

BC No: 230501

SITE DETAILS:

71 DAVIS ROAD

CUST

LEGAL:

LOT 1

AS BUILT TRUSS LAYOUT REQUIRED –
This must be received by the Building Unit
AT LEAST 10 WORKING DAYS PRIOR to the
Structure Pre-Roof Pre-Wrap Inspection

Truss “As-Built” Designs may be sent to:
buildinginfo@wmk.govt.nz

Approved Building Consent Documents and Plans (Full set)

On Site Copy

- These plans and specifications must be kept on site during construction, and made available to the building officer on request. Failure to do so will mean an automatic failure of the building inspection and will necessitate re-booking the inspection at the applicant's expense.
- All boundary survey pegs must be located and flagged by the owner before work is commenced.

Inspections

For bookings or building enquiries please phone the **Building Unit** on:

03 311 8906

or

Email inspection bookings to: bcbooking@wmk.govt.nz

- Please refer to your inspection schedule for details of inspections to be carried out.
- At least 2-3 full working days' notice should be given when booking an inspection.
- Please be advised that it may not always be possible to carry out the inspection within the time frame you require.
- Provision is to be made to allow access.
- The Code Compliance Certificate will be issued once the:
 - Final inspection has been carried out and passed.
 - Audit of WDC building consent file has been completed.
 - Payment of any outstanding invoices is received.

Access Around House Building Sites



It is important when you are building your house that you take care not to damage roads, kerbs, footpaths, street trees, swales and berms.

The Council will be monitoring building sites in subdivisions to make sure that builders have the correct arrangements in place to help avoid damage and to ensure public safety.

In particular:

- **Vehicles accessing the site should only use an approved vehicle crossing**
- **Vehicles should not park on the footpath or berm**
- **Take care unloading plant and materials to protect the road surface**
- **You must ensure no litter encroaches into a public place (road/berm/footpath). Litter includes such items as earth, dirt or stones. An infringement notice up to \$400.00 may be issued to any person or company found in breach of the Litter Act 1979.**

If you need to block footpaths for any reason such as pouring foundations or unloading materials you need to provide alternative access for pedestrians. You need to do this to fulfil the requirements of the Health and Safety in Work Act 2015, and the Code of Practice for Temporary Traffic Management (CoPTTM). As site owner you or your builder are responsible for the health and safety of workers and the general public.

Vehicles are not allowed to be parked on footpaths, berms or swales. The Council will issue parking infringement notices if required.

Thank you for helping to keep our roads and footpaths safe for everyone, and doing what you can to reduce costly damage to new roads, footpaths and berms.

Find out more at waimakariri.govt.nz

WOODBURNER COMMITMENT AND REGISTRATION FORM



WOODBURNER REGISTRATION

Applicant's full name: _____

Postal address: _____

Phone (home): _____ **Mobile:** _____

Email address: _____

Site address: *(Property address of where the wood burner is being used)*

Number & Street: _____

Suburb: _____ City: _____

Burner make & model: _____

CONDITION OF USE

I acknowledge that all users of this woodburner will be required to meet the following conditions.

The discharge of visible smoke from a burner is not allowed, except for 15 minutes at start-up and 5 minutes at refuelling	<input type="checkbox"/> Yes
Only dry, seasoned wood will be used	<input type="checkbox"/> Yes
The burner must be well maintained and appropriate records must be kept	<input type="checkbox"/> Yes

For more information and clean burning tips visit www.letscleartheair.co.nz

Applicant's signature

Date

Note: All properties less than 2ha that are in a Clean Air Zone need to register. To find out if your property is in a Clean Air Zone, please contact Customer Services

Please return to:

Environment Canterbury
PO Box 345
Christchurch 8140

or email to:

ecinfo@ecan.govt.nz

Customer services

0800 329 276

Dial Before You Dig

Safety near underground cables and services

MainPower is committed to providing a safe, secure and reliable electricity supply to all customers.

This fact sheet is designed to inform you about safety around electricity, particularly underground cables.

Working near electricity cables

Serious personal injury can result from damaging underground services during excavation and ground penetration. Supply disruption and repairs can be costly and extremely irritating to customers.

The positions where cables are buried are subject to reasonable tolerance however, the depth of cover may have changed since installation.

It is your responsibility to verify the position and depth of cables before excavation.

Steps to ensure safe digging

- Obtain up-to-date plans from the relevant local authorities.
- Use a cable locator, if possible, to mark-out the underground services before commencing work.
- Practice safe digging procedures.
- The Worksafe Guide for Safety with Underground Services sets out agreed work methods and preferred work practices for the location and excavation of underground services. Download the guide at - <http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/underground-services-guide-for-safety-with/underground.pdf>

Underground electricity cables

For copies of plans showing MainPower's electricity cables phone 03 311 8300, weekdays 8am - 5pm or email us at underground.records@mainpower.co.nz.

Please allow 2 working days to receive copies of plans. MainPower may hold some records of privately-owned cables connected to the MainPower network system; contact MainPower in the first instance.

Additional services MainPower can provide if you are planning your digging:

- Mark-out Services: MainPower can trace cables using an electronic locator.
- On-Site Supervision: For difficult work or locations, MainPower can provide on-site safety supervision.

Disclaimer This fact sheet is not an exhaustive list of all safety matters that need to be considered. Whilst care is taken in the preparation of this material, MainPower does not guarantee the accuracy and completeness of the information.

Underground council services

All contractors are reminded of their legal responsibility to take all practicable steps to locate and protect existing services. In the road corridor, service plans and a Corridor Access Request (CAR) permit need to be obtained through the Beforeudig website (www.beforeudig.co.nz). The Beforeudig service helps contractors to determine the location of any underground services before excavating. For service plans on private property, and lateral locations for work on private property that will not extend into any part of the road reserve, contact the Waimakariri District Council's Customer Services team at office@wmk.govt.nz.

Contact MainPower

To report a fault:
0508 60 70 80

For electricity emergencies:
0508 60 70 80

For general enquiries:
www.mainpower.co.nz
info@mainpower.co.nz
03 311 8300 (8am to 5pm, Monday to Friday)

mainpower

Dial before you dig.

Always remember to locate underground cables and services before digging and avoid serious injury, supply disruption and costly repairs. Phone MainPower for cable location advice.

03 311 8300



Think for
Safety's Sake



www.mainpower.co.nz

BUILDING UNIT

Application for a Minor Variation to a Building Consent

It is the owner's (or authorised agent's) responsibility to notify Council of any changes to the approved plans under *The Building Act 2004, Section 40*

This application is to advise Waimakariri District Council that the following minor variation* is proposed to be undertaken on the building situated at the site address listed below. (As per *The Building Act 2004, Section 45A*)

*For guidance on minor variations, please refer to the fact sheet on our website waimakariri.govt.nz/council/documents-bylaws-plans/fact-sheets

This variation will be processed in office and approved by a Building Control Officer.

Consent details

BC number: _____ Site address: **71 DAVIS RD. CUST**

Owner/Agent name: **BARRY WALSH**

Owner/Agent email: **barry@dimensionshopfitters.co.nz**

Owner/Agent contact number: **021 522 119**

Applicant's role in project: **OWNER**

Applicant name: (if not Owner/Agent) _____

Applicant email: (if not Owner/Agent) _____

Applicant contact number: (if not Owner/Agent) _____

WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.05 17/02/2025 johnb
Addition of a Velux Skylight to the attic space,
Addition of a Secondary private stair, Change Wood
Burner to Masport Hurunui F/S, Updated Effluent
Disposal Design & Amended elevations.

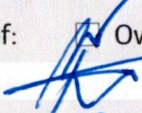
Description of Minor Variation and reason for change: (Attach only relevant plans and supporting documents)

- ① VELUX SKYLIGHT AND STAIRS ADDED TO ATTIC SPACE
- ② MASPORT HURUNUI LOG FIRE (FREE STANDING)

Minor Variation requested during inspection ☒ Yes ☐ No

If yes, note type of inspection and date carried out: **FINAL**

Signature of: ☒ Owner ☐ Applicant on behalf of owner

Signature:  Date: **17/12/24**

Print name: **BARRY WALSH**

Invoice to be billed and sent to: ☒ Owner ☐ Applicant ☐ Other: _____

General information

Processing and administration fees apply. Our latest fees and charges are available on the WDC webpage waimakariri.govt.nz/services/fees-and-charges

NOTE: Any charges incurred are required to be paid by the 20th day of the month following the month in which the invoice is issued and prior to issue of the Code Compliance Certificate.

From: [Barry Walsh](#)
To: [Building Services](#)
Subject: RE: TRIM: RE: Re:71 Davis Rd, Cust
Date: Tuesday, 17 December 2024 3:41:24 PM
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[0.png](#)

Caution: [THIS EMAIL IS FROM AN EXTERNAL SOURCE] DO NOT CLICK links or attachments unless you recognise the sender email address and know the content is safe.

Hi Shirley,

Cost of both items combined - \$1870.00.

Regards,

Barry Walsh
021 522 119

From: Building Services <buildinginfo@wmk.govt.nz>
Sent: Tuesday, 17 December 2024 3:31 pm
To: Barry Walsh <barry@dimensionshopfitters.co.nz>
Subject: RE: TRIM: RE: Re:71 Davis Rd, Cust

Hi Barry

What will the estimated value of skylight and stairs that have been added.

Regards

Shirley Cresswell | Senior Administration Officer
Building Unit

Phone: 0800 965 468 (0800 WMK GOV)
DDI: +64 3 266 9326



waimakariri.govt.nz



Ngā mihi o te wā me te Tau Hou

Wishing you a happy holiday season, and a safe and enjoyable summer.

We look forward to working with you in 2025.

From: Barry Walsh <barry@dimensionshopfitters.co.nz>
Sent: Tuesday, 17 December 2024 1:00 PM
To: Building Services <buildinginfo@wmk.govt.nz>
Subject: TRIM: RE: Re:71 Davis Rd, Cust

Caution: [THIS EMAIL IS FROM AN EXTERNAL SOURCE] DO NOT CLICK links or attachments unless you recognise the sender email address and know the content is safe.

Hi Amanda,

Thank you for the time over the phone, much appreciated.

1. Skylight / staircase to attic space.
2. Free standing fire name change due to Masport stopped making original fire noted in consent.

Please find attached free standing log burner spec as well.

Let me know if you require any further info.

Regards,

Barry Walsh
021 522 119

From: Building Services <buildinginfo@wmk.govt.nz>
Sent: Tuesday, 17 December 2024 12:39 pm
To: Barry Walsh <barry@dimensionshopfitters.co.nz>
Subject: RE: Re:71 Davis Rd, Cust

Hi Barry

Please complete the form attached, and submit with all the documentation and photos for the Skylight, Attic Stairs and Log burner Specifications.

Kind regards

Amanda McIntyre | Building Unit Administration Officer
Building Unit

Phone: 0800 965 468 (0800 WMK GOV)
DDI: +64 3 266 9197



waimakariri.govt.nz



Ngā mihi o te wā me te Tau Hou

Wishing you a happy holiday season, and a safe and enjoyable summer.

We look forward to working with you in 2025.

From: Barry Walsh <barry@dimensionshopfitters.co.nz>

Sent: Tuesday, December 17, 2024 11:18 AM

To: Building Services <buildinginfo@wmk.govt.nz>

Subject: FW: Re:71 Davis Rd, Cust

Caution: [THIS EMAIL IS FROM AN EXTERNAL SOURCE] DO NOT CLICK links or attachments unless you recognise the sender email address and know the content is safe.

Hi there,

Could you please confirm this was processed, Andrew sent 2nd of September 24.

Regards,

Barry Walsh
021 522 119

From: Andrew Toulson <andrew@iconicarchitecture.co.nz>

Sent: Monday, 2 September 2024 9:38 am

To: Building Services <buildinginfo@wmk.govt.nz>

Cc: Barry Walsh <barry@dimensionshopfitters.co.nz>

Subject: FW: Re:71 Davis Rd, Cust

Hi Guys

See attached photos and amended plans for a minor amendment. Velux skylights and stairs added to attic space.

regards

Andrew Toulson, LBP Des.
Director, Principal Designer
ICONIC ARCHITECTURE LTD
21 Priors Road
RD1 Rangiora
027-628-5278

BUILDING UNIT

Application for a Minor Variation to a Building Consent

It is the owner's (or authorised agent's) responsibility to notify Council of any changes to the approved plans under *The Building Act 2004, Section 40*

This application is to advise Waimakariri District Council that the following minor variation* is proposed to be undertaken on the building situated at the site address listed below. (As per *The Building Act 2004, Section 45A*)

*For guidance on minor variations, please refer to the fact sheet on our website waimakariri.govt.nz/council/documents-by-laws-plans/fact-sheets

This variation will be processed in office and approved by a Building Control Officer.

Consent details

BC number: BC230501

Site address: 71 Davis Rd, Cust

Owner/Agent name: B & C Walsh

Owner/Agent email: barry@dimensionshopfitters.co.nz

Owner/Agent contact number:

Applicant's role in project: Owner

Applicant name: (if not Owner/Agent)

Applicant email: (if not Owner/Agent)

Applicant contact number: (if not Owner/Agent) 021 522 119

Description of Minor Variation and reason for change: (Attach only relevant plans and supporting documents)

See attached revised elevations and section for Barry Walsh's residence at 71 Davis rd Cust, to swap out for a minor amendment. The batten over plywood cladding to the living wing, and the chimney stone cladding, is being swapped out for Linea to match the rest of the house.

Minor Variation requested during inspection ☐ Yes ☒ No

If yes, note type of inspection and date carried out:

Signature of: ☒ Owner ☐ Applicant on behalf of owner

Signature:

Date: 24/04/24

Print name: Barry Walsh

Invoice to be billed and sent to: ☒ Owner ☐ Applicant ☐ Other:**General information**

Processing and administration fees apply. Our latest fees and charges are available on the WDC webpage waimakariri.govt.nz/services/fees-and-charges

NOTE: Any charges incurred are required to be paid by the 20th day of the month following the month in which the invoice is issued and prior to issue of the Code Compliance Certificate.

From: [Barry Walsh](#)
To: [Building Services](#)
Cc: [andrew@iconicarchitecture.co.nz](#)
Subject: RE: minor amendment 71 Davis rd Cust
Date: Wednesday, 24 April 2024 10:26:42 AM
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[0.png](#)
[20240424_100829.pdf](#)

Caution: [THIS EMAIL IS FROM AN EXTERNAL SOURCE] DO NOT CLICK links or attachments unless you recognise the sender email address and know the content is safe.

Hi Shirley,

Please find attached as requested.

How quick could we book an ½ height Linea site inspection? As we are ready now.

Regards,
Barry Walsh
021 522 119

From: Building Services <buildinginfo@wmk.govt.nz>
Sent: Wednesday, April 24, 2024 10:14 AM
To: Barry Walsh <barry@dimensionshopfitters.co.nz>
Subject: RE: minor amendment 71 Davis rd Cust

Hi Barry

Please fill in and return

Regards

Shirley Cresswell | Building Unit Administration Officer
Building Unit

Building Unit: 03 311 8906
Phone: 0800 965 468 (0800 WMK GOV)
DDI: +64 3 266 9326



waimakariri.govt.nz

From: Barry Walsh <barry@dimensionshopfitters.co.nz>
Sent: Wednesday, April 24, 2024 10:13 AM
To: Building Services <buildinginfo@wmk.govt.nz>
Subject: FW: minor amendment 71 Davis rd Cust

Caution: [THIS EMAIL IS FROM AN EXTERNAL SOURCE] DO NOT CLICK links or attachments unless you recognise the sender email address and know the content is safe.

From: Barry Walsh
Sent: Wednesday, April 24, 2024 10:00 AM
To: buildinginfo@wdc.govt.nz
Cc: Andrew Toulson <andrew@iconicarchitecture.co.nz>
Subject: RE: minor amendment 71 Davis rd Cust

Hi,

Please find the correct elevation attached, could you please confirm how quick we could have an ½ Linea inspection, including the revised elevations?

Regards,
Barry Walsh.
021 522 119

From: Andrew Toulson <andrew@iconicarchitecture.co.nz>
Sent: Monday, April 22, 2024 5:10 PM
To: buildinginfo@wdc.govt.nz
Cc: Barry Walsh <barry@dimensionshopfitters.co.nz>
Subject: minor amendment 71 Davis rd Cust

Hi

See attached revised elevations and section for Barry Walsh's residence at 71 Davis rd Cust to swap out for a minor amendment. The batten over plywood cladding to the living wing is being swapped out for Linea to match the rest of the house.

regards

Andrew Toulson, LBP Des.
Director, Principal Designer
ICONIC ARCHITECTURE LTD
21 Priors Road
RD1 Rangiora
027-628-5278

~~Dwellings, Outbuildings, Swimming Pools and Other Works (Not Commercial)~~

Section 1 Statutory Forms

- Inspection List – By Council
- Building Consent Form (Form 5) – By Council
- Code Compliance Application (Form 6) – By Council
- ~~Installation & PS3 Forms – By Council~~
- Application Form
- LBP Design Certificates
- ~~Record of Title or Sales & Purchase Agreement~~
- ~~PIM, Resource Consent – By Council~~

WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.02 15/11/2023 bhargavac
Change Foundation to Ribraft

Waimakariri District Council

215 High Street
Private Bag 1005
Rangiora 7440, New Zealand
Phone 0800 965 468

BUILDING UNIT

Application for a Minor Variation to a Building Consent

It is the owner's (or authorised agent's) responsibility to notify Council of any changes to the approved plans under *The Building Act 2004, Section 40*

This application is to advise Waimakariri District Council that the following minor variation* is proposed to be undertaken on the building situated at the site address listed below. (As per *The Building Act 2004, Section 45A*)

*For guidance on minor variations, please refer to the fact sheet on our website waimakariri.govt.nz/council/documents-by-laws-plans/fact-sheets

This variation will be processed in office and approved by a Building Control Officer.

Consent details

BC number: **230501** Site address: **71 DAVIS RD, CUST**
Owner/Agent name: **BARRY WALSH**
Owner/Agent email: **barry@dimensionshopfitters.co.nz**
Owner/Agent contact number: **021 522 119**
Applicant's role in project: **OWNER**
Applicant name: (if not Owner/Agent) **BARRY WALSH**
Applicant email: (if not Owner/Agent) **AS ABOVE**
Applicant contact number: (if not Owner/Agent) **021 522 119**

Description of Minor Variation and reason for change: (Attach only relevant plans and supporting documents)

**CHANGE FOUNDATION TO THE VERANDA 600X600X600
PAD AS PER SECTION 9 OF 3604 (4m2)**

Minor Variation requested during inspection ☐ Yes ☐ No

If yes, note type of inspection and date carried out: _____

Signature of: ☐ Owner ☐ Applicant on behalf of owner

Signature: _____ Date: **18/01/24**

Print name: **BARRY WALSH**

Invoice to be billed and sent to: ☒ Owner ☐ Applicant ☐ Other: _____

General information

Processing and administration fees apply. Our latest fees and charges are available on the WDC webpage waimakariri.govt.nz/services/fees-and-charges

NOTE: Any charges incurred are required to be paid by the 20th day of the month following the month in which the invoice is issued and prior to issue of the Code Compliance Certificate.

BUILDING UNIT

Form 2 Application for a Project Information Memorandum and/or Building Consent

Dwellings, Outbuildings, Swimming Pools and Other Works e.g. Septic Tank, Bridge, Retaining Wall, Amendments and Exemptions

Under The Building Act 2004, Sections 33, 45 & Schedule 1, Part 1, Clause 2

BC No.: 230501.02

1. The Building

Street address (street/road/township): (for structures that do not have a street address, state the nearest street intersection and the distance and direction from that intersection)

71 BAUIS ROAD CUST

Legal description of the land where the building is located: (state legal description as at the date of application and, if the land is proposed to be subdivided, include details of relevant lot numbers and subdivision consent)

Lot: 1 DP: 570321 Valuation Number: 2158007013 Resource Consent:

Building name: (if applicable)

Location of building within site/block number: (include nearest street access)

Number of levels: 1 Unit/Level No.:

Area: (total floor area; indicate area affected by the building work if less than the total area)

Existing: New: 337 Total: 337

Current lawfully established use: (include number of occupants per level and per use if more than 1)

Year building first constructed: (Approximate date is acceptable, eg 1920's)

2. The Owner - all details must be the legal owner's

Name of owner: (include preferred form of address, e.g. Mr, Mrs, Ms, Miss, Dr, if an individual)

Barry Christopher Walsh & Carol Sheila Walsh

Contact person: (not required if the owner is an individual. Must have a New Zealand address)

Mailing address: 199 JONES ROAD RANGIORA

Street address/Registered office: (if different than above)

WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.02 15/11/2023 bhargavac
Change Foundation to Ribraft

Phone number:

Landline: Mobile: Daytime: After hours: Fax:

021522119

Email: barry@dimensionshopfitters.co.nz Website:

As the owner, where you have given authorisation for an Agent to act on your behalf, please confirm if you require a copy of Building Consent/PIM correspondence and associated Building Consent Inspection Notices following the formally received notification: ☒ Yes ☐ No

The following evidence of ownership is attached to this application:

- ☐ Copy of Record of Title OR ☐ Council to provide (additional charge of \$15)
(Current within 1 month of being issued and must include a deposited plan [diagram]. Where the Record of Title is not current, Council will provide this [additional charge of \$15 applies]).
- ☐ Signed copy of Sales and Purchase Agreement (If Record of Title is not issued)

3. Applicant - only required when the applicant is not the owner or the agent e.g. leasee/tenant

PLEASE NOTE - Authorisation is required from the owner of the property.

Name of applicant: (e.g. leasee/tenant)

Contact person: (not required if the applicant is an individual)

Mailing address:

Street address/Registered office: (if different than above)

Phone number:

Landline:

Mobile:

Daytime:

After hours:

Fax:

Email:

Website:

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

4. Agent - only required when the application is being made on behalf of the owner

PLEASE NOTE - Authorisation is required from the owner of the property.

Name of agent: **ICONIC ARCHITECTURE LTD**

Contact person: (not required if the applicant is an individual)

ANDREW TOLSON

Mailing address: **21 PRINCE ROAD RD1 PANGIORA**

Street address/Registered office: (if different than above)

Phone number:

Landline:

Mobile:

Daytime:

After hours:

Fax:

0276285278

Email: **andrew@iconicarchitecture.co.nz** Website:

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

DESIGNER.

PLEASE NOTE - The Agent will be the first point of contact for communications with the Council/Building Consent Authority regarding this application/building work

5. Application

I request that the following (please select one) be issued for the building work described in this Application:

- ☐ Project Information Memorandum (PIM) only ☐ Building Consent for PIM No:
- ☐ Building Consent with PIM ☐ Building Consent without PIM (Compliance Check applies)
- ☐ Exemption from the need for B/C ☒ Amendment to Building Consent **230501**
(Refer Building Act 2004 Schedule 1, Part 1, Clause 2) **Please Note:** Amendments must be authorised by the owner
- ☐ Building Consent for Above Ground Pool and/or Non-Exempt Small Heated Pool

I wish to receive my approved documentation in the following format:

PLEASE NOTE - If USB or hard copy, please confirm if you wish to pick it up from the Council or have it posted.

☒ Electronically via Sharefile Transfer Portal (You must be set up and registered for this option)

☐ USB: (this is an additional charge) ☐ Post OR ☐ Pick-up

☐ Hard copy: (onsite - this is an additional charge) ☐ Post OR ☐ Pick-up

PLEASE NOTE - One set of "Onsite" hard copy consented documents must be available at all times for inspections.

All consent related invoices/refunds to be billed and sent to:

☒ Owner ☐ Applicant ☐ Agent ☐ Or other (If other, please complete below)

Company name: (if applicable)

Contact person:

Mailing address:

Phone number:

Landline:

Mobile:

Daytime:

After hours:

Fax:

Email:

Website:

PLEASE NOTE - Any refunds are to the receipted name unless written authorisation has been received from the receipted person or company.

Terms of trade

I/We understand that:

Building Consents shall be paid for when the consent is collected/uploaded or if the consent is not collected/uploaded within three months after the date of consent being granted, the work done to date portion i.e. admin and processing costs of the account will be due and payable. The balance of the invoice will be payable when the consent is collected/uploaded.

All other accounts shall be paid by the 20th day of the month following the month in which the invoice is issued.

I/We agree to pay according to these terms for any goods or services you supply to us. Failure to meet these Terms of Trade may result in any credit arrangement being withdrawn with any balance becoming payable within seven days. Should failure to meet the terms of trade result in debt recovery and/or legal proceedings, any costs whatsoever incurred in the collection of the debt including debt collector's fees and commissions and legal costs, charges and expenses on a solicitor and own client basis will be added to the account and will be payable by me/us.

Application authorisation

By entering your name in the box below you are giving your authority for this application to proceed under Sections 33 and 45 of the Building Act 2004.

Name: **ANURAG TOLSON**

Date: **6/11/2023**

I am the: ☐ Owner ☐ Applicant on behalf of, and with the authority of the owner
☐ Agent on behalf of, and with the authority of the owner

6. The Project

Description of work (e.g. dwelling, alteration/addition). If an amendment, please provide a complete description of the nature of the amendment.

AMENDMENT TO FOUNDATION TO RIBRAFT

WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.02 15/11/2023 bhargavac
Change Foundation to Ribraft

Specify the intended use of the building: (e.g. detached dwelling, multi-unit dwelling, show home, sleepout or outbuilding - shed/garage etc.)

DETACHED DWELLING

Will the building work result in a change of use of this building? ☐ Yes ☒ No

If Yes, provide details of the new use:

Will hazardous substances be stored in the building? ☐ Yes ☒ No

Intended life of the building:

☒ Indefinite but not less than 50 years Or specified as _____ years

Is this a staged consent? ☐ Yes ☒ No

If staged, provide details (e.g. Stage 1 of 3)

List Building Consents previously issued for this building (if any): (i.e. is this project being constructed in stages? Is this consent for a relocated or transportable building?)

Estimated value of the building work on which the building levy will be calculated (incl. GST): (state estimated value as defined in section 7 of the Building Act 2004)

\$ _____

If this is an application to amend a building consent, advise the estimated value of amended building work (incl. GST) \$ _____

Is this in addition to, or reduction from, what was stated with the original application?

☐ Addition ☐ Reduction ☒ No change

7. Restricted building work

Will the building work include any restricted building work? ☒ Yes ☐ No

If Yes, provide the following details of all Licensed Building Practitioners who will be involved in carrying out or supervising the restricted building work (if these details are unknown at the time of the application, they must be supplied before the work begins).

Licence class	Name	Licensed building practitioner number (or registration number if treated as being licensed under section 291 of the Building Act 2004)
Foundations		
Carpentry		
Exterior Plasterer		
Bricklayer		
Blocklayer		
Roofer		

Key personnel

Builder

Name:

Reg. No.:

Address:

Phone No.:

Email:

Designer(s)

Name:

ANDREW TOLSON

Reg. No.: 115384

Address:

21 PRIBBS ROAD RD1 RANGIORA

Phone No.: 0276285278

Email: andrew@iconicarchitecture.co.nz

Certifying drainlayer

Name:

Reg. No.:

Address:

Phone No.:

Email:

Certifying plumber

Name:

Reg. No.:

Address:

Phone No.:

Email:

Certifying gasfitter

Name:

Reg. No.:

Address:

Phone No.:

Email:

Registered electrician

Name:

Reg. No.:

Address:

Phone No.:

Email:

Structural engineer

Name:

Reg. No.:

Address:

Phone No.:

Email:

8. Project Information Memorandum - this section is not applicable if this application is for a building consent only

The following matters are involved in the project:

- ☐ Subdivision
- ☐ Alterations to land contours
- ☐ New or altered connections to public utilities
- ☐ New or altered locations and/or external dimensions of buildings
- ☐ New or altered access for vehicles
- ☐ Building work over or adjacent to any road or public place
- ☐ Disposal of stormwater and wastewater
- ☐ Building work over any existing drains or sewers or in close proximity to wells or water mains
- ☐ Registered historic site or place, tick if applicable (only applies where a PIM has not previously been issued for the building work)
- ☐ Other matters known to the applicant that may require authorisations from the territorial authority:

Notes

Other notes or comments which you may wish to add, eg: Resource Consents

9. Building consent - this section is not applicable if this application is for a Project Information Memorandum only

The following plans and specifications are attached to this application, or refer to the Appendix section for plans and specifications provided. ☐

AMENDED SECTIONS PAGES 08 + 09 .

The building work will comply with the Building Code as follows: (Note: if you are not sure what clauses are applicable, consult with your builder, designer or architect)

Clause (Tick relevant clause numbers of Building Code)	Means of compliance (Refer to the relevant compliance document(s) or detail of alternative solution in the plans and specifications)	Waiver/modification required (State nature of waiver or modification of building code required)
<input checked="" type="checkbox"/> B1 Structure	AS	
<input checked="" type="checkbox"/> B2 Durability	AS	
<input type="checkbox"/> C1-C6 Protection from fire		
<input type="checkbox"/> D1 Access routes		
<input type="checkbox"/> D2 Mechanical installations for access		
<input type="checkbox"/> E1 Surface water		
<input type="checkbox"/> E2 External moisture		
<input type="checkbox"/> E3 Internal moisture		
<input type="checkbox"/> F1 Hazardous agents on site		
<input type="checkbox"/> F2 Hazardous building materials		
<input type="checkbox"/> F3 Hazardous substances and processes		
<input type="checkbox"/> F4 Safety from falling		
<input type="checkbox"/> F5 Construction and demolition hazards		
<input type="checkbox"/> F6 Visibility in escape routes		
<input type="checkbox"/> F7 Warning systems		
<input type="checkbox"/> F8 Signs		
<input type="checkbox"/> F9 Means of restricting access to residential pools		
<input type="checkbox"/> G1 Personal hygiene		
<input type="checkbox"/> G2 Laundering		
<input type="checkbox"/> G3 Food preparation and prevention of contamination		
<input type="checkbox"/> G4 Ventilation		
<input type="checkbox"/> G5 Interior environment		
<input type="checkbox"/> G6 Airborne and impact sound		
<input type="checkbox"/> G7 Natural light		
<input type="checkbox"/> G8 Artificial light		
<input type="checkbox"/> G9 Electricity		
<input type="checkbox"/> G10 Piped services		
<input type="checkbox"/> G11 Gas as an energy source		
<input type="checkbox"/> G12 Water supplies		
<input type="checkbox"/> G13 Foul water		
<input type="checkbox"/> G14 Industrial liquid waste		
<input type="checkbox"/> G15 Solid waste		
<input type="checkbox"/> H1 Energy efficiency		

10. Compliance schedule - this section is not applicable if there are no specified systems or if the application is for a Project Information Memorandum

The specified systems for the building are as follows: *(specified systems are defined in regulations)*

The following specified systems are being altered, added to, or removed in the course of the building work:

☒ There are no specified systems in the building

11. Attachments

The following documents are attached to this application:

- ☒ Plans and specifications (list under section 9)
- ☐ Memoranda from licensed building practitioner(s) who carried out or supervised any design work that is restricted building work
- ☐ Project information memorandum
- ☐ Development contribution notice
- ☐ Certificate attached to project information memorandum
- ☐ Completed relevant application checklist(s) – refer to Appendix

Please continue on the Appendix as follows for further information requested by the Waimakariri District Council.

Appendix - further information requested by the Waimakariri District Council

National Environment Standard (NES)

This section relates to the [National Environmental Standard for Assessing & Managing Contaminants in Soil to Protect Human Health \(NES\)](#).

The NES includes regulations controlling **soil disturbance, change of use, subdivision, and removal/replacement of fuel storage systems** on properties which have been used either now or in the past for a hazardous activity or industry (known as HAIL) that may have resulted in contamination of the soil. The table below determines whether the NES applies to your proposal.

	Yes	No
Is the application site listed on Environment Canterbury's Listed Land Use Register (LLUR)? www.llur.ecan.govt.nz If YES , please include a copy of the LLUR statement with your application.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If the site is not listed on the LLUR, is an activity described on the Hazardous Substances and Industries List (HAIL) currently being undertaken on the piece of land to which this application relates, or is it more likely than not to have ever been undertaken on the land? The HAIL list is available to view at Hazardous Activities and Industries List (HAIL)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Type of HAIL activity:

If the answer to either of the above questions is YES, then the NES will apply, depending on the type of activity. Please identify whether the application involves the activities below.

PLEASE NOTE - If the answer to both of the previous questions is No, you do not need to answer the remaining questions in this section.

	Yes	No
Has the property been recently subdivided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Will the proposed activity involve the disturbance of more than 25m ³ of soil (per 500m ² of disturbed area)? Volume of soil disturbed:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Will the proposed activity involve the removal of more than 5m ³ of soil (per 500m ² of disturbed area) from the site? Volume of soil removal:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the application involve changing the use of the land to one which, because the land has been subject to a HAIL activity, is reasonably likely to harm human health? (e.g. orchard to a residence)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the application involve replacing or removing fuel storage systems or parts of it?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the answer to any of the above activity questions is also YES, then the NES will apply and you will need to establish whether the proposed activity complies with the NES.

- Changing the land use will require resource consent if the permitted activity requirements of the NES are not complied with. These include provision of a Preliminary Site Investigation carried out by a suitably qualified and experienced practitioner.
- Soil disturbance or removal exceeding the specified volumes require resource consent.
- Removal or replacement of a fuel storage system will require consent if the permitted activity requirements of the NES are not complied with.

Does the proposed activity require resource consent under the NES?

If **YES**, a resource consent is required and with the application an assessment under the NES must be provided. A Detailed Site Investigation may be required.

Vehicle crossing

Is a new vehicle crossing required or an existing crossing altered for this project?

☐ Yes ☐ No ☐ Resource consent applied for

If yes, please complete and submit the [Vehicle Crossing Application Form](#) and send to office@wmk.govt.nz

Application form

(One copy)

- ☒ All sections fully completed as applicable to the project
- ☒ Means of Compliance with NZBC - designer to complete
- ☒ Provide the correct legal description (Council can help with this)
- ☐ Provide one copy of the current Record of Title, or Sales and Purchase Agreement
 - not more than one month old **AS PER ORIGINAL BC APPLICATION**
- ☒ Give name and contact numbers of contact person (if not the owner)
- ☐ State the project location (street address or location details as near as possible if no address)
- ☐ Application authorised and dated
- ☒ Agent relationship to owner stated (where applicable)
- ☒ Certificate/s of design work (LBP)

Office
use only

These have
been provided:

Bookmarks

PLEASE NOTE - Our current software does not enable us to maintain bookmarks within the consent documents during processing and granting. (This may be reviewed once a software solution becomes available.)

Project Information Memorandum (PIM)

This section must be completed if you are applying for a PIM. **DO NOT** complete this section if a PIM has already been issued. The following documents are attached to this application:

- ☐ Site plan, Floor plans, Elevations for proposed building (electronic preferred or if hard-copy minimum size A3)
- ☐ Record of Title, or Sales and Purchase Agreement if Record of Title is not issued. Current Record of Title required (current within one month of application)
- ☐ Application fee (as per Council Fees and Charges Schedule)

Building consent

This section must be completed if you are applying for a building consent. **DO NOT** complete this section if the Application is for a Project Information Memorandum only.

The following documents are attached to this application:

- ☒ 1 copy - building plans (site plans, floor plans, elevation plans. All plans to be dimensioned, scaled and accurate electronic preferred or if hard-copy minimum size A3)
- ☒ 1 copy of each - specifications, producer statements, truss details (refer below)
- ☐ 1 copy - Record of Title or Sale and Purchase Agreement if Record of Title is not issued. Current Record of Title required (current within one month of application) **AS PER ORIGINAL BC APPLICATION**
- ☒ Restricted building work - see page 4
- ☒ Key personnel - see page 5
- ☒ Building work compliance with the Building Code - see page 7

PLEASE NOTE - Swimming Pool document checklist on the following page to be completed if applicable.

Office
use only
These have
been provided:

Swimming pools (as applicable)

- ☐ Site plan, showing location of pool and existing buildings, location of fence, boundaries and existing waterways
- ☐ Fence construction. Show the height, gates, self-closing device, construction type etc (see "A Guide to Pool Fencing")
- ☐ Also show how any doors or windows that form part of the fence will comply

Brand and model of pool:

Size of the pool:

- ☐ Drainage plan. Show discharge point
- ☐ Producer statement (where applicable)
- ☐ Installation instructions/manual
- ☐ Show filling point for pool (tap) and backflow protection

Design basis

(To be completed by the designer)

Please list the following basis for the building design:

- ☒ Wind zone H
- ☒ Earthquake zone 2
- ☒ Snow zone/altitude 150
- ☒ Corrosion zone (if applicable) N/A
- ☒ Building is specifically engineer-designed Foundation
- ☐ Complies with NZS 3604:2011
- ☐ Both specific design and NZS 3604:2011

Design documents

(One copy)

- ☐ Weather tightness risk matrix
- ☐ Truss design layout and Producer Statement
- ☐ Bracing calculations/plan
- ☐ H1 Energy efficiency calculations

Site plan

(One copy, electronic preferred or if hard-copy minimum size A3)

- ☐ Overview of site showing legal boundaries as per current Record of Title
- ☐ Showing proposed and existing structures (including swimming pools)
- ☐ Distances to boundaries
- ☐ Proposed and existing site levels
- ☐ North point
- ☐ Utility infrastructure (sewer, water pipelines, septic tanks etc) where applicable
- ☐ Water races, drains, topographic features

**Office
use only**
These have
been provided:

Drainage layout

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- ☐ Foul water - showing waste pipes, sizes, grades, venting
- ☐ Foul water to discharge point
- ☐ Storm water - pipe sizes, grades, downpipe locations
- ☐ Storm water drain to discharge point

☐

Foundation layout

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- ☒ Full foundation layout plan
- ☐ For timber floors, show all pile layout, pile types and bracing location
- ☒ Slab thickenings, shrinkage control joints and reinforcing rebates

☐

Floor plans

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- ☐ Layout of all floors fully dimensioned. For alterations and/or additions provide both new and existing floor plans
- ☐ Doors and window positions and sizes
- ☐ Layout of amenity areas (laundry etc)
- ☐ Main structural beams that are not shown elsewhere
- ☐ Lintel sizes
- ☐ HWC location
- ☐ Roof space access
- ☐ Gas cylinder location
- ☐ Room names
- ☐ Location of smoke alarms
- ☐ Location of heating unit (if applicable)

☐

Exterior elevations

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- ☐ Elevations of all external walls showing claddings
- ☐ Doors and windows showing opening sections
- ☐ Show location of solar panels
- ☐ Accurate ground levels existing and proposed
- ☐ Subfloor ventilation for timber floors
- ☐ Show roof bracing on elevations if not shown elsewhere

☐

Cross section and construction details

(One copy to scale usually 1:50 or 1:20 for sections and 1:10 for details - minimum scale, electronic preferred or if hard copy minimum size A3)

- ☐ Roof lines, overhangs, floor levels, ground levels
- ☐ Major vertical dimensions
- ☒ Foundation, wall and roof structure materials
- ☐ Upper level decks or balconies over lower level room must be fully detailed including the stormwater disposal and overflow precautions

- ☐ Stairs, handrails and balustrade showing pitch and head clearances
- ☐ Structural connections, posts to footings, beams to posts, trusses or beams to walls
- ☐ Component fixing information is to be provided for all structural and framing components
- ☐ Foundation and footing details and reinforcing. Show height from finished floor to ground level
- ☐ Pile details for timber floors
- ☐ Floor bracing details
- ☐ Timber grade and treatment
- ☐ Damp proof membranes, building papers and insulation systems/materials
- ☐ Flashing details and documents
- ☐ Roof penetrations
- ☐ Shower floor details and wall to shower base junction detail
- ☐ Sealing to wet area fixtures
- ☐ Water splash prevention
- ☐ All other building components that are not otherwise detailed or are unusual in any way

☐

Specification

(One copy)

The specification must be for the project. We will not accept standard specifications unless they relate directly to the building and they cover the project accurately and fully. Multi-choice specifications will not be accepted. A brief accurate specification is usually best.

- ☒ Provide a written specification to cover all of the trades involved in the project. All materials used in the project are fully specified including fixings of all materials and components
- ☐ The specification can be written on the drawings as long as all materials are fully covered

☐

Important things to include in your application

(One copy - where relevant)

- ☐ The chartered professional engineer's Producer Statement
- ☐ The engineer's monitoring schedule if the engineer chooses to do site monitoring
- ☐ All structural calculations
- ☐ Structural details showing connections and details of the components
- ☐ Solar technical details and plumbing schematic
- ☐ Log fire and flue installation instructions
- ☐ If log fire secondhand, engineer's certification required
- ☐ Current potable water test (current within 18 months)
- ☐ Effluent disposal design & ECan's copy of the submitted application form or approval
- ☐ Wastewater system designs when required to be done by a chartered professional engineer such as in a hazard zone
- ☐ Supporting manufacturer's trade literature and appraisals / certificates included

☐

Geotechnical report

- ☐ Geotechnical report provided, if applicable. Record report number:

☐

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Further information required? ☐ Yes ☐ No

Date/time received: **Mon 6/11/2023 1:44 pm** Officer:

Date/time vetted/accepted: **06/11/2023 3.05pm shirley cresswell**

Office use only

Amount paid: \$ **N/A** Date: Officer:

☐ Fee paid on application ☐ Deposit invoice sent

Date payment processed: Receipt: **06/11/2023 N/A Shirley Cresswell** Officer:

Important information

All the relevant information on this form is required to be provided under the *Building Act 2004* and/or *Resource Management Act 1991* for the Waimakariri District Council to assess your application. Under these Acts this information has to be made available to members of the public if requested. The information contained in this application may be made available to other units of the Council. You have the right to access the personal information held about you by the Council which can be readily retrieved. You can also request that the Council correct any personal information it holds about you.

Application information

a. Project Information Memorandum (PIM):

A PIM will be issued within 20 working days provided all the required information is supplied with the application. Processing time is stopped whenever further information is required and starts again when the correct information is received.

It is not mandatory to apply for a PIM. Applicants can choose not to apply for a PIM when they consider that the information would not be relevant for their building project.

A fee is required to accompany your PIM application (as per Council's Fees and Charges Schedule).

b. Compliance Check:

Where a PIM is not sought, a Compliance Check will be undertaken to ensure your proposal complies with the District Plan.

c. Building Consent (BC):

A Building Consent will be processed within a maximum allowable time of 20 working days provided all the information required has been supplied. Processing time is stopped whenever further information is required and starts again when the correct information is received.

Once the Building Consent has been granted, you will receive notification, which will include an invoice for the fees payable.

Once the fees are paid in full, your Building Consent will be issued. Work must not start until the Building Consent is issued, and any Resource Consent requirements have been resolved.

A Building Consent lapses and is 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 any further period that the Building Consent Authority may allow. You may request an extension which will need to be agreed to by Council (fees apply), refer to [building application forms and fact sheets](#).

d. Combined Project Information Memorandum & Building Consent Applications:

Applications for a combined PIM/BC will only be accepted when sufficient information is provided to permit the Building Consent to be processed.

If insufficient information is provided, then further information will be requested, or your application may be returned to you.

e. If the applicant does not own the land, they must provide written approval from the owner to submit this application.

Levies payable

Under the Building Act 2004 s53, s55 s402 Council are authorised to collect levies for the MBIE (*Building Levy Order 2005*) and BRANZ (*Building Research Levy Act 1969*). Levies are only payable on building works where the construction value exceeds a prescribed amount.

[Building Act 2004](#)

[Building Levy Order 2005](#)

[Building Research Levy Act 1969](#)

Fees

The application for a PIM and/or Building Consent must be accompanied by the fees as described in *Sections 33 and 45 of the Building Act 2004*. The work to process a PIM and/or Building Consent will be invoiced and needs to be paid in full before the PIM and/or Building Consent can be granted, refer to [building services fees and charges](#).

Inspections

During the process of construction, inspections will be necessary to confirm all work complies with your approved Building Consent documentation. Please phone the Council Building Unit on 03 311 8906 at least **48 hours in advance** of requiring an inspection. Bookings are subject to demand and the availability of Inspectors, **please be advised that it is not always possible to carry out an inspection within 48 hours**.

The inspections required will be set out in the Building Consent documentation issued by the Council. Failure to have a prescribed inspection carried out may put the issue of the Code Compliance Certificate at risk.

All inspections including re-inspections are subjected to a separate charge, even if carried out on the same day.

Resource consent

Your application will be assessed by the Planning Unit of the Council to determine whether your project complies with the relevant District Plan requirements.

If your application does not comply with District Plan requirements, you will need to either amend your proposal to comply or apply for a Resource Consent. A Certificate will be attached to your Project Information Memorandum to notify that a Resource Consent is required prior to building work commencing. It is recommended that you phone the Planning Unit on 0800 965 468 to discuss the process.

Code compliance certificate

A Building Consent is not completed until it has been issued with a Code Compliance Certificate. The owner is required to complete a separate application for a Code Compliance Certificate as soon as practicable after the building work is completed. In any event no later than two (2) years after the granting of the Building Consent, Council is required to decide whether or not a Code Compliance Certificate can be issued. If your project will not be completed within two years, you may request an extension which will need to be agreed to by Council (fees apply), refer to [building application forms and fact sheets](#).

Agency

The owner may authorise an agent to submit an application on their behalf.

The Agent will be the first point of contact for all communications with the Council/Building Consent Authority regarding this application under *Sections 33 and 45 of the Building Act 2004*. They will receive all correspondence and must be authorised by the Owner. All amendments require new authorisation.

The owner can elect to receive a copy of correspondence regarding this Building Consent/PIM and associated Building Consent Inspection Notices in "The owner" section of this application form, or by notifying Council during the Building Consent/PIM and/or Code Compliance Certificate process.

Dwellings, Outbuildings, Swimming Pools and Other Works (Not Commercial)

Section 1 Statutory Forms

- **Inspection List – By Council**
- **Building Consent Form (Form 5) – By Council**
- **Code Compliance Application (Form 6) – By Council**
- **Installation & PS3 Forms – By Council**
- **Application Form**
- **LBP Design Certificates**
- **Record of Title or Sales & Purchase Agreement**
- **PIM, Resource Consent – By Council**

PLEASE NOTE

- Although your Consent documentation states 2-3 full working days' notice is required, it may not always be possible to carry out the inspection within the time frame you require.
- If an inspection of the building works is not carried out in accordance with the Inspection Schedule it could affect the issue of the Code Compliance Certificate.

**To book inspections ring WDC on
03 311 8906**

All inspections are subject to a separate charge.

All re-inspections will be charged and recorded separately even if other inspections are carried out on the same day.

Using engineers & other professionals

If an engineer has been engaged to carry out various site inspections you will need to provide copies of his/her site notices to us and a producer statement, a PS4 from the engineer confirming the building elements designed and inspected by the engineer were completed in accordance with the approved design.

Confirmation of installation of products

We require producer statements, warranties & installation certificates from various installers as a way of confirming products have been installed in accordance with the manufacturer's recommendations. These are commonly required for exterior claddings, wet area tanking, membrane roofing/decking and effluent fields. Energy certificates such as electrical and gas certificates need to be provided too. You will need to provide these to us prior to the issue of the Code Compliance Certificate.

Applying for a Code Compliance Certificate (CCC)

When you are satisfied your project is complete please book a final inspection. The owner or their agent is also required to complete a separate application for the Code Compliance Certificate (Form 6) as soon as possible after the building work is completed. The application form to apply can be downloaded via the link below or call 03 311 8906 for further information.

<https://www.waimakariri.govt.nz/building-services/building-services/building-consents/related-content/building-application-forms-and-fact-sheets>

You should have this form ready for when the building Inspector arrives on site to carry out the final inspection, or email it to ccc@wmk.govt.nz. Please note all outstanding monies must be paid prior to the issue of the CCC.

Grant or refuse a CCC

We are required to make a decision to grant or refuse a CCC if you do not formally apply for a CCC within two years of the granting of the building consent. The date your consent was granted is the date at the bottom of the building consent form. If you do not apply for a CCC or arrange an extension with us within the two year period we may carry out an inspection of the building work. An additional fee applies for this work.

Lapsing of your consent

Your building consent will lapse if building work has not commenced within 12 months after the date of issue of the building consent. The issue date is deemed to be the day you paid for the consent. In saying this we understand things don't always run smoothly so you can apply for a time extension which we may agree to. A fee applies for this.

Site Inspection Sheet

Application

Barry C Walsh, Carol S Walsh C/- Iconic Architecture Limited 21 Priors Road RD 1 Rangiora 7471	No.	BC230501
	Issue date	10 July 2023
	Overseer	Chris Keegan

Project

Description	1100 New (& prebuilt) House, Unit, Bach, Crib, Town Houses BC - New or Relocated Dwelling, Solid-fuel (Wood or Coal) fire, New Detached Dwelling, Septic Tank (Effluent Disposal System), 01 Standard Building Consent(20 W Processing Days)
Intended Life	Indefinite (50+)
Intended Use	Residential
Estimated Value	\$720000.00
Location	71 Davis Road CUST
Legal Description	LOT 1 DP 570321 4.113800 Ha
Valuation No.	2158007013

This inspection sheet and all the approved plans and specifications relating to this building consent are to be available on site during construction. If the documentation required for a particular inspection is not available, this will mean automatic failure of the building inspection and will necessitate re booking the inspection at the applicant's expense.

Work cannot proceed past each step until that step has been inspected and approved.

All inspections listed below are to be inspected by a WDC Building Inspector, an Engineer may also need to be engaged to inspect engineer requirements, this will be noted below.

BC230501
Foundation - Pre Pour - Lumens engineer to also inspect foundations to verify bearing capacity
Compacted Hardfill - pre DPM -
Pre Pour Slab -
Pre Pour Slab - Garage -
Structure Pre Roof Pre Wrap - Engineer to also inspect scissor truss connections & member sizes
Building Wrap & Sill Tape -
Cavity Battens & Flashings (1) - Linea Weatherboard
Cavity Battens & Flashings (2) - Plywood cladding
Cavity Battens & Flashings (3) - BGC Stonesheet for Hard as Rocks Veneer
Mid Height Cladding - Linea weatherboard
Sheet Cladding Exterior Early Installation (1) - Plywood cladding
Sheet Cladding Exterior Early Installation (2) - BGC Stonesheet for Hard as Rocks Veneer
Drains - includes detention tank and septic tank
Effluent Field - includes fencing/planting
Preline & Plumbing -
Prestopping -
Wet Area Tanking -
Free Standing Fire / Boiler -
Final -

Please give at least 2-3 full working days' notice for the next required inspection, please be advised that it may not always be possible to carry out the inspection within the time frame you require.

PLEASE NOTE

- Although your Consent documentation states 2-3 full working days' notice is required, it may not always be possible to carry out the inspection within the time frame you require.
- If an inspection of the building works is not carried out in accordance with the Inspection Schedule it could affect the issue of the Code Compliance Certificate.

**To book inspections ring WDC on
03 311 8906**

All inspections are subject to a separate charge.

All re-inspections will be charged and recorded separately even if other inspections are carried out on the same day.

Using engineers & other professionals

If an engineer has been engaged to carry out various site inspections you will need to provide copies of his/her site notices to us and a producer statement, a PS4 from the engineer confirming the building elements designed and inspected by the engineer were completed in accordance with the approved design.

Confirmation of installation of products

We require producer statements, warranties & installation certificates from various installers as a way of confirming products have been installed in accordance with the manufacturer's recommendations. These are commonly required for exterior claddings, wet area tanking, membrane roofing/decking and effluent fields. Energy certificates such as electrical and gas certificates need to be provided too. You will need to provide these to us prior to the issue of the Code Compliance Certificate.

Applying for a Code Compliance Certificate (CCC)

When you are satisfied your project is complete please book a final inspection. The owner or their agent is also required to complete a separate application for the Code Compliance Certificate (Form 6) as soon as possible after the building work is completed. The application form to apply can be downloaded via the link below or call 03 311 8906 for further information.

<https://www.waimakariri.govt.nz/building-services/building-services/building-consents/related-content/building-application-forms-and-fact-sheets>

You should have this form ready for when the building Inspector arrives on site to carry out the final inspection, or email it to ccc@wmk.govt.nz. Please note all outstanding monies must be paid prior to the issue of the CCC.

Grant or refuse a CCC

We are required to make a decision to grant or refuse a CCC if you do not formally apply for a CCC within two years of the granting of the building consent. The date your consent was granted is the date at the bottom of the building consent form. If you do not apply for a CCC or arrange an extension with us within the two year period we may carry out an inspection of the building work. An additional fee applies for this work.

Lapsing of your consent

Your building consent will lapse if building work has not commenced within 12 months after the date of issue of the building consent. The issue date is deemed to be the day you paid for the consent. In saying this we understand things don't always run smoothly so you can apply for a time extension which we may agree to. A fee applies for this.

Form 5

Building consent

BC230501

Section 51, Building Act 2004

The building

Street address of building: 71 Davis Road CUST

Legal description of land where building is located: LOT 1 DP 570321 4.113800 Ha

Valuation number: 2158007013

Building name:

Location of building within site/block number:

Level/unit number: 1

The owner

Name of owner: Barry C Walsh and Carol S Walsh

Contact person:

Mailing address: 71 Davis Road RD 1 Rangiora 7471

Street address/registered office:

Phone number:

Landline: 033125363

Mobile: 021522119

Daytime:

After hours: 033125363

Facsimile number:

Email address: Planb10@me.com

Website:

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

Iconic Architecture Limited

Building work

The following building work is authorised by this building consent:

DWELLING WITH LOG BURNER AND ATTACHED GARAGE WITH WASTE WATER SYSTEM 71

DAVIS ROAD CUST LOT 1 DP 570321

Primary Specified Intended Use: Housing - Detached dwellings

Description of Intended Use: Residential

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:

The Building Act 2004, Section 90, states that agents authorised by the building consent authority (the Council) for the purposes of this section are entitled, at all times during normal working hours or while building work is being done, to inspect:

- (a) land on which building work is being or is proposed to be carried out; and
- (b) building work that has been or is being carried out on or off the building site; and
- (c) any building.

This building consent is issued with the following advice notes:

All inspections listed must be requested and carried out in accordance with the attached schedule (list) of inspection types. It is advisable to request bookings at least 2-3 full working days' in advance, please be advised that it may not always be possible to carry out the inspection within the time frame you require. It is the owner's responsibility to ensure all necessary inspections are carried out. Please contact the building consent authority if you are unsure what requires inspection - do not cover or enclose any building work without prior inspection. Please note that the consent fees allow for a single inspection of construction stages of the project as specified in the inspection schedule. Any extra inspections required will be invoiced and must be paid for before a code compliance certificate is issued.

All boundary survey pegs must be located by discovery or redefinition before work is commenced.

Comply with the endorsements on the plan.

An inspection of the installation of the heating unit is required before its first use. Council recommends the heating unit is not lit until the Final Inspection has Passed and the Code Compliance Certificate has been issued.

The duplicate copy of the approved consent documents and inspection schedule must remain on site during construction.

Engineers site reports are to be kept on site for the review and collection by the building Inspector.

A PS4 construction review will be required from the engineer prior to the issue of a Code Compliance Certificate.

Waste disposal units, or garbage grinders shall not be installed to a septic tank system.

Please note that any material deviation from the approved documents will require a formal application for amendment. Amendments that are not of a material nature can be approved by a Building Officer or Building Inspector by way of the endorsement of the approved consent documentation.

WorkSafe New Zealand to be notified prior to any disturbance of asbestos or hazardous materials on site during demolition or construction.

The electrical certificate shall be provided to the building consent authority prior to issue of Code Compliance Certificate where the project involves electrical works.

Your consent is issued subject to manufacturers technical information about their products, installation and maintenance is to be as this technical information requires.

Licensed building practitioners records of work shall be provided to the Territorial Authority (TA) / Building Consent Authority (BCA) for foundations, carpentry / primary structure, roof cladding, wall cladding systems, brick & block laying as applicable at the conclusion of the relevant work.

A Building Consent lapses and is 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 any further period that the Building Consent Authority may allow. (Time extensions to commence building work after 12 months must be submitted to the Building Consent Authority in writing stating the reason for the request, prior to the lapse date of the consent.

A Building Consent is not completed until it has been issued with a Code Compliance Certificate. The owner is required to complete a separate application for a Code Compliance Certificate as soon as practicable after the building work is completed. In any event no later than two (2) years after the granting of the Building Consent. Council is required to decide whether or not a Code Compliance Certificate can be issued. If your project will not be completed within two years you will need to apply for a time extension*. *fees apply

A "Statement of Thermal performance of Windows and doors" to be supplied by window manufacturer/supplier confirming the thermal performance of the windows and doors has met minimum R values required by the building consent being R0.37, prior to the issue of a Code Compliance Certificate

The certifying drainlayer's registration number shall be provided to the Building Consent Authority prior to issue of the Code Compliance Certificate.

The drainlayer shall provide the building consent authority a PS3 for the installation of the effluent field prior to issue of Code Compliance Certificate

The plumbing pressure test PS3 & plumbers registration number shall be provided to the Building Consent Authority prior to issue of the Code Compliance Certificate

The installer shall provide the building consent authority a PS3 for the installation of the Internal wet area membrane prior to issue of Code Compliance Certificate.

The installer shall provide a PS3 for the installation of the Heating Unit prior to issue of Code Compliance Certificate

A PS3 construction review will be required from the Hard as Rocks installer prior to the issue of a Code Compliance Certificate.

Compliance schedule

A Compliance Schedule is not required for this building.

Attachments

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

Consented Plans

Consented Specifications

Inspection List

Form 6 Application for Code Compliance



Diana Firth | Building Consent Administration Officer

Building Unit

Building Unit: 03 311 8906

On behalf of: Waimakariri District Council

Date: 10 July 2023

Minor Variation Building Consent BC230501.04

Section 45A, Building Act 2004

The building

Street address of building: 71 Davis Road CUST

Legal description of land where building is located: LOT 1 DP 570321 4.113800 Ha

Valuation number: 2158007013

Building name:

Location of building within site/block number:

Level/unit number: 1

The owner

Name of owner: Barry C Walsh & Carol S Walsh

Contact person:

Mailing address: 199 Johns Road Rangiora 7400

Street address/registered office:

Phone number:

Landline: 033125363

Mobile: 021522119

Daytime:

After hours: 033125363

Facsimile number:

Email address: Planb10@me.com

Website:

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

Building work

The following building work is authorised by this Minor Variation:

MINOR VARIATION batten over plywood cladding to living wing and chimney stone cladding is being swapped out for Linea to match rest of house

Primary Specified Intended Use: Housing - Detached dwellings

Description of Intended Use: Residential

This minor variation is granted under section 45A 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 minor variation 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.

Refer to the approved building consent for applicable conditions and advice notes.



Shirley Cresswell

Building Unit Administrator

On behalf of: Waimakariri District Council

Date: 30 April 2024

PLEASE NOTE

- Although your Consent documentation states 2-3 full working days' notice is required, it may not always be possible to carry out the inspection within the time frame you require.
- If an inspection of the building works is not carried out in accordance with the Inspection Schedule it could affect the issue of the Code Compliance Certificate.

**To book inspections ring WDC on
03 311 8906**

All inspections are subject to a separate charge.

All re-inspections will be charged and recorded separately even if other inspections are carried out on the same day.

Using engineers & other professionals

If an engineer has been engaged to carry out various site inspections you will need to provide copies of his/her site notices to us and a producer statement, a PS4 from the engineer confirming the building elements designed and inspected by the engineer were completed in accordance with the approved design.

Confirmation of installation of products

We require producer statements, warranties & installation certificates from various installers as a way of confirming products have been installed in accordance with the manufacturer's recommendations. These are commonly required for exterior claddings, wet area tanking, membrane roofing/decking and effluent fields. Energy certificates such as electrical and gas certificates need to be provided too. You will need to provide these to us prior to the issue of the Code Compliance Certificate.

Applying for a Code Compliance Certificate (CCC)

When you are satisfied your project is complete please book a final inspection. The owner or their agent is also required to complete a separate application for the Code Compliance Certificate (Form 6) as soon as possible after the building work is completed. The application form to apply can be downloaded via the link below or call 03 311 8906 for further information.

<https://www.waimakariri.govt.nz/consents-and-licences/forms-a-to-z#building>

You should have this form ready for when the building Inspector arrives on site to carry out the final inspection, or email it to ccc@wmk.govt.nz. Please note all outstanding monies must be paid prior to the issue of the CCC.

Grant or refuse a CCC

We are required to make a decision to grant or refuse a CCC if you do not formally apply for a CCC within two years of the granting of the building consent. The date your consent was granted is the date at the bottom of the building consent form. If you do not apply for a CCC or arrange an extension with us within the two year period we may carry out an inspection of the building work. An additional fee applies for this work.

Lapsing of your consent

Your building consent will lapse if building work has not commenced within 12 months after the date of issue of the building consent. The issue date is deemed to be the day you paid for the consent. In saying this we understand things don't always run smoothly so you can apply for a time extension which we may agree to. A fee applies for this.

Minor Variation Building Consent BC230501.05

Section 45A, Building Act 2004

The building

Street address of building: 71 Davis Road CUST

Legal description of land where building is located: LOT 1 DP 570321 4.113800 Ha

Valuation number: 2158007013

Building name:

Location of building within site/block number:

Level/unit number: 1

The owner

Name of owner: Barry C Walsh & Carol S Walsh

Contact person:

Mailing address: 199 Johns Road Rangiora 7400

Street address/registered office:

Phone number:

Landline: 033125363

Mobile: 021522119

Daytime:

After hours: 033125363

Facsimile number:

Email address: Planb10@me.com

Website:

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

Building work

The following building work is authorised by this Minor Variation

MINOR VARIATION ADDITION OF VELUX SKYLIGHT TO ATTIC SPACE, ADDITION OF SECONDARY PRIVATE STAIR, CHANGE WOOD BURNER TO MASPORT F/S, UPDATED EFFLUENT DISPOSAL DESIGN AND AMENDED ELEVATIONS

Primary Specified Intended Use: Housing - Detached dwellings

Description of Intended Use: Residential

This minor variation is granted under section 45A 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 minor variation 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.

Refer to the approved building consent for applicable conditions and advice notes.



Cathy Thornton
Building Unit Administration Officer

On behalf of: Waimakariri District Council

Date: 17 February 2025

THINGS YOU SHOULD KNOW ABOUT...

Fencing of Effluent Field Options

OBJECTIVE

To provide a practical solution to the protection of effluent fields so the performance and durability requirements of the Building Code can be achieved.

PREAMBLE

The District Plan requires effluent fields for the onsite disposal to be protected. Additionally AS/NZ1547:2000 explains why these fields need to be protected. There is presently no clear explanation of how these fields should be protected but a logical way to do so is to fence the effluent disposal field.

BUILDING CODE

Clause G13/AS1 describes the objective, functional and performance requirements for foul water systems. G13 specifically lists AS/NZS 1547:2000 as a document that can be used as a verification method for on-site domestic wastewater management. The durability requirement for an effluent field is acknowledged as being fifteen years. Accordingly an approved fence would need to meet this requirement.

ADVICE ON MAINTENANCE: SEC 3A5.2

Land-application area needs protection as follows:

- (i) spray or irrigation areas are not play areas for children and access should be restricted
- (ii) any evapo-transpiration areas should be designed to deter pedestrian traffic
- (iii) no vehicles or stock should be allowed on trenches or beds.

DESIGNATED AREA FOR IRRIGATION SYSTEM: SEC 4.2A10.4.2

- (i) shall not be used for purposes that compromise the effectiveness of the system or access for future maintenance purposes

- (ii) be only used for effluent application
- (iii) have boundaries clearly delineated by appropriate vegetation or other type of border. This is explained as being designed to deter human and animal access.

The location of an effluent field and the type of disposal system determines the degree of protection required. The location of an effluent field and the type of disposal system determines the degree of protection required. Accordingly we believe fencing requirements fall into three categories:-

1. No Fencing

Trench or mound – would need to be in the immediate vicinity of the dwelling. This would need to be protected by suitable planting to deter human access: ie, garden or shrubbery area, but still requires boundary fencing around house garden area to prevent stock intrusion.

2. Fencing for vehicles or people OR combination of both

Would need to be in the immediate vicinity of dwelling as per (1) above. This may also include wider driveways where the effluent field is located parallel to the drive. Minimum of 2 strand wires on metal warratahs with stayed timber corner posts to allow tensioning/straining.

3. Fencing for stock

Located in potential grazing areas, to be the standard type recognised form of stock fence. This is to be 7 strand wires or equivalent, on combination of timber posts and warratahs: ie, stayed timber strainer posts to each corner and a maximum of 10m centres between posts, with 2 warratahs between posts. Warratahs can be substituted with timber posts.

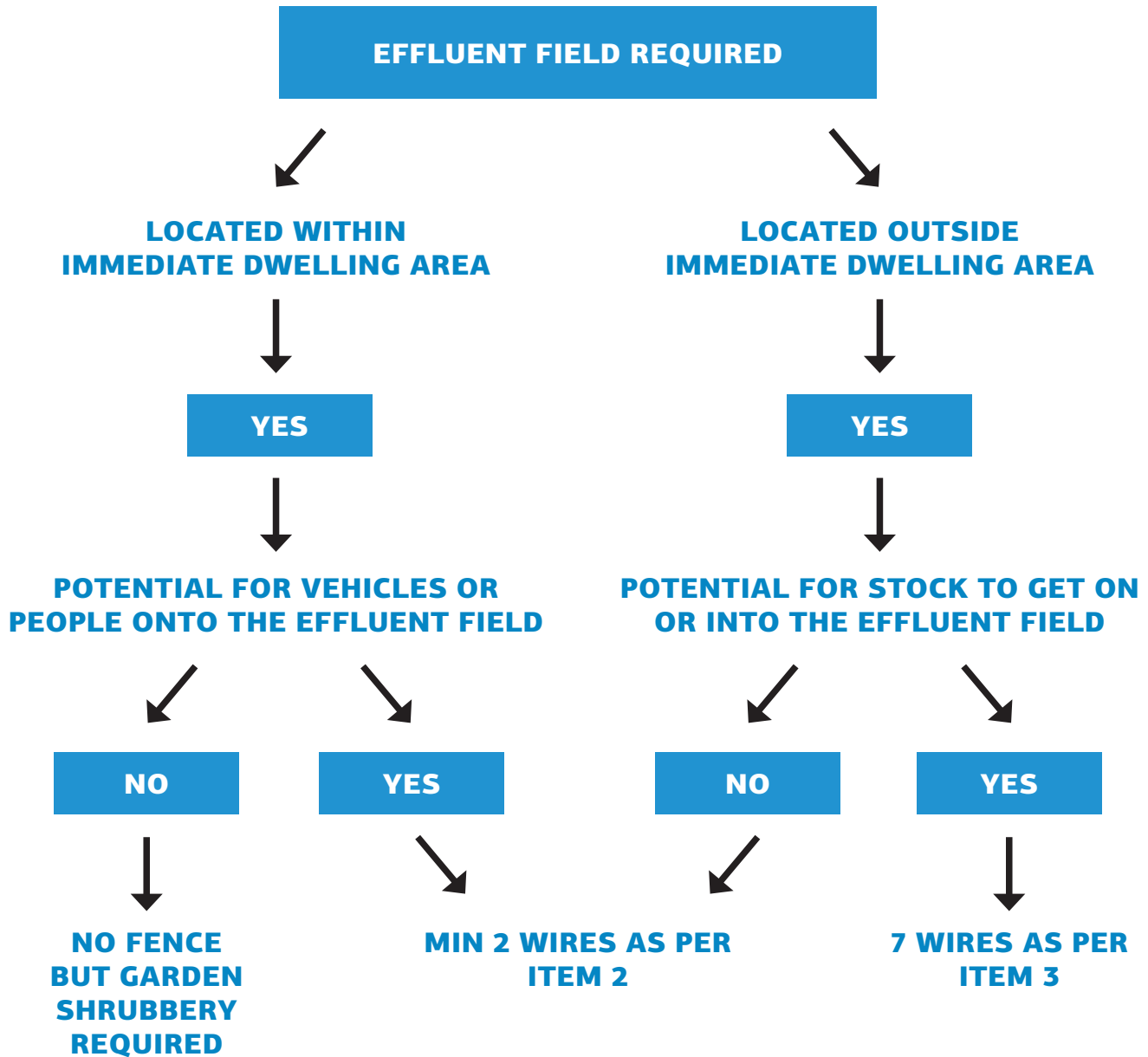
Note

Protection of the fields is usually by fences and this requirement is part of the building consent.

MORE INFORMATION

Visit Waimakariri.govt.nz for more information about building on a rural site, or contact Customer Services on 03 311 8900.

PROPERTY & BUILDING



MORE INFORMATION

Visit Waimakariri.govt.nz for more information about building on a rural site, or contact Customer Services on 03 311 8900.



WAIMAKARIRI
DISTRICT COUNCIL

Private Bag 1005, Rangiora 7440
Ph 03 311 8900, 03 327 6834 Fax 03 313 4432
www.waimakariri.govt.nz

PRODUCER STATEMENT PIPEWORK TESTING

BC No.

Issued by (Plumber):

At (address):

For (Owner):

In respect of the testing of water pipe work prior
to concealment.

I hereby state that I have personally tested the water pipe work installed in the building authorised under this Building Consent by the method indicated hereunder.

By pressurising the pipe work to 1500 kPa for a period of not less than 15 minutes for the hot and cold water supply and checking to see there are no leaks. (NZBC G12/AS1 7.5.1 (a), (b).)

By pressurising the uPVC pipe work to 1.5 times the maximum working pressure for a period of not less than 15 minutes and checking that there are no leaks. (NZBC G12/AS1 7.5.2, NZS 7643).

Max working pressure was:

By pressurising the pipe work to 1500 kPa for a period of not less than 5 minutes and checking to see there are no leaks. (NZBC G12 VM1, AS3500:Part 1.2 1998)

And believe on reasonable grounds that the pipe work has passed that test.

All work complies with the NZBC

I also understand that Waimakariri District Council in accepting this producer statement will be relying on it to issue the Code Compliance Certificate at the completion of the building work.

SIGNATURE OF LICENSED CERTIFYING PLUMBER:

Signature:

Registration Number:

Company Name:

Date:



Private Bag 1005, Rangiora 7440
Ph 03 311 8900, 03 327 6834 Fax 03 313 4432
www.waimakariri.govt.nz

**PRODUCER STATEMENT INSTALLATION OF SOLID/
 LIQUID FUEL HEATING APPLIANCE**

For Installer to Complete

BC No.

Issued by (Installer):

At (address):

For (Owner):

In respect of the installation of the solid or liquid fuel heating appliance prior to first use.

HEATING APPLIANCE INSTALLATION

Free standing	Inbuilt	Wet back
Make of SFB		Make of Flue
Model of SFB		

Tick as Appropriate:

Y N N/A

1. Is the SFB and Flue as per the building consent
2. Chimney Cleaned
3. Fireplace surround/chimney face junction sealed with a heat resistant material
4. The flue pipe is constructed of austenitic stainless steel
5. Seismic Restraint fitted
6. Flue sections are secured together with Stainless Steel Rivets
7. The Flue is secured to the heating unit
8. The chimney void has been vented at the top
9. Flue and appliance clearances have been achieved in terms of the Manufacturers Instructions and AS/NZS 2918:2001
10. Flue Joints sealed in Accordance with Manufacturers Instructions
11. Fire Safety Valve connected and working correctly
12. If you have answered "no" to any items please comment:

PLEASE TURN OVER FOR SIGNATURES

INSTALLER

I (print/type name) certify that the above specified installation has been carried out as described and in accordance with the manufacturers installation instructions and the current building code requirements.

Company Name:

Phone:

Address:

Fax:

Email:

Installers Signature:

HHA Registration No:

Date:

WETBACK INSTALLATION

If a wetback heater is fitted, name the Certifying plumber who carried out the supervised work:

Name:

Registration No:

Signature:

Company Name:

Date:

BUILDING UNIT

Form 2 Application for a Project Information Memorandum and/or Building Consent

Dwellings, Outbuildings, Swimming Pools and Other Works e.g. Septic Tank, Bridge, Retaining Wall, Amendments and Exemptions

Under The Building Act 2004, Sections 33, 45 & Schedule 1, Part 1, Clause 2

BC No.:

1. The Building

Street address (street/road/township): (for structures that do not have a street address, state the nearest street intersection and the distance and direction from that intersection)

Legal description of the land where the building is located: (state legal description as at the date of application and, if the land is proposed to be subdivided, include details of relevant lot numbers and subdivision consent)

Lot: DP: Valuation Number: Resource Consent:

Building name: (if applicable)

Location of building within site/block number: (include nearest street access)

Number of levels: Unit/Level No.:

Area: (total floor area; indicate area affected by the building work if less than the total area)

Existing: New: Total:

Current lawfully established use: (include number of occupants per level and per use if more than 1)

Year building first constructed: (Approximate date is acceptable, eg 1920's)

2. The Owner - all details must be the legal owner's

Name of owner: (include preferred form of address, e.g. Mr, Mrs, Ms, Miss, Dr, if an individual)

Contact person: (not required if the owner is an individual. Must have a New Zealand address)

Mailing address:

Street address/Registered office: (if different than above)

Phone number:

Landline: Mobile: Daytime: After hours: Fax:

Email: Website:

As the owner, where you have given authorisation for an Agent to act on your behalf, please confirm if you require a copy of Building Consent/PIM correspondence and associated Building Consent Inspection Notices following the formally received notification: Yes No

The following evidence of ownership is attached to this application:

Copy of Record of Title OR Council to provide (additional charge of \$15)

(Current within 1 month of being issued and must include a deposited plan [diagram]. Where the Record of Title is not current, Council will provide this [additional charge of \$15 applies]).

Signed copy of Sales and Purchase Agreement (If Record of Title is not issued)

3. Applicant - only required when the applicant is not the owner or the agent e.g. leasee/tenant

PLEASE NOTE - Authorisation is required from the owner of the property.

Name of applicant: (e.g. leasee/tenant)

Contact person: (not required if the applicant is an individual)

Mailing address:

Street address/Registered office: (if different than above)

Phone number:

Landline:

Mobile:

Daytime:

After hours:

Fax:

Email:

Website:

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

4. Agent – only required when the application is being made on behalf of the owner

PLEASE NOTE - Authorisation is required from the owner of the property.

Name of agent:

Contact person: (not required if the applicant is an individual)

Mailing address:

Street address/Registered office: (if different than above)

Phone number:

Landline:

Mobile:

Daytime:

After hours:

Fax:

Email:

Website:

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

PLEASE NOTE - The Agent will be the first point of contact for communications with the Council/Building Consent Authority regarding this application/building work

5. Application

I request that the following (please select one) be issued for the building work described in this Application:

Project Information Memorandum (PIM) only

Building Consent for PIM No:

Building Consent with PIM

Building Consent without PIM (Compliance Check applies)

Exemption from the need for B/C

Amendment to Building Consent

(Refer Building Act 2004 Schedule 1, Part 1, Clause 2)

Please Note: Amendments must be authorised by the owner

Building Consent for Above Ground Pool and/or Non-Exempt Small Heated Pool

I wish to receive my approved documentation in the following format:

PLEASE NOTE - If USB or hard copy, please confirm if you wish to pick it up from the Council or have it posted.

Electronically via Sharefile Transfer Portal (You must be set up and registered for this option)

USB: (this is an additional charge) Post OR Pick-up

Hard copy: (onsite - this is an additional charge) Post OR Pick-up

PLEASE NOTE - One set of "Onsite" hard copy consented documents must be available at all times for inspections.

All consent related invoices/refunds to be billed and sent to:

Owner Applicant Agent Or other (If other, please complete below)

Company name: (if applicable)

Contact person:

Mailing address:

Phone number:

Landline: Mobile: Daytime: After hours: Fax:

Email: Website:

PLEASE NOTE - Any refunds are to the receipted name unless written authorisation has been received from the receipted person or company.

Terms of trade

I/We understand that:

Building Consents shall be paid for when the consent is collected/uploaded or if the consent is not collected/ uploaded within three months after the date of consent being granted, the work done to date portion i.e. admin and processing costs of the account will be due and payable. The balance of the invoice will be payable when the consent is collected/uploaded.

All other accounts shall be paid by the 20th day of the month following the month in which the invoice is issued.

I/We agree to pay according to these terms for any goods or services you supply to us. Failure to meet these Terms of Trade may result in any credit arrangement being withdrawn with any balance becoming payable within seven days. Should failure to meet the terms of trade result in debt recovery and/or legal proceedings, any costs whatsoever incurred in the collection of the debt including debt collector's fees and commissions and legal costs, charges and expenses on a solicitor and own client basis will be added to the account and will be payable by me/us.

Application authorisation

By entering your name in the box below you are giving your authority for this application to proceed under Sections 33 and 45 of the Building Act 2004.

Name: Date:

I am the: Owner Applicant on behalf of, and with the authority of the owner
Agent on behalf of, and with the authority of the owner

6. The Project

Description of work (e.g. dwelling, alteration/addition). If an amendment, please provide a complete description of the nature of the amendment.

Specify the intended use of the building: (e.g. detached dwelling, multi-unit dwelling, show home, sleepout or outbuilding - shed/garage etc.)

Will the building work result in a change of use of this building? Yes No

If Yes, provide details of the new use:

Will hazardous substances be stored in the building? Yes No

Intended life of the building:

Indefinite but not less than 50 years Or specified as years

Is this a staged consent? Yes No

If staged, provide details (e.g. Stage 1 of 3)

List Building Consents previously issued for this building (if any): (i.e. is this project being constructed in stages? Is this consent for a relocated or transportable building?)

Estimated value of the building work on which the building levy will be calculated (incl. GST): (state estimated value as defined in section 7 of the Building Act 2004)

\$

If this is an application to amend a building consent, advise the estimated value of amended building work (incl. GST) \$

Is this in addition to, or reduction from, what was stated with the original application?

Addition Reduction No change

7. Restricted building work

Will the building work include any restricted building work? Yes No

If Yes, provide the following details of all Licensed Building Practitioners who will be involved in carrying out or supervising the restricted building work (if these details are unknown at the time of the application, they must be supplied before the work begins).

Licence class	Name	Licensed building practitioner number (or registration number if treated as being licensed under section 291 of the Building Act 2004)
Foundations		
Carpentry		
Exterior Plasterer		
Bricklayer		
Blocklayer		
Roofer		

Key personnel

Builder

Name:

Reg. No.:

Address:

Phone No.:

Email:

Designer(s)

Name:

Reg. No.:

Address:

Phone No.:

Email:

Certifying drainlayer

Name:

Reg. No.:

Address:

Phone No.:

Email:

Certifying plumber

Name:

Reg. No.:

Address:

Phone No.:

Email:

Certifying gasfitter

Name:

Reg. No.:

Address:

Phone No.:

Email:

Registered electrician

Name:

Reg. No.:

Address:

Phone No.:

Email:

Structural engineer

Name:

Reg. No.:

Address:

Phone No.:

Email:

8. Project Information Memorandum - this section is not applicable if this application is for a building consent only

The following matters are involved in the project:

- Subdivision
- Alterations to land contours
- New or altered connections to public utilities
- New or altered locations and/or external dimensions of buildings
- New or altered access for vehicles
- Building work over or adjacent to any road or public place
- Disposal of stormwater and wastewater
- Building work over any existing drains or sewers or in close proximity to wells or water mains
- Registered historic site or place, tick if applicable (only applies where a PIM has not previously been issued for the building work)
- Other matters known to the applicant that may require authorisations from the territorial authority:

Notes

Other notes or comments which you may wish to add, eg: Resource Consents

9. Building consent - this section is not applicable if this application is for a Project Information Memorandum only

The following plans and specifications are attached to this application, or refer to the Appendix section for plans and specifications provided.

The building work will comply with the Building Code as follows: (Note: if you are not sure what clauses are applicable, consult with your builder, designer or architect)

Clause (Tick relevant clause numbers of Building Code)	Means of compliance (Refer to the relevant compliance document(s) or detail of alternative solution in the plans and specifications)	Waiver/modification required (State nature of waiver or modification of building code required)
B1 Structure		
B2 Durability		
C1-C6 Protection from fire		
D1 Access routes		
D2 Mechanical installations for access		
E1 Surface water		
E2 External moisture		
E3 Internal moisture		
F1 Hazardous agents on site		
F2 Hazardous building materials		
F3 Hazardous substances and processes		
F4 Safety from falling		
F5 Construction and demolition hazards		
F6 Visibility in escape routes		
F7 Warning systems		
F8 Signs		
F9 Means of restricting access to residential pools		
G1 Personal hygiene		
G2 Laundering		
G3 Food preparation and prevention of contamination		
G4 Ventilation		
G5 Interior environment		
G6 Airborne and impact sound		
G7 Natural light		
G8 Artificial light		
G9 Electricity		
G10 Piped services		
G11 Gas as an energy source		
G12 Water supplies		
G13 Foul water		
G14 Industrial liquid waste		
G15 Solid waste		
H1 Energy efficiency		

10. Compliance schedule - this section is not applicable if there are no specified systems or if the application is for a Project Information Memorandum

The specified systems for the building are as follows: *(specified systems are defined in regulations)*

The following specified systems are being altered, added to, or removed in the course of the building work:

There are no specified systems in the building

11. Attachments

The following documents are attached to this application:

Plans and specifications (list under section 9)

Memoranda from licensed building practitioner(s) who carried out or supervised any design work that is restricted building work

Project information memorandum

Development contribution notice

Certificate attached to project information memorandum

Completed relevant application checklist(s) – refer to Appendix

Please continue on the Appendix as follows for further information requested by the Waimakariri District Council.

Appendix - further information requested by the Waimakariri District Council

National Environment Standard (NES)

This section relates to the [National Environmental Standard for Assessing & Managing Contaminants in Soil to Protect Human Health \(NES\)](#).

The NES includes regulations controlling **soil disturbance, change of use, subdivision, and removal/replacement of fuel storage systems** on properties which have been used either now or in the past for a hazardous activity or industry (known as HAIL) that may have resulted in contamination of the soil. The table below determines whether the NES applies to your proposal.

Yes No

Is the application site listed on Environment Canterbury's Listed Land Use Register (LLUR)? www.llur.ecan.govt.nz If **YES**, please include a copy of the LLUR statement with your application.

If the site is not listed on the LLUR, is an activity described on the Hazardous Substances and Industries List (HAIL) currently being undertaken on the piece of land to which this application relates, or is it more likely than not to have ever been undertaken on the land?

The HAIL list is available to view at [Hazardous Activities and Industries List \(HAIL\)](#)

Type of HAIL activity:

If the answer to either of the above questions is YES, then the NES will apply, depending on the type of activity. Please identify whether the application involves the activities below.

PLEASE NOTE - If the answer to both of the previous questions is No, you do not need to answer the remaining questions in this section.

Yes No

Has the property been recently subdivided?

Will the proposed activity involve the disturbance of more than 25m³ of soil (per 500m² of disturbed area)? Volume of soil disturbed:

Will the proposed activity involve the removal of more than 5m³ of soil (per 500m² of disturbed area) from the site? Volume of soil removal:

Does the application involve changing the use of the land to one which, because the land has been subject to a HAIL activity, is reasonably likely to harm human health? (e.g. orchard to a residence)

Does the application involve replacing or removing fuel storage systems or parts of it?

If the answer to any of the above activity questions is also YES, then the NES will apply and you will need to establish whether the proposed activity complies with the NES.

- Changing the land use will require resource consent if the permitted activity requirements of the NES are not complied with. These include provision of a Preliminary Site Investigation carried out by a suitably qualified and experienced practitioner.
- Soil disturbance or removal exceeding the specified volumes require resource consent.
- Removal or replacement of a fuel storage system will require consent if the permitted activity requirements of the NES are not complied with.

Does the proposed activity require resource consent under the NES?

If **YES**, a resource consent is required and with the application an assessment under the NES must be provided. A Detailed Site Investigation may be required.

Vehicle crossing

Is a new vehicle crossing required or an existing crossing altered for this project?

Yes No Resource consent applied for

If yes, please complete and submit the [Vehicle Crossing Application Form](#) and send to office@wmk.govt.nz

Application form

(One copy)

**Office
use only**

These have
been provided:

All sections fully completed as applicable to the project
Means of Compliance with NZBC - designer to complete
Provide the correct legal description (Council can help with this)
Provide one copy of the current Record of Title, or Sales and Purchase Agreement
- not more than one month old
Give name and contact numbers of contact person (if not the owner)
State the project location (street address or location details as near as possible if no address)
Application authorised and dated
Agent relationship to owner stated (where applicable)
Certificate/s of design work (LBP)

Bookmarks

PLEASE NOTE - Our current software does not enable us to maintain bookmarks within the consent documents during processing and granting. (This may be reviewed once a software solution becomes available.)

Project Information Memorandum (PIM)

This section must be completed if you are applying for a PIM. **DO NOT** complete this section if a PIM has already been issued. The following documents are attached to this application:

Site plan, Floor plans, Elevations for proposed building (electronic preferred or if hard-copy minimum size A3)
Record of Title, or Sales and Purchase Agreement if Record of Title is not issued. Current Record of Title required (current within one month of application)
Application fee (as per Council Fees and Charges Schedule)

Building consent

This section must be completed if you are applying for a building consent. **DO NOT** complete this section if the Application is for a Project Information Memorandum only.

The following documents are attached to this application:

1 copy - building plans (site plans, floor plans, elevation plans. All plans to be dimensioned, scaled and accurate electronic preferred or if hard-copy minimum size A3)
1 copy of each - specifications, producer statements, truss details (refer below)
1 copy - Record of Title or Sale and Purchase Agreement if Record of Title is not issued. Current Record of Title required (current within one month of application)
Restricted building work - see page 4
Key personnel - see page 5
Building work compliance with the Building Code - see page 7

PLEASE NOTE - Swimming Pool document checklist on the following page to be completed if applicable.

Swimming pools (as applicable)

Site plan, showing location of pool and existing buildings, location of fence, boundaries and existing waterways

Fence construction. Show the height, gates, self-closing device, construction type etc (see "A Guide to Pool Fencing")

Also show how any doors or windows that form part of the fence will comply

Brand and model of pool:

Size of the pool:

Drainage plan. Show discharge point

Producer statement (where applicable)

Installation instructions/manual

Show filling point for pool (tap) and backflow protection

Design basis

(To be completed by the designer)

Please list the following basis for the building design:

Wind zone

Earthquake zone

Snow zone/altitude

Corrosion zone (if applicable)

Building is specifically engineer-designed

Complies with NZS 3604:2011

Both specific design and NZS 3604:2011

Design documents

(One copy)

Weather tightness risk matrix

Truss design layout and Producer Statement

Bracing calculations/plan

H1 Energy efficiency calculations

Site plan

(One copy, electronic preferred or if hard-copy minimum size A3)

Overview of site showing legal boundaries as per current Record of Title

Showing proposed and existing structures (including swimming pools)

Distances to boundaries

Proposed and existing site levels

North point

Utility infrastructure (sewer, water pipelines, septic tanks etc) where applicable

Water races, drains, topographic features

Drainage layout

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- Foul water - showing waste pipes, sizes, grades, venting
- Foul water to discharge point
- Storm water - pipe sizes, grades, downpipe locations
- Storm water drain to discharge point

Foundation layout

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- Full foundation layout plan
- For timber floors, show all pile layout, pile types and bracing location
- Slab thickenings, shrinkage control joints and reinforcing rebates

Floor plans

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- Layout of all floors fully dimensioned. For alterations and/or additions provide both new and existing floor plans
- Doors and window positions and sizes
- Layout of amenity areas (laundry etc)
- Main structural beams that are not shown elsewhere
- Lintel sizes
- HWC location
- Roof space access
- Gas cylinder location
- Room names
- Location of smoke alarms
- Location of heating unit (if applicable)

Exterior elevations

(One copy to scale usually 1:100 or 1:50, electronic preferred or if hard copy minimum size A3)

- Elevations of all external walls showing claddings
- Doors and windows showing opening sections
- Show location of solar panels
- Accurate ground levels existing and proposed
- Subfloor ventilation for timber floors
- Show roof bracing on elevations if not shown elsewhere

Cross section and construction details

(One copy to scale usually 1:50 or 1:20 for sections and 1:10 for details - minimum scale, electronic preferred or if hard copy minimum size A3)

- Roof lines, overhangs, floor levels, ground levels
- Major vertical dimensions
- Foundation, wall and roof structure materials
- Upper level decks or balconies over lower level room must be fully detailed including the stormwater disposal and overflow precautions

Stairs, handrails and balustrade showing pitch and head clearances
 Structural connections, posts to footings, beams to posts, trusses or beams to walls
 Component fixing information is to be provided for all structural and framing components
 Foundation and footing details and reinforcing. Show height from finished floor to ground level
 Pile details for timber floors
 Floor bracing details
 Timber grade and treatment
 Damp proof membranes, building papers and insulation systems/materials
 Flashing details and documents
 Roof penetrations
 Shower floor details and wall to shower base junction detail
 Sealing to wet area fixtures
 Water splash prevention
 All other building components that are not otherwise detailed or are unusual in any way

Specification

(One copy)

The specification must be for the project. We will not accept standard specifications unless they relate directly to the building and they cover the project accurately and fully. Multi-choice specifications will not be accepted. A brief accurate specification is usually best.

Provide a written specification to cover all of the trades involved in the project. All materials used in the project are fully specified including fixings of all materials and components

The specification can be written on the drawings as long as all materials are fully covered

Important things to include in your application

(One copy - where relevant)

The chartered professional engineer's Producer Statement

The engineer's monitoring schedule if the engineer chooses to do site monitoring

All structural calculations

Structural details showing connections and details of the components

Solar technical details and plumbing schematic

Log fire and flue installation instructions

If log fire secondhand, engineer's certification required

Current potable water test (current within 18 months)

Effluent disposal design & ECan's copy of the submitted application form or approval

Wastewater system designs when required to be done by a chartered professional engineer such as in a hazard zone

Supporting manufacturer's trade literature and appraisals / certificates included

Geotechnical report

Geotechnical report provided, if applicable. Record report number:

Office use only

Further information required? Yes No

Date/time received:

Officer:

Date/time vetted/accepted:

Officer:

Office use only

Amount paid: \$

Date:

Officer:

Fee paid on application

Deposit invoice sent

Date payment processed:

Receipt:

Officer:

Important information

All the relevant information on this form is required to be provided under the *Building Act 2004* and/or *Resource Management Act 1991* for the Waimakariri District Council to assess your application. Under these Acts this information has to be made available to members of the public if requested. The information contained in this application may be made available to other units of the Council. You have the right to access the personal information held about you by the Council which can be readily retrieved. You can also request that the Council correct any personal information it holds about you.

Application information

a. Project Information Memorandum (PIM):

A PIM will be issued within 20 working days provided all the required information is supplied with the application. Processing time is stopped whenever further information is required and starts again when the correct information is received.

It is not mandatory to apply for a PIM. Applicants can choose not to apply for a PIM when they consider that the information would not be relevant for their building project.

A fee is required to accompany your PIM application (as per Council's Fees and Charges Schedule).

b. Compliance Check:

Where a PIM is not sought, a Compliance Check will be undertaken to ensure your proposal complies with the District Plan.

c. Building Consent (BC):

A Building Consent will be processed within a maximum allowable time of 20 working days provided all the information required has been supplied. Processing time is stopped whenever further information is required and starts again when the correct information is received.

Once the Building Consent has been granted, you will receive notification, which will include an invoice for the fees payable.

Once the fees are paid in full, your Building Consent will be issued. Work must not start until the Building Consent is issued, and any Resource Consent requirements have been resolved.

A Building Consent lapses and is 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 any further period that the Building Consent Authority may allow. You may request an extension which will need to be agreed to by Council (fees apply), refer to [building application forms and fact sheets](#).

d. Combined Project Information Memorandum & Building Consent Applications:

Applications for a combined PIM/BC will only be accepted when sufficient information is provided to permit the Building Consent to be processed.

If insufficient information is provided, then further information will be requested, or your application may be returned to you.

e. If the applicant does not own the land, they must provide written approval from the owner to submit this application.

Levies payable

Under the Building Act 2004 s53, s55 s402 Council are authorised to collect levies for the MBIE (*Building Levy Order 2005*) and BRANZ (*Building Research Levy Act 1969*). Levies are only payable on building works where the construction value exceeds a prescribed amount.

[Building Act 2004](#)

[Building Levy Order 2005](#)

[Building Research Levy Act 1969](#)

Fees

The application for a PIM and/or Building Consent must be accompanied by the fees as described in *Sections 33 and 45 of the Building Act 2004*. The work to process a PIM and/or Building Consent will be invoiced and needs to be paid in full before the PIM and/or Building Consent can be granted, refer to [building services fees and charges](#).

Inspections

During the process of construction, inspections will be necessary to confirm all work complies with your approved Building Consent documentation. Please phone the Council Building Unit on 03 311 8906 at least **48 hours in advance** of requiring an inspection. Bookings are subject to demand and the availability of Inspectors, **please be advised that it is not always possible to carry out an inspection within 48 hours**.

The inspections required will be set out in the Building Consent documentation issued by the Council. Failure to have a prescribed inspection carried out may put the issue of the Code Compliance Certificate at risk.

All inspections including re-inspections are subjected to a separate charge, even if carried out on the same day.

Resource consent

Your application will be assessed by the Planning Unit of the Council to determine whether your project complies with the relevant District Plan requirements.

If your application does not comply with District Plan requirements, you will need to either amend your proposal to comply or apply for a Resource Consent. A Certificate will be attached to your Project Information Memorandum to notify that a Resource Consent is required prior to building work commencing. It is recommended that you phone the Planning Unit on 0800 965 468 to discuss the process.

Code compliance certificate

A Building Consent is not completed until it has been issued with a Code Compliance Certificate. The owner is required to complete a separate application for a Code Compliance Certificate as soon as practicable after the building work is completed. In any event no later than two (2) years after the granting of the Building Consent, Council is required to decide whether or not a Code Compliance Certificate can be issued. If your project will not be completed within two years, you may request an extension which will need to be agreed to by Council (fees apply), refer to [building application forms and fact sheets](#).

Agency

The owner may authorise an agent to submit an application on their behalf.

The Agent will be the first point of contact for all communications with the Council/Building Consent Authority regarding this application under *Sections 33 and 45 of the Building Act 2004*. They will receive all correspondence and must be authorised by the Owner. All amendments require new authorisation.

The owner can elect to receive a copy of correspondence regarding this Building Consent/PIM and associated Building Consent Inspection Notices in "The owner" section of this application form, or by notifying Council during the Building Consent/PIM and/or Code Compliance Certificate process.



RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy



R.W. Muir
Registrar-General
of Land

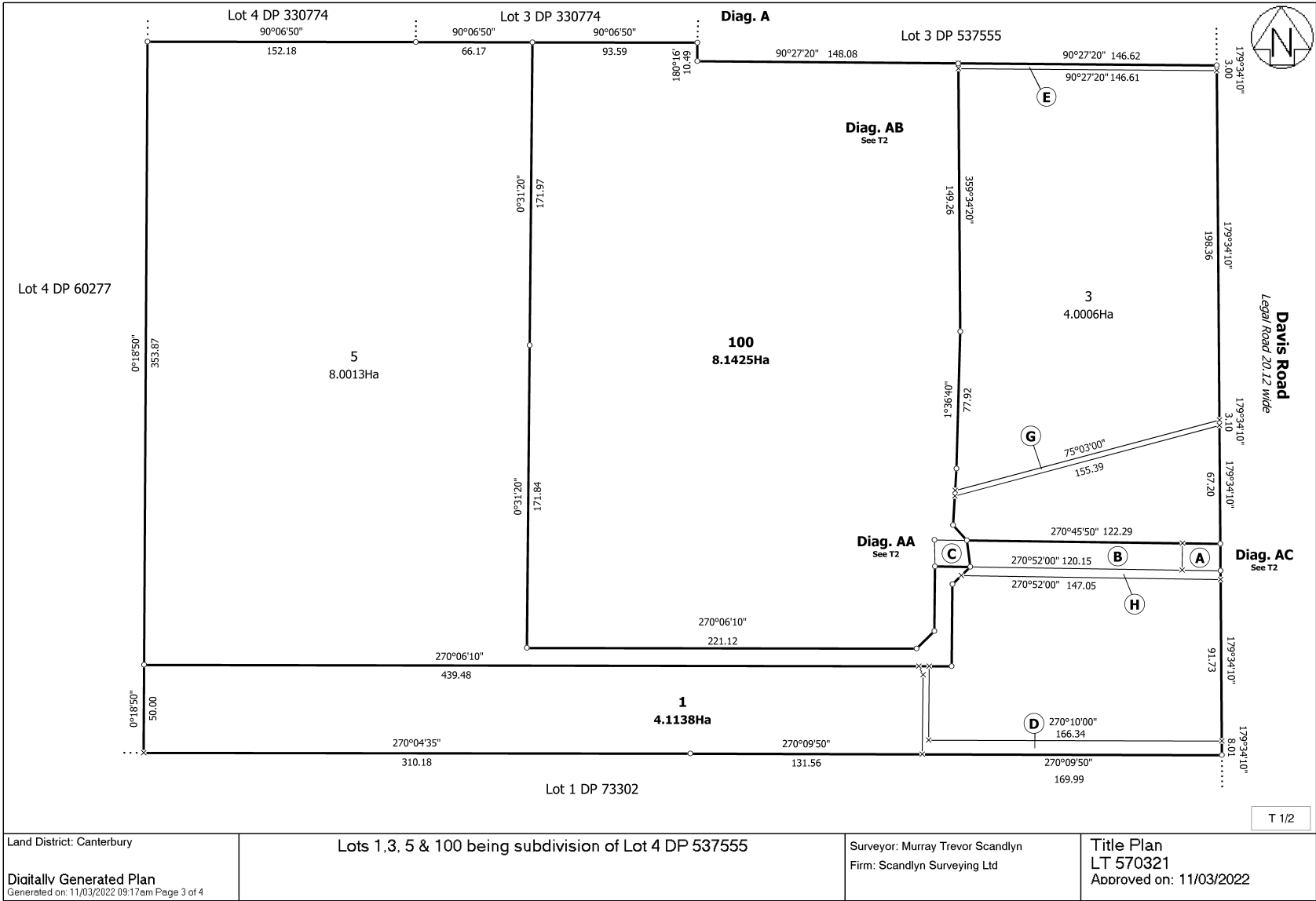
Identifier **1030127**
Land Registration District **Canterbury**
Date Issued 25 February 2022

Prior References
894480

Estate Fee Simple
Area 4.1138 hectares more or less
Legal Description Lot 1 Deposited Plan 570321
Registered Owners
Barry Christopher Walsh and Carol Sheila Walsh

Interests

Appurtenant hereto is a right to convey water created by Transfer 250980.1 - 7.11.1979 at 9:13 am
Land Covenant in Transfer A19905.3 - 20.10.1992 at 11:56 am
12376734.2 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 25.2.2022 at 4:53 pm
Subject to a right (in gross) to convey telecommunications over parts marked A, B & H on DP 570321 in favour of Chorus New Zealand Limited created by Easement Instrument 12376734.4 - 25.2.2022 at 4:53 pm
The easement created by Easement Instrument 12376734.4 is subject to Section 243(a) Resource Management Act 1991
Subject to a right (in gross) to convey electricity over parts marked A, B & H on DP 570321 in favour of Mainpower New Zealand Limited created by Easement Instrument 12376734.5 - 25.2.2022 at 4:53 pm
The easement created by Easement Instrument 12376734.5 is subject to Section 243(a) Resource Management Act 1991
Subject to a right of way and a right to convey telecommunications over part marked A & B, a right to convey water over parts marked A, B & D, a right to convey electricity over parts marked A, B & H, all on DP 570321 created by Easement Instrument 12376734.6 - 25.2.2022 at 4:53 pm
The easements created by Easement Instrument 12376734.6 are subject to Section 243(a) Resource Management Act 1991
Land Covenant in Covenant Instrument 12376734.7 - 25.2.2022 at 4:53 pm
Land Covenant in Covenant Instrument 12579350.1 - 25.10.2022 at 3:50 pm (Limited as to duration)
12584160.3 Mortgage to ANZ Bank New Zealand Limited - 22.11.2022 at 2:16 pm



Form 2A:

Memorandum from licensed building practitioner (certificate of design work)

SECTION 30C OR 45, BUILDING ACT 2004

The building

Street address of building:

The owner

Full name:

Mailing address:

Telephone number:

Email address:

Identification of design work that is restricted building work

I carried out/supervised the following design work that is restricted building work:

Design work that is restricted building work ✓	Building work <i>(If appropriate, provide details of the restricted building work)</i>	Carried out/supervised <i>(Specify whether you carried out this design work or supervised someone else carrying out this design work)</i>	Reference to plans and specifications <i>(If appropriate, specify references)</i>
Primary structure			
<input type="checkbox"/> Foundations and subfloor framing			
<input type="checkbox"/> Walls			
<input type="checkbox"/> Roof			
<input type="checkbox"/> Columns and beams			
<input type="checkbox"/> Bracing			
<input type="checkbox"/> Other			

External moisture management systems

<input type="checkbox"/> Damp proofing			
<input type="checkbox"/> Roof cladding or roof cladding system			
<input type="checkbox"/> Ventilation system (for example, subfloor or cavity)			
<input type="checkbox"/> Wall cladding or wall cladding system			
<input type="checkbox"/> Waterproofing			
<input type="checkbox"/> Other			

Fire safety systems

<input type="checkbox"/> Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other			
---	--	--	--

Note:

1. 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.
2. Continue on another page if necessary.

Are waivers or modifications of the building code required?: ☐ Yes ☐ No

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

Clause (List relevant numbers of building code)	Waiver/modification required (Specify nature of waiver or modification of building code)

Note:

Continue on another page if necessary.

Issued by

(Name of licensed building practitioner who is licensed to carry out or supervise design work that is restricted building work)

Licensed building practitioner number:

(if applicable)

Registered architect number:

(if applicable)

Chartered professional engineer number:

(if applicable)

Mailing address:

Street address/registered office:

Telephone number:

Mobile number:

Facsimile:

Email address:

Website:

(if applicable)

Declaration

I,

(name of licensed building practitioner), certify that the design work that is restricted building work recorded on this form:

☐

(a) complies with the building code; or

☐

(b) complies with the building code subject to any waiver or modification of the building code recorded on this form.

Signature:

Andrew Toulson

Date:

DAY

MONTH

YEAR

Form 2A

Memorandum from licensed building practitioner: Certificate of design work Section 30C or 45, 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: **71 Davis Road**

Suburb:

Town/City: **Cust**

Postcode:

THE OWNER(S)

Name(s): **Southern Foundations Ltd**

Mailing address: **Unit 8 19 William Lewis Drive**

Suburb: **Sockburn**

PO Box/Private Bag:

Town/City: **Christchurch**

Postcode:

Phone number: **021 221 1884**

Email address: **bevan@superslab.co.nz**

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies ☒

- ☐ **sole** designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design work myself – no other person will be providing any additional memoranda for the project
- ☐ **lead** 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
- ☐ **lead** 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 memorandum relating to their specific RBW design
- ☒ **specialist** 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 Tom Watanabe carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input type="checkbox"/> if included. Cross <input type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
All RBW design work relating to B1 <input type="radio"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised	
Foundations and subfloor framing <input checked="" type="radio"/>	Codemark ALLIED Ready Superslab Foundation	<input type="radio"/> Carried out <input checked="" type="radio"/> Supervised	Refer to HFC Group Structural Drawings Job no. 23-180.

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/> if included. Cross <input checked="" type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Walls <input type="radio"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised	
Roof <input type="radio"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised	
Columns and beams		<input type="radio"/> Carried out <input type="radio"/> Supervised	
Bracing <input type="radio"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised	
Other <input type="radio"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/> if included. Cross <input checked="" type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2			
All RBW design work relating to E2 <input type="radio"/>	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A
Damp proofing <input type="radio"/>	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A
Roof cladding or roof cladding system <input type="radio"/>	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A
Ventilation system (for example, subfloor or cavity) <input type="radio"/>	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A
Wall cladding or wall cladding system <input type="radio"/>	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A
Waterproofing <input type="radio"/>	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A
Other <input type="radio"/>	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/> if included. Cross <input type="checkbox"/> if excluded	If appropriate, provide details of the RBW	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
FIRE SAFETY SYSTEMS: C1 - C6			
Emergency warning systems Evacuation and fire service operation systems Suppression or control systems Other	N/A	<input type="radio"/> Carried out <input type="radio"/> Supervised	N/A
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. <input type="radio"/> Yes <input checked="" type="radio"/> 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 required

ISSUED BY

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

Name: **Tom Watanabe**

LBP or Registration number: **IPENZ CPEng No. 1010912**

The practitioner is a: ☐ Design LBP ☐ Registered architect ☒ Chartered professional engineer

Design Entity or Company (optional):

Mailing address (if different from below): **PO Box 28006, Christchurch**

Street address/Registered office: **Unit 4, 295 Blenheim Road**

Suburb: **Upper Riccarton**

Town/City: **Christchurch**

PO Box/Private Bag: **(as above)**

Postcode:

Phone number: **03 339 7000**

Mobile: **021 278 1561**

After hours: **Not Available**

Fax:

Email address: **tom@hfc.co.nz**

Website: **www.hfc.co.nz**

DECLARATION

I **Tom Watanabe** 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:

Tom Watanabe.

Date:

09 August 2023

Section 2

Geotech, ~~Engineer~~

Reports & Conditions

PS1 & 2s

- Calculations
- A4 Details

SOIL TEST REPORT

71 Davis Road, Cust

210 Hazeldean Road,
Sydenham, Christchurch
8023, New Zealand

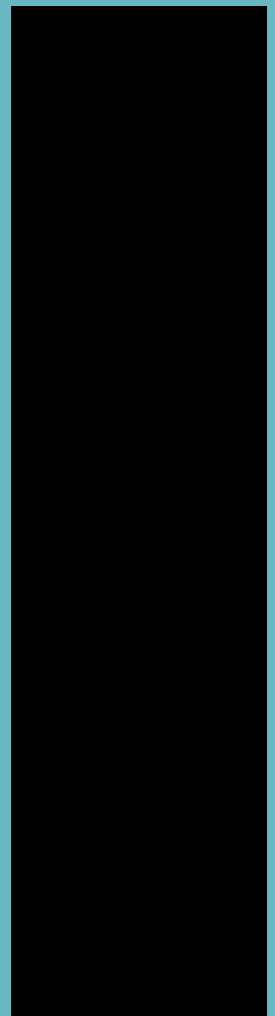
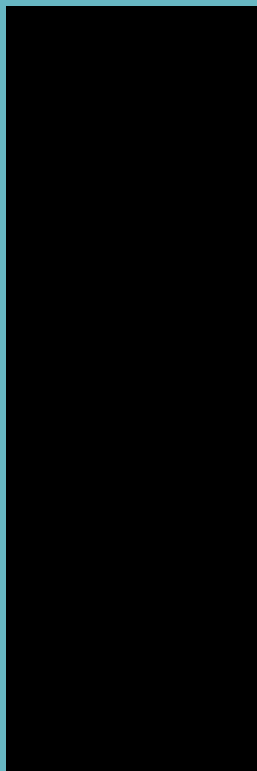
+64 3 377 1546

www.lumen.net

Job No. 19638

April 2023

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 ChrisK



REVISION HISTORY

REVISION	DATE	DESCRIPTION	PREPARED BY	REVIEWED BY	APPROVED BY
1.0	06/04/2023	Preliminary Issue	John Campbell	Kate de Bruin	Kate de Bruin

Client: Barry Walsh
Client Reference: 19638
Document Title: SOIL TEST REPORT

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2.1.	WEATHER AND SITE CONDITIONS	3
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2.3.	SOIL STRATA FROM HAND AUGERED BOREHOLES	3
2.4.	SOIL BEARING CAPACITY FROM SCALA PENETROMETER TESTING	3
3.	RECOMMENDATIONS FOR FOUNDATION TYPES	4
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GLOSSARY OF TERMS

TERM	DESCRIPTION
Scala penetrometer test (SPT)	Tool used to determine the penetration resistance of a soil
Hand auger (HA)	Tool used to obtain soil samples
BGL	Below ground level

1. INTRODUCTION

1.1. SCOPE OF REPORT

As requested, we have carried out a site investigation at 71 Davis Road, Cust. Our investigations conducted on the 3rd April 2023 focused on the site of a new residential property. Four scala penetrometer tests (SPTs) were completed to indicate bearing capacity. Two hand augered boreholes were completed to provide an indication of soil strata.

The location plan and soil investigation records are located in Appendix A and B, respectively.

Recommendations and opinions in this report are based on a visual assessment and isolated test bores. The nature and continuity of subsoil types inferred must be appreciated that the actual conditions could vary from the assumed model. During foundation excavation and construction, it is possible that the nature of exposed subsoils may require further investigation and the modification of the design based upon this report. Should the exposed subsoils differ from the description in this report, please advise this office so that the excavations may be examined by us to judge whether the exposed subsoils are compatible with the inferred conditions on which this report has been based.

This report has been prepared solely for the benefit of Barry Walsh as our client with respect to the brief given to us, and data or opinions contained in it may not be used in other contexts or for other purpose without our prior review or agreement.

2. GEOTECHNICAL PROPERTIES

2.1. WEATHER AND SITE CONDITIONS

The weather was fine at the time of testing. The testing was carried out in dry ground conditions.

The site is generally flat and level. The site is covered in grass, above the site to the north is a shared driveway, to the east side is another similar sized section. South is the boundary of the site and west of the site is Davis Road. The site layout can be seen in Figure 2 of Appendix A.

2.2. MBIE TECHNICAL CATEGORY

This site falls into the MBIE Technical Category N/A – Rural and Unmapped. Properties in rural areas or beyond the extent of land damage mapping, and properties in parts of the Port Hills and Banks Peninsula have not been given a Technical Category. The property is located in North Canterbury. It is beyond the extent of land damage mapping and therefore it is unclassified.

2.3. SOIL STRATA FROM HAND AUGERED BOREHOLES

Two hand augers were performed on the site (HA1 and HA2, see appendices). They both consisted of brown topsoil to 300 mm. HA1 then became slightly moist, light brown silty clay which turned into an orange colour with traces of organics, clayey silt at 600 mm depth. This layer became denser and HA1 was refused at 800 mm below ground level (BGL).

After the layer of topsoil, HA2 became less damp, light brown silt with trace organics. This gave way to brown silty clay layer with orange mottles, from 300 mm – 600 mm BGL. As with HA2, soil then became an orange/brown colour, clayey silt at which became denser, and the auger was refused at 600 mm BGL.

The ground water table was not encountered in either test.

2.4. SOIL BEARING CAPACITY FROM SCALA PENETROMETER TESTING

The SPTs were terminated at depths of 1400 mm, 1700 mm, 2200 mm and 900mm respectively. All SPTs reached 300 kPa bearing capacity within 450 – 600 mm of depth. No weak layers were detected below these depths.

All SPTs were terminated with bearing strengths above 700 kPa.

The Stockwell correlation was used to determine soil bearing pressure from the number of blows per 100 mm from the Scala penetrometer apparatus.

3. RECOMMENDATIONS FOR FOUNDATION TYPES

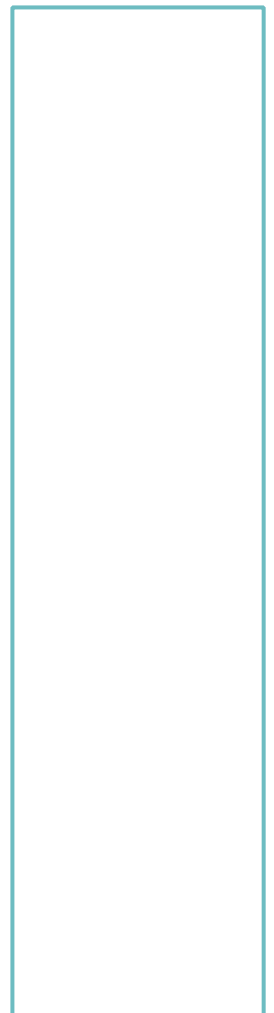
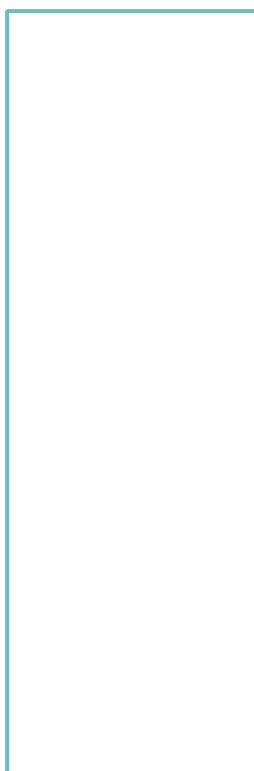
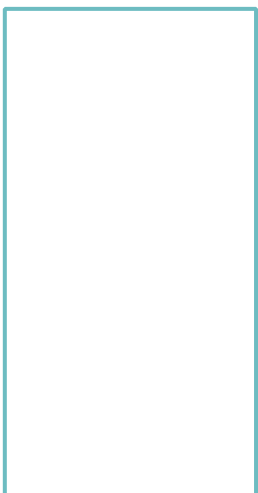
3.1. SITE PREPARATION

Tests conducted on the site indicate that all ground tested falls within NZS 3604:2011 “good ground” acceptance at 600 mm BGL. We recommend that the topsoil below the footprint of the proposed building is to be removed prior to construction.

An ultimate bearing capacity of 200 kPa can be used below the topsoil with 300 kPa suitable from 600 BGL. A reduction factor of 0.5 should be adopted to get the dependable bearing capacity.

We recommend that the structural engineer carries out the excavation inspections to ensure that the design bearing capacity is achieved, and any localized soft spots removed.

Appendices



APPENDIX A LOCATION PLAN

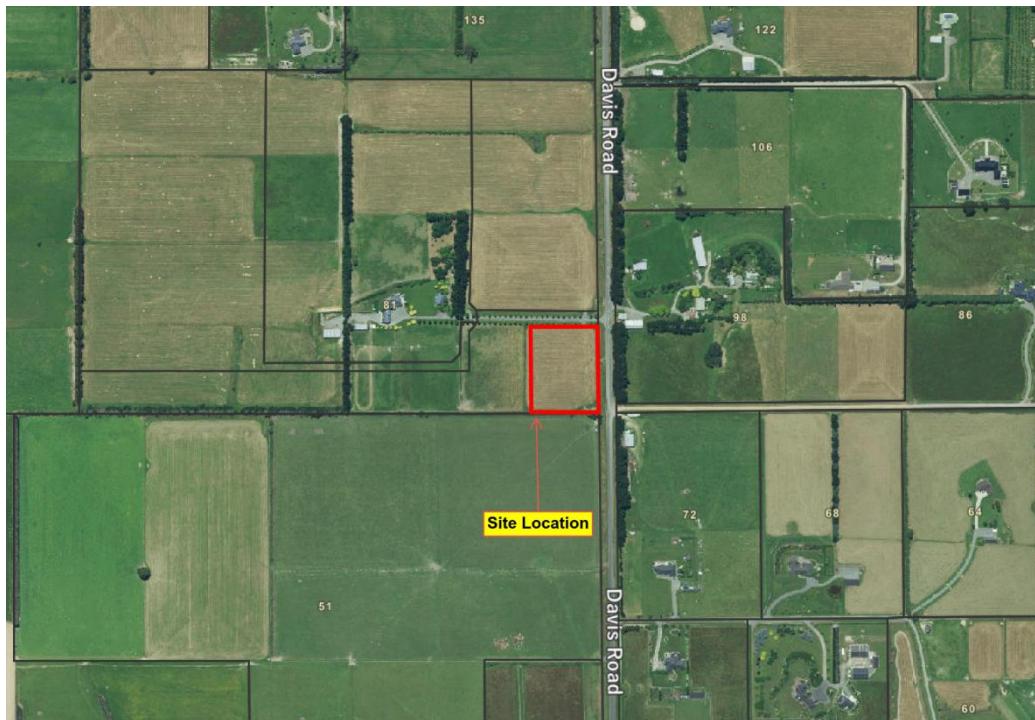
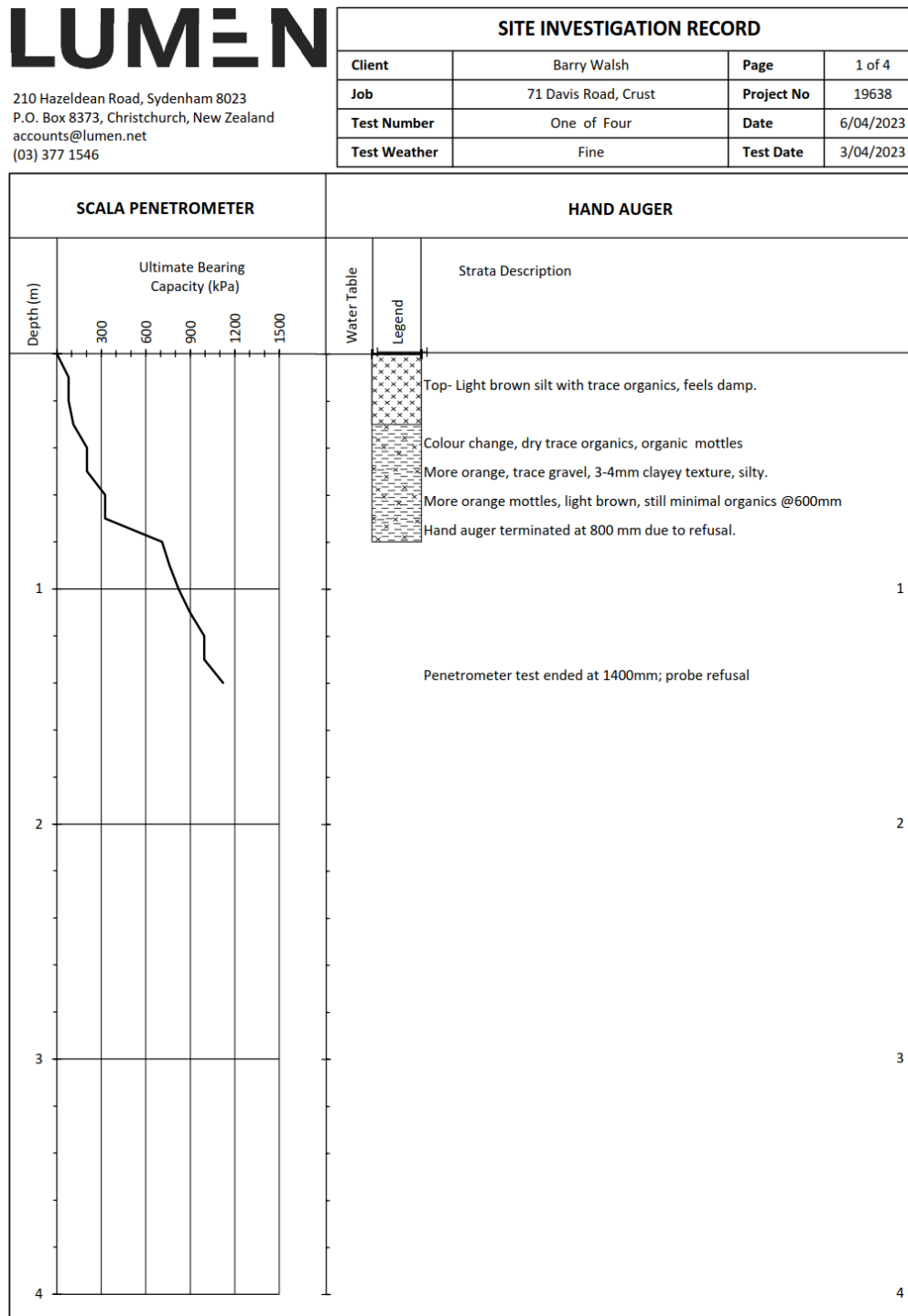


Figure 1. Aerial of 71 Davis Road relative to the surrounding area (image courtesy of canterburymaps.govt.nz)



Figure 2. Location of tests at 71 Davis Road (image courtesy of canterburymaps.govt.nz)

APPENDIX B TESTING RESULTS







LUMEN

210 Hazeldean Road, Sydenham 8023
P.O. Box 8373, Christchurch, New Zealand
accounts@lumen.net
(03) 377 1546

SITE INVESTIGATION RECORD

Client	Barry Walsh	Page	2 of 4
Job	71 Davis Road, Crust	Project No	19638
Test Number	Two of Four	Date	6/04/2023
Test Weather	Fine	Test Date	3/04/2023

SCALA PENETROMETER		HAND AUGER	
Depth (m)	Ultimate Bearing Capacity (kPa)	Water Table	Strata Description
	300 600 900 1200 1500	Legend	
		 Topsoil, Light brown silt with trace organics, damp  Less damp, orange mottles, trace organics  More orange mottles, no organics, lighter brown colour  Hand auger terminated at 600 mm due to refusal.	
1			
2			Penetrometer test ended at 1700mm; probe refusal.
3			
4			

LUMEN

210 Hazeldean Road, Sydenham 8023
P.O. Box 8373, Christchurch, New Zealand
accounts@lumen.net
(03) 377 1546

SITE INVESTIGATION RECORD

Client	Barry Walsh	Page	3 of 4
Job	71 Davis Road, Crust	Project No	19638
Test Number	Three of Four	Date	6/04/2023
Test Weather	Fine	Test Date	3/04/2023

SCALA PENETROMETER		HAND AUGER		
Depth (m)	Ultimate Bearing Capacity (kPa)	Water Table	Legend	Strata Description
	300 600 900 1200 1500			
1				
2				
3				
4				

Penetrometer test ended at 2200mm; probe refusal.

LUMEN

210 Hazeldean Road, Sydenham 8023
P.O. Box 8373, Christchurch, New Zealand
accounts@lumen.net
(03) 377 1546

SITE INVESTIGATION RECORD

Client	Barry Walsh	Page	4 of 4
Job	71 Davis Road, Crust	Project No	19638
Test Number	Four of Four	Date	6/04/2023
Test Weather	Fine	Test Date	3/04/2023

SCALA PENETROMETER					HAND AUGER		
Depth (m)	Ultimate Bearing Capacity (kPa)				Water Table	Legend	Strata Description
	300	600	900	1200	1500		
1							Penetrometer test ended at 900mm; probe refusal.
2							2
3							3
4							4

From: [Barry Walsh](#)
To: [Brenda McIndoe](#); [Building Services](#)
Subject: TRIM: RE: Foundation amendment 71 Davis rd Cust. BC 230501
Date: Monday, 6 November 2023 2:03:53 PM
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[0.png](#)
[Soil test report at 71 Davis Road our ref 19638.msg](#)

Caution: [THIS EMAIL IS FROM AN EXTERNAL SOURCE] DO NOT CLICK links or attachments unless you recognise the sender email address and know the content is safe.

Hi there,

Please note the following info,

Just a wee note, excavation 350mm, and not 600mm, please see attached.

-

Also correct installer, will be Mark Skachill from Master Foundations, he'll send over his (Form 2A) memorandum this afternoon.

Regards,
Barry Walsh
021 522 119

From: Brenda McIndoe <brenda.mcindoe@wmk.govt.nz>
Sent: Monday, November 6, 2023 1:44 PM
To: Building Services <buildinginfo@wmk.govt.nz>
Cc: Barry Walsh <barry@dimensionshopfitters.co.nz>
Subject: FW: Foundation amendment 71 Davis rd Cust. BC 230501

Hi Team

Please setup this Amendment and advise when completed

Cheers Brenda

Brenda McIndoe | **Building Consent Officer**
Building Unit

Building Unit: 03 311 8906
Phone: 0800 965 468 (0800 WMK GOV)
DDI: +64 3 266 9111



From: Andrew Toulson <andrew@iconicarchitecture.co.nz>
Sent: Monday, November 6, 2023 12:49 PM
To: Brenda McIndoe <brenda.mcindoe@wmk.govt.nz>
Cc: Barry Walsh <barry@dimensionshopfitters.co.nz>
Subject: Foundation amendment 71 Davis rd Cust. BC 230501

Caution: [THIS EMAIL IS FROM AN EXTERNAL SOURCE] DO NOT CLICK links or attachments unless you recognise the sender email address and know the content is safe.

Hi Brenda

I believe Barry Walsh has had a conversation re the amendment to change the foundation to ribraft.
See attached the Amendment application, my amended sections and the ribraft design info.
Any RFIs bang them thru to me thanks.

regards

Andrew Toulson, LBP Des.
Director, Principal Designer
ICONIC ARCHITECTURE LTD
21 Priors Road
RD1 Rangiora
027-628-5278

WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.02 15/11/2023 bhargavac
Change Foundation to Ribraft

From: [Kate de Bruin](#)
To: [Barry Walsh](#)
Subject: Soil test report at 71 Davis Road, our ref 19638
Date: Tuesday, 25 July 2023 1:06:51 PM
Attachments: [Lumen email signature 300420.png](#)

Hi Barry,

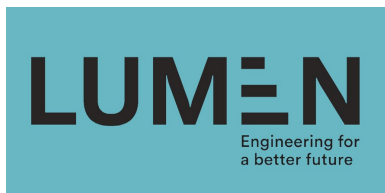
As discussed if you are installing a rib raft foundation, I believe that the 200kPa ULS soil which was achieved below the topsoil layer will be sufficient. Excavating to 600mm below ground level is only required if you need to achieve 300kPa ULS.

Please just make the rib raft engineer designer aware that they need to design the foundation to 200kPa.

--

Ngā mihi

Kate



Kate de Bruin *BE(Hons), CMEngNZ, CPEng*
Manager - Civil and Structural

☎ +64 3 363 0579

kate.debruin@lumen.net

[210 Hazeldean Road, Sydenham, Christchurch 8023_\(link\)](#)

www.lumen.net

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Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Dear Sir/Madam

Thank you for submitting your property enquiry from our Listed Land Use Register (LLUR). The LLUR holds information about sites that have been used or are currently used for activities which have the potential to cause contamination.

The LLUR statement shows the land parcel(s) you enquired about and provides information regarding any potential LLUR sites within a specified radius.

Please note that if a property is not currently registered on the LLUR, it does not mean that an activity with the potential to cause contamination has never occurred, or is not currently occurring there. The LLUR database is not complete, and new sites are regularly being added as we receive information and conduct our own investigations into current and historic land uses.

The LLUR only contains information held by Environment Canterbury in relation to contaminated or potentially contaminated land; additional relevant information may be held in other files (for example consent and enforcement files).

Please contact Environment Canterbury if you wish to discuss the contents of this property statement.

Yours sincerely

Contaminated Sites Team

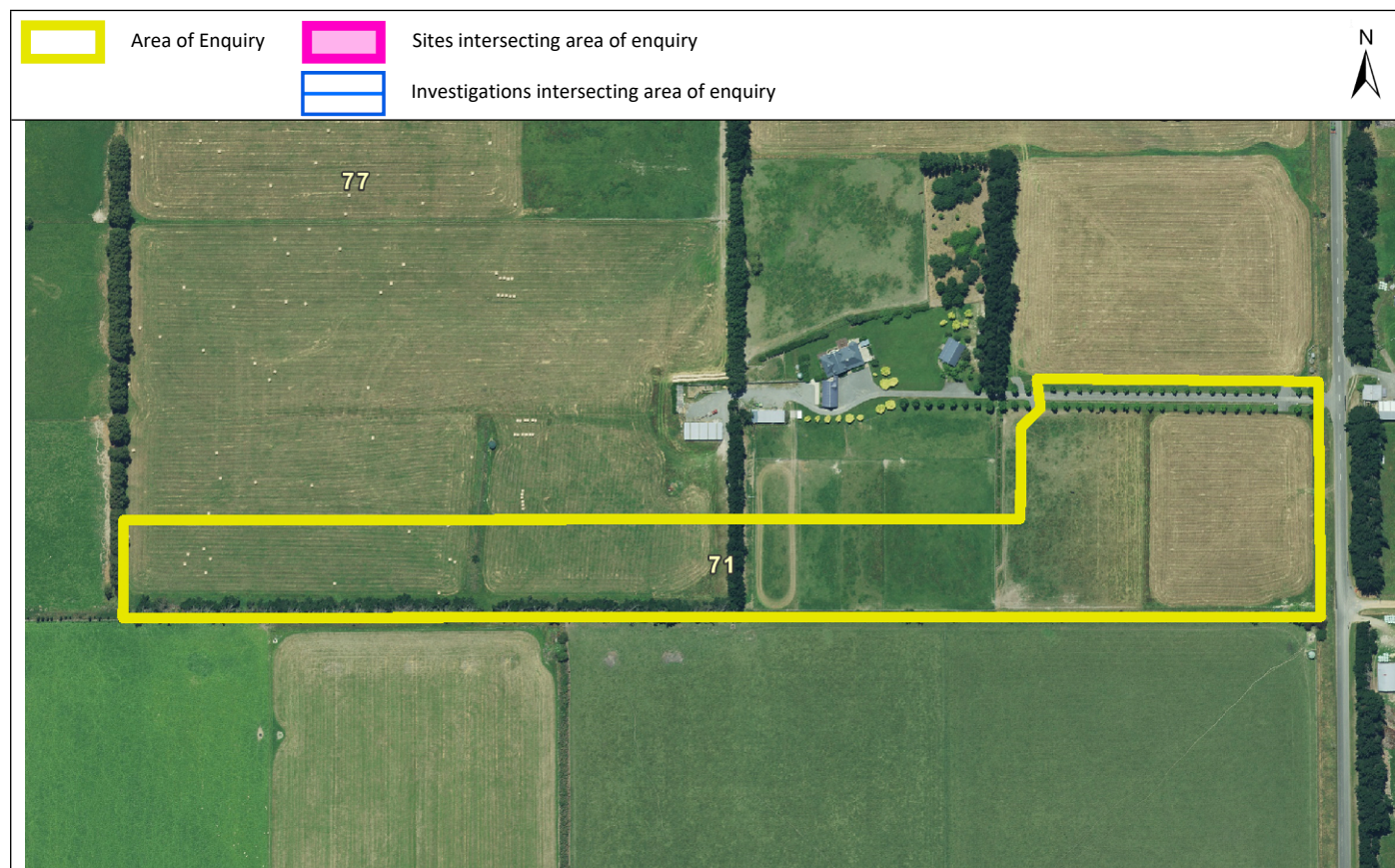
WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

Property Statement from the Listed Land Use Register



Visit ecan.govt.nz/HAIL for more information or contact Customer Services at ecan.govt.nz/contact/ and quote ENQ343078

Date generated: 21 April 2023
Land parcels: Lot 1 DP 570321



The information presented in this map is specific to the property you have selected. Information on nearby properties may not be shown on this map, even if the property is visible.

Sites at a glance

 Sites within enquiry area

There are no sites associated with the area of enquiry.

More detail about the sites

There are no sites associated with the area of enquiry.

Disclaimer

The enclosed information is derived from Environment Canterbury's Listed Land Use Register and is made available to you under the Local Government Official Information and Meetings Act 1987.

The information contained in this report reflects the current records held by Environment Canterbury regarding the activities undertaken on the site, its possible contamination and based on that information, the categorisation of the site. Environment Canterbury has not verified the

accuracy or completeness of this information. It is released only as a copy of Environment Canterbury's records and is not intended to provide a full, complete or totally accurate assessment of the site. It is provided on the basis that Environment Canterbury makes no warranty or representation regarding the reliability, accuracy or completeness of the information provided or the level of contamination (if any) at the relevant site or that the site is suitable or otherwise for any particular purpose. Environment Canterbury accepts no responsibility for any loss, cost, damage or expense any person may incur as a result of the use, reference to or reliance on the information contained in this report.

Any person receiving and using this information is bound by the provisions of the Privacy Act 1993.

Listed Land Use Register

What you need to know

What is the Listed Land Use Register (LLUR)?

The LLUR is a database that Environment Canterbury uses to manage information about land that is, or has been, associated with the use, storage or disposal of hazardous substances.

Why do we need the LLUR?

Some activities and industries are hazardous and can potentially contaminate land or water. We need the LLUR to help us manage information about land which could pose a risk to your health and the environment because of its current or former land use.

Section 30 of the Resource Management Act (RMA, 1991) requires Environment Canterbury to investigate, identify and monitor contaminated land. To do this we follow national guidelines and use the LLUR to help us manage the information.

The information we collect also helps your local district or city council to fulfil its functions under the RMA. One of these is implementing the National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil, which came into effect on 1 January 2012.

For information on the NES, contact your city or district council.

How does Environment Canterbury identify sites to be included on the LLUR?

We identify sites to be included on the LLUR based on a list of land uses produced by the Ministry for the Environment (MfE). This is called the Hazardous Activities and Industries List (HAIL)¹. The HAIL has 53 different activities, and includes land uses such as fuel storage sites, orchards, timber treatment yards, landfills, sheep dips and any other activities where hazardous substances could cause land and water contamination.

We have two main ways of identifying HAIL sites:

- We are actively identifying sites in each district using historic records and aerial photographs. This project started in 2008 and is ongoing.
- We also receive information from other sources, such as environmental site investigation reports submitted to us as a requirement of the Regional Plan, and in resource consent applications.

¹ The Hazardous Activities and Industries List (HAIL) can be downloaded from MfE's website www.mfe.govt.nz, keyword search HAIL

How does Environment Canterbury classify sites on the LLUR?

Where we have identified a HAIL land use, we review all the available information, which may include investigation reports if we have them. We then assign the site a category on the LLUR. The category is intended to best describe what we know about the land use and potential contamination at the site and is signed off by a senior staff member.

Please refer to the Site Categories and Definitions factsheet for further information.

What does Environment Canterbury do with the information on the LLUR?

The LLUR is available online at www.llur.ecan.govt.nz. We mainly receive enquiries from potential property buyers and environmental consultants or engineers working on sites. An inquirer would typically receive a summary of any information we hold, including the category assigned to the site and a list of any investigation reports.

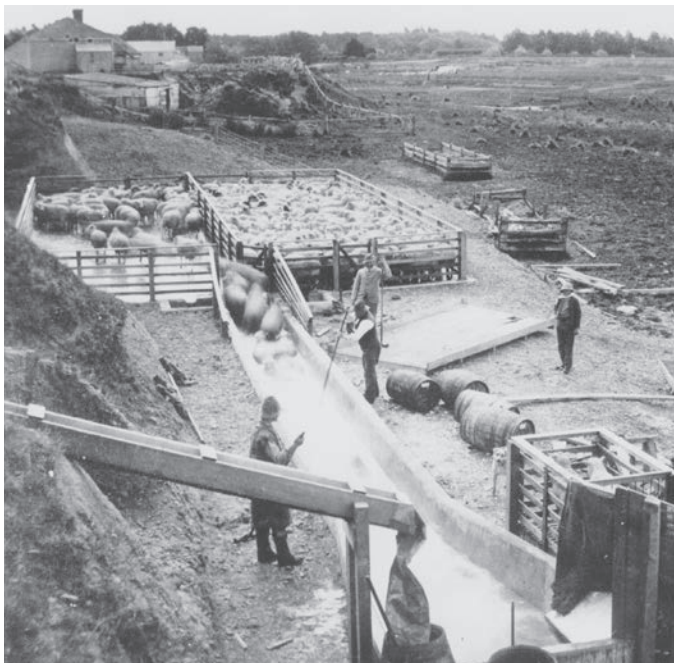
We may also use the information to prioritise sites for further investigation, remediation and management, to aid with planning, and to help assess resource consent applications. These are some of our other responsibilities under the RMA.

If you are conducting an environmental investigation or removing an underground storage tank at your property, you will need to comply with the rules in the Regional Plan and send us a copy of the report. This means we can keep our records accurate and up-to-date, and we can assign your property an appropriate category on the LLUR. To find out more, visit www.ecan.govt.nz/HAIL.



IMPORTANT!

The LLUR is an online database which we are continually updating. A property may not currently be registered on the LLUR, but this does not necessarily mean that it hasn't had a HAIL use in the past.



Sheep dipping (ABOVE) and gas works (TOP) are among the former land uses that have been identified as potentially hazardous. (Photo above by Wheeler & Son in 1987, courtesy of Canterbury Museum.)

IMPORTANT!

Just because your property has a land use that is deemed hazardous or is on the LLUR, it doesn't necessarily mean it's contaminated. The only way to know if land is contaminated is by carrying out a detailed site investigation, which involves collecting and testing soil samples.

You do not need to do anything if your land is on the LLUR and you have no plans to alter it in any way. It is important that you let a tenant or buyer know your land is on the Listed Land Use Register if you intend to rent or sell your property. If you are not sure what you need to tell the other party, you should seek legal advice.

You may choose to have your property further investigated for your own peace of mind, or because you want to do one of the activities covered by the National Environmental Standard for Assessing and Managing Contaminants in Soil. Your district or city council will provide further information.

If you wish to engage a suitably qualified experienced practitioner to undertake a detailed site investigation, there are criteria for choosing a practitioner on www.ecan.govt.nz/HAIL.



I think my site category is incorrect – how can I change it?

If you have an environmental investigation undertaken at your site, you must send us the report and we will review the LLUR category based on the information you provide. Similarly, if you have information that clearly shows your site has not been associated with HAIL activities (eg. a preliminary site investigation), or if other HAIL activities have occurred which we have not listed, we need to know about it so that our records are accurate.

If we have incorrectly identified that a HAIL activity has occurred at a site, it will be not be removed from the LLUR but categorised as Verified Non-HAIL. This helps us to ensure that the same site is not re-identified in the future.

Contact us

Property owners have the right to look at all the information Environment Canterbury holds about their properties.

It is free to check the information on the LLUR, online at www.llur.ecan.govt.nz.

If you don't have access to the internet, you can enquire about a specific site by phoning us on (03) 353 9007 or toll free on 0800 EC INFO (32 4636) during business hours.

Contact Environment Canterbury:

Email: ecinfo@ecan.govt.nz

Phone:

Calling from Christchurch: (03) 353 9007

Calling from any other area: 0800 EC INFO (32 4636)

Listed Land Use Register

Site categories and definitions

When Environment Canterbury identifies a Hazardous Activities and Industries List (HAIL) land use, we review the available information and assign the site a category on the Listed Land Use Register. The category is intended to best describe what we know about the land use.

If a site is categorised as **Unverified** it means it has been reported or identified as one that appears on the HAIL, but the land use has not been confirmed with the property owner.

If the land use has been confirmed but analytical information from the collection of samples is not available, and the presence or absence of contamination has therefore not been determined, the site is registered as:

Not investigated:

- A site whose past or present use has been reported and verified as one that appears on the HAIL.
- The site has not been investigated, which might typically include sampling and analysis of site soil, water and/or ambient air, and assessment of the associated analytical data.
- There is insufficient information to characterise any risks to human health or the environment from those activities undertaken on the site. Contamination may have occurred, but should not be assumed to have occurred.

If analytical information from the collection of samples is available, the site can be registered in one of six ways:

At or below background concentrations:

The site has been investigated or remediated. The investigation or post remediation validation results confirm there are no hazardous substances above local background concentrations other than those that occur naturally in the area. The investigation or validation sampling has been sufficiently detailed to characterise the site.

Below guideline values for:

The site has been investigated. Results show that there are hazardous substances present at the site but indicate that any adverse effects or risks to people and/or the environment are considered to be so low as to be acceptable. The site may have been remediated to reduce contamination to this level, and samples taken after remediation confirm this.

The site has been investigated. Results show BC230501 are hazardous

substances present at the site in concentrations that have the potential to cause adverse effects or risks to people and/or the environment. However, those risks are considered managed because:

- the nature of the use of the site prevents human and/or ecological exposure to the risks; and/or
- the land has been altered in some way and/or restrictions have been placed on the way it is used which prevent human and/or ecological exposure to the risks.

Partially investigated:

The site has been partially investigated. Results:

- demonstrate there are hazardous substances present at the site; however, there is insufficient information to quantify any adverse effects or risks to people or the environment; or
- do not adequately verify the presence or absence of contamination associated with all HAIL activities that are and/or have been undertaken on the site.

Significant adverse environmental effects:

The site has been investigated. Results show that sediment, groundwater or surface water contains hazardous substances that:

- have significant adverse effects on the environment; or
- are reasonably likely to have significant adverse effects on the environment.

Contaminated:

The site has been investigated. Results show that the land has a hazardous substance in or on it that:

- has significant adverse effects on human health and/or the environment; and/or
- is reasonably likely to have significant adverse effects on human health and/or the environment.

If a site has been included incorrectly on the Listed Land Use Register as having a HAIL, it will not be removed but will be registered as:

Verified non-HAIL:

Information shows that this site has never been associated with any of the specific activities or industries on the HAIL.

Please contact Environment Canterbury for further information:

(03) 353 9007 or toll free
on 0800 EC INFO (32 4636)
email ecinfo@ecan.govt.nz



**Environment
Canterbury**
Regional Council
Kaunihera Taiao ki Waitaha

Section 3

Truss Details & Bracing Details

- Manufacturers bracing instruction and construction documentation
- Design IT Calcs
- Hyspan etc.

-- AS BUILT TRUSS LAYOUT REQUIRED --
This must be received by the Building Unit
AT LEAST 10 WORKING DAYS PRIOR to
the Structure Pre-Roof Pre-Wrap inspection.

Truss "As-Build" designs shall be sent to
buildinginfo@wmk.govt.nz

WESTLAKE

FRAME TRUSS STEEL

BQ030308 3401
sales@westlake.co.nz
www.westlake.co.nz
 31 Sonter Road
 PO Box 11-178, Sockburn
 Christchurch 8443

FABRICATOR AGREEMENT LETTER

JOB Residence for Walsh
SITE 71 Davis Rd
 Cust

DATE: 13/04/2023
Ref.No: 230017ps

WESTLAKE TIMBER LTD has been engaged to manufacture and supply frames and trusses for the above project. Please find attached a buildable truss layout/ producer statement to allow completion of the consent application. Included is any Slab Thickening (if required) on the truss layout and all truss loaded lintels, inside and outside NZS 3604.2011. All truss fixings will be as per NZS3604.2011, clause 10.2.2.6. All walls shown on the truss layout are to be considered load bearing and should not be removed without engineering advice.

Roof Bracing requirements as per NZS3604:2011

On advice from the building project owner, the structure will be designed under the following parameters:

WIND ZONE: High	ROOF MATERIAL: Iron	SNOW LOAD: 0.9kPa
------------------------	----------------------------	--------------------------

All Loadbearing Studs & Lintels SG8 Timber minimum. TIMBER TREATMENTS.

EXTERNAL WALLS:	SG8 H1.2 Studs
INTERNAL WALLS:	SG8 H1.2 Studs
TRUSSES:	H1.2

WAIMAKARIRI DISTRICT COUNCIL
 Plans and specifications APPROVED in accordance
 with the Building Act 2004, clause 49 and the Building
 Regulations 1992, Clause 3
 BC230501 6/07/2023 Chrisk

ADDITIONAL INFORMATION TO BE PROVIDED AT TIME OF MANUFACTURE:

- 1: As built truss layout and producer statement.
- 2: Truss to truss & truss to top plate fixings.
- 3: Stud to top plate and lintel fixings.
- 4: Roof bracing
- 5: Confirmation that the project has been fabricated and supplied in accordance with the above specifications.

E-MAILED

Supply of this information is dependant on you providing Westlake Timber Ltd with the Consent Number for this project as soon as is practicable

Please fax to 03 348 3402
 email: sales@westlake.co.nz

CONSENT NO : 230501

WESTLAKE TIMBER LTD

-- AS BUILT TRUSS LAYOUT REQUIRED --
 This must be received by the Building Unit
 AT LEAST 10 WORKING DAYS PRIOR to
 the Structure Pre-Roof Pre-Wrap inspection.

Truss "As-Built" designs shall be sent to
buildinginfo@wmk.govt.nz



Correspondence from : **AUCKLAND**
40 Neales Road, East Tamaki 2013
PO Box 58-014, Botany 2163
Phone: 09 274 7109
Fax: 09 274 7100

CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03 348 8691
Fax: 03 348 0314

www.mitek.nz.co.nz

Printed: 01:29:49 04 Jul 2023

MiTek 20/20 Engineering 4.7.346.0

PRODUCER STATEMENT for MiTek 20/20[®] TRUSS DESIGN - Version 4.7

ISSUED BY: **MiTek New Zealand Limited**

TO: **Westlake Timber Ltd.**

IN RESPECT OF: **MiTek[®] Truss Designs**

-- AS BUILT TRUSS LAYOUT REQUIRED --
This must be received by the Building Unit
AT LEAST 10 WORKING DAYS PRIOR to
the Structure Pre-Roof Pre-Wrap inspection.

Truss "As-Built" designs shall be sent to
buildinginfo@wmk.govt.nz

This producer statement covers the MiTek 20/20[®] truss design and the structural performance of the GANG-NAIL[®] connector plate for the job reference **230017PS** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek 20/20[®] truss design program has been developed by MiTek New Zealand Limited for the design of MiTek[®] timber roof, floor and attic trusses in New Zealand. The truss designs computed by MiTek 20/20[®] are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents of the New Zealand Building Code and Verification Method B1/VM1; and internationally accepted standard ANSI/TPI 1 - 2002 as an alternative solution, to satisfy the requirements of Clause B1 of the New Zealand Building Code.

On behalf of MiTek New Zealand Limited, and subject to:

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence
- vi) Timber is graded to the requirements of NZS 3603:1993
- vii) Minimum timber treatment for these MiTek[®] trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003

I believe on reasonable grounds that the trusses, if constructed in accordance with the MiTek 20/20[®] truss design and shop drawings, will comply with the relevant provisions of the New Zealand Building Code.

MiTek New Zealand Limited holds a current policy of Professional Indemnity Insurance no less than \$500,000.

On behalf of MiTek New Zealand Limited,

Date: Tuesday, 4 July 2023

In Ling Ng, BE (Hons), CPEng, IntPE, MIPENZ (ID: 146585)
TECHNICAL SERVICES MANAGER, MiTek New Zealand Limited

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

Job: 230017PS

Client: Building Consent No.:
Phone: Building Consent No.:
Site: 71 Davis Rd
Results For Walsh
CustBuilding Consent BC230501
Received 5/7/2023
Phone:Description:
Building Consent No.:
MiTek 20/20 Engineering 4.7.346.0

MiTek New Zealand Limited

Printed: 01:29:49 04 Jul 2023

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **Westlake Timber Ltd.**, being licensed to use the MiTek 20/20® software, to the client listed above and may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

MiTek 20/20® TRUSS DESIGN DATA

The MiTek 20/20® computer design for this job is based on the following design parameters entered into the program. The Fabricator shall ensure that these job details are current and relevant to the project for the design of the MiTek® trusses.

Job Details**Roof Truss**

Timber Group: MSGx45_H1.2

Roof

Material: Galv Iron .5mm
Dead Load: 0.210 kPa
Restraints: 900 mm centres
Live Load: Q_{ur} = 0.250 kPa
Q_c = 1.100 kN

Attic Floor

Material: 20mm Particle Board
Dead Load: 0.200 kPa
Restraints: Continuous

Importance Level : 2

Pitch: 35.000 deg

Ceiling

Material: Standard Plaster Board 13mm
Dead Load: 0.210 kPa
Restraints: 600 mm centres
Live Load: Q_c = 1.400 kN

Occupancy Live Load

Distributed: Q_{uf} = 1.500 kPa
Concentrated: Q_{cf} = 1.800 kN

Attic Room Ceiling

Material: Standard
Dead Load: 0.300 kPa
Restraints: 400 mm centres

Design Working Life : 50 years

Nominal Overhang: 200 mm

Wind

Area: High (44.0 m/s)
Pressure Coeff: C_{pe} = varies; C_{pi} = -0.30, 0.20

Snow

Location: Christchurch (N4) at 165 m
Open Ground Load: 1.200 kPa
Basic Roof Load: 0.420 kPa

Attic Wall

Material: Gib Board
Dead Load: 0.300 kPa
Restraints: Continuous

The minimum timber treatment for these MiTek® trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003. The timber for these MiTek® trusses shall be graded to the requirements of NZS 3603:1993. Proprietary fixings and timber connectors shall be selected in accordance with NZS3604:2011 Section 4 - Durability.

MiTek® Truss List

Legend: * = detail only, ? = input only, Txx = failed design, Ø = non certified, Unmarked trusses = designed successfully, LB = lateral bracing required
GB = gable brace required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
EN01	1D	8240	35.000	886 GB	EN05	1D	2590	35.000	900	V01	1	3760	35.000	900
EN03	1D	4690	35.000	900 GB	EN06	1D	2500	35.000	900	V02	1	1960	35.000	900
EN04	1D	7190	35.000	900 GB	T01	1	8240	35.000	889	*R01	1	2590	35.000	900
S01	11	7380	35.000	881	T01A	3	8240	35.000	889	*R02	1	2500	35.000	900
T04	1	6880	35.000	717	T01B	1	8240	35.000	889	*R04	1	6095	35.000	900
T05	1D	8240	35.000	900	T02	1	6880	35.000	683	*R05	1	5090	35.000	900
T05A	5	8240	35.000	886 LB	T03	2	6880	35.000	717	*R06	1	4845	35.000	900
T05B	3	8240	35.000	886 LB	T06	1	4690	35.000	900					
T05C	3	8240	35.000	886 LB	T07	7	7190	35.000	886					

Total quantity : 52

-- AS BUILT TRUSS LAYOUT REQUIRED --
This must be received by the Building Unit
AT LEAST 10 WORKING DAYS PRIOR to
the Structure Pre-Roof Pre-Wrap inspection.

Truss "As-Built" designs shall be sent to
buildinginfo@wmk.govt.nz

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chris

The computer design input has been carried out by:

Name of Detailer: Lyra Mae De Castro

Qualifications and Title:

Signed: 

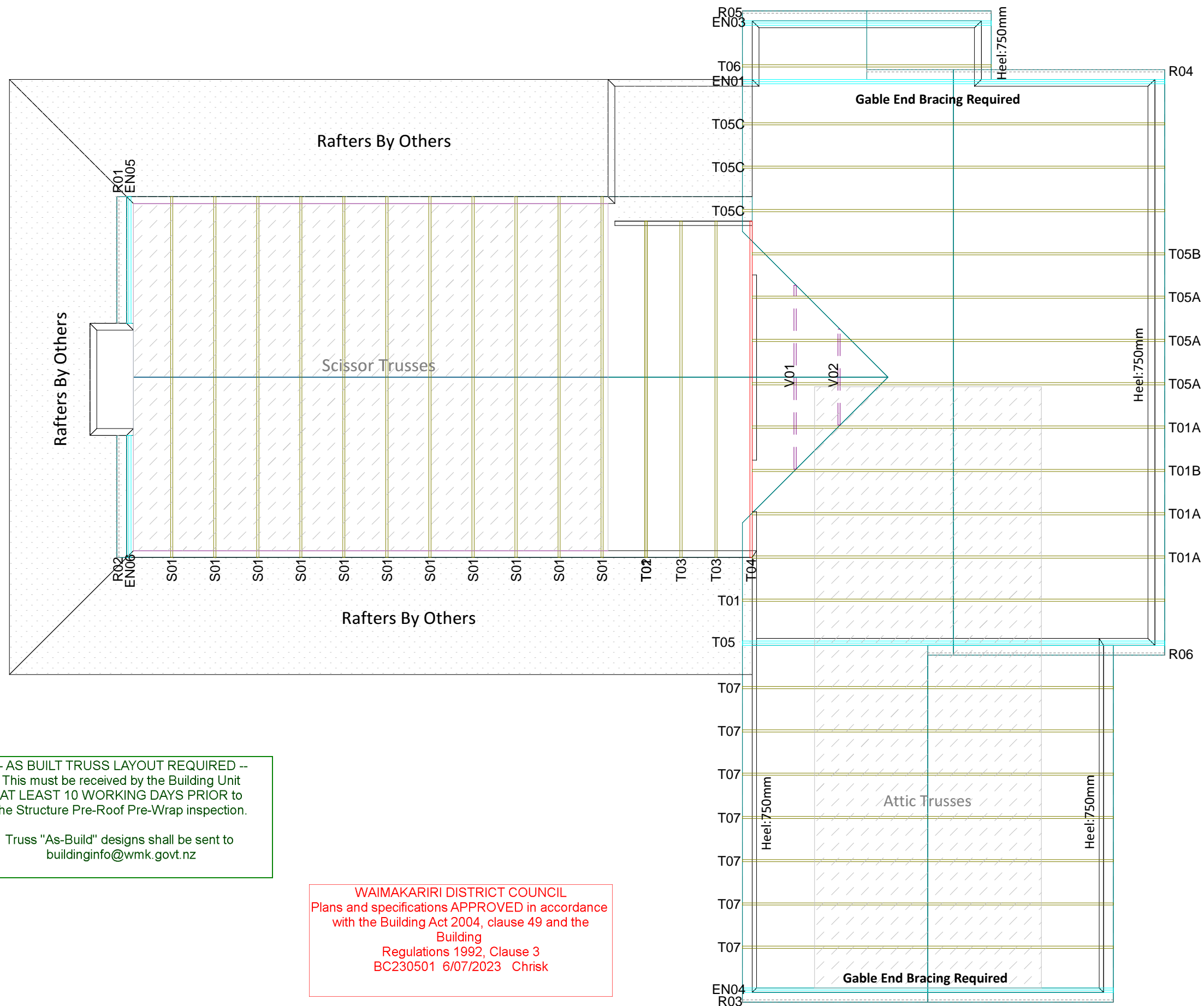
Date: Tuesday, 4 July 2023

On behalf of:

Westlake Timber Ltd.
17 Frank Coxon Road
Belfast
Christchurch 8051
New Zealand
Phone: 03 348 3401
Email: sales@westlake.co.nz

WESTLAKE
FRAME TRUSS STEEL

FTMA
NEW ZEALAND



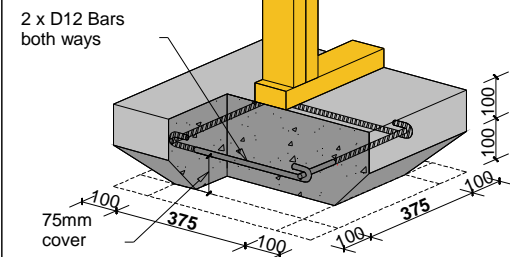
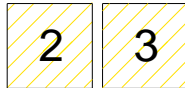
-- AS BUILT TRUSS LAYOUT REQUIRED --
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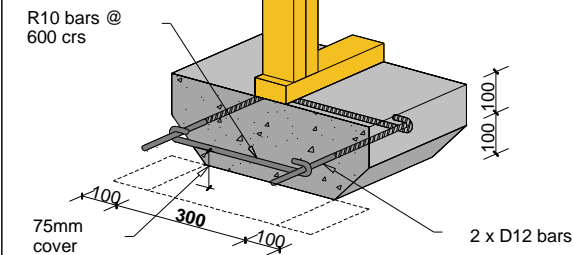
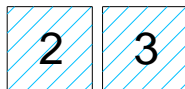
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Plans and specifications APPROVED in accordance
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Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

SLAB THICKENING & STUD REQUIREMENTS

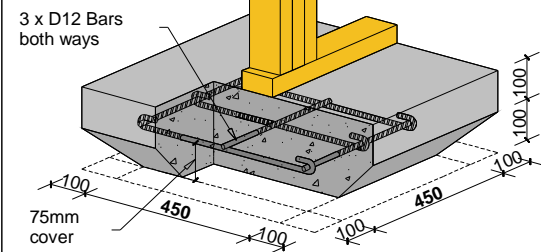
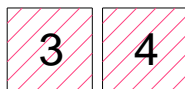
TYPE FP1 375mm² Pad



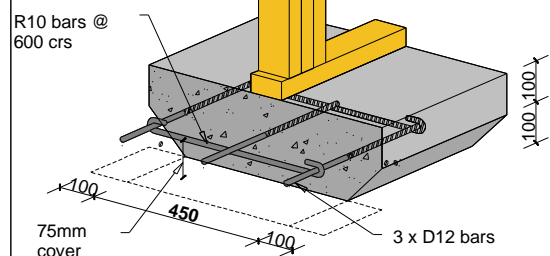
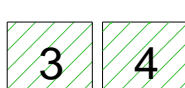
TYPE FS1 300mm Strip



TYPE FP2 450mm² Pad



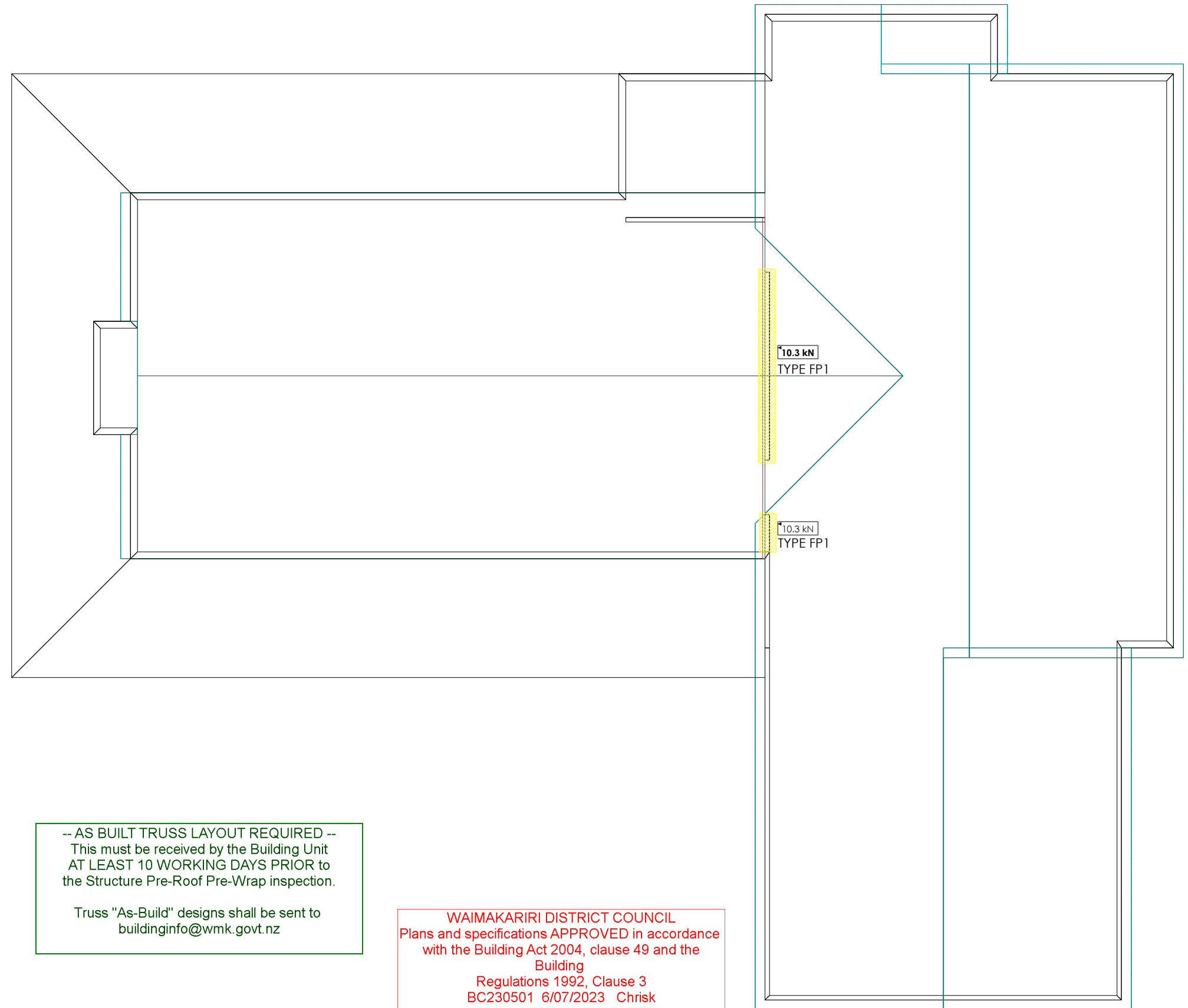
TYPE FS2 450mm Strip



Notes:
- The numbers found in the hatched areas are the numbers of studs required below each truss
- Standard 100mm reinforcing concrete slab, as per NZS3604:2011

Refer to:
MiTek Internal Load Bearing on Concrete Floor Slabs 10/2011
MiTek Structural Fixings **On-Site Guide** for Building Code Compliance

Concrete Slab
Thickening
Guide



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WESTLAKE
FRAME TRUSS STEEL
(03) 348 3401
sales@westlake.co.nz
www.westlake.co.nz
17 Frank Coxon Road,
Belfast,
Christchurch

Site Address :
Residence For Walsh
71 Davis Rd
Cust

Sheet Title :
**For Building Consent
Slab Thickening**

Date : 12 Apr,2023
Scale : 1: 100
Drawn : Lyra Mae De Castro
System : MiTek 20/20

Job Details:
Roof Pitch : 35.00deg
Roof Material : Galv Iron .5mm
Ceiling Material : Standard Plaster Board 13mm
Wind Zone : High
Roof Snow Load : 0.420kPa
Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 200mm



Job Title :
230017PS
Sheet :
2
Revision Number :

PrimeCad v4.7.346

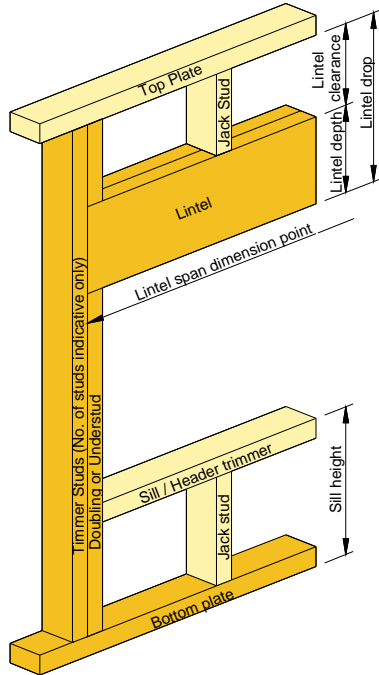
LUMBERLOK® LINTEL FIXING OPTIONS

TYPE E
1.4 kN

TYPE F
4.0 kN

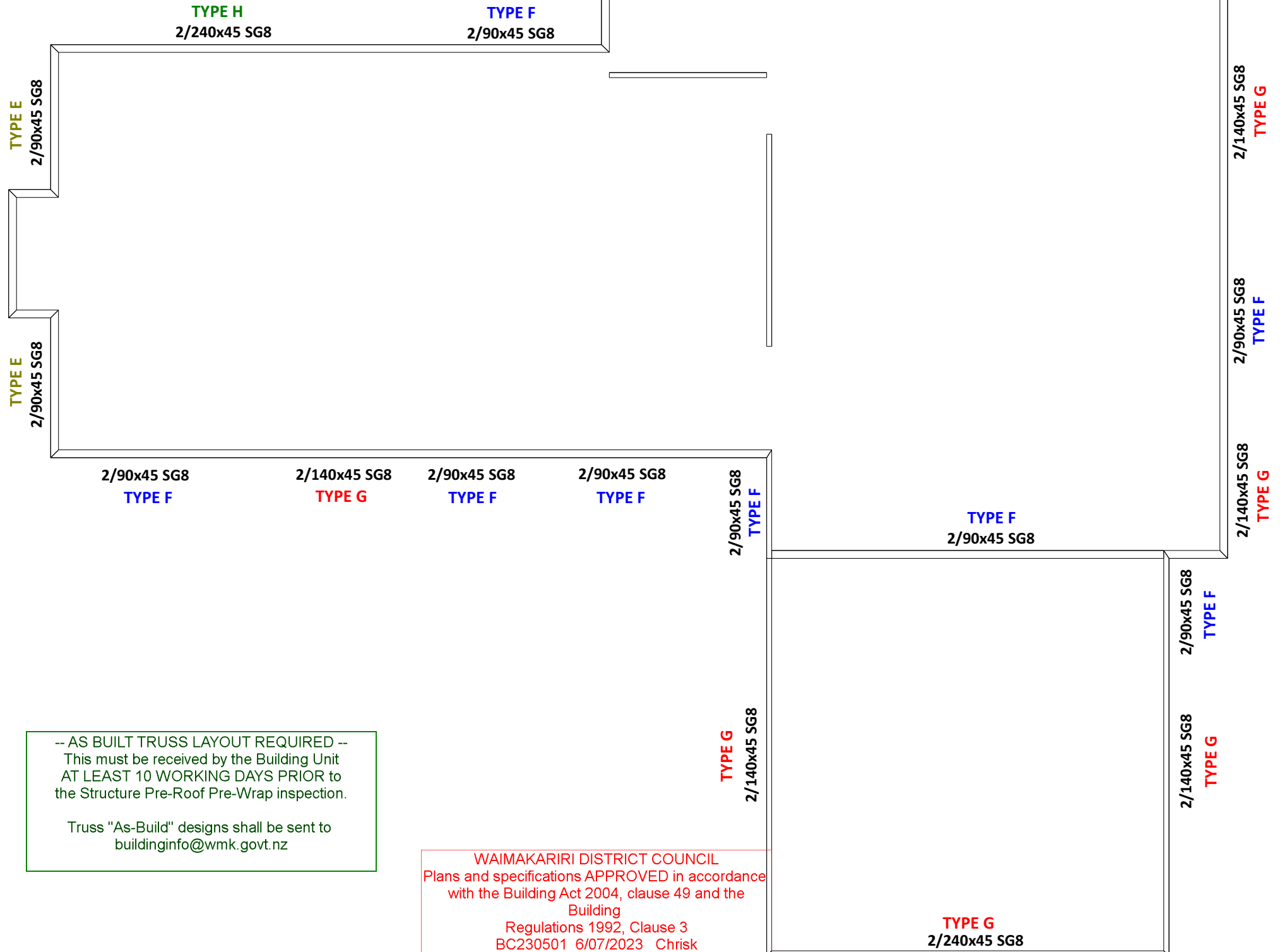
TYPE G
7.5 kN

TYPE H
13.5 kN



LINTELS SIZED USING GANGLAM CHART 2008 & MITEK BEAM

Refer to:
LUMBERLOK Lintel Fixing Schedule 10/2011
MiTek Structural Fixings **On-Site Guide** for Building Code Compliance
(Alternative to Table 8.14 & Figure 8.12 NZS 3604:2011)



-- AS BUILT TRUSS LAYOUT REQUIRED --
This must be received by the Building Unit
AT LEAST 10 WORKING DAYS PRIOR to
the Structure Pre-Roof Pre-Wrap inspection.

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WAIMAKARIRI DISTRICT COUNCIL
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Belfast,
Christchurch

Site Address :
Residence For Walsh
71 Davis Rd
Cust

Sheet Title :
For Building Consent
Lintel Fixing

Date : 12 Apr,2023
Scale : 1: 100
Drawn : Lyra Mae De Castro
System : MiTek 20/20

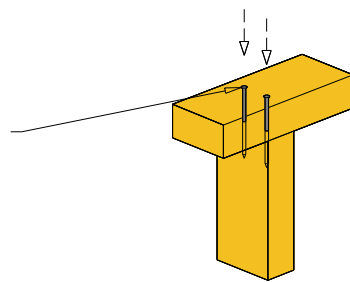
Job Details:
Roof Pitch : 35.00deg
Roof Material : Galv Iron .5mm
Ceiling Material : Standard Plaster Board 13mm
Wind Zone : High
Roof Snow Load : 0.420kPa
Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 200mm

PrimeCad v4.7.346
MiTek
Job Title :
230017PS
Sheet :
3
Revision Number :

LUMBERLOK® STUD TO TOP PLATE

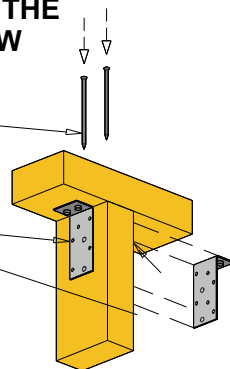
TYPE A 0.7 kN

2 x 90mm x 3.15 Ø plain
steel wire nails driven
vertically into stud.



TYPE B 4.7 kN CHOOSE ANY OF THE 3 OPTIONS BELOW

2 x 90mm x 3.15 Ø plain steel wire
nails driven vertically into stud.

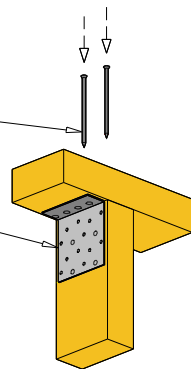


2 x LUMBERLOK
CPC40

Recommended for internal wall
options to avoid lining issues

OR

2 x 90mm x 3.15 Ø plain steel wire
nails driven vertically into stud.

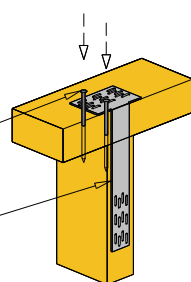


1 x LUMBERLOK 6 kN Stud Anchor
(CPC80)

Recommended for internal wall
options to avoid lining issues

OR

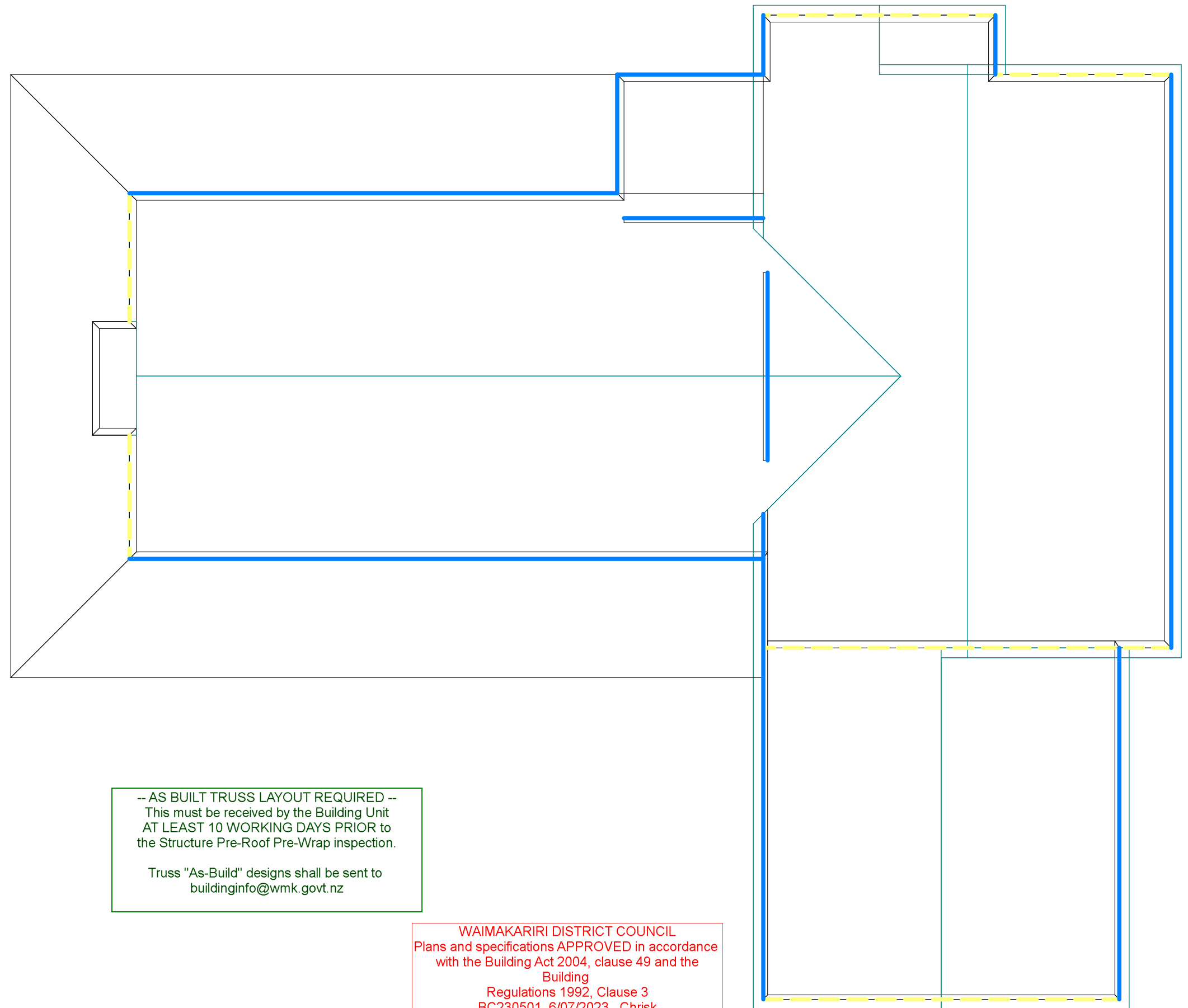
2 x 90mm x 3.15 Ø plain
steel wire nails driven
vertically into stud.



1 x LUMBERLOK
Stud Strap



Refer to:
LUMBERLOK Stud to Top Plate Fixing Selection Chart 09/2011
MiTek Structural Fixings **On-Site Guide** for Building
Code Compliance
(Alternative to NZS 3604:2011 Table 8.18)



-- AS BUILT TRUSS LAYOUT REQUIRED --
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BC230501 6/07/2023 Chrisk

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Site Address :
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71 Davis Rd
Cust

Sheet Title :
**For Building Consent
Stud To Top Plate Fixing**

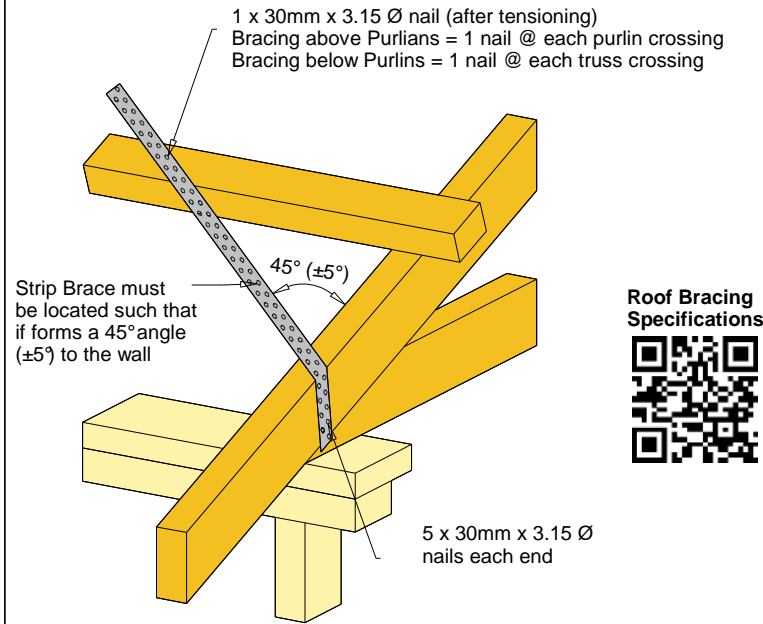
Date : 12 Apr,2023
Scale : 1: 100
Drawn : Lyra Mae De Castro
System : MiTek 20/20

Job Details:
Roof Pitch : 35.00deg
Roof Material : Galv Iron .5mm
Ceiling Material : Standard Plaster Board 13mm
Wind Zone : High
Roof Snow Load : 0.420kPa
Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 200mm

PrimeCad v4.7.346
MiTek

Job Title :
230017PS
Sheet :
4
Revision Number :

LUMBERLOK® ROOF BRACING



Refer to:
LUMBERLOK Roof Bracing Specifications 10/2011
MiTek Structural Fixings **On-Site Guide** for Building Code Compliance
(As per NZS 3604:2011)

LUMBERLOK® TRUSS FIXINGS

- D - Pair of Wire Dogs and 2 x 90mm 3.15mm skew nails
- X - LUMBERLOK JH47x90 Joist Hanger
- Z - LUMBERLOK JH47x120 Joist Hanger
- P - LUMBERLOK JH47x190 Joist Hanger
- E - LUMBERLOK JH95x165 Joist Hanger
- T - LUMBERLOK CT200 Ceiling Tie
- O - Pair of LUMBERLOK CT200 Ceiling Ties
- H - LUMBERLOK CT400 Cyclone Tie
- B - LUMBERLOK CT600 Cyclone Tie
- 4 - LUMBERLOK Multi Grip
- M - Pair of LUMBERLOK Multi Grips
- NP - LUMBERLOK Nailon Plate
- N - LUMBERLOK N21 Diagonal Cleat
- V - LUMBERLOK CPC40 Cleat
- W - Pair of LUMBERLOK CPC40 Cleats
- K - LUMBERLOK TTP 16kN Truss to Top Plate set
- G - LUMBERLOK TTP 9kN Truss to Top Plate set

**Joist Hanger
Installation**



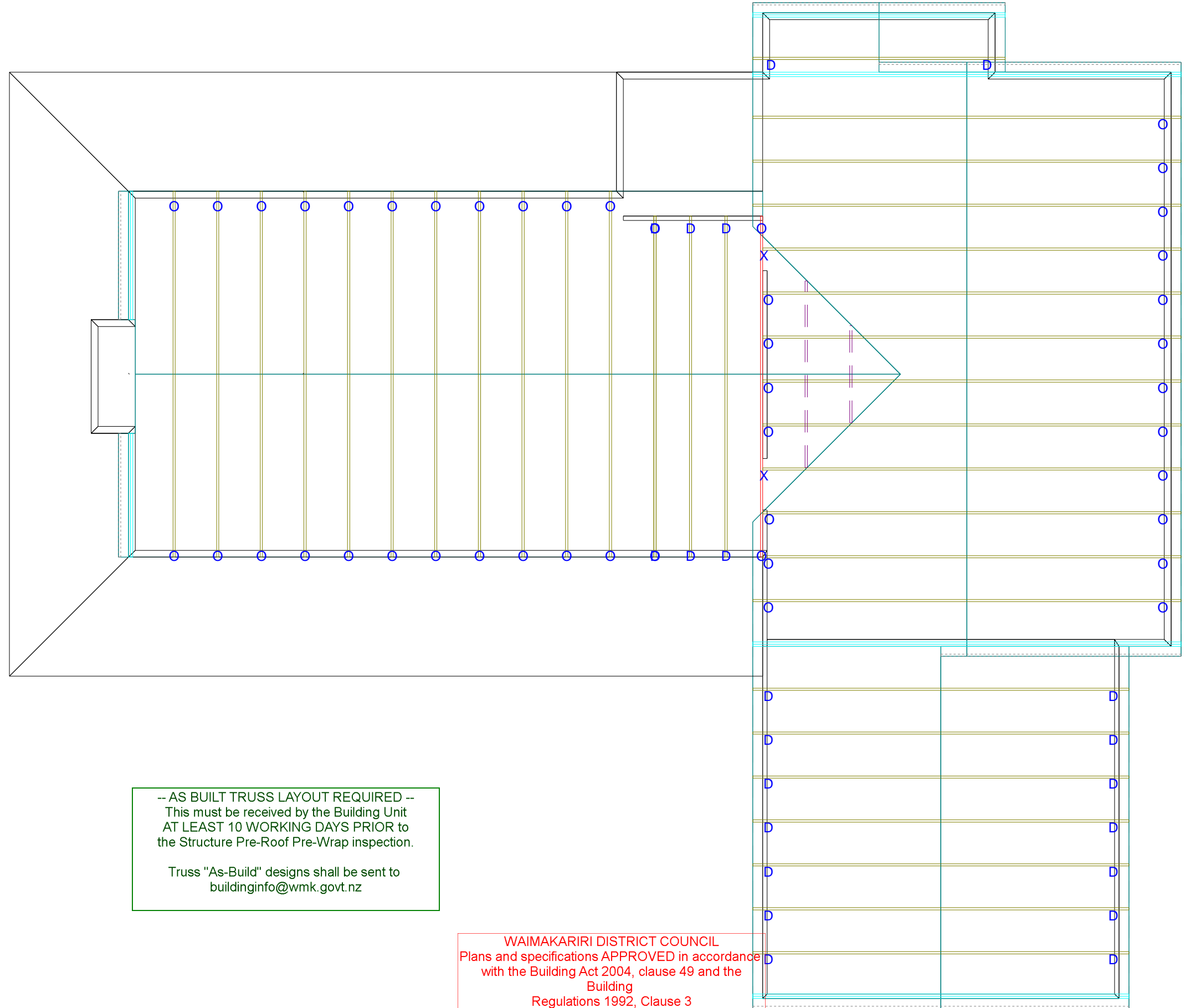
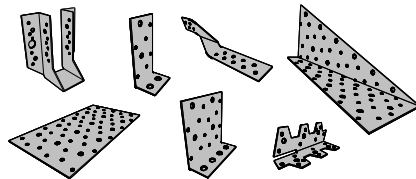
**CT200 Truss to
Top Plate Fixing
Installation**



**16kN & 9kN Truss
to Top Plate Fixing
Installation**



Notes:
All other areas must have the minimum 2 x 90mm 3.15mm skew nails and 2 x wire dogs for truss to top plate connections
Refer to:
LUMBERLOK Timber Connectors Characteristic Loadings Data Brochure 08/2014



-- AS BUILT TRUSS LAYOUT REQUIRED --
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WAIMAKARIRI DISTRICT COUNCIL
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PrimeCad v4.7.346

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sales@westlake.co.nz
www.westlake.co.nz
17 Frank Coxon Road,
Belfast,
Christchurch

Site Address :
Residence For Walsh
71 Davis Rd
Cust

Sheet Title :
**For Building Consent
Truss Fixings & Roof Bracing**

Date : 12 Apr,2023
Scale : 1: 100
Drawn : Lyra Mae De Castro
System : MiTek 20/20

Job Details:
Roof Pitch : 35.00deg
Roof Material : Galv Iron .5mm
Ceiling Material : Standard Plaster Board 13mm
Wind Zone : High
Roof Snow Load : 0.420kPa
Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 200mm



Job Title :
230017PS
Sheet :
5
Revision Number :

Date: Tuesday, 4 July 2023
Job Number 230017ps
Job Name Residence for Walsh
Client 71 Davis Rd
Calculated By Lyra De Castro

Roof Weight light + ceiling
Wind Zone high (44.0 m/s)
Snow Load 1.2 kPa

Beam Label	Garage Door
Beam Span (mm)	4800
Roof Span "S" (mm)	900
Overhang (mm)	200
Wall Type	
Wall Height (mm)	
Floor Live load	NA
Floor Span "F" (mm)	

Not in use in this version

[illegible][illegible][illegible]

Beam Status	OKAY
Beam Material	MSG8/VSG8
Beam Size	2/240x45
Beam Deflection	5.82mm
Beam Length	4800

Westlake Timber

Job No: 230017ps
Job Name: Residence for Walsh

Client: 71 Davis Rd
Building Consent No:

Site: Cust

DESIGN STATEMENT

MiTek Beam Program v1.11 September 2017

Certification of MiTek Beam Program v1.11 September 2017

The MiTek Beam Program v1.11 September 2017 has been developed by MiTek New Zealand Ltd for the design of these beams: Timber, Glulam, GANGLAM and GANG-NAIL FLITCH BEAMS. The beam designs calculated by this program are prepared using sound and widely accepted engineering principles, and in accordance with Compliance Documents of the New Zealand Building Code and Verification Method B1/VM1 to satisfy the requirements of Clause B1 of the Building Code. We believe on reasonable grounds that these beams for the proposed building, if constructed in accordance with the drawings, specifications and other documents provided will comply with the relevant provisions of the NZ Building Code. This is subject to all proprietary products meeting their performance specification requirements; the provision of adequate bracing and fixings; and the correct input of design data carried out by suitably trained personnel. This document may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

Summary of MiTek Beam Program v1.11 September 2017 Data and Output

Roof		Wind		Wall	
Weight:	light + ceiling	Area/Speed:	high (44.0 m/s)	Type:	NA
Dead Load:	0.45 kPa				
Live Load:	0.25 kPa	Snow		Floor	
		Area:	1.2 kPa	Live Load:	NA

Beam List

Opening Label	Beam Material	Beam Size	Beam Length	Design Status	Opening Label	Beam Material	Beam Size	Beam Length	Design Status
Garage Door	MSG8/VSG8	2/240x45	4800	OKAY					

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in
accordance
with the Building Act 2004, clause 49 and the
Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

GANGLAM plating details indicated with RD (regular duty plating), HD (heavy duty plating) and SHD (super heavy duty plating)

The design input has been carried out by:

Signed:.....

Date: 4/07/2023

Name of Computer Operator: Lyra De Castro

Qualifications and Title: Detailer

Company: Westlake Timber

GANGLAM

Selection Charts

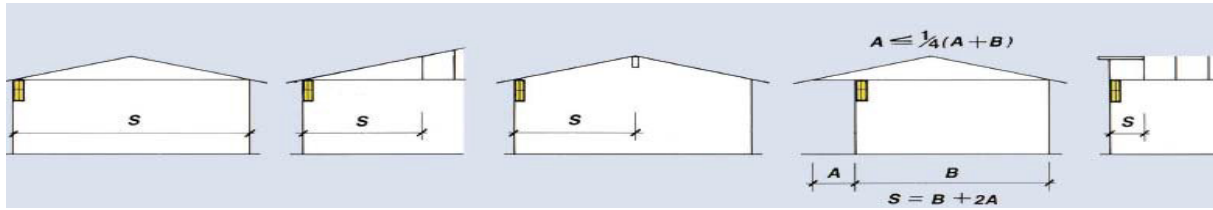


TABLE 1:
LINTEL SUPPORTING ROOF AND CEILING ONLY

		LINTEL SIZE	MAXIMUM LINTEL SPAN (m)										
			SUPPORTED ROOF SPAN 'S' (m)										
			5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
LIGHT ROOF	SOLID TIMBER	2/90 x 45	1.38	1.32	1.27	1.22	1.18	1.14	1.11	1.06	1.03	0.99	0.96
		2/115 x 45	1.85	1.76	1.69	1.63	1.57	1.53	1.47	1.42	1.37	1.32	1.28
		2/140 x 45	2.15	2.05	1.97	1.90	1.84	1.78	1.72	1.65	1.60	1.54	1.50
		2/190 x 45	2.92	2.79	2.67	2.58	2.49	2.42	2.33	2.25	2.17	2.10	2.03
		2/240 x 45	3.51	3.39	3.29	3.20	3.12	3.05	2.95	2.84	2.74	2.65	2.57
		2/290 x 45	3.94	3.81	3.69	3.59	3.50	3.42	3.35	3.29	3.19	3.09	2.99
	GANGLAM	2/330 x 45	4.76	4.60	4.45	4.33	4.22	4.13	4.04	3.97	3.90	3.83	3.77
		2/380 x 45	5.29	5.11	4.95	4.82	4.70	4.59	4.50	4.41	4.33	4.26	4.19
		2/430 x 45	5.81	5.60	5.43	5.28	5.15	5.04	4.93	4.84	4.75	4.67	4.60
		2/480 x 45	6.31	6.09	5.90	5.74	5.60	5.47	5.36	5.26	5.16	5.08	5.00
		2/530 x 45	6.80	6.56	6.35	6.18	6.03	5.89	5.77	5.66	5.56	5.47	5.38
		2/580 x 45	7.27	7.02	6.80	6.61	6.45	6.30	6.17	6.06	5.95	5.78	5.60
HEAVY ROOF	SOLID TIMBER	2/90 x 45	1.12	1.07	1.02	0.99	0.95	0.93	0.90	0.88	0.86	0.83	0.81
		2/115 x 45	1.49	1.42	1.37	1.32	1.27	1.23	1.20	1.17	1.14	1.11	1.08
		2/140 x 45	1.74	1.66	1.59	1.54	1.48	1.44	1.40	1.37	1.33	1.30	1.26
		2/190 x 45	2.36	2.25	2.16	2.08	2.01	1.95	1.90	1.85	1.81	1.76	1.70
		2/240 x 45	2.99	2.85	2.73	2.63	2.55	2.47	2.40	2.34	2.29	2.22	2.15
		2/290 x 45	3.36	3.25	3.15	3.06	2.97	2.88	2.80	2.73	2.67	2.59	2.51
	GANGLAM	2/330 x 45	4.06	3.92	3.80	3.70	3.60	3.52	3.45	3.38	3.32	3.27	3.19
		2/380 x 45	4.52	4.36	4.22	4.11	4.01	3.92	3.84	3.76	3.70	3.63	3.58
		2/430 x 45	4.96	4.78	4.63	4.51	4.40	4.30	4.21	4.13	4.05	3.99	3.93
		2/480 x 45	5.38	5.19	5.03	4.89	4.77	4.67	4.57	4.48	4.40	4.33	4.26
		2/530 x 45	5.80	5.59	5.42	5.27	5.14	5.03	4.92	4.83	4.74	4.66	4.59
		2/580 x 45	6.20	5.98	5.80	5.64	5.50	5.38	5.27	5.17	5.07	4.99	4.91

= regular duty plating = heavy duty plating = super heavy duty plating



LUMBERLOK®

LINTEL FIXING SCHEDULE

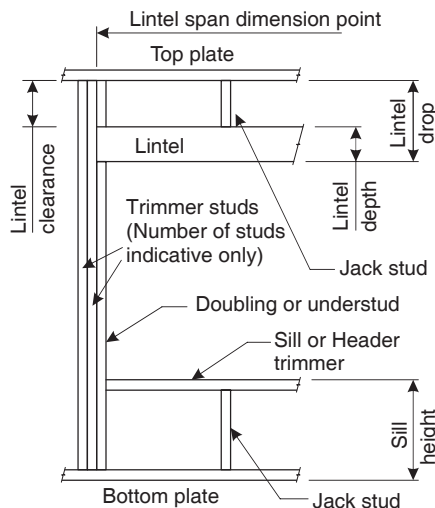
ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12

NZS 3604:2011

NOTE:

- ★ All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ All fixings assume bottom plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011.

DEFINITIONS



Lintel Supporting Girder Trusses

Roof Tributary Area	Light Roof			Heavy Roof		
	Wind Zone			Wind Zone		
	L, M, H	VH	EH	L, M, H	VH	EH
8.6m ²	G	G	H	G	G	H
11.6m ²	G	H	H	G	G	H
12.1m ²	G	H	H	G	H	H
15.3m ²	H	H	-	G	H	H
19.1m ²	H	-	-	G	H	-
20.9m ²	H	-	-	H	H	-
21.8m ²	H	-	-	H	-	-
34.3m ²	-	-	-	H	-	-

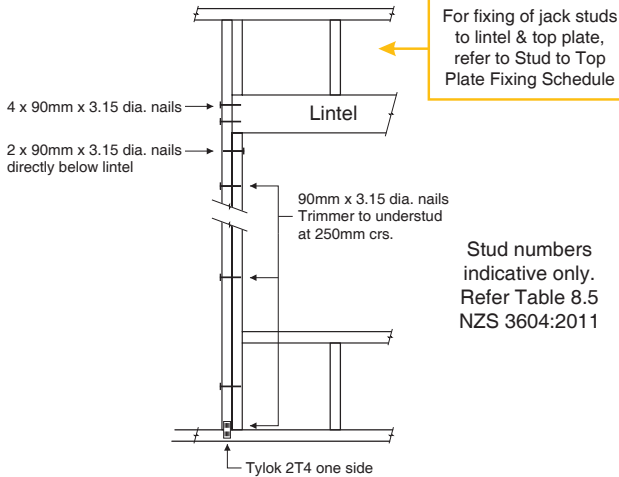
NOTES:

1. Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by lintel)
2. Assumed girder truss is at mid-span or middle third span of lintel
3. Use similar fixings for both ends of lintel
4. All other cases require specific engineering design

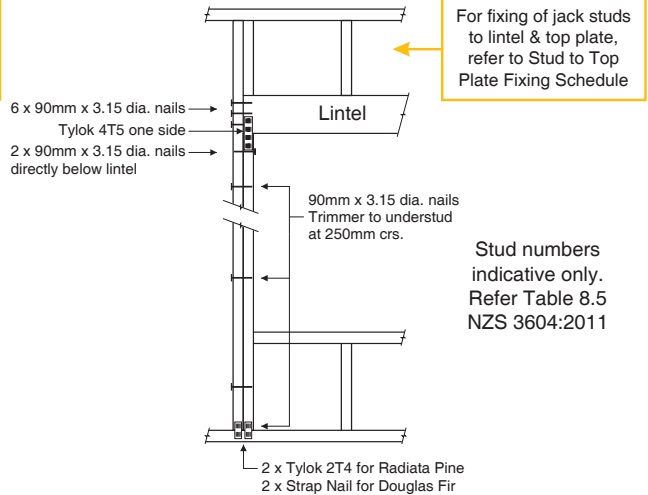
Lintel Span (m)	Loaded Dimension (m) (See Fig. 1.3 NZS 3604:2011)	Light Roof Wind Zone					Heavy Roof Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
5.1	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.5	F	G	H	-	-	E	F	G	H	-
	4.0	G	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
5.4	2.0	F	F	G	H	H	E	E	F	G	H
	2.8	F	G	H	H	-	E	F	G	H	H
	3.0	F	G	H	-	-	E	F	G	H	-
	4.0	G	H	H	-	-	E	F	H	-	-
	5.0	G	H	-	-	-	E	F	H	-	-

INTEL FIXING OPTIONS

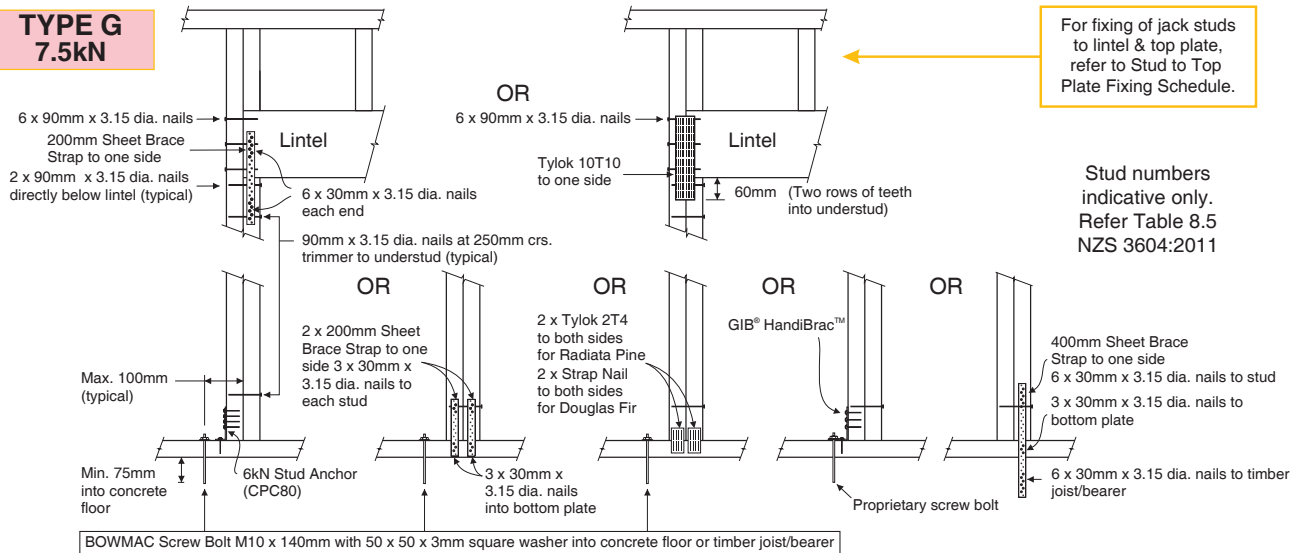
TYPE E 1.4kN



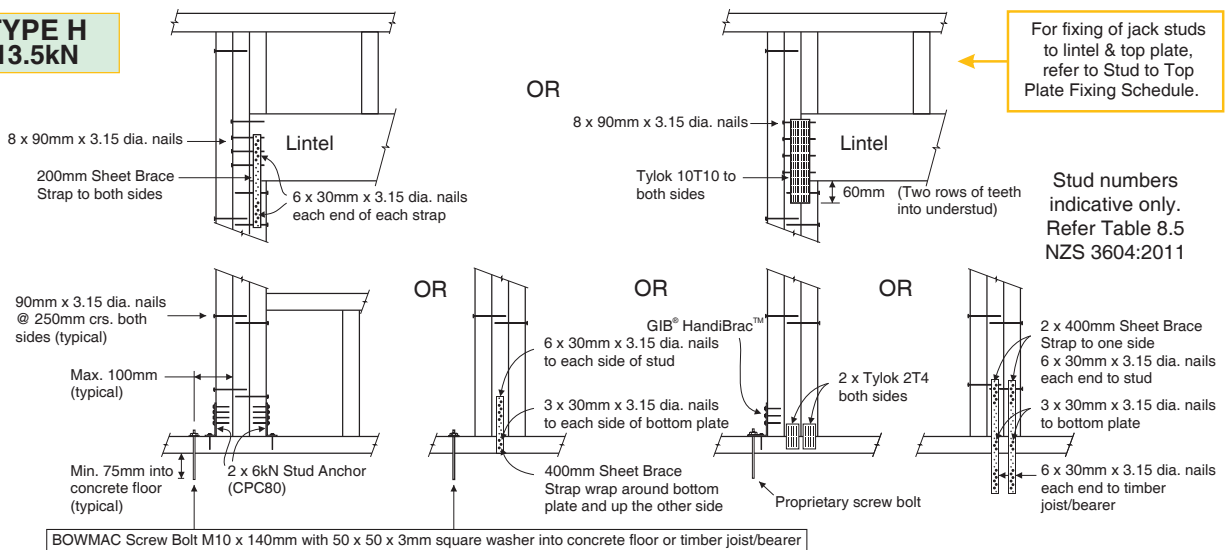
TYPE F 4.0kN



TYPE G 7.5kN



TYPE H 13.5kN



GABLE END BRACING

OVER ROOF SECTION OF END WALLS



- ★ Covers bracing of the roof section on gable end construction.
- ★ Includes bracing on extra high gables.
- ★ All timber to be minimum grade SG8 as defined in NZS 3604:2011 apart from gable end webs which are either SG6 or SG8 (see Tables 1A & 1B).
- ★ Tables cover gable end truss installed as single component 45mm thick, double component 90mm thick, 45x70mm or 45x90mm webs “on flat”.
- ★ “On flat” description here refers to truss fabrication terminology.
- ★ Design assumes restraints are provided at the ceiling and roof lines.
- ★ Bracing covers loading conditions as per NZS 3604:2011 up to Extra High wind and includes full height brick veneer gables.
- ★ Height of webs design for wind serviceability deflection limit of $h/180$ and a maximum of 15mm in accordance with NZS 3604:2011.

TABLE 1A - STRONGBACK LOCATION FOR WEBS @ 600MM CRS.

WIND ZONE	MAXIMUM STRONGBACK HEIGHT (h)											
	70x45 Web		90x45 Web		Double Component Gable End Webs				45x70 on flat		45x90 on flat	
					2/ 70x45		2/ 90x45					
	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8
LOW	1750	1950	1900	2100	2200	2450	2400	2650	2350	2600	2950	3150
MEDIUM	1600	1750	1750	1900	2000	2200	2200	2400	2150	2350	2750	2950
HIGH	1400	1500	1500	1650	1750	1900	1900	2100	1800	2050	2350	2650
VERY HIGH	1250	1400	1400	1500	1600	1750	1750	1900	1600	1900	2050	2400
EXTRA HIGH	1150	1350	1300	1450	1550*	1700*	1650*	1850*	1450	1700	1850*	2200*

TABLE 1B - STRONGBACK LOCATION FOR WEBS @ 400MM CRS.

WIND ZONE	MAXIMUM STRONGBACK HEIGHT (h)											
	70x45 Web		90x45 Web		Double Component Gable End Webs				45x70 on flat		45x90 on flat	
					2/ 70x45		2/ 90x45					
	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8
LOW	2000	2200	2200	2400	2550	2750	2750	2950	2700	2900	3250	3500
MEDIUM	1800	2000	2000	2200	2300	2550	2500	2750	2450	2700	3050	3300
HIGH	1600	1750	1750	1900	2000	2200	2200	2400	2150	2350	2750	2950
VERY HIGH	1450	1600	1600	1750	1850	2000	2000	2200	1950	2200	2500	2750
EXTRA HIGH	1400	1550	1500	1650	1750*	1950*	1900*	2100*	1800	2100	2300*	2650*

*Use these values for full height brick veneer attached to gable end.
Please note that the maximum height of brick veneer on a gable end wall is 5.5m.

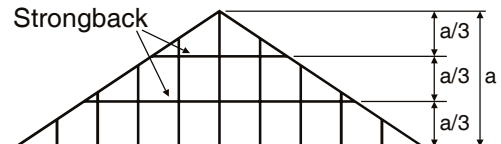
SELECTION PROCESS



- Where (a) is less than or equal to (h) - no strongback required.

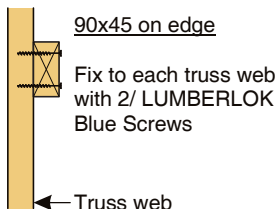


- Where (a) is greater than (h) but less than 2(h) - lower strongback is required.
- Locate the strongback at height of (a/2).

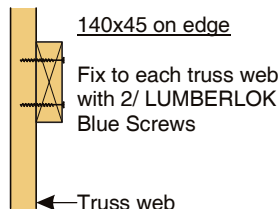


- Where (a) is greater than 2(h) but less than 3(h) - lower and upper strongbacks are required.
- Locate strongbacks at height increments of (a/3).

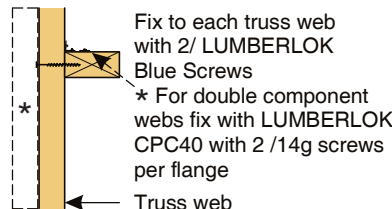
STRONGBACK OPTIONS



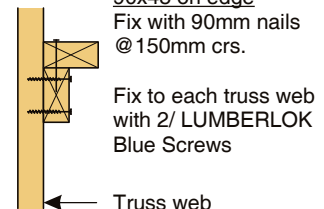
OPTION 1



OPTION 2



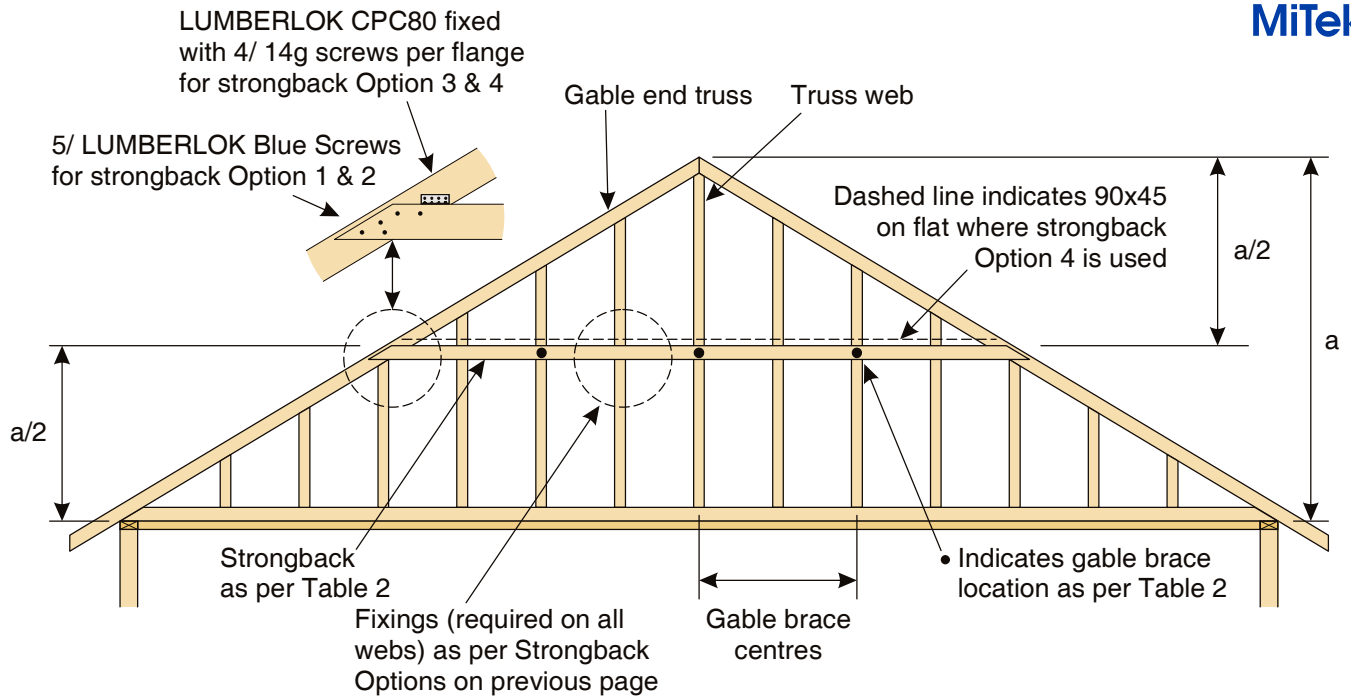
OPTION 3



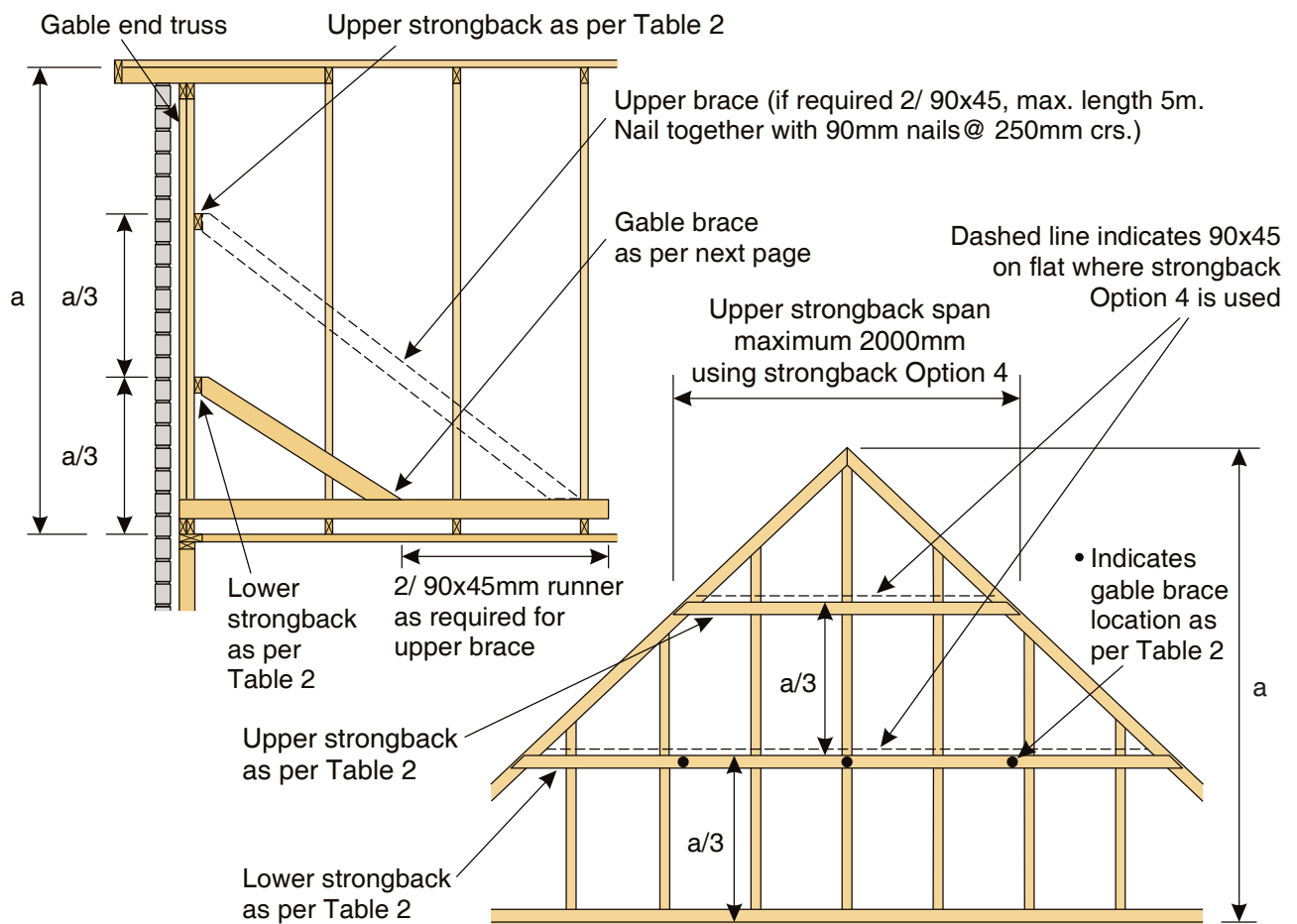
OPTION 4

TABLE 2 - STRONGBACK SPAN AND GABLE BRACE LOCATION

OPTION 1	OPTION 2	OPTION 3	OPTION 4
90x45 on edge	140x45 on edge	90x45 on flat	90x45 on flat plus 90x45 on edge
Max. span and/or gable brace location 1200mm	Max. span and/or gable brace location 1400mm	Max. span and/or gable brace location 1600mm	Max. span and/or gable brace location 2000mm



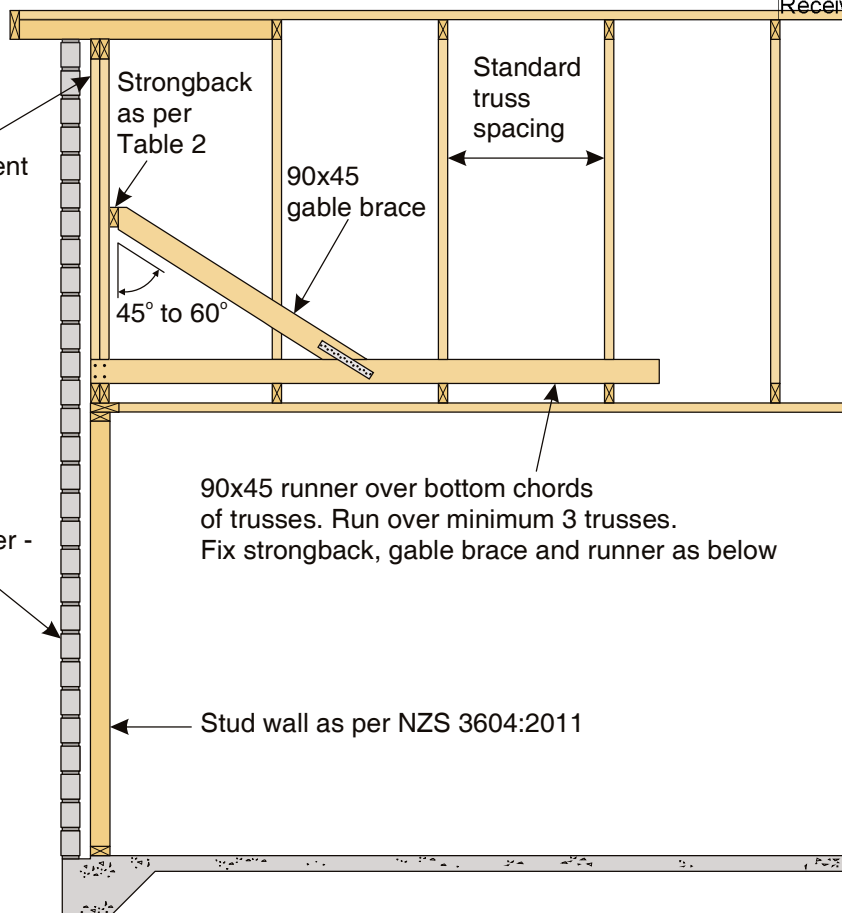
SINGLE STRONGBACK DETAILS



DOUBLE STRONGBACK DETAILS FOR ALL GABLE END OPTIONS (full height brick veneer option shown)

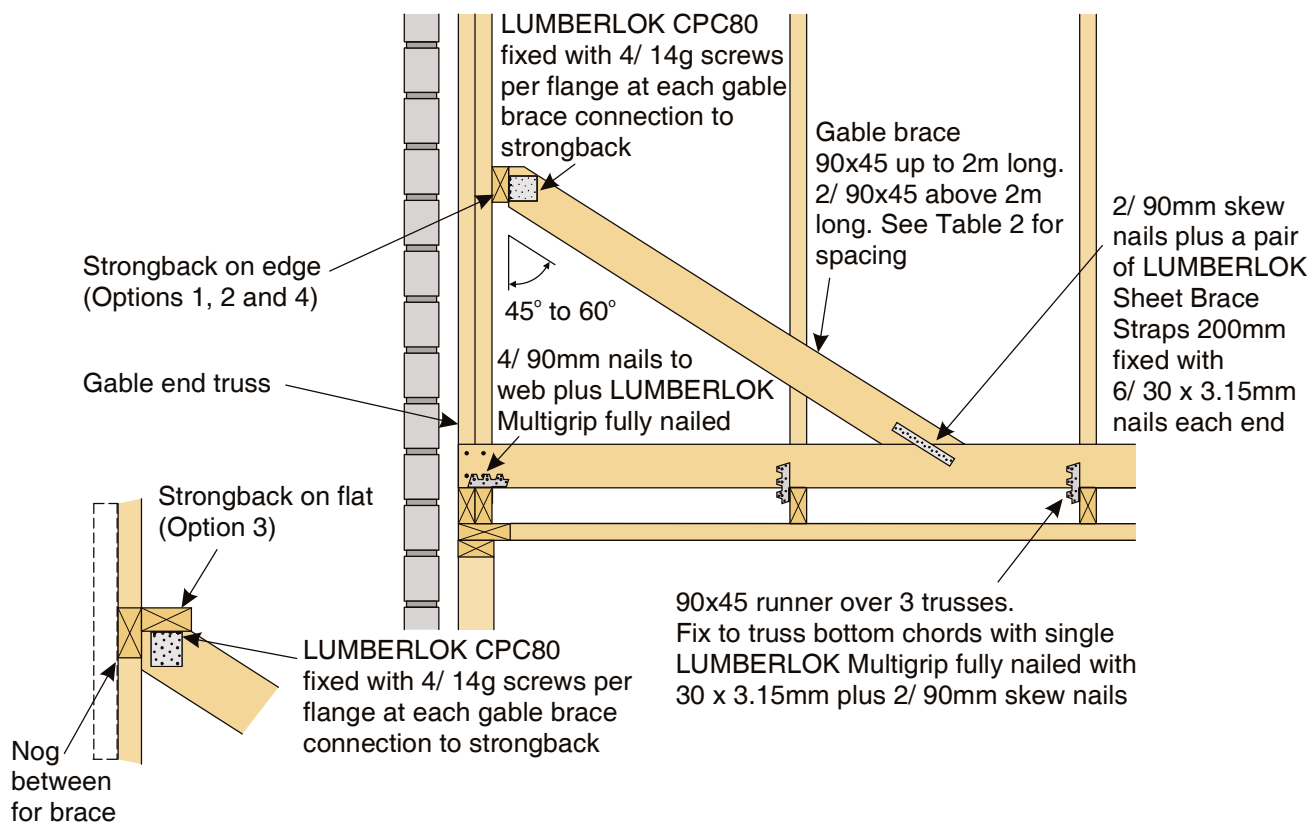
Note: Double component gable end truss or 45x90 webs on flat required for full height brick veneer gable

Full height brick veneer - Max. height 5.5m on gable end wall, Clause 1.1.2(o) NZS 3604:2011



CROSS SECTION

(full height brick veneer option shown)



GABLE BRACE DETAIL FOR ALL GABLE END OPTIONS (full height brick veneer option shown)

DESIGN CERTIFICATE

Technical basis for structural design methodology contained in designIT for houses - New Zealand.

designIT for houses, New Zealand has been developed by experienced timber engineers to assist designers in selecting appropriate sizes of structural laminated veneer lumber products manufactured by Carter Holt Harvey LVL Limited (including hySPAN, hy90, hyONE and hyJOIST) and other generic stress grades of timber, to be used as structural elements for the construction of buildings that fall within the scope of NZS 3604.

The design methodology used for the software complies with the loading and general design requirements contained within AS/NZS 1170 and with timber structural design in accordance with NZS 3603:1993 including Amendment 4 (Verification method B1/VM1, 6.1).

designIT relies on the accurate input of span and loading information by the user. Where accurate inputs are submitted the product and/or stress grade and the size given will comply with the structural requirements of the New Zealand Building Code (NZBC), provided the installation is in accordance with the installation requirements provided by designIT and/or in product literature and/or NZS 3604, or specific engineering design, as appropriate.

Futurebuild LVL and SG8 components, when used and treated to the required treatment levels prescribed in NZS 3602 and NZS 3604, as modified by Acceptable Solution B2/AS1, will comply with the requirements of the NZBC (Acceptable Solution B2/AS1, 3.2).

References:

1. NZS 3603:1993 Timber Structures Standard.
2. NZS 3604:2011 Timber-framed buildings.
3. AS/NZS 1170:2002 Structural design actions, Parts 0 and 1.
4. AS/NZS 1170:2011 Structural design actions, Part 2: Wind actions.
5. AS/NZS 1170:2003 Structural design actions, Part 3: Snow and ice actions.
6. AS 1720.1:2010 Timber structures. Part 1: Design methods.
7. AS 1720.3:2016 Timber structures. Part 3: Design criteria for timber-framed residential buildings.

This Design Certificate, and any associated warranty/certification, is void where there has been substitution of alternate products not detailed within the Member Specification.

Version date: 20 April, 2023

For further information or advice contact:

Carter Holt Harvey LVL Limited,
173 Captain Springs Road, Onehunga. Auckland
Telephone: 0800 808 131
Email: designit@futurebuild.co.nz
Web: https://futurebuild.co.nz/

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in
accordance
with the Building Act 2004, clause 49 and the
Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

Specifier details:

Specifier:	Andrew Toulson
Business name:	Iconic Architecture Ltd
Email:	andrew@iconicarchitecture.co.nz

Project and site details:

Project:	71 Davis rd Cust
Site address:	
Design wind zone	High
Snow loading	Design snow zone: N4, Altitude: 165 m (sub-alpine), Ground snow load, $S_g^{1,2} = 1.2 \text{ kPa}$

1. designIT does not include any allowance for the effects of drifting and sliding of snow.
2. Snow loads are applied to roofed over structures only, the design of exposed floors/decks are not covered by designIT.

MEMBER DESIGN DETAILS

Member 1

1) Member code and description	VB1 - Verandah beams
2) Date prepared	04 July 2023
3) Serviceability criteria	AS 1720.1: 2010 and AS 1720.3: 2016

4) Design inputs

Span	2.9 m - continuous span
Roof mass	20 kg/m ²
Roof load width 'RLW'	1.2 m
Roof snow load	0.8 kPa, snow overhang 0.1 kN/m ($\mu_i=0.7$, $C_e=1.0$, $k=0.5$)

5) Member specification

Size, stress grade/product	Use 2/190 x 45 SG8
Material type	Dry softwood, machine stress graded and verified (NZS 3622)
Assumed design density	< 480 kg/m ³

6) Serviceability

Load case	Limit ³ on average deflection ²	Estimated average deflection ²	Rigidity ratio ⁴
Long term load - $G + \Psi_L Q$	7.3 mm	1.0 mm (long term)	7.5
Live load - $\Psi_S Q$	11.6 mm	0.7 mm	16.7
Wind load - W_s	14.5 mm	1.8 mm	8.0
Snow load - S_s^*	7.3 mm	1.2 mm	6.0

*Critical serviceability load case

See 'Notes for interpretation of serviceability data' at the end of this report

7) Reactions

Load case	k_1^1	Limit States Design Reaction ^{2,3}	
		End kN ⁴	Intermediate kN
1.35G	0.60	-0.7	-1.7
1.2G + 1.5Q	0.80	-1.2	-3.2
1.2G + S_u + $\Psi_c Q$	0.80	-2.4	-6.1
1.2G + W_u + $\Psi_c Q$	1.00	-2.5	-6.4
0.9G + W_u	1.00	2.5	6.2

8) Installation requirements

- Provide at least 30 mm bearing at end supports
- Provide at least 45 mm bearing at internal supports
- Vertical lamination required - refer AS 1684

Notes for interpretation of serviceability data

1. 'average deflection' is an engineering concept based upon a notional estimated load, notional member rigidity and, in some cases, an approximate model of material response to environmental conditions. These parameters are, 'standardised' in AS 1170 and AS 1720.

2. Deflection is the flexural response to load 'out-of-level' measurements of installations are not necessarily deflections and can incorporate 'initial out-of-straightness', whether intended or not. Furthermore, loads can be higher/lower than the notional estimate and in any comparison with measured levels, material variability needs to also be considered. AS 1720 gives the following basis for estimation of upper bound deflections for various materials.

No 1 Framing – visually graded to NZS 3631	Average + 100%
SG grades - mechanically graded to AS/NZS 1748	Average + 43%
GL grades for glulam to AS 1328	Average + 33%
LVL to AS/NZS 4357 (includes hySPAN and hyJOIST)	Average +18%

As can be seen, comparison of the 'average deflection' for different materials, even if calculated on the same basis, does not give the whole picture!

3. The limits referred are those specified in AS 1720.3 for the stated load case.

4. 'Rigidity ratio' expresses the rigidity of the specified beam relative to the rigidity of a notional beam just meeting the serviceability requirements detailed.

Notes for interpretation of reaction data

1. Duration of load factor 'k₁' for strength as per NZS 3603:1993
 2. Negative (-) reactions relate to the 'gravity' or 'downwards' force on the support
 3. Positive reactions relate to the 'upwards' forces or 'tie-down' requirement on the support
 4. End reaction includes allowance for overhang/cantilever where one has been designed
-

GIB EzyBrace® Systems



Wall Bracing Calculation Sheet A

JUNE 2011

Job Details (tick appropriate boxes)

Box 1

Name	WALSH		
Street Address	71 DAVIS RD		
Lot No		DPS No	
City/Town	CHST		
Location of Storey:	Floor type:	Floor load:	
Single/upper storey <input checked="" type="checkbox"/>	Sub-floor <input type="checkbox"/>	2kPa <input checked="" type="checkbox"/>	
Upper storey of two <input type="checkbox"/>	Slab <input checked="" type="checkbox"/>	3kPa <input type="checkbox"/>	
Lower storey of two <input type="checkbox"/>			
Key dimensions			
Building height to apex	6.8	Metres	
Roof height above eaves	3.3	Metres	
Stud height	2.4	Metres	
Average roof pitch	35	Degrees	
Building Length	BL	21	Metres
Building Width	BW	19.8	Metres
Gross Plan Area	GPA	257	Sq Metres
<small>Note: When the average roof pitch is over 25 degrees, use the eaves length and width to determine BL and BW</small>			
Cladding weight	Light	Medium	Heavy
Sub-floor			
Lower storey			
Upper or Single Storey	<input checked="" type="checkbox"/>		
Roof weight	Light <input checked="" type="checkbox"/>	Heavy	
Room in roof space	Yes <input checked="" type="checkbox"/>	No	

Wind Zone

Box 2

Action	Reference	Values available	Outcome
Wind Region	Figure 5.1	A, W	A
Lee Zone	Figure 5.1	Yes, No	No
Ground Roughness	Page 6	Urban, Open	OPEN
Site Exposure	Page 7	Sheltered, Exposed	EXPOSED
Topographic Class	Tables 5.2 and 5.3 + Fig 5.2	Gentle to Steep	GENTLE
Wind Zone	Table 5.4	L, M, H, VH, EH, SED	H

Earthquake Zone

Box 3

Action	Reference	Values available	Outcome
Earthquake Zone	Figure 5.4	1, 2, 3, 4	2
Site subsoil classification	Page 9	A, B, C, D, E	E

BUs required Wind

Box 4

W Across		95	BU's per m	(From NZS 3604:2011 tables 5.5, 5.6 and 5.7)					
W Along		80	BU's per m						
Total Wind Load									
W Across	Enter BL from box 1	Multiply by	BU's per m Across	Equals Across W required	W Along	Enter BW from box 1	Multiply by	BU's per m Along	Equals Along W required
	21	X	95	1995		19.8	X	80	784

BUs required Earthquake

Box 5

E =	11	BU's per m²	(From NZS 3604:2011 tables 5.8, 5.9 and 5.10)		
<small>Note: For a room in the roof space use E + 3 BU/m²</small>					
Total Earthquake Load					
EQ Requirement Along and Across	Enter GPA from box 1	Multiply by	E	Equals E required	$ALONG\ 2827 \div 5 = 566 \times 50\% = 283\ BUs$ $ACROSS\ 2827 \div 7 = 403 \times 50\% = 202\ BUs$
	257	X	11	2827	Transfer to calculation sheet B

For manual calculations only

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Wall Bracing Calculation Sheet B

JUNE 2011

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Regulations 1992, Clause 3
BC230501 6/07/2023 Chris

Regulations 1992, Clause 3				
230504 6/07/2023 Chrisk				
BRACING ELEMENTS PROVIDED				
1	2	3	4	5
Line Label	Minimum BUs Required	Bracing Element No.	Bracing Type	Length Element (m)
A		A1	BLH	0.6
		A2	BLH	0.9
		A3	GSIN	2.0
		A4	BLH	0.9
		A5	BLH	0.6
B		B1	GSIN	2.8
		B2	GSIN	2.5
C		B3	BLH	0.8
		C1	GSIN	1.1
		C2	GSIN	2.9
D		C3	GSIN	1.9
		C4	GSIN	2.6
		C5	GSIN	2.6
E		D1	GSIN	1.1
		D2	GSIN	2.8
		D3	GSIN	3.8
		D4	GSIN	2.5
		Totals Achieved		
		D5	GSIN	2.8
		Totals Required		
From Sheet A				

From Sheet A

Across

WALL OR BRACING LINE		BRACING ELEMENTS PROVIDED		
1	2	3	4	5
Line Label	Minimum BUs Required	Bracing Element No.	Bracing Type	Length Element (m)
M		M1	GSIN	1.8
		M2	GSIN	0.8
		M3	GSIN	0.8
		M4	GSIN	1.2
N1		GSIN	2.0	
N2		GSIN	2.8	
N3		GSIN	0.6	
N4		GSIN	3.5	
N5		GSIN	3.4	
N6		GSIN	3.6	
O1		GSIN	3.4	
O2		GSIN	2.3	
P1		GSIN	2.3	
P2		GSIN	2.2	
Q1		GSIN	0.6	
Q2		GSIN	3.3	
Q3	GSIN	0.6		
		Totals Achieved		
		Q4	GSIN	2.5
		Totals Required		
From Sheet A				

For manual calculations only

R1	GSIN	3.5
R2	GSIN	3.4
S1	BLH	1.0
S2	BLH	1.0

6 W	7 W
Rating BU/m	BUs Achieved (BU/m x L)
90	54
90	81
70	140
90	81
90	54
70	196
70	175
90	72
70	72
95	275
70	133
70	182
70	182
50	55
70	196
70	266
95	237
W achieved	3324
W required*	784
W achieved must exceed W required*	
70	112
70	98
70	105
70	105
70	182

W achieved

W required*

W achieved must exceed
W required*

* from Calculation Sheet

6 E	7 E
Rating BU/m	BUs Achieved (BU/m x L)
100	60
100	30
60	120
30	90
30	60
60	168
60	150
100	80
60	60
85	246
60	114
60	156
60	156
55	60
60	168
60	228
85	212
E achieved	2972
E required*	2827
E achieved must exceed E required*	
60	96
60	84
60	80
60	80
60	80

E achieved

E required*

E achieved must exceed
E required*

6 W	7 W
Rating BU/m	BUs Achieved (BU/m x L)
70	126
50	40
50	40
70	84
70	140
70	196
70	30
70	245
70	238
70	252
70	238
70	161
70	161
70	154
50	30
70	231
50	30
W achieved	3320
W required*	1995
W achieved must exceed W required*	
95	332
70	238

W achieved

W required*

W achieved must exceed
W required*

* from Calculation Sheet

6 E	7 E
Rating BU/m	BUs Achieved (BU/m x L)
60	108
55	44
55	44
60	90
60	120
60	168
55	33
60	210
60	238
60	216
60	204
60	138
60	138
60	132
55	33
60	198
55	33
E achieved	3006
E required*	2827
E achieved must exceed E required*	
85	297
60	204

E achieved

E required*

E achieved must exceed
E required*



EzyBrace® Systems

Specification and installation manual

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

CBI 5113

AUGUST 2016

NATIONAL SUPPORT

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GIB® HELPLINE

0800 100 442

Based on learnings derived from the 2011 Canterbury earthquakes GIB EzyBrace® Systems have been updated to offer improved design flexibility and further simplification of the bracing design and build process.

NEW GIB EZYBRACE® 2016 DESIGN SOFTWARE

- Improved user interface with simplified bracing design process.
- Increased functionality including exterior line check function, easy insert/deletion of bracing elements and built in software help function.
- Includes the new GIB® Bracing element GS2- NOM
- Allows the GIBFix® Framing System to be used in GIB EzyBrace® designs.

NEW GIB® BRACING ELEMENT GS2-NOM

- Allows internal walls lined with GIB® plasterboard on both sides and fastened off as per the standard fixing requirements of the current GIB® Site Guide to contribute to bracing resistance.
- Potentially reduces the amount of fasteners¹
- Encourages more even bracing distribution throughout the building.

¹ Actual savings dependent on building and bracing design

UPDATE TO OPENINGS IN BRACING ELEMENTS AND CEILING DIAPHRAGMS

- Large hole specification updated to use a more conservative methodology.
- Guidance included for fireplace flues and range hoods.

NEW — GIBFIX® FRAMING SYSTEM

- Reduced potential for fastener pop and joint cracking as a result of timber frame movement.
- Reduced potential for on-site call backs.
- Improved thermal performance.
- Reinforced plasterboard junctions.

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SYSTEM SUMMARY

GIB EzyBrace® Systems — August 2016

Winstone Wallboards Ltd accepts no liability if GIB EzyBrace® Systems are not designed and installed in strict accordance with instructions contained in this publication.

USE ONLY THE CURRENT SPECIFICATION

This publication may be superseded by a new publication at any time. Winstone Wallboards accepts no liability for reliance upon publications that have been superseded. Check for the current publication at gib.co.nz/library before using this publication. If you are unsure whether this is the current publication, call the GIB® Helpline on 0800 100 442.

GIB EzyBrace® 2011 software and specification literature remains valid until further notice.

PATENTS

GIBFix® Framing System and GIB EzyBrace® Systems, including componentry and design method, have patents pending (NZ Patent Number 596691, NZ Patent 709159 pending) and design and other IP rights reserved.

Beware of substitution

The performance of GIB® Systems are very sensitive to design detailing and construction practices. All GIB® Systems have been developed specifically for New Zealand conditions and independently tested or assessed to ensure the required level of performance. It is important to use only GIB® branded components where specified and to closely follow the specified design details and construction practices, to be confident that the required level of performance and quality is achieved on site.

For further information call our GIB® Helpline on 0800 100 442.

GIB EzyBrace® Systems have been designed and tested using only the products specified. When additional GIB® plasterboard properties are required the table below provides acceptable alternative options.

	Acceptable alternative GIB® plasterboards								
Specified GIB® plasterboard	GIB® Standard	GIB Ultralite®	GIB Braceline/ Noiseline®	GIB Aqualine®	GIB Toughline®	GIB Fyrelite®			
						10mm	13mm	16mm	19mm
GIB® Standard		OK	OK	OK	OK	Note 1 and 3			
GIB Braceline®	X	X		Note 2	OK	X	Notes 1, 2 and 3		

- Note 1** The fastener type and length must be as required for the relevant FRR system using the perimeter fixing pattern illustrated for the relevant bracing specification.
- Note 2** The element must be 900mm or longer. Decrease perimeter fastener centres to 100mm. The bracing corner fastening pattern, as illustrated for the relevant specification applies to all four corners of the element. Panel hold-down fixings are required.
- Note 3** Specify traditional wall framing layout (see figure 1) where a Fire Resistance Rating (FRR) is required.



Scope of use

This document is a guide to wall bracing of light timber frame (LTF) buildings constructed in accordance with NZS3604:2011 Timber Framed Buildings and presents a simple and efficient method for calculating and incorporating bracing resistance. This information draws on recent experiences from seismic activity in New Zealand and seeks to minimise earthquake damage to plasterboard linings in LTF buildings.

This document outlines the main principles of bracing design and construction using GIB® plasterboard products and systems. Further detailed information can be found in the GIB® Bracing Supplement by visiting gib.co.nz/library. This 'live' on-line document is updated continuously in response to market feedback and Winstone Wallboards' development initiatives.

Finish quality — framing and substrates

Home owners are increasingly demanding a high quality of interior finish. Finish quality is heavily influenced by the substrate to which linings are fixed. Detailed information on 'Levels of Finish' is given in AS/NZS 2589 and the latest version of the GIB® Site Guide.

New GIBFix® Framing System

With increased NZ Building Code requirements and growing customer demand for thermal efficiency and high quality interior finishes, traditional framing practices present problems such as multiple framing members at wall intersections creating thermal 'bridges' and cavities where insulation cannot be installed effectively.

Figure 1 shows a traditional wall framing layout. Figure 2 shows the alternative GIBFix® Framing System layout.

Multiple timber framing members also take longer to dry resulting in an increased risk of fastener pops and blemishes resulting from timber frame movement.

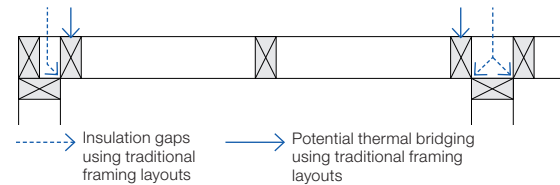
The GIBFix® Framing System offers better thermal efficiencies and minimises potential joint imperfections resulting from interior linings being fixed to multiple timber framing members.

The GIBFix® Framing System can be used in conjunction with GIB EzyBrace® Systems.

Bracing resistance is not affected by the GIBFix® Framing System if the use of this alternative timber framing layout is preferred. Refer to the GIBFix® Framing System literature for more information.

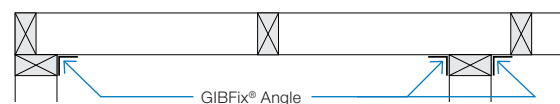
Bracing ratings apply whether fixing is directly into timber or into the metal components, provided correct construction details, fastener types and centres are applied.

FIGURE 1: TRADITIONAL WALL FRAMING LAYOUT



GFS004

FIGURE 2: GIBFix® FRAMING SYSTEM (ALTERNATIVE LAYOUT)



GFS005

NEW GS2-NOM Bracing Element

The new GS2-NOM bracing element allows most homes to be braced with a single lining type and less fixings so that a high quality finish is maintained throughout.

GS2-NOM permits the contribution of 'nominally fixed' internal walls. Higher performance elements are commonly specified on external walls and where limited wall area is available or adjacent to significant openings.

Winstone Wallboards recommends the use of the GIBFix® Framing System in conjunction with GS2-NOM elements. Key benefits of this approach include:

- Reduced potential for fastener pop and joint cracking of plasterboard linings.
- Enhanced thermal performance.
- Allows internal walls lined with GIB® plasterboard on both sides and fastened off as per the standard fixing requirements of the current GIB® Site Guide to contribute bracing resistance.
- Potentially reduces the amount of fasteners!
- Encourages more even bracing distribution throughout the building.

1. Actual savings dependent on building and bracing design.



Compliance with the NZ Building Code

NZBC CLAUSE B1 — STRUCTURE

The design and material specification for steel and timber framing used in conjunction with this literature must be in accordance with the performance requirements of NZBC Clause B1. GIB EzyBrace® Systems comply with the requirements of NZS 3604:2011, when designed and installed in accordance with this publication and relevant technical literature. NZS 3604:2011 is an acceptable solution to NZBC Clause B1.

NZBC CLAUSE B2 — DURABILITY

Under normal conditions of dry internal use GIB EzyBrace® Systems have a service life in excess of 50 years and satisfy the requirements of NZBC Clause B2. When in conditions of dry internal use, the components specified in this literature satisfy the requirements of NZBC Clause B2.

GIB® EzyBrace® Systems must not be specified in areas where 15 year durability applies and where linings are subject to direct water pressure, e.g. shower cubicle or shower over bath situations.

NZBC CLAUSE F2 — HAZARDOUS BUILDING MATERIALS

Under normal conditions of use, during handling, installation or serviceable life, the products detailed in GIB EzyBrace® Systems do not constitute a health hazard and meet the provisions of the NZBC Clause F2.

NZBC CLAUSE H1 — ENERGY EFFICIENCY

Buildings must be constructed to achieve an adequate degree of energy efficiency and the building envelope must provide adequate thermal resistance. The required thermal resistance (R-value) of timber framed external walls depends on climate zone but is commonly in the range from R 1.9 to R 2.0.

CAD design details

Where applicable drawings related to GIB EzyBrace® Systems have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box. CAD design details can be found at gib.co.nz/library.

Appraisal

GIB EzyBrace® Systems 2016 have been appraised by the Building Research Association of New Zealand (BRANZ), Appraisal No. 928 (2016) GIB EzyBrace® Systems, 2016.

It is of prime importance to comply with the details of design, construction and workmanship in this document.

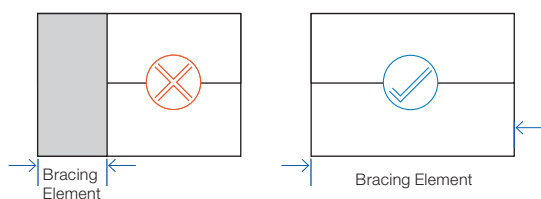


Bracing resistance

WALL BRACING LAYOUT

When designing the bracing layout, carefully consider the final finished appearance and utilise full wall lengths where possible, avoiding unnecessary fastenings in the centre of a clear wall. Using the available wall length provides additional bracing and achieves improved aesthetics.

FIGURE 3: WALL BRACING LAYOUT



BRACING DISTRIBUTION

Distribute bracing by drawing a grid pattern of bracing lines along and across the building. Bracing lines must coincide as much as possible with the wall bracing elements. Pairs of elements may be counted on a single line provided they are no more than 2 metres apart and parallel. See figure 4.

Locate bracing evenly throughout the building and as close as practical to corners of external walls.

Space bracing lines no more than:

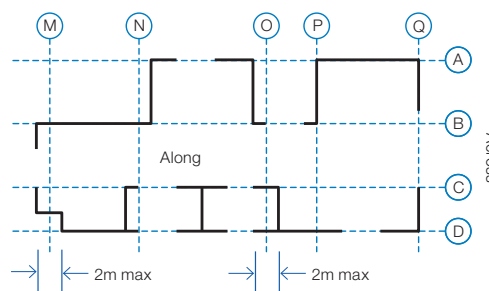
- 6 metres for standard construction with any GIB® plasterboard ceiling, or
- 7.5 metres where dragon ties in accordance with NZS3604:2011 have been installed, or
- 12 metres with a GIB® plasterboard ceiling diaphragm.

The construction of ceiling diaphragms is described in detail on p.18–20.

NZS3604:2011 requires that no bracing line shall have a capacity less than the greater of:

- 100 Bracing Units (BUs), or
- 15 x the external wall length (BUs) for bracing lines coinciding with external walls, or
- 50% of the total demand (D) divided by the number of lines (n) in the direction being considered (BUs).

FIGURE 4: BRACING GRID LAYOUT



The NZS3604 'rules' are merely minimum guidelines and compliance with them does not in itself ensure even distribution. The designer is responsible for checking distribution. Poor distribution can cause torsional effects and localised or more significant damage in an earthquake event.

GIB EZYBRACE® SYSTEMS

The GIB EzyBrace® Specification Numbering System (and sub-components thereof) is protected by copyright and makes specification and identification of GIB EzyBrace® Systems transparent.

- 'GS' stands for GIB® Standard.
- 'BL' for GIB Braceline®.
- 'P' for plywood.
- '1' and '2' for linings one or both sides.
- 'N' stands for 'no specific panel hold-down fixings'.
- 'H' stands for 'specific panel hold-down fixing' required.
- 'NOM' stands for 'nominal plasterboard fixing'. This refers to the standard fixing method used to install plasterboard as shown in the current GIB® Site Guide.

Where specific hold-down fixings are specified, refer to p.15-16. GIB HandiBrac® is fully contained within the framing cavity and does not interfere with lining installation and quality of finish.

Where no specific hold-down fixings are required, the minimum NZS3604:2011 bottom plate fixings apply.

Full bracing element construction details are provided in this technical literature.

Further general design and construction information can also be found in our GIB® Bracing Supplement by visiting gib.co.nz/library.

Specifying GIB EzyBrace® elements (minimum wall length 400mm)

Inside lining external walls.	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required. If the other side of the frame is lined with plywood consider GSP-H or BLP-H elements or use alternative proprietary bracing systems.
Internal walls (only one side available for bracing).	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required.
Internal walls (both sides available for bracing).	Nominate available length of wall as GS2-NOM elements. Change to GS1-N if higher ratings are required. Change to GS2-N if higher ratings are required. Change to BLG-H for even higher ratings. Consider GSP-H or BLP-H if the opposite side is lined with plywood.



Software functionality

Innovations adopted in the GIB EzyBrace® 2016 bracing 'resistance' calculation sheets include the ability to easily add and delete lines and elements during calculations.

The software compares bracing resistance achieved with demand and for wall bracing lines incorporating external walls, the external wall length can now be entered to check minimum

bracing units required on that line. The NZS 3604:2011 rules and associated software output are not the only check. Designers must additionally check the building layout to ensure adequate bracing distribution.

Figures 6 and 7 show screen shots of the Wall and Subfloor Resistance Sheets respectively.

FIGURE 6: GIB EZYBRACE® 2016 — WALL BRACING RESISTANCE CALCULATION SHEET

Line	Ext. Len. (m)	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BU)	Earthquake (BU)
a	11.25	1	0.5		2.44	GSP-H	GIB®	53	58
		2	1.1		2.44	GS1-N	GIB®	72	65
		3	0.6		2.44	GSP-H	GIB®	67	73
b	6.41	1	1.2		2.44	GS1-N	GIB®	81	71
		2	0.6		2.44	GS1-N	GIB®	34	35
		3	4		2.44	GS2-NOM	GIB®	197	197
c		1	3.2		2.44	GS2-NOM	GIB®	157	157
d		1	7.9		2.44	GS2-NOM	GIB®	389	389
e	17.9	1	0.6		2.44	BL1-H	GIB®	58	60
		2	0.6		2.44	BL1-H	GIB®	58	60
		3	0.8		2.44	GS1-N	GIB®	48	46
		4	2.1		2.44	GS1-N	GIB®	143	124
		5	1.2		2.44	EP1-1.2	CHH	142	159

Wind	Earthquake
Demand	Demand
682	880
Resistance	Resistance
1499	1492
220%	170%

FIGURE 7: GIB EZYBRACE® 2016 — SUBFLOOR BRACING RESISTANCE CALCULATION SHEET

Download GIB EzyBrace® 2016 design software from gib.co.nz/ezybrace

Line	Ext. Len. (m)	Element	Length (m) or No.	Angle (degrees)	Type	Supplier	Wind (BU)	Earthquake (BU)
A		1	1		Braced Piles	NZS3604	160	120
		2	1		Anchor Pile	NZS3604	160	120
		3	1		Braced Piles	NZS3604	160	120
B		1	1		Braced Piles	NZS3604	160	120
		2	1		Cantilever Pile	NZS3604	70	30
		3	1		Cantilever Pile	NZS3604	70	30
C		1	1		Anchor Pile	NZS3604	160	120
		2	1		Anchor Pile	NZS3604	160	120

Wind	Earthquake
Demand	Demand
426	687
Resistance	Resistance
1100	780
258%	114%



Software functionality

Custom elements can be entered by accessing the 'custom' tab as shown in figure 8.

FIGURE 8: GIB EZYBRACE® 2016 — CUSTOM ELEMENTS SHEET

Supplier	System	Min. Length m	Wind BU/s/m	EQ BU/s/m	Element Height Dependant	Element Foundation Dependant
Custom1	CU1.0.4	0.4	80	95	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom1	CU1.0.6	0.6	95	105	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom1	CU1.1.2	1.2	120	135	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom2	CU2.0.4	0.4	90	90	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom2	CU2.0.6	0.6	127	136	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom2	CU2.1.2	1.2	164	135	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Engineer	Portal	1	300	300	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Note: Values and systems shown in Custom Elements Sheets are for illustrative purposes only.

Help can be accessed by pressing the ? symbol which displays a window with further information.

The GIB EzyBrace® 2016 software has a number of options that can be accessed via the File tab at the top left hand corner of the window. The options include: New, Save, Save As, Open, Recent and Print.

- The New option closes any opened job ready for the input of a new job.
- The Save option saves the currently opened job to the same filename and the Save As option saves the job to a new filename.

- The Open option prompts for the name of an existing job.
- The Recent option displays a list of the ten latest jobs and allows for the selection of one of these jobs to be opened.
- The Print option displays the print screen. In this screen, a print preview is displayed. The print preview can be copied to the clipboard by clicking the right-hand mouse button. Also on the print screen is the option to choose which pages are to be printed and the option to print the output to a portable data format, PDF, file.
- The Print Screen View is shown in figure 9.

FIGURE 9: GIB EZYBRACE® 2016 — PRINT SCREEN VIEW

Download GIB EzyBrace® 2016 design software from gib.co.nz/ezybrace

GIB EzyBrace® PLUS

File Home

New, Save, Save As, Open, Recent, Print, Exit

Demand Calculation Sheet

Job Details

Name: Example
 House and Number: 100 Job Street
 Lot and DP Number: Lot 123 DP 101
 City/Town/County: Sydney District
 Designer: A.R. Architect
 Company: JKL Limited
 Date: 11/6/15

Building Specification

Number of Storeys: 1
 Floor Loading: 2 kPa
 Foundation Type: Raft
 Cladding Weight: Single
 Roof Weight: Light
 Room to Roof Space: No
 Roof Pitch: 20
 Roof Height above Eave (m): 2.5
 Building Height to Apex (m): 5
 Ground to Lower Floor (m): 0.3
 Average Stud Height (m): 2.44
 Building Length (m): 17.9
 Building Width (m): 15.8
 Building Plot Area (m²): 100

Building Location

Wind Zone: High
 Earthquake Zone 1
 Soil Type: C (Shallow)
 Annual Prob. of Exceedance: 1 in 500 (NZS3104:2011 Default)

Bracing Units required for Wind

	Along	Across
Single Level	682	960

Bracing Units required for Earthquake

	Along & Across
Single Level	177

Preview Page: 1 of 4
 Magnification: 100%



GIB® plasterboard linings

When fixing part sheets of GIB® plasterboard, a minimum sheet width of 300mm applies for bracing elements. Horizontal fixing is recommended. If fixing vertically, full height sheets shall be used where possible. Where sheet end butt joints are unavoidable they must be formed over nogs or over the studs and fastened at 200mm centres. Alternatively, and preferably, sheet end butt joints may be back-blocked.

When a GIB® Bracing element has been designated for a section of wall, BU ratings cannot be increased by incorporating additional proprietary bracing elements within that same section of wall.

LIMITATIONS

- GIB® plasterboard must be stacked flat and protected from the weather.
- GIB® plasterboard must be handled as a finishing material.
- GIB® plasterboard in use must not be exposed to liquid water or be installed in situations where extended exposure to humidities above 90% RH can reasonably be expected.
- GIB EzyBrace® Systems must not be used in showers or behind baths.
- It is highly recommended not to install GIB® plasterboard in any situation where external claddings are not in place or the property is not adequately protected from the elements.
- If GIB® plasterboard is installed under these conditions, the risk of surface defects such as joint peaking or cracking is greatly increased.

GIB EzyBrace® Systems in water-splash areas

When GIB® plasterboard is installed in locations likely to be frequently exposed to liquid water it must have an impervious finish. Examples are adhesive fixed acrylic shower linings or ceramic tiles over an approved waterproof membrane over GIB Aqualine®. The NZBC requires 15 years durability in these situations. Bracing elements are required to have a durability of 50 years. Bracing elements are not to be located in shower cubicles or behind baths because of durability requirements, the likelihood of renovation, and practical issues associated with fixing bracing elements to perimeter framing members. Otherwise GIB EzyBrace® Systems can be used in water-splash areas as defined by NZBC Clause E3, provided these are maintained impervious for the life of the building.

For further design details refer to the current GIB Aqualine® Wet Area Systems literature.

Renovation

When relining walls during the process of renovation, ensure that bracing elements are reinstated (check the building plans).

Openings in bracing elements

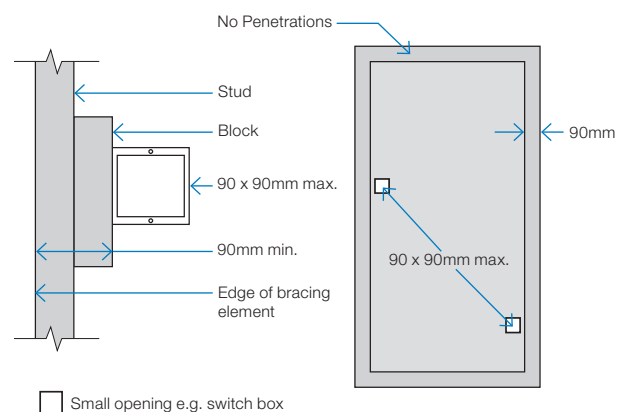
SMALL OPENINGS

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. A block may need to be provided alongside the perimeter stud as shown below.

LARGE OPENINGS

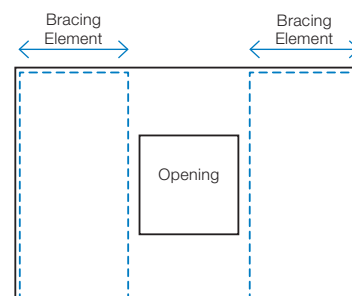
Openings above 90 x 90mm such as switch boards, recessed cabinets and TV's etc. should be placed outside of the bracing element or locate bracing on the other side of the wall framing.

FIGURE 10: SMALL OPENINGS IN BRACING ELEMENTS



GEB001

FIGURE 11: LARGE OPENINGS AND BRACING ELEMENTS





Timber framing

General framing requirements such as grade, spacings and installation shall comply with the provisions of NZS 3604:2011. To achieve the published bracing performance the minimum actual framing dimensions are 90 x 45mm for external walls and 70 x 45mm for internal walls.

As a minimum the use of Kiln Dried Stress Graded timber for all wall, roof and mid-floor framing members is recommended.

GIBFix® Framing System (alternative layout)

Practices recommended as part of the GIBFix® Framing System aim to increase timber framing efficiencies, reduce reliance on unnecessary framing at wall junctions and minimise surface imperfections that commonly arise from constructing plasterboard junctions over multiple timber members. GIBFix® Angles fixed to a single timber framing member are introduced to tie together plasterboard junctions, improving seismic resilience and decrease the risk of future defects due to timber movement. The GIBFix® Framing System can be used in conjunction with the GIB EzyBrace® System.

Note: GIBFix® Angles and 32mm x 7g GIB® Grabber® Dual Thread Screws may also be used in traditional wall framing layouts and in GIB EzyBrace® Systems.

When the GIBFix® Framing System is used a minimum of 2 equally spaced nogs for walls between 2.4m and 3m in height are required at corners and wall junctions.

When used in GIB EzyBrace® systems GIBFix® Angles must run from top to bottom on all applicable studs. If 2 GIBFix® Angles are required on a stud they must be overlapped by a minimum of 300mm with 2/32mm 7g GIB® Grabber® Dual Thread Screws penetrating through both GIBFix® Angles.

For full specification details refer to GIBFix® Framing System literature available at gib.co.nz/gibfix.

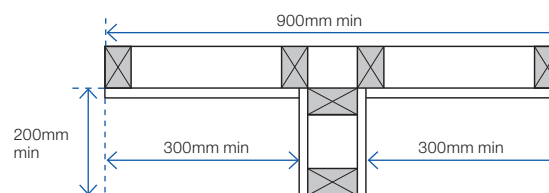
Guidelines for intersection walls

GIB® Bracing Elements may have intersecting walls with a minimum length of 200mm. Fasteners are required around the perimeter of the bracing element. Vertical joints at T-junctions shall be fixed and jointed as specified for intermediate sheet joints. The bracing element length must be no less than 900mm.

Where a Wall Bracing Element is interrupted by a T-junction the element is deemed to be continuous for the whole length (900mm minimum in the example illustrated).

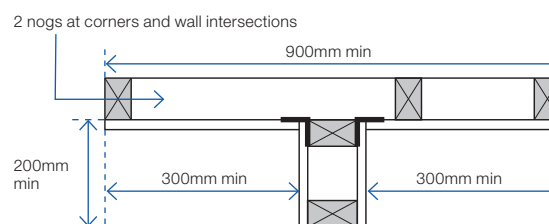
When fixing part sheets of GIB® plasterboard to the side of a T-junction, a minimum width of 300mm applies for bracing elements. See figures 12 and 13.

FIGURE 12: WALL INTERSECTION (TRADITIONAL WALL FRAMING)



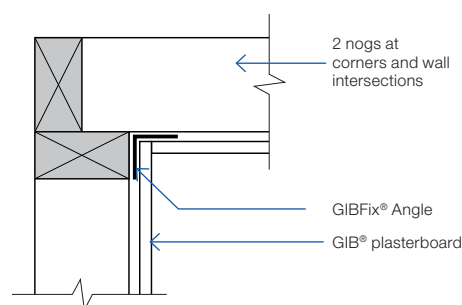
GEB002

FIGURE 13: WALL INTERSECTION (GIBFix® FRAMING SYSTEM)



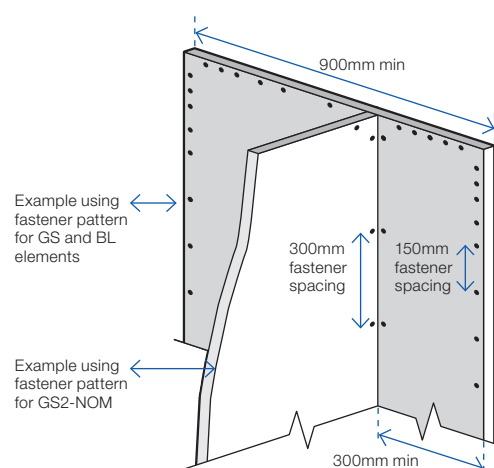
GEB003

FIGURE 14: CORNER INTERSECTION (GIBFix® FRAMING SYSTEM)



GFS001

FIGURE 15: WALL INTERSECTION FASTENER PLACEMENT



Junction

Min 32mm x 6g GIB® Grabber® High Thread or 32mm x 7g GIB® Grabber® Dual Thread Screws @ 300mm ctrs each side.



Top plate connections

For top plate connections refer to NZS3604:2011 section 8.7.3.

Parapets and gable end walls

Bracing elements must be fixed from top plate to bottom plate. Fixing to a row of nogs is not acceptable unless either:

A continuous member such as an ex 90 x 45mm ribbon plate is fixed across the studs just above a row of nogs at the ceiling line, as shown in figure 16.

or

GIBFix® Angle as shown in figure 17. The angle is fixed to a row of nogs with 30 x 2.5mm galv flat head nails or 32mm x 7g GIB® Grabber® Dual Thread Screws at 300mm centres.

Bottom plate fixing

TIMBER FLOOR

For elements with an 'N' specification use 2/100 x 3.75mm hand or 3/90 x 3.15mm power-driven nails at 600mm centres.

In addition, for elements with an 'H' specification, use GIB HandiBrac® panel hold-down fixings at each end of the bracing element, see p.16.

CONCRETE FLOOR – EXTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix external wall plates in accordance with NZS 3604:2011.

Use GIB HandiBrac® panel hold-down fixings at each end of bracing elements with an 'H' specification and minimum intermediate fixings as required by NZS 3604:2011.

CONCRETE FLOOR – INTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix plates in accordance with NZS 3604:2011 or use 75 x 3.8mm shot-fired fasteners with 16mm discs spaced at 150 and 300mm from end-studs and 600mm centres thereafter.

For bracing elements with an 'H' specification use GIB HandiBrac® panel hold-down fixings at each end of the element and minimum intermediate fixings as required by NZS 3604:2011.

FIGURE 16: PARAPETS AND GABLE ENDS WITH RIBBON PLATE

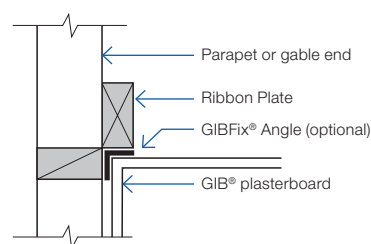
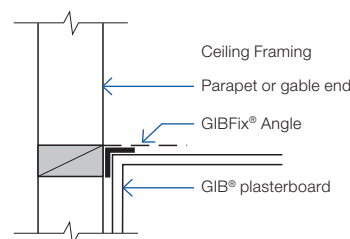


FIGURE 17: PARAPETS AND GABLE ENDS WITH GIBFIX® ANGLE



GFS003

BOTTOM PLATE FIXINGS FOR GIB® BRACING ELEMENTS

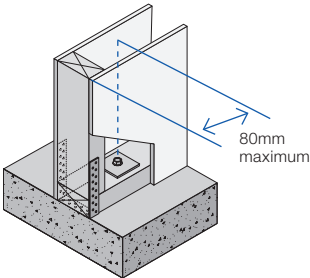
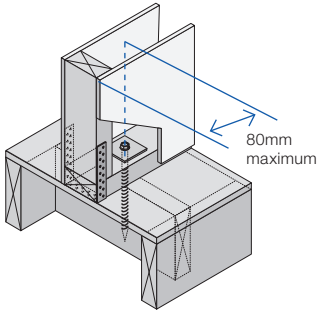
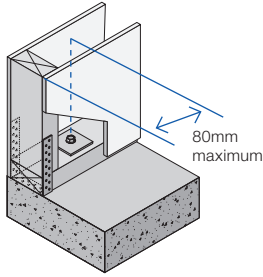
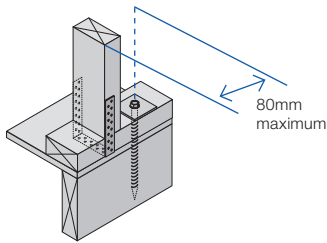
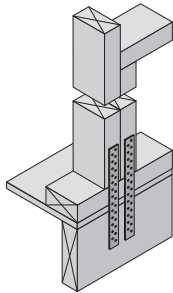
Brace type	Concrete slabs		Timber floors
	External wall	Internal wall	External and Internal walls
GS1-N	As per NZS 3604:2011. No specific additional fastening required.	As per NZS 3604:2011. Alternatively use 75 x 3.8mm shot-fired fasteners with 16mm discs, 150mm and 300mm from each end of the bracing element and at 600mm thereafter.	Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011.
GS2-N	Not applicable.		
GS2-NOM			
GSP-H BL1-H BLP-H	Intermediate fastenings to comply with NZS 3604:2011 In addition: GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.		Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011. In addition:
BLG-H	Not applicable	As for GSP-H, BL1-H, BLP-H on concrete slab as illustrated on p.15 and 16.	GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.



Bracing strap installation

Care needs to be taken with the installation of the bracing strap. It should be checked in to be flush with the face of the stud providing a flat substrate for the plasterboard and

positioned in such a way that the corner fastenings of the bracing element are not affected by it. Keeping the strap to the edge of the end stud as shown will allow the corner fastenings to be installed without having to penetrate the bracing strap.

Concrete floor	Timber floor
<p>400 x 25 x 0.9mm galvanised strap to pass under the plate and up the other side of the stud. Six 30 x 2.5mm flat head galvanised nails to each side of the stud. Three 30 x 2.5mm flat head galvanised nails to each side of the plate. Hold down bolt with 50 x 50 x 3mm washer to be fitted within 80mm of the end of the element.</p>	
Internal wall	
 <p>GEB004</p>	 <p>GEB005</p>
External wall	
 <p>GEB006</p>	 <p>GEB007</p>
<p>Note: Where applicable drawings have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box that can be found at gib.co.nz/library.</p>	
<p>2/300 x 25 x 0.9mm galvanised straps with six 30 x 2.5mm flat head galvanised nails to each stud and into the floor joist and three nails to the plate. Block to nog fixed with 3/100 x 3.75mm nails to stud.</p>	
 <p>GEB008</p>	
Hold-down fastener requirements	
Concrete floor	Timber floor
<p>A mechanical fastening with a minimum characteristic uplift capacity of 15kN fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element.</p>	<p>12 x 150mm galvanised coach screw fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element</p>

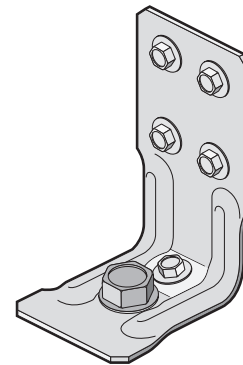


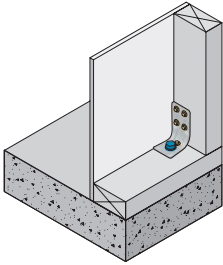
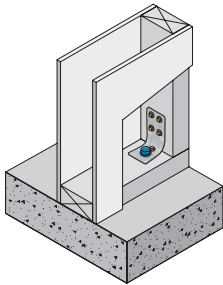
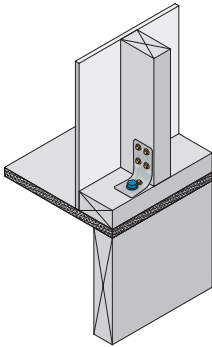
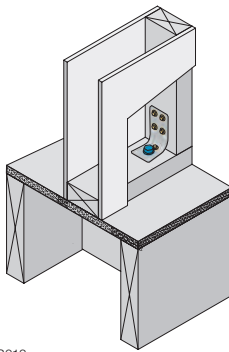
GIB HandiBrac® installation

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- Quick and easy to fit.
- May be fitted at any stage before lining.
- Framing face is clear to allow flush lining.
- Easily inspected.

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011.



Concrete floor		Timber floor	
External walls	Internal walls	External walls	Internal walls
 <p>GEB009</p> <p>Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.</p>	 <p>GEB010</p> <p>Position GIB HandiBrac® at the stud/plate junction and at mid-width of plate.</p>	 <p>GEB011</p> <p>Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.</p>	 <p>GEB012</p> <p>Position GIB HandiBrac® in the centre of floor joist or full depth solid block.</p>
Hold-down fastener requirements			
<p>A mechanical fastening with a minimum characteristic uplift capacity of 15kN or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.</p>		<p>12 x 150mm galvanised coach screw or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.</p>	



GIB HandiBrac® placement with GIBFix® Framing System for concrete floors

Figure 18 shows the preferred positioning of the GIB HandiBrac® panel hold-down brackets within the GIBFix® Framing System layout and where they are required by bracing systems with an 'H' in the specification code.

Note that, in corners and at wall junctions, a single GIB HandiBrac® can serve 'H' type bracing elements in both directions, but additional intermediate concrete anchors may need to be installed to meet the minimum requirements of NZS 3604:2011 for bottom plate fixing.

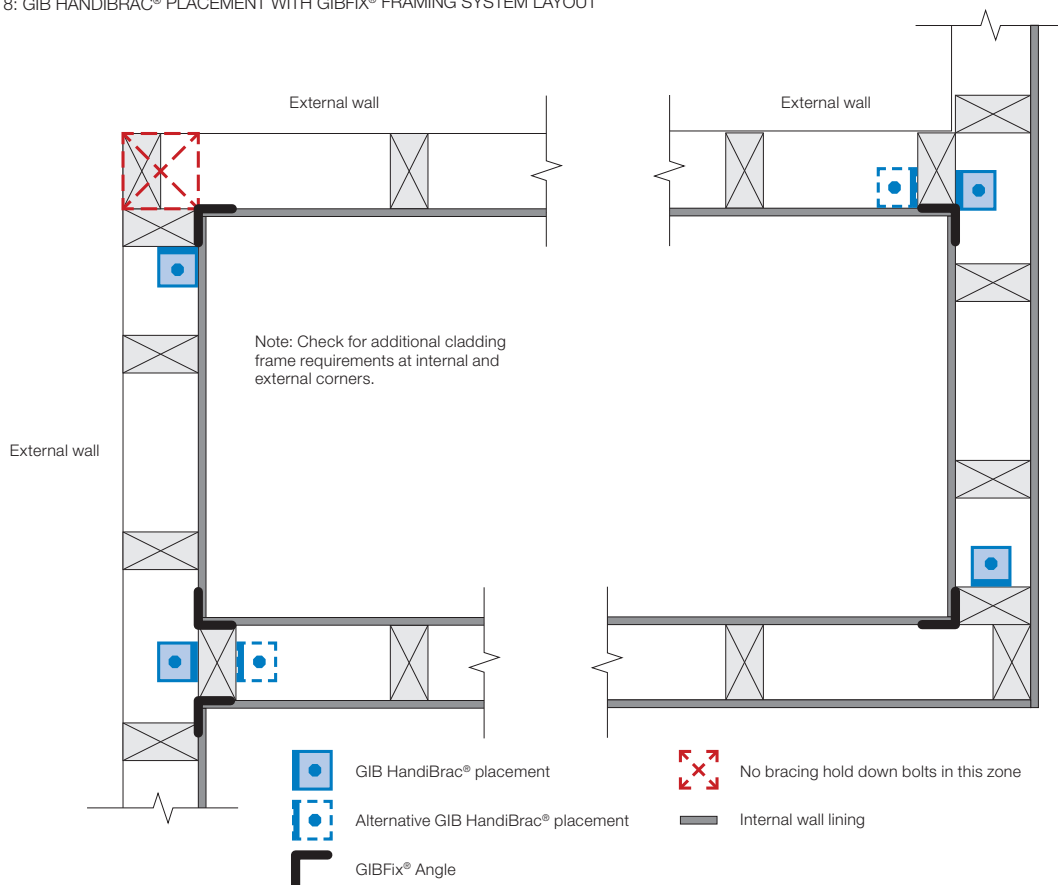
The GIB HandiBrac® is fixed to the stud which has the GIBFix® Angle.

For bracing elements with sheet material both sides of the wall connect corner studs using 8/90mm gun nails as shown in figure 19.

TIMBER FLOORS

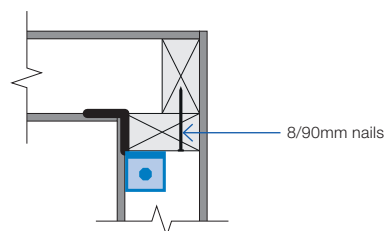
For timber floors bolt fixing in to solid joist or block is required, as shown on p 15.

FIGURE 18: GIB HANDIBRAC® PLACEMENT WITH GIBFIX® FRAMING SYSTEM LAYOUT



GEB013

FIGURE 19: STUD CONNECTION FOR 'H' TYPE BRACING ELEMENTS WITH SHEET MATERIAL BOTH SIDES



GEB014



Ceiling diaphragms

GIB® plasterboard ceiling diaphragms are stiff and strong horizontal elements which effectively transfer loads to bracing walls. They themselves do not have a bracing unit rating but are used when bracing lines exceed 6m separation. The basic shape of a ceiling diaphragm is square or rectangular. Protrusions are permitted but cut-outs are not. The length of a ceiling diaphragm shall not exceed twice its width. Dimensions are measured between supporting bracing lines. Supporting bracing lines shall have a bracing capacity no less than the greater of 100 bracing units or 15 bracing units per metre of diaphragm dimension, measured at right angles to the line being considered, see figure 21.

Limitations for GIB® plasterboard ceiling diaphragms

Ceiling diaphragms may be constructed using any GIB® plasterboard provided perimeter fixing is at;

150mm centres for: Diaphragms up to 7.5m in length, no steeper than 15°.

100mm centres for: Diaphragms up to 7.5m in length, no steeper than 45°. Diaphragms up to 12m in length, no steeper than 25°.

Diaphragms outside these parameters must be specifically designed.

General fixing requirements for GIB® Ceiling Diaphragms:

- Linings must be installed over the entire area of the diaphragm.
- Fastening must be no less than 12mm from sheet edges and not less than 18mm from sheet ends.
- Sheets must be supported by framing members (e.g., ceiling battens) spaced at no more than 500mm centres for 10mm GIB® plasterboard and at no more than 600mm centres for 13mm GIB® plasterboard.
- Sheets within the diaphragm area may be fastened and finished conventionally in accordance with the publication entitled, "GIB® Site Guide". All joints shall be GIB® Joint Tape reinforced and stopped. It is recommended that sheet butt joints are formed off framing and back-blocked (see "GIB® Site Guide").
- Use full width sheets where possible. At least 900mm wide sheets with a length not less than 1800mm shall be used. Sheets less than 900mm wide but no less than 600mm may be used provided all joints with adjacent sheets are back-blocked (see "GIB® Site Guide" and figure 22).
- Fasteners are placed at the specified centres around the ceiling diaphragm with the corners fastened using the GIB EzyBrace® fastener pattern.

FIGURE 20: PROTRUSIONS AND CUTOUTS

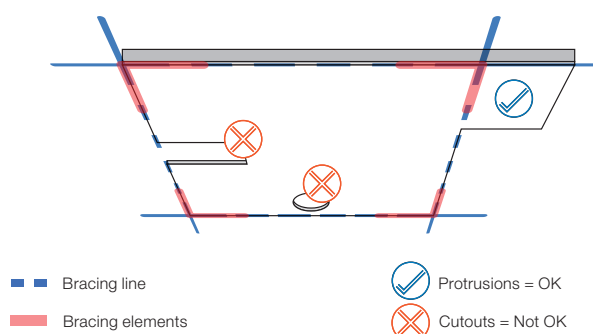


FIGURE 21: DIAPHRAGM BRACING LINING SPACINGS

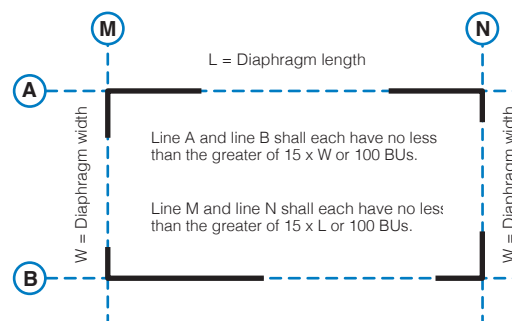


FIGURE 22: GIB® CEILING DIAPHRAGM SHEET WIDTHS AND LENGTHS

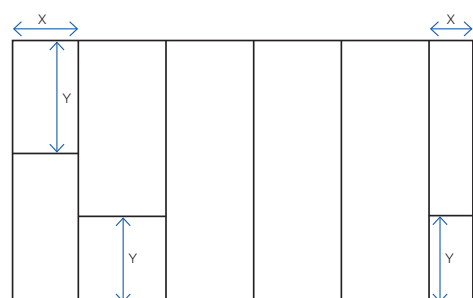
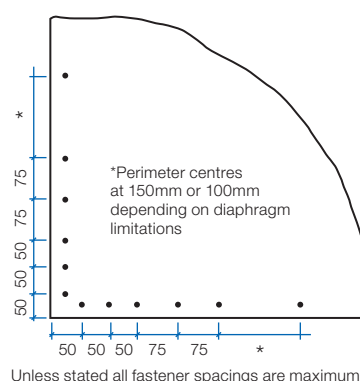


FIGURE 23: GIB EZYBRACE® FASTENER PATTERN



GEB015



Ceiling battens in ceiling diaphragms

Ceiling diaphragms may be constructed using steel or timber ceiling battens.

Battens shall be spaced at a maximum of:

- 500mm for 10mm GIB® plasterboard.
- 600mm for 13mm GIB® plasterboard.

Timber battens shall be fixed in accordance with the requirements of NZS 3604:2011.

Metal battens shall be GIB® Rondo® battens with two external flanges of 8mm to allow direct screw fixing to roof framing.

GIB® Rondo® metal battens shall be fixed with 2/32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws to supporting framing.

GIB® Rondo® metal battens must be fixed directly to the roof framing. If a clip system has been used, a timber block (min 300mm) or a continuous timber member can be fixed alongside the bottom chord to permit a direct connection to the batten, see figure 26.

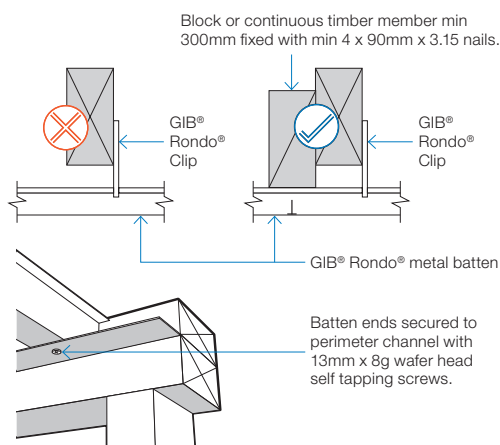
For GIB® Rondo® metal battens, a GIB® Rondo® metal channel or metal angle is required at the perimeter of the diaphragm. The perimeter channel shall be fastened to the top plate with 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screw at 300mm centres maximum.

Linings are fastened to metal using 25mm x 6g GIB® Grabber® Self Tapping screws and to timber framing using 32mm x 6g GIB® Grabber® High Thread screws. Alternatively 32mm x 7g GIB® Grabber® Dual Thread screws can be used in both cases. Fastener centres are specified on p.18.

Coved ceiling diaphragms can be achieved by using nominally 32 x 32 x 0.55mm proprietary galvanised metal angles ("back-flashing") at the changes in direction. These angles shall be:

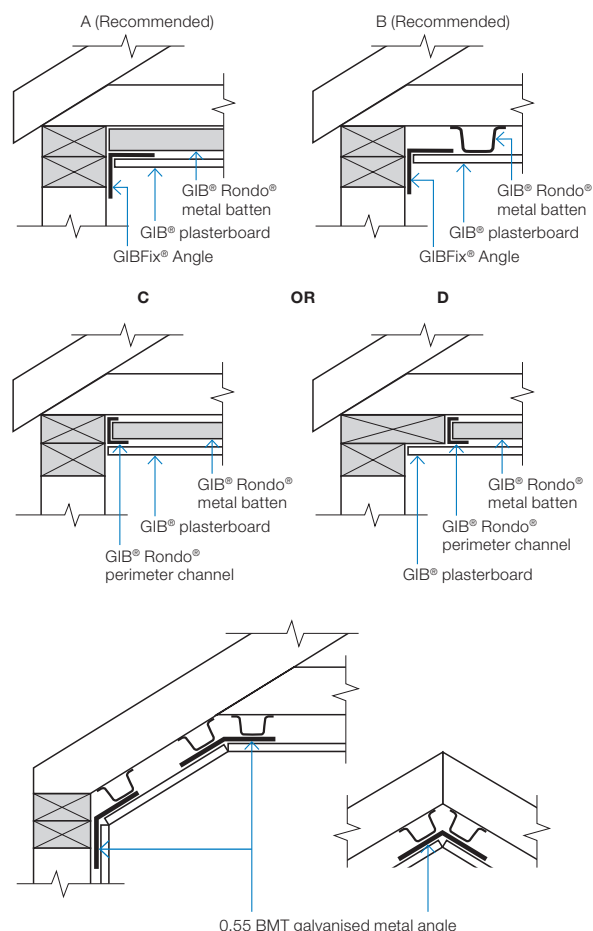
- Fastened at 300mm on each edge to metal battens using 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screws.
- Fastened to timber framing using 32mm x 7g GIB® Grabber® Dual Thread screws when linings are installed.

FIGURE 26: GIB® RONDO® METAL CEILING BATTEN INSTALLATION



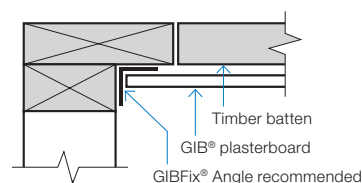
GEB016

FIGURE 27: GIB® RONDO® METAL CEILING BATTENS WITH CORNER ANGLES



GEB017

FIGURE 28: TIMBER CEILING BATTENS*



GEB018



Openings in ceiling diaphragms

SMALL OPENINGS

Small opening (e.g. down lights) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the ceiling diaphragm.

LARGE OPENINGS

Openings are allowed within the middle third of the diaphragms length and width. Fixing of sheet material to opening trimmers shall be at 150mm centres. Neither opening dimension shall exceed a third of the diaphragm width. Larger openings or openings in other locations require specific engineering design.

Where fireplace flue or range hood openings are required in a ceiling diaphragm use a galvanised metal backing plate as shown in figure 25, with a maximum hole diameter of 350mm.

Figure 25 can also be used for range hood openings in walls.

For information on openings in ceiling diaphragms contact the GIB® Helpline on 0800 100 442.

FIGURE 24: LARGE OPENINGS IN CEILING DIAPHRAGMS

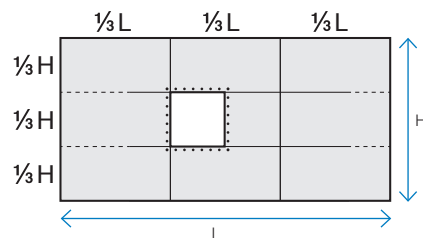
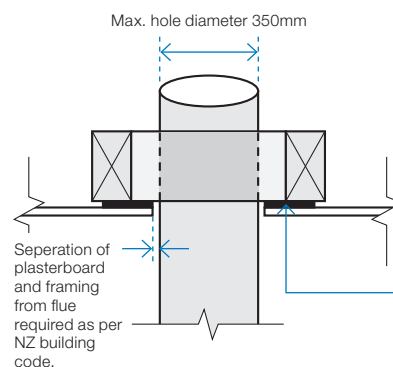


FIGURE 25: FIREPLACE FLUES AND RANGE HOOD OPENINGS

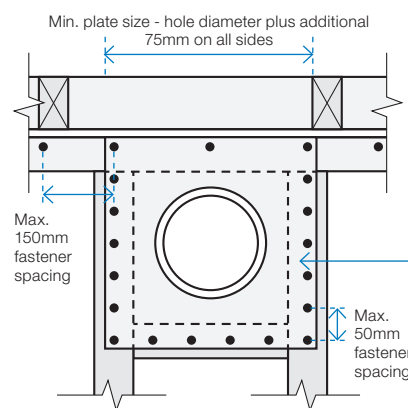
Section view



Steel plate
0.55 BMT
Galvanised sheet
Max. opening
350mm diameter.
Installed prior to
GIB® plasterboard.

Framing
90 x 45mm framing
trimmed to provide
extra fixing.

Plan view



GIB® plasterboard ceiling
Installed over the
steel plate and into
framing using a
minimum of 32mm
x 6g GIB® Grabber
High Thread or
32mm x 7g GIB®
Grabber Dual Thread
screws at 50mm
max centre spacing.

Plasterboard ceiling not shown in plan view



Length of GIB EzyBrace® elements ('N' Type)

The length of GIB EzyBrace® elements with an 'N' extension (requiring standard NZS3604:2011 plate connections) can be taken as the full frame length measured from the outside of the end-stud to the opening face as illustrated in figures 29-32.

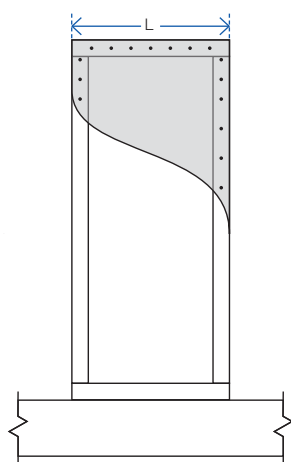
'N' type GIB EzyBrace® elements are identified by GIB® specification numbers GS1-N, GS2-N and GS2-NOM

The dimension 'L' shall not be less than 400mm.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening.

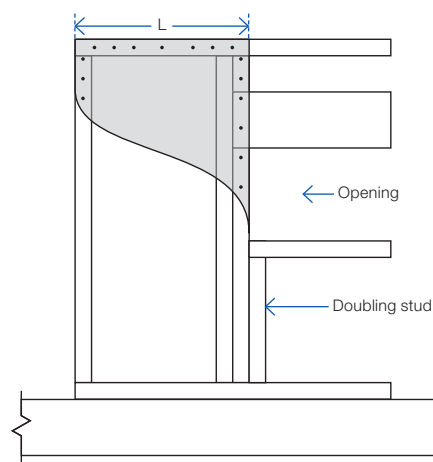
Fastener spacings and diagram scales shown in Figures 29-32 are indicative only. Refer to p.23-30 for construction details.

FIGURE 29: GS BRACING ELEMENTS (OPTION A)



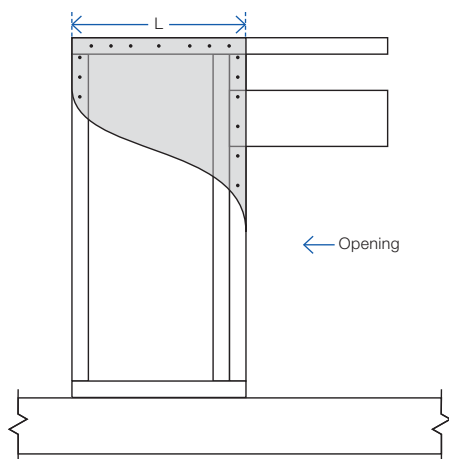
GS1-N, GS2-N elements
'L' indicates the length of the bracing element

FIGURE 30: GS BRACING ELEMENTS (OPTION B)



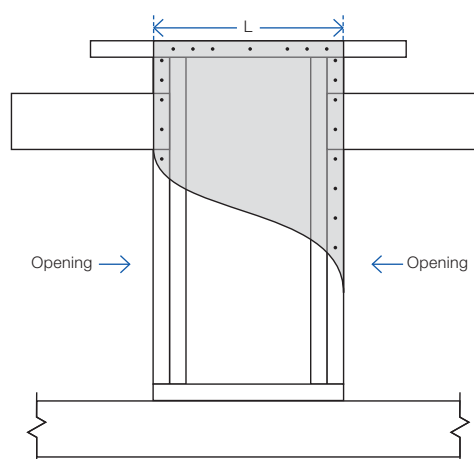
GS1-N, GS2-N elements
'L' indicates the length of the bracing element

FIGURE 31: GS BRACING ELEMENTS (OPTION C)



GS1-N, GS2-N elements
'L' indicates the length of the bracing element

FIGURE 32: GS BRACING ELEMENTS (OPTION D)



GS1-N, GS2-N elements
'L' indicates the length of the bracing element



Length of GIB EzyBrace® elements ('H' Type)

GIB EzyBrace® elements with an 'H' extension (requiring special panel hold-down fixings) can be used when the dimension 'L' as illustrated in figures 33–36 is 400mm or more.

'H' type GIB EzyBrace® elements are identified by GIB® specification numbers GSP-H, BL1-H, BLG-H and BLP-H.

The length of an 'H' type element is not only determined by the sheet material, but also by the placement of the hold-down fixings.

Hold-down fixings cannot be placed closer together than what is shown for the standard panel in figure 33.

Hold-down fixings can be placed under windows provided sill trimming studs beneath the opening are connected to the bracing element using 8/90mm gun nails, as illustrated in figure 34.

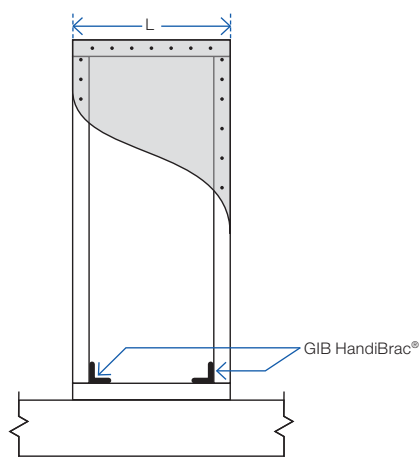
Spike doubling stud to trimming stud using a minimum of 2/90mm gun nails at 600mm centres. Lintel straps (where required for wind uplift) should be checked in and be located away from the bracing element fasteners.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening as indicated in figures 34–36.

When using bracing straps, installed in accordance with p.17, fix the strap to the same framing member as shown for the GIB Handibrac® below, and install the adjacent anchor bolt in the same position as the GIB Handibrac® bolt.

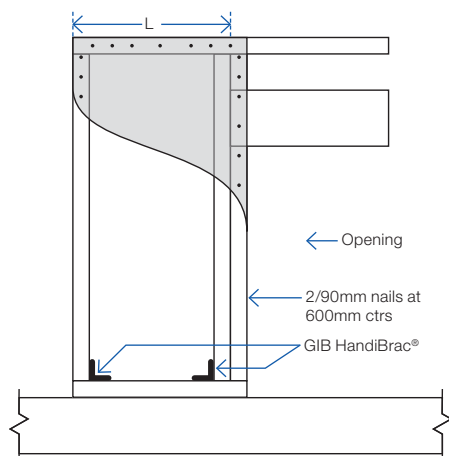
Fastener spacings and diagram scales shown in figures 33–36 are indicative only. Refer to p.23–30 for construction details.

FIGURE 33: BL BRACING ELEMENTS (OPTION A)



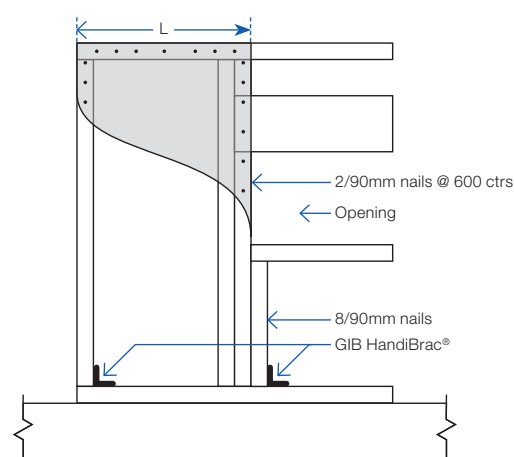
'H' type elements with specific hold downs
'L' indicates the length of the bracing element

FIGURE 35: BL BRACING ELEMENTS (OPTION C)



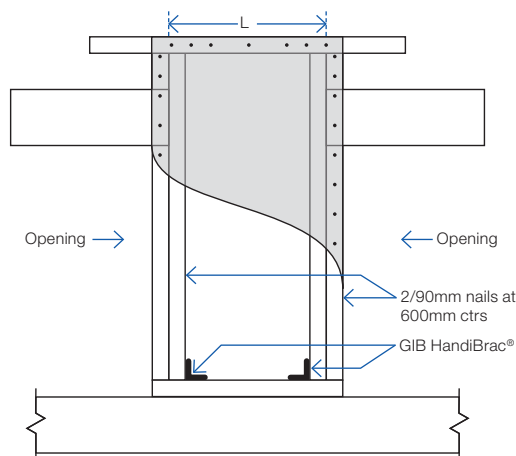
'H' type elements with specific hold downs
'L' indicates the length of the bracing element

FIGURE 34: BL BRACING ELEMENTS (OPTION B)



'H' type elements with specific hold downs
'L' indicates the length of the bracing element

FIGURE 36: BL BRACING ELEMENTS (OPTION D)



'H' type elements with specific hold downs
'L' indicates the length of the bracing element



GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

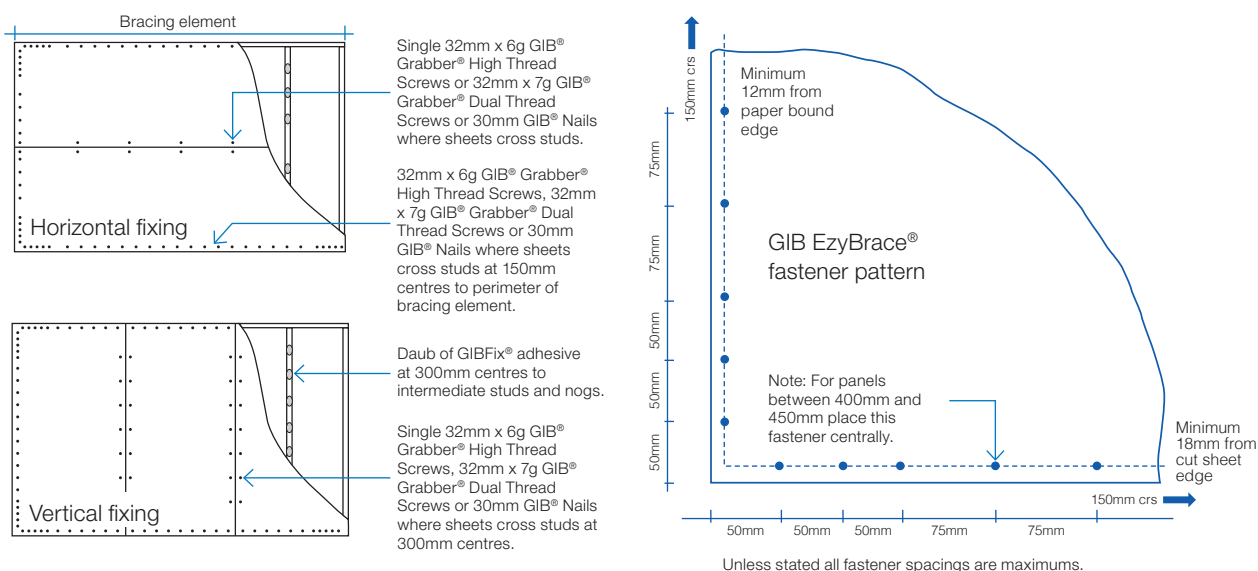
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification GS2-NOM

Specification code	Minimum length (m)	Lining requirement
GS2-NOM	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100mm x 3.75mm nails at 600mm centres; or three power driven 90mm x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75mm x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

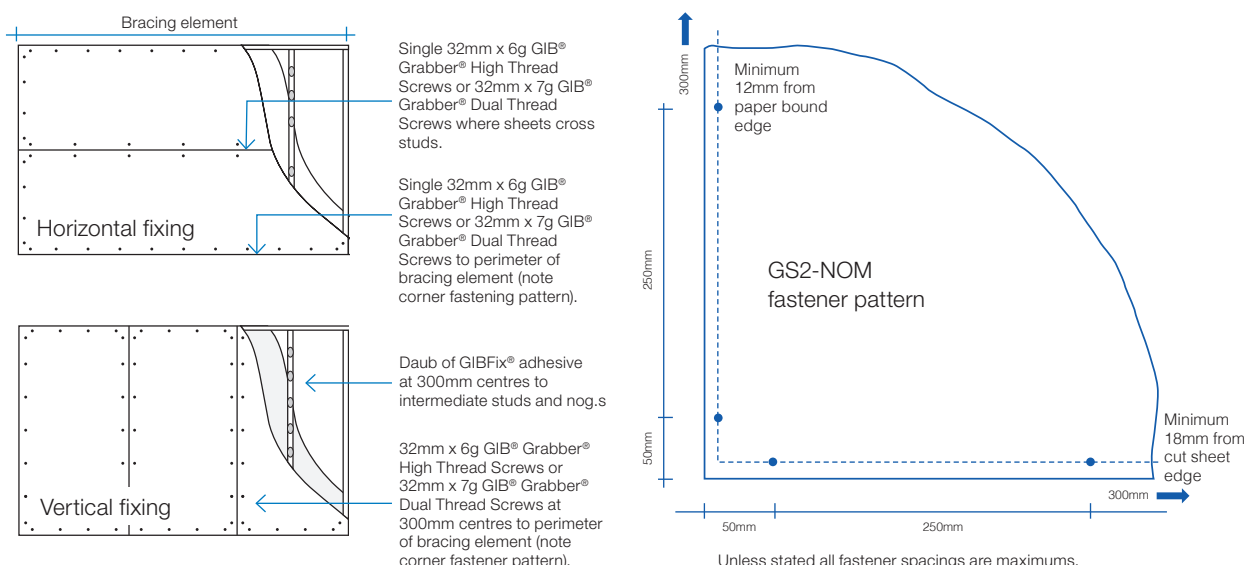
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Angle use 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50, 300mm from each corner and 300mm maximum thereafter around the perimeter of the bracing element. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GS2-NOM ADHESIVE FIXING OPTION AT DOOR JAMBS

As an alternative to using screw fixings, a continuous 6-10mm bead of solvent based GIBFix® All-Bond can be applied along the full height studs immediately adjacent to an internal door opening and at the door lintel or head trimmer. The lining is then bedded into the adhesive and installed into the rebated jamb, as shown in figure 38.

This solvent based adhesive option may only be used with GS2-NOM specification and is designed to reduce popping of fasteners around door openings on internal walls.

FIGURE 37: SCREW FIX FOR OPENINGS

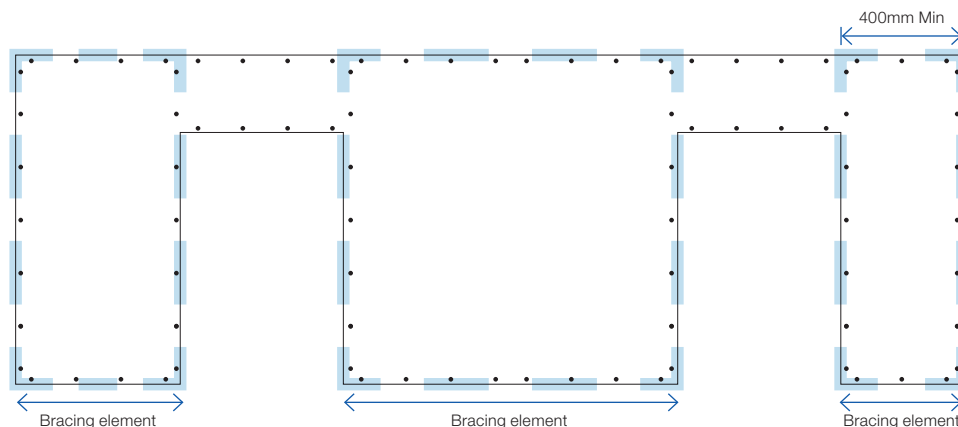
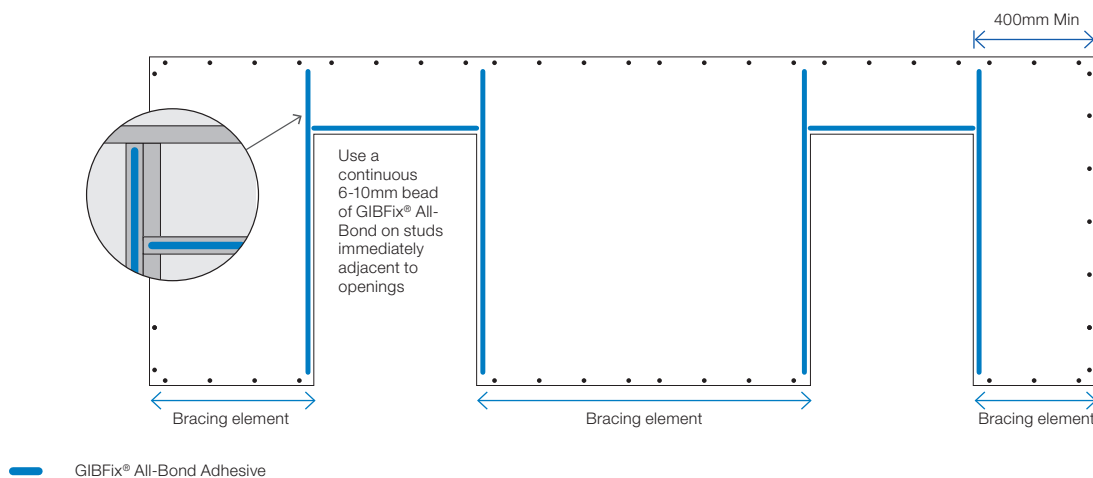
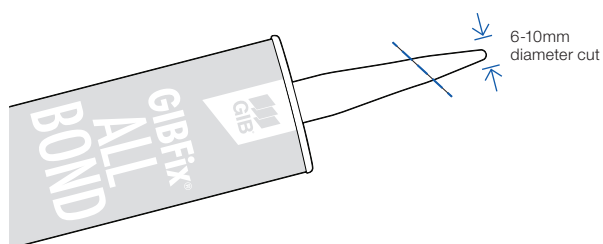


FIGURE 38: SCREW AND ADHESIVE FIX FOR OPENINGS



ADHESIVE NOZZLE APERTURE





GIB EzyBrace® Systems specification GS2-N

Specification code	Minimum length (m)	Lining requirement
GS2-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber Floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

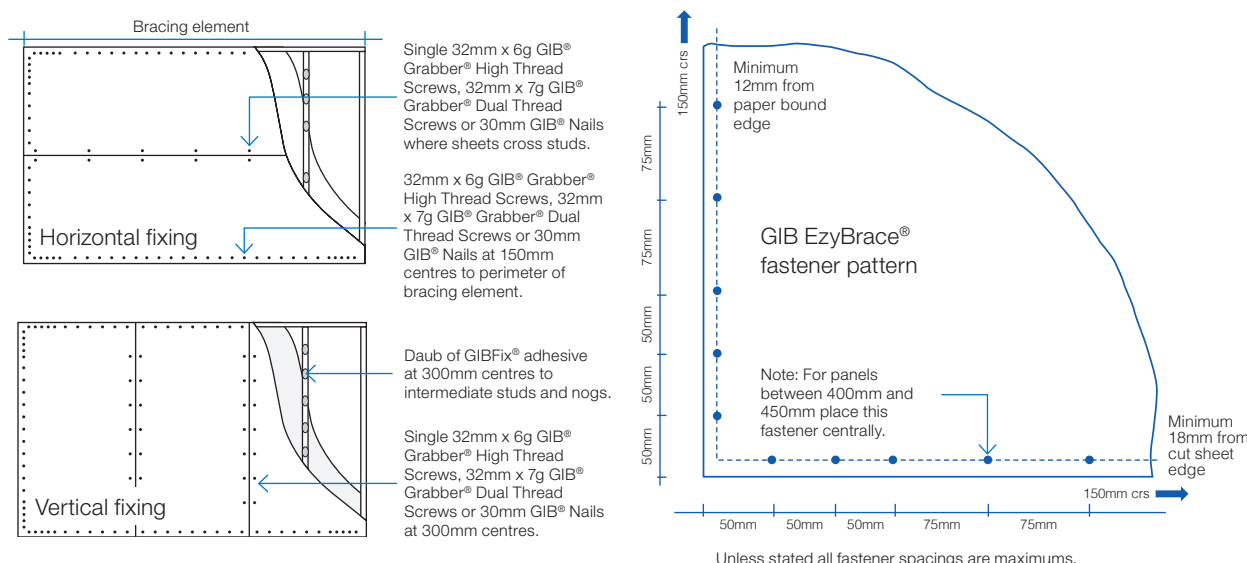
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification GSP-H

Specification Code	Minimum length (m)	Lining requirement	Other requirements
GSP-H	0.4	Any 10mm or 13mm GIB® plasterboard lining to one side of framing and minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally, with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails.

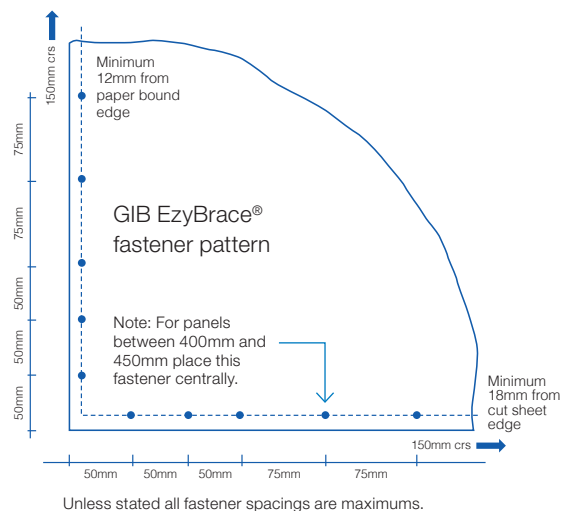
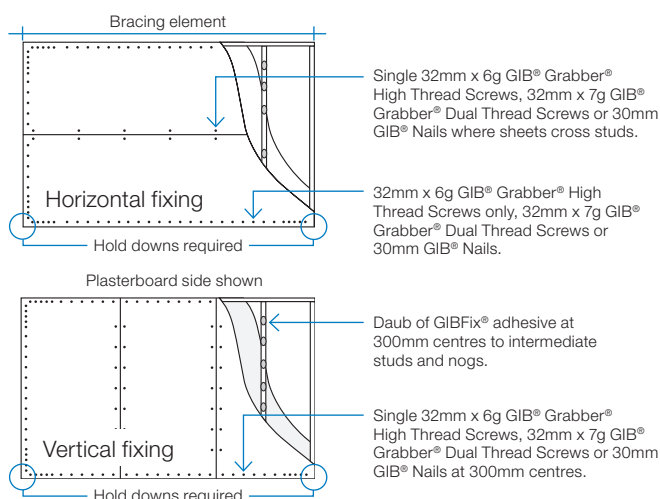
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails.

Fastener centres

GIB® plasterboard side: 50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification BL1-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BL1-H	0.4	10mm or 13mm GIB Braceline® to one side only	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or
Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline®
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

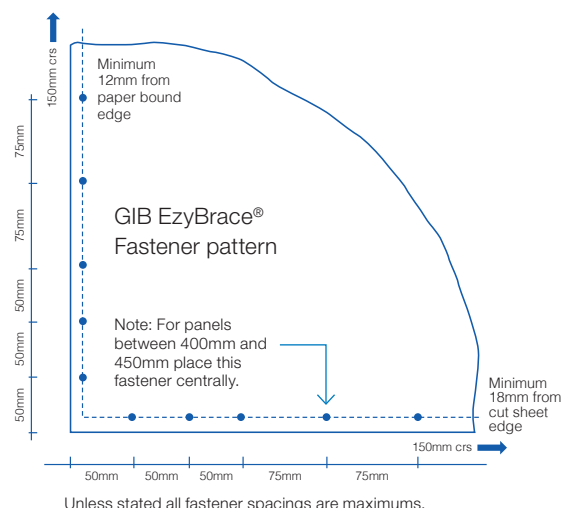
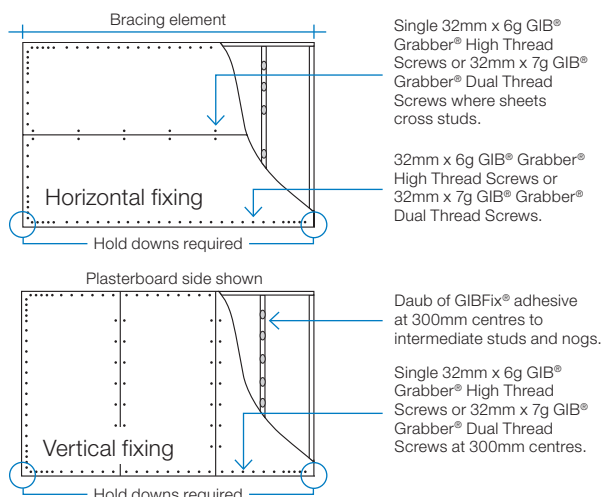
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm from maximum each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the sheet joint. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification BLG-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLG-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus any 10mm or 13mm GIB® plasterboard to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems 2011 or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus any 10mm or 13mm GIB® plasterboard lining to the other side.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Other side: 32mm x 6g GIB® Grabber® High Thread Screws, 30mm GIB Nails or 32mm x 7g GIB® Grabber® Dual Thread Screws.

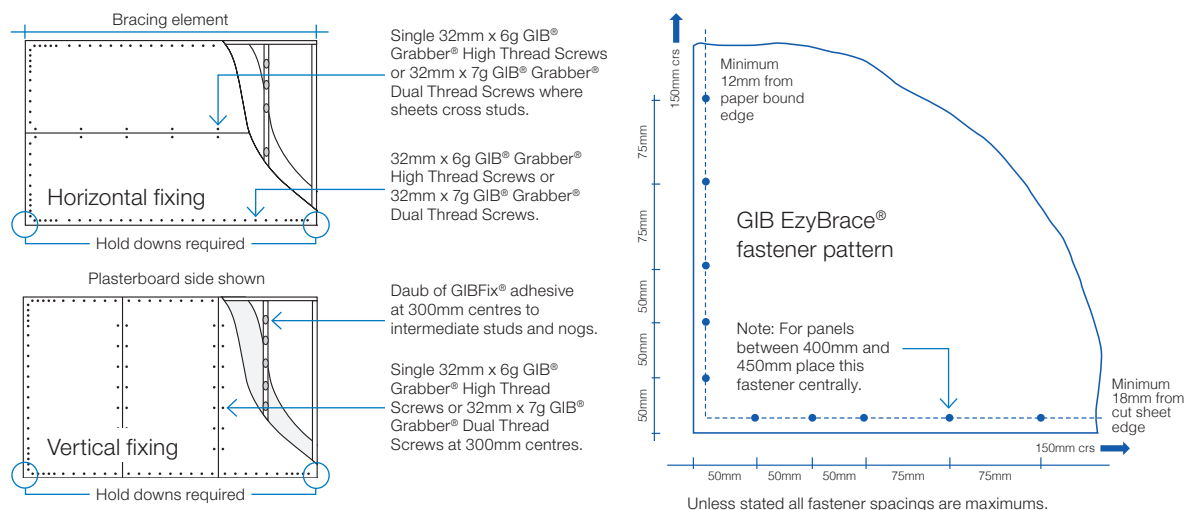
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification BLP-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLP-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure; B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of AS/NZ 2269/0 :2012.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZS 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally.
- Plywood is to be fixed vertically with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

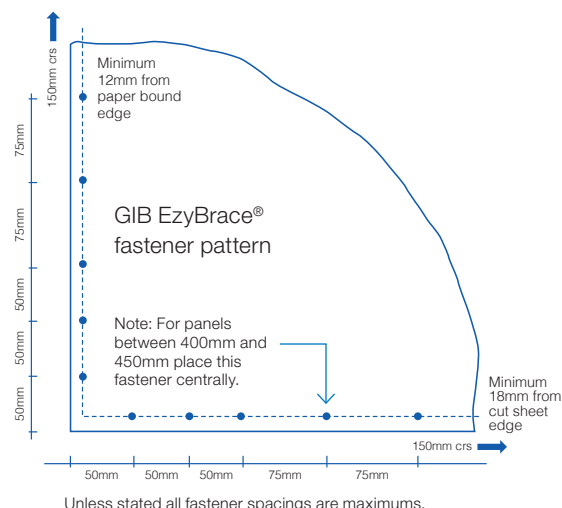
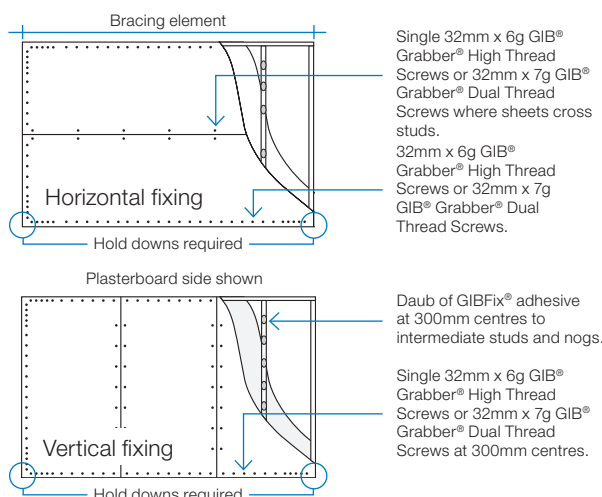
GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

GIB® Plasterboard side: 50,100,150, 225, 300mm from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



Winstone Wallboards is committed to protecting the environment. Environmental matters are integrated into all business activities:

- Our operations strive to exceed all environmental regulatory requirements at all times.
- Protection of the environment is a day to day responsibility that we all must accept.
- We allocate appropriate management time and resources to address relevant environmental issues and continuously improve our activities in that area.
- We will achieve our standards of performance through positive action, employee involvement and constant communication with our neighbours, local authorities and customers.

Minimise on-site waste when designing and/or installing GIB® Systems. For larger projects give consideration to our cut-to-length service to reduce waste. GIB® plasterboard off-cuts, if separated from other waste building materials, can be readily recycled.

For larger projects waste can be diverted to compost manufacturers who grind up the GIB® plasterboard and use it in compost. For smaller projects, the GIB® plasterboard can be ground up and spread around the building site.

GLOBAL GREENTAG^{CERT}™

The Global GreenTag^{Cert}™ certified eco-label acknowledges product as meeting the GreenRate Standard set by Global GreenTag^{Cert}™

GIB® plasterboard has a Level B green rating.

DECLARE CERTIFICATION

Declare is a database of non-toxic, sustainably sourced building products.

Many GIB® plasterboard products including GIB® Standard, GIB Braceline®, GIB Noiseline® and GIB Aqualine® have achieved Red List Free status in Declare certification.

For more information on Winstone Wallboards sustainability commitments visit gib.co.nz.

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Winstone Wallboards asserts its moral rights and reserves all other intellectual property rights in the materials contained in this brochure and related to GIBFix® Framing System and GIB EzyBrace® Systems.

TRADEMARKS

The names GIB®, GIB Fyrelime®, GIB Ultraline®, GIB Braceline®, GIB Toughline®, GIB Noiseline®, GIB Aqualine®, GIB Nail®, GIB Tradeset®, GIB Plus 4®, GIB-Cove®, GIB Lite Blue®, GIBFix®, the colour mauve for GIB Toughline®, GIB HandiBrac®, GIB EzyBrace®, the colour blue for GIB Braceline®, the colour pink for GIB Fyrelime®, the colour green for GIB Aqualine®, and the shield device are registered trademarks of Fletcher Building Holdings Limited.

PATENTS

GIBFix® Framing System and GIB EzyBrace® Systems, including componentry and design method, have patents pending (NZ Patent Number 596691, NZ Patent 709159 pending) and design and other IP rights.



FOR MORE INFORMATION VISIT

gib.co.nz

OR CALL THE GIB® HELPLINE

0800 100 442

Section 4

H1 Calculations

Risk Matrix

RISK MATRIX – NORTH FACE

71 DAVIS RD CWT

Risk Factor	Risk Severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS 3604)	0		0		1	✓	2		1
Number of storeys	0		1	✓	2		4		1
Roof/wall intersection design	0		1		3		5	✓	5
Eaves width	0		1		2	✓	5		2
Envelope complexity	0		1		3	✓	6		3
Deck design	0	✓	2		4		6		0
Total risk score:									12

RISK MATRIX – SOUTH FACE

Risk Factor	Risk Severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS 3604)	0		0		1	✓	2		1
Number of storeys	0		1	✓	2		4		1
Roof/wall intersection design	0		1		3		5	✓	5
Eaves width	0		1		2	✓	5		2
Envelope complexity	0		1		3	✓	6		3
Deck design	0	✓	2		4		6		0
Total risk score:									12

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

RISK MATRIX – EAST FACE

Risk Factor	Risk Severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS 3604)	0		0		1	✓	2		1
Number of storeys	0		1	✓	2		4		1
Roof/wall intersection design	0		1		3		5	✓	5
Eaves width	0		1		2	✓	5		2
Envelope complexity	0		1		3	✓	6		3
Deck design	0	✓	2		4		6		0
Total risk score:									12

RISK MATRIX – WEST FACE

Risk Factor	Risk Severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS 3604)	0		0		1	✓	2		1
Number of storeys	0		1	✓	2		4		1
Roof/wall intersection design	0		1		3		5	✓	5
Eaves width	0		1		2	✓	5		2
Envelope complexity	0		1		3	✓	6		3
Deck design	0	✓	2		4		6		0
Total risk score:									12

Note: Risk Matrix calculated to highest risk for north, south, east and west face.

SITE		71 Davis Rd, Cust		H1 SCHEDULE METHOD CALCULATIONS			
SUMMARY							
TOTAL							
PERCENTAGE GLAZED				21.27			
TOTAL WALL AREA				165.72			
TOTAL GLAZED AREA				35.25			
NON-NORTH WALLS							
PERCENTAGED GLAZED				15.77			
WALL AREA				114.17			
GLAZED AREA				18.00			
SKYLIGHTS/S							
AREA							
DOWNLIGHTS ICF RATED							
R VALUE CALCULATIONS*							
Walls	Minimum required R 2.0 total wall construction. Non solid walls 140x45 H 1.2 studs @ 600c with dwangs @ 800c with R 3.6 fiberglass insulation. Total construcion value 2.0						
Floor	Minimum required R1.3 total floor construction. 100mm concrete floor slab with DPC membrane. Total construcion value R 1.3						
Roof	Minimum required R 5.2 total roof construction. Trusses @ 900c with R 5.2 fibreglass insulation at ceiling batten height and 100mm Conqueror PIR insulation board. Total construction R 4.87						
Windows	Minimum required R 0.37 4mm Low-E / Clear double glazing with 12mm gap (Argon filled with thermally improved spacer) in aluminium framing. Total construction value R 0.37						
*NOTE: The above calculations are quoted as a minimum and may be improved by various specified products.							
WALL / GLAZING CALCULATIONS*							
North Wall				East Wall			
Area	W	X	H =	Area	W	X	H =
	21.04		2.45 51.55		12.78		2.45 31.31
Glazing 1	3.00		2.15 6.45	Glazing 1	1.50		1.30 1.95
Glazing 2	1.00		2.15 2.15	Glazing 2	1.00		1.10 1.10
Glazing 3	1.00		1.10 1.10	Glazing 3	1.50		1.30 1.95
Glazing 4	3.00		2.15 6.45	Glazing 4	0.00		0.00 0.00
Glazing 5	1.00		1.10 1.10	Glazing 5	0.00		0.00 0.00
Glazing 6	0.00		0.00 0.00	Glazing 6	0.00		0.00 0.00
Glazing 7	0.00		0.00 0.00	Glazing 7	0.00		0.00 0.00
Glazing 8	0.00		0.00 0.00	Glazing 8	0.00		0.00 0.00
Glazing 9	0.00		0.00 0.00	Glazing 9	0.00		0.00 0.00
Glazing 10	0.00		0.00 0.00	Glazing 10	0.00		0.00 0.00
Glazing 11	0.00		0.00 0.00	Glazing 11	0.00		0.00 0.00
Glazing 12	0.00		0.00 0.00	Glazing 12	0.00		0.00 0.00
Total			17.25	Total			5.00
Percentage	GT/A*100		33.46	Percentage	GT/A*100		15.97
West Wall				South Wall			
Area	W	X	H =	Area	W	X	H =
	12.78		2.45 31.31		21.04		2.45 51.55
Glazing 1	1.00		2.15 2.15	Glazing 1	1.00		1.10 1.10
Glazing 2	1.00		2.15 2.15	Glazing 2	1.00		1.10 1.10
Glazing 3	1.00		1.10 1.10	Glazing 3	2.00		2.15 4.30
Glazing 4	0.00		0.00 0.00	Glazing 4	1.00		1.10 1.10
Glazing 5	0.00		0.00 0.00	Glazing 5	0.00		0.00 0.00
Glazing 6	0.00		0.00 0.00	Glazing 6	0.00		0.00 0.00
Glazing 7	0.00		0.00 0.00	Glazing 7	0.00		0.00 0.00
Glazing 8	0.00		0.00 0.00	Glazing 8	0.00		0.00 0.00
Glazing 9	0.00		0.00 0.00	Glazing 9	0.00		0.00 0.00
Glazing 10	0.00		0.00 0.00	Glazing 10	0.00		0.00 0.00
Glazing 11	0.00		0.00 0.00	Glazing 11	0.00		0.00 0.00
Glazing 12	0.00		0.00 0.00	Glazing 12	0.00		0.00 0.00
Total			5.40	Total			7.60
Percentage	GT/A*100		17.25	Percentage	GT/A*100		14.74
*NOTE: Wall height calculations use stud height only. Glazed dimensions use wall rough opening size.							

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

Section 5

Specifications

Section 6

Technical Information

- Septic Tank & Effluent Design incl. fencing
- ~~ECan Approval Documents~~
- ~~Gas Fire~~
- Heating Unit **Metro Extreme RAD**
- ~~Solar Panels~~
- ~~Central Heating Systems~~
- Manufacturer's Literature
- A4 Details/Acceptable Solution Extract
- ~~Well/Water Test~~

Peter Hansen DRAINAGE LTD.

EFFLUENT DESIGN – PRODUCER STATEMENT

Date: 03/07/2023 **AMMENDED: 11/02/2025**

Applicant: Barry Walsh

Address: 71 Davis Road, Cust

WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.05 17/02/2025 johnb
Addition of a Velux Skylight to the attic space,
Addition of a Secondary private stair, Change
Wood Burner to Masport Hurunui F/S, Updated
Effluent Disposal Design & Amended elevations.

Peter Hansen Drainage Limited believe this is a widely accepted system and if maintained to a high standard will perform well. The septic tank is manufactured, and engineer approved to **AS/NZS 1546.1.2008**.

The land application system is based on **AS/NZS 1547:2012**: Onsite Domestic Wastewater Management.

Simone Hoodhills

Design Consultant

AMMENDED: Zoë Yule

Environmental & Design Consultant

Applicant Details

Applicant	Barry Walsh
Property address	71 Davis Road, Cust
Legal description	Lot 1 DP 570321
Area	4.11 ha

Effluent Data

A **four**-bedroom dwelling with an office is proposed for the subject property. The maximum daily effluent discharge for the home will therefore be **1600** litres.

Effects on the Environment:

This system has been designed to comply with Environment Canterbury's guidelines on effluent disposal and to the best of our knowledge complies fully with their requirements.

This system has been designed with this property's specific boundaries, soil type and depth to groundwater, and therefore should have minimal effect on the environment.

Description of the Environment

Soils

Canterbury Map's soils database indicates poorly drained, Claremont moderately deep, poorly drained, silt across 60% of the general area. A 1.2 m test pit was excavated on the property in February 2023, the details for which are given in Table 1. Photos of the test pit are provided in Figure 1.

Table 1: Soil test pit

Soil	Layer Thickness (mm)
Topsoil	400
Clay	800



Figure 1: Test pit at 71 Davis Road Cust, February 2023

Based on the results in Table 1, the soils across the site are Category 5 light clays. No mottling or groundwater was observed in the test pit.

The topography of the discharge site is flat (<10 degrees).

A search of Environment Canterbury's Listed Land Use Register did not identify any sites of enquiry within the applicant's property.

Groundwater

A search of Canterbury Maps database identified six groundwater bores and one proposed within a 1,000 m radius of the proposed discharge, however only two are currently active. There is one well with groundwater level data and one with notes provided under ECan well details with details provided in Table 2. The elevation of the location of the closest well and the site is similar with notes from ECan well search indicating a wet season groundwater height of 6.1m bgl. The on-site test hole did not encounter groundwater at the termination depth of 1.2 m.

Depth to groundwater in the area is within the 2.5 m bgl contour from Canterbury Maps. Groundwater is expected to flow in a NW to SE direction, based on piezometric contours. Data from borelogs within 400 m (2) of the proposed discharge show dry clay or clayey gravels underlying topsoil, extending down to at least 15 m.

Accordingly, the depth to groundwater in the area is expected to be 6.1 m.

Table 2: Well data within 1,000 m of proposed discharge

Well Number	Well depth (m)	Distance (m)	Highest reading bgl (m)	Number of readings taken	Years readings taken
M35/0093	15.5	130	Comments from ECan well search: during wet seasons groundwater increases to 6.1 m bgl. Static water level 15m.		
M35/0108	7.6	803	0.1	20	1977-1986

Surface water

No surface water channels are present within or adjacent to the property and the proposed discharge will be a minimum of 20 m from any existing waterway.

Effluent design

Tank

A new Oasis S2000 tank (or similar) is proposed. The S2000 provides for secondary treatment of the wastewater through the five chambers, has a total operating capacity of 6720 litres, and a daily treatment capacity of up to 2000 litres.

The tank will be fitted with an audible visual high water level alarm and a Pedrollo Top Multi 2 submersible pump (or equivalent) will be installed. The tank will be manufactured and engineer approved to AS/NZS 1546.1:2008.

Land Application System

Effluent will be discharged to land via driplines (refer to the attached Site Plan). It is proposed that 640 m² of driplines will be installed, comprising 20 x 32 m runs, laid 1 m apart. This equates to an application depth of 2.5 mm/day at the maximum discharge of 1600 l/day. The 15 mm driplines will be buried with 100 mm of topsoil cover (see Table 2).

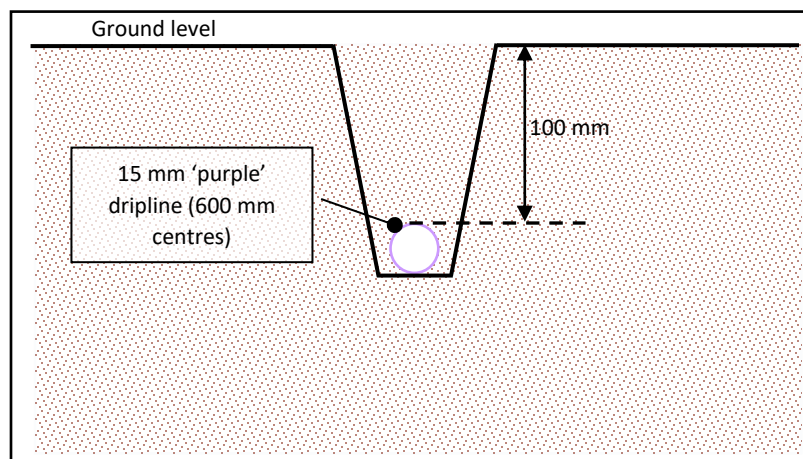
Table 3: Proposed Land Application System Details

Type of irrigation lines	Pressure compensating 15 mm drip lines
Total length of irrigation lines	640 m (20 x 32 m or other configuration totalling 640 m)
Distance between irrigation lines	1 m
Spacing between drip emitters	0.6 m
Area of land application system	640 m ²
Application rate	2.5 mm/day
Where will the irrigation lines be installed?	100 mm below ground, with 100 mm soil cover
Will the land application area be planted?	Yes
How will stock/vehicle access be restricted?	Fencing or with signage and planting
Minimum separation from high groundwater levels	>1.1 m

A cross section of the proposed dripline system is given in Figure 3.

The proposed system has been designed in accordance with AS/NZS 1547 On site Domestic Wastewater Management.

Figure 2: Cross section of dripline



Service Contract:

A service contract must be in place for each system and a copy sent to Environment Canterbury and District Council. The service contractor must check the tank twice per year and carry out the steps listed in the Resource Consent.

Peter Hansen Drainage Ltd can provide a service contract – Phone 0275 369 331

The Owners Manual, detailing operation and maintenance requirements of the system, is given in Appendix A.

Assessment of Compliance with the Canterbury LWRP Rules

The following provides an assessment of the proposed discharge of human sewage to land against the relevant Canterbury Land and Water Regional Plan rules.

Rule 5.8 of the LWRP:

The discharge of wastewater from a new, modified or upgraded on-site domestic wastewater treatment system onto or into land in circumstances where a contaminant may enter water is a permitted activity, provided the following conditions are met:

Condition	Proposal Complies?
1. The discharge volume does not exceed 2 m ³ per day; and	Complies, daily discharge up to 1600 litres per day.
2. The discharge is onto or into a site that is equal to or greater than 4 hectares in area; and	Complies, property is 4.11 ha and residential density <1.5/ha
2a. The discharge is not located within an area where residential density exceeds 1.5 dwellings per hectare and the total population is greater than 1000 persons; and	
(d) The discharge is not onto or into land: (a) where there is an available sewerage network; or (b) that is contaminated or potentially contaminated; or (c) that is listed as an archaeological site; or (d) in circumstances where the discharge would enter any surface waterbody; or (e) within 20 m of any surface waterbody or the Coastal Marine Area; or (f) within 50 m of a bore used for water abstraction; or (g) within a Community Drinking-water Protection Zone as set out in Schedule 1; or (h) where there is, at any time, less than 1 m of vertical separation between the discharge point and groundwater; and	Complies, no sewage network available. No HAIL sites are associated with the site, and it is not associated with an archaeological site. System design will prevent surface ponding and runoff and minimum separation distances to surface water and groundwater wells maintained. There are no Community Drinking-water Protection Zone within 1000 m of the proposed discharge. A minimum of 1 m vertical separation will be maintained.
4. The treatment and disposal system is designed and installed in accordance with Sections 5 and 6 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and	Complies

Condition	Proposal Complies?
5. The treatment and disposal system is operated and maintained in accordance with the system's design specification for maintenance or, if there is no design specification for maintenance, Section 6.3 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and	Complies
6. The discharge does not result in wastewater being visible on the ground surface; and	Complies, the system has been designed to the ground conditions to prevent ponding on the ground surface.
7. The discharge does not contain any hazardous substance.	Complies, the discharge will be domestic wastewater only.

Appendix A: Owners Manual



AS THE OWNER OF THIS SEPTIC TANK AND EFFLUENT SYSTEM, YOU ARE RESPONSIBLE FOR ITS OPERATION AND MAINTENANCE. AFTER THE SYSTEM HAS BEEN OPERATING FOR 1-3 WEEKS YOU WILL NEED TO HAVE THE SYSTEM COMMISSIONED AND SET UP A SERVICE CONTRACT,

LIFE OF SYSTEM

- 1 Effluent Field and Septic Tank area It is imperative that these areas are fenced from stock and other traffic.
- 2 Pump The pump is a mechanical item and with maintenance should last at least 5 years (if required).
- 3 Drains and Septic Tank These should last 50 years.
- 4 Septic Tank/Pump Chambers Concrete septic tanks should last at least 50 years.
- 5 Effluent Field The life of the effluent field is dependent on many variables. Some are listed below:
 - a) The types of other products flushed into the system, (what kills bugs in the house will kill bacterial bugs in the septic tank).
 - b) Volume of effluent discharged per day.
 - c) What type of detergents used.
 - d) Volume of solid particles discharged.
 - e) The maintenance of the system.
 - f) High rainfall.
 - g) Ground Water height.

WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.05 17/02/2025 johnb
Addition of a Velux Skylight to the attic space,
Addition of a Secondary private stair, Change
Wood Burner to Masport Hurunui F/S, Updated
Effluent Disposal Design & Amended elevations.

The life of your system will depend on how you as an owner treat it.

1. Limit the amount of water that goes through your system.
2. Limit the amount of excess food off plates that goes down your drains.
3. Use biodegradable cleaners, synthetic powders and soaps.
4. Do not use standard soaps.
5. Do not flush down your sinks or toilets: napi-san, nappies, wipes, condoms, tampons, pads, disinfectants, medicine, powerful bleach, fat, oils or petrol etc.
6. Do not install a garbage disposal system.
- 7. If you sell the property, please give the new owners these instruction.**
- 8. Set up a maintenance/service contract – Phone Peter Hansen Drainage Ltd, 0275 369 331**

For further details on how to maintain your system please contact your service company.

THINGS YOU SHOULD KNOW ABOUT...

Fencing of Effluent Field Options

OBJECTIVE

To provide a practical solution to the protection of effluent fields so the performance and durability requirements of the Building Code can be achieved.

PREAMBLE

The District Plan requires effluent fields for the onsite disposal to be protected. Additionally AS/NZ1547:2000 explains why these fields need to be protected. There is presently no clear explanation of how these fields should be protected but a logical way to do so is to fence the effluent disposal field.

BUILDING CODE

Clause G13/AS1 describes the objective, functional and performance requirements for foul water systems. G13 specifically lists AS/NZS 1547:2000 as a document that can be used as a verification method for on-site domestic wastewater management. The durability requirement for an effluent field is acknowledged as being fifteen years. Accordingly an approved fence would need to meet this requirement.

ADVICE ON MAINTENANCE: SEC 3A5.2

Land-application area needs protection as follows:

- (i) spray or irrigation areas are not play areas for children and access should be restricted
- (ii) any evapo-transpiration areas should be designed to deter pedestrian traffic
- (iii) no vehicles or stock should be allowed on trenches or beds.

DESIGNATED AREA FOR IRRIGATION SYSTEM: SEC 4.2A10.4.2

- (i) shall not be used for purposes that compromise the effectiveness of the system or access for future maintenance purposes

- (ii) be only used for effluent application

- (iii) have boundaries clearly delineated by appropriate vegetation or other type of border. This is explained as being designed to deter human and animal access.

The location of an effluent field and the type of disposal system determines the degree of protection required. The location of an effluent field and the type of disposal system determines the degree of protection required. Accordingly we believe fencing requirements fall into three categories:-

1. No Fencing

Trench or mound – would need to be in the immediate vicinity of the dwelling. This would need to be protected by suitable planting to deter human access: ie, garden or shrubbery area, but still requires boundary fencing around house garden area to prevent stock intrusion.

2. Fencing for vehicles or people OR combination of both

Would need to be in the immediate vicinity of dwelling as per (1) above. This may also include wider driveways where the effluent field is located parallel to the drive. Minimum of 2 strand wires on metal warratahs with stayed timber corner posts to allow tensioning/straining.

3. Fencing for stock

Located in potential grazing areas, to be the standard type recognised form of stock fence. This is to be 7 strand wires or equivalent, on combination of timber posts and warratahs: ie, stayed timber strainer posts to each corner and a maximum of 10m centres between posts, with 2 warratahs between posts. Warratahs can be substituted with timber posts.

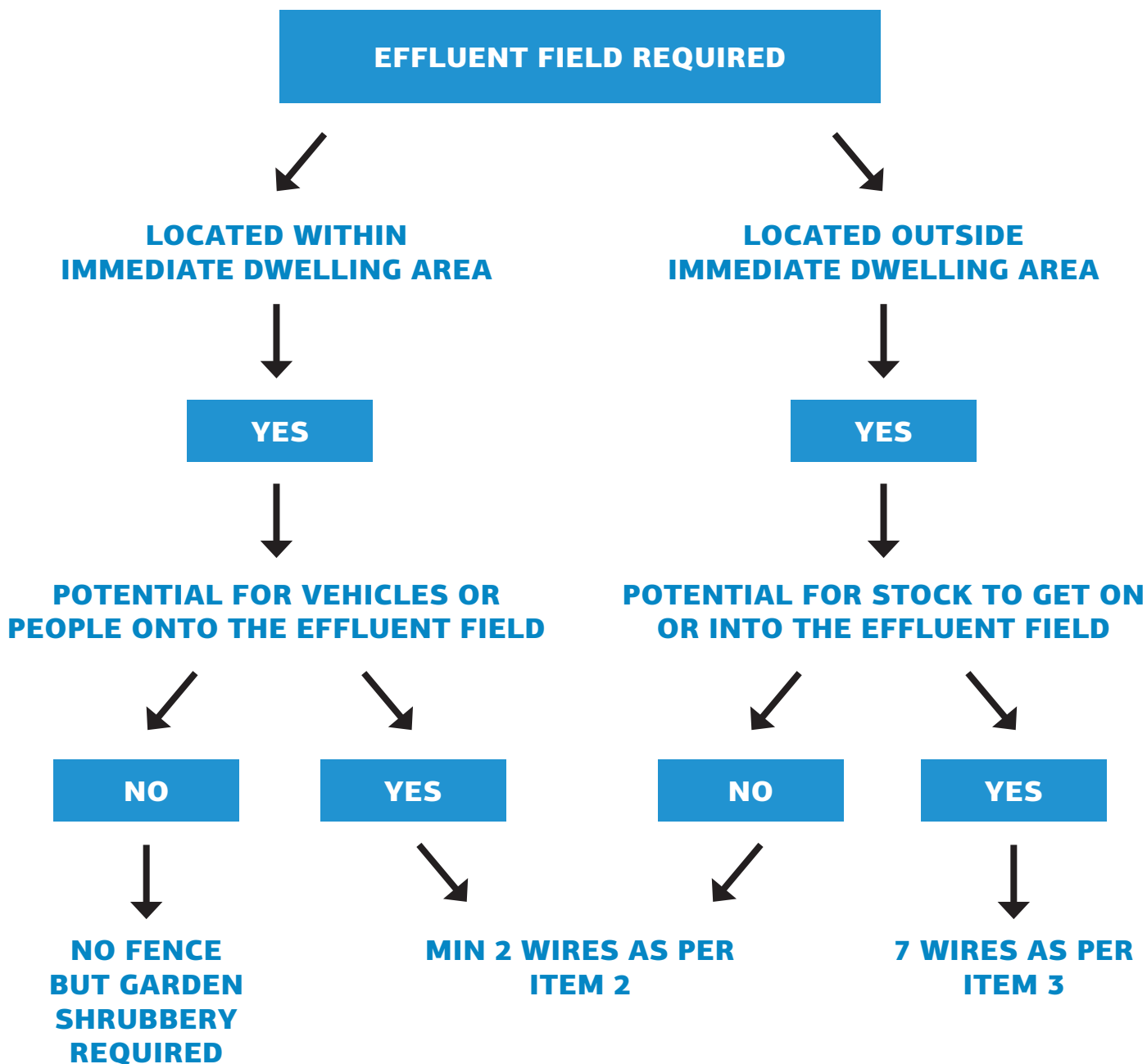
Note

Protection of the fields is usually by fences and this requirement is part of the building consent.

MORE INFORMATION

Visit Waimakariri.govt.nz for more information about building on a rural site, or contact Customer Services on 03 311 8900.

PROPERTY & BUILDING



MORE INFORMATION

Visit Waimakariri.govt.nz for more information about building on a rural site, or contact Customer Services on 03 311 8900.

PLANT SPECIES SUITABLE FOR USE WITHIN EFFLUENT DISPOSAL AREAS

The following list is not exhaustive, many other plants are suitable. While most of the plants listed are hardy, some will need varying degrees of protection until established.

Trees

It is preferable that evergreen species be planted within the disposal areas, although some deciduous trees offer very good transpiration when in leaf.

Birch	Betula spp.
Elms	Ulmaceae spp.
Pine	Pinus Radiata
Willow, Pussy	Salix
Willow, Bitter	Salix

Evergreen Trees

Akiraho	Olearia paniculata
Alder	Alnus jorullensis (evergreen)
Beech	Fagus spp.
Black Locust	Robina pseudoacacia
Blackwood	Acacia melanoxylon
Karaka	Corynocarpus laevigatus
Karo	Pittosporium crassiflorum
Kawakawa	Macropiper excelsum
Kohuhu	Pittosporium tenuifolium
Pukatea	Laurelia novae-zelandiae
Puriri	Vitex Lucens
Lacebark	Hoheria sexstylosa & H. augustiloba
Lemonwood	Pittosporium eugenioides
Makomako	Aristollia serrata
Mankua	Leptospermum spp.
Sheoak	Casuarina glauca
Tree Lucerne	Chaemocystis proflera

Shrubs and Herbs

Buddia spp.	(rapid spreading habit)
Flax	Phormium tenax
Gunneras	Gunneraceae (Larger varieties best)
Hebe spp.	
Kaka spp.	Clanthus puniceus
Karamu	Coprosma lucida
Kanono	C. Australis, C. crassifolia, C. rotundiflora, C. aerolata
Kotukutuku	Fuchsia excorticata
Poroporo	Solanum aviculare & S. laciniatum
Rangiora	Brachyglottis repanda
Swan Plant	Asclepias physocarpa



Site Plan for 71 Davis Road, Cust
Lot 1 DP 570321

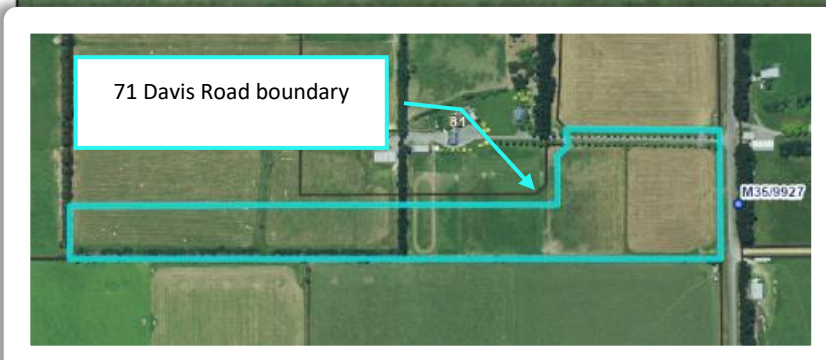
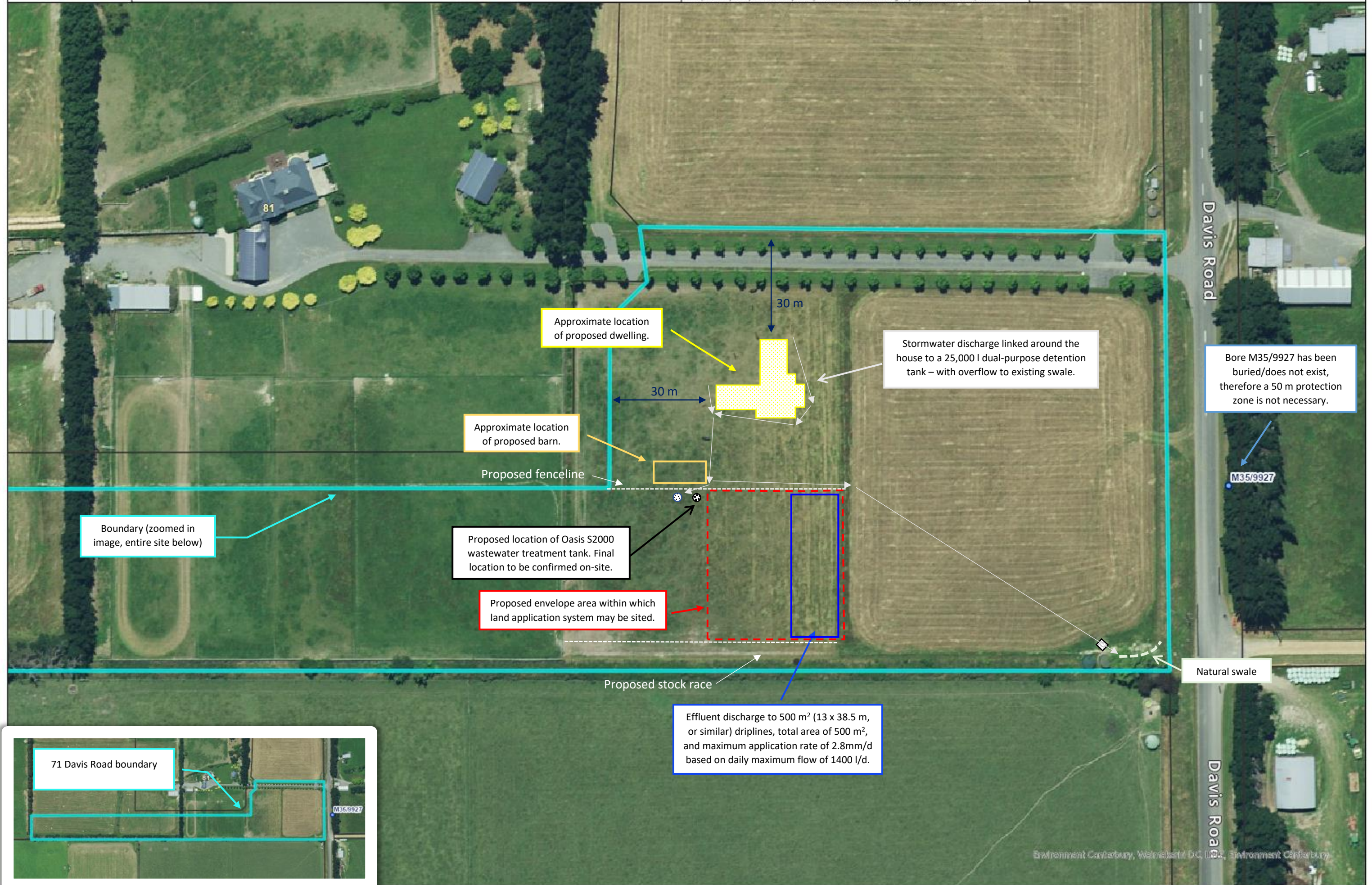
Section size: 4.11 ha

Peter Hansen
DRAINAGE LTD.

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0 0.01 0.02 0.05 Kilometres
Scale: 1:900 @A3
Map Created by Canterbury Maps on 2/03/2023 at 9:14 AM



Peter Hansen DRAINAGE LTD.

STORMWATER LOADING DESIGN
03/07/2023

Barry Walsh
71 Davis Road, Cust
Lot 1 DP 570321

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

Design by Simone Hoodhills
Design consultant

Description of the Activity

Stormwater is proposed to be collected and discharged from a new three-bedroom dwelling with an office.

Description of the Environment

Soils

Canterbury Map's soils database indicates poorly drained, Claremont moderately deep, poorly drained, silt across 60% of the general area. A 1.2 m test pit was excavated on the property in February 2023, the details for which are given in Table 1. Photos of the test pit are provided in Figure 1.

Table 1: Soil test pit

Soil	Layer Thickness (mm)
Topsoil	400
Clay	800



Figure 1: Test pit at 71 Davis Road Cust, February 2023

Based on the results in Table 1, the soils across the site are Category 5 light clays. No mottling or groundwater was observed in the test pit.

The topography of the discharge site is flat (<10 degrees).

A search of Environment Canterbury's Listed Land Use Register did not identify any sites of enquiry within the applicant's property.

Groundwater

A search of Canterbury Maps database identified six groundwater bores and one proposed within a 1,000 m radius of the proposed discharge, however only two are currently active. There is one well with groundwater level data and one with notes provided under ECan well details with details provided in Table 2. The elevation of the location of the closest well and the site is similar with notes from ECan well search indicating a wet season groundwater height of 6.1m bgl. The on-site test hole did not encounter groundwater at the termination depth of 1.2 m.

Depth to groundwater in the area is within the 2.5 m bgl contour from Canterbury Maps.

Groundwater is expected to flow in a NW to SE direction, based on piezometric contours. Data from borelogs within 400 m (2) of the proposed discharge show dry clay or clayey gravels underlying topsoil, extending down to at least 15 m.

Accordingly, the depth to groundwater in the area is expected to be 6.1 m.

Table 2: Well data within 1,000 m of proposed discharge

Well Number	Well depth (m)	Distance (m)	Highest reading bgl (m)	Number of readings taken	Years readings taken
M35/0093	15.5	130	Comments from ECan well search: during wet seasons groundwater increases to 6.1 m bgl. Static water level 15 m.		
M35/0108	7.6	803	0.1	20	1977-1986

Surface water

No surface water channels are present within or adjacent to the property and the proposed discharge will be a minimum of 20 m from any existing waterway.

Rainfall intensity data

NIWA HIRDS V4 data was used to determine rainfall depth of 26.0 mm/hr at the site for a rainfall event of 1 hour duration with a 10% annual exceedance probability (AEP) (Table 3). The data in Table 3 is based on a conservative modelled date range of 2081-2100 for the climate change scenario representative concentration pathway RCP8.5.

Table 3: Rainfall depths (mm) - RCP8.5 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	5.67	7.60	9.19	13.0	18.6	32.6	45.4	62.1	81.1	92.7	101	107
2	0.500	6.46	8.63	10.4	14.8	21.1	36.7	51.1	69.2	90.4	103	112	119
5	0.200	9.38	12.4	14.9	21.0	29.7	51.1	70.6	94.7	123	140	151	160
10	0.100	11.8	15.5	18.6	26.0	36.7	62.5	85.9	115	148	168	181	191
20	0.050	14.5	19.0	22.7	31.5	44.2	74.9	102	135	174	197	212	223
30	0.033	16.2	21.2	25.3	35.0	49.0	82.5	112	148	190	214	231	242
40	0.025	17.5	22.8	27.2	37.6	52.4	88.2	120	158	201	228	244	257
50	0.020	18.6	24.2	28.8	39.7	55.3	92.6	126	165	211	237	255	267
60	0.017	19.5	25.3	30.1	41.4	57.6	96.5	131	172	218	246	264	276
80	0.013	20.9	27.1	32.2	44.3	61.5	102	138	181	231	259	278	291
100	0.010	22.1	28.6	33.9	46.5	64.5	107	145	189	240	270	289	303
250	0.004	27.2	34.9	41.3	56.2	77.4	128	171	222	280	313	334	349

Catchment areas

Roof Area = 250.0 m²

Other = N/A

Total = 250.0 m²

Stormwater Specification

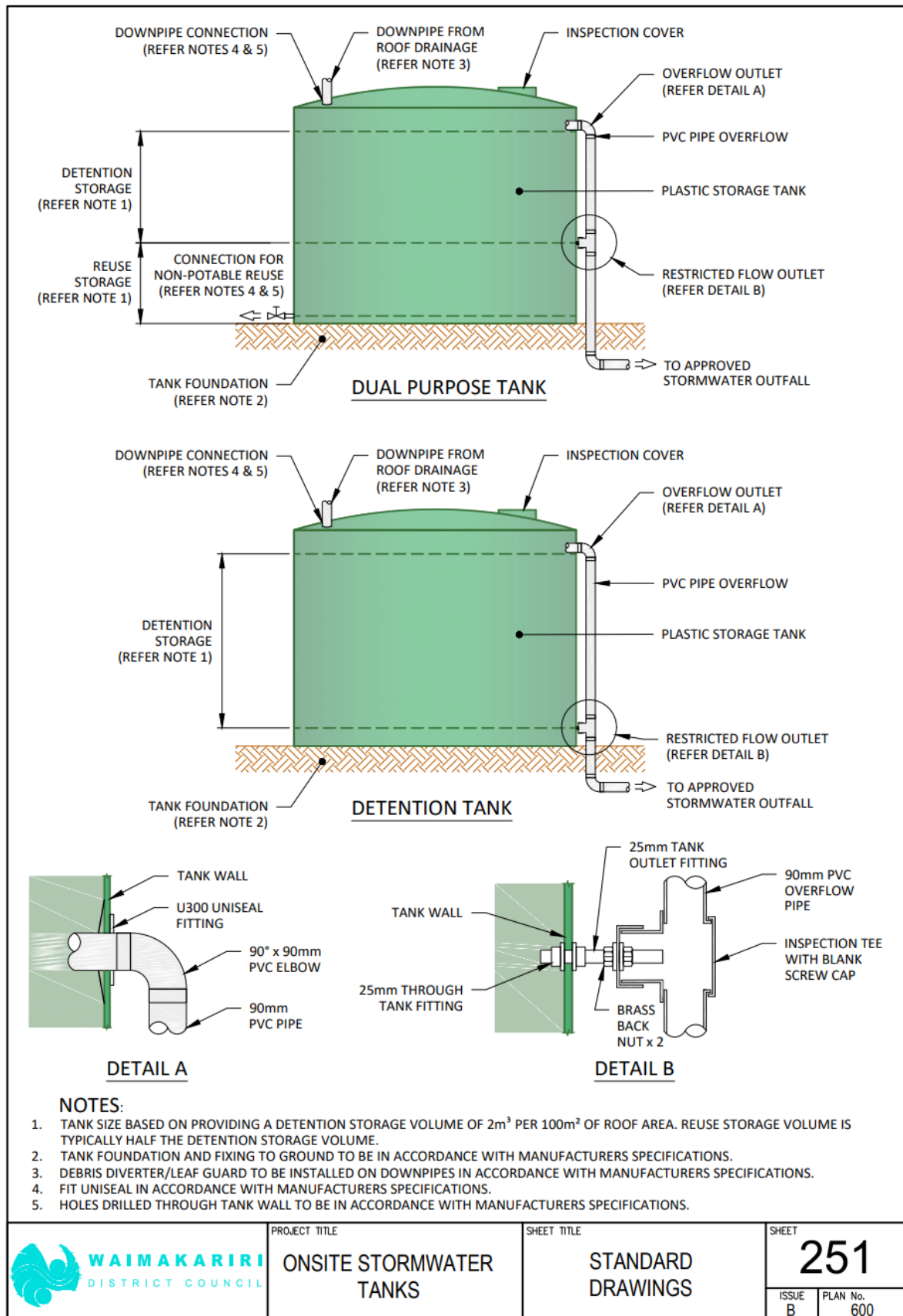
On-site test hole identified the ground conditions to be unsuitable for discharging stormwater to a soakage pit. It is therefore proposed that stormwater will be linked around the house and directed to a 25 m³ dual purpose slow release tank with overflow to an existing swale on the property, via a dissipater, as illustrated in the attached site plan.

Based on a roof catchment area of 250.0 m², the volume of stormwater generated during a 10% AEP, 1 hour event equates to 6.5 m³, for which the proposed stormwater storage capacity of the dual purpose tank is more than sufficient. Based on a total volume 25 m³, the tank would be able to contain stormwater from a 10% AEP 12 hour event or 2% AEP 6 hour event.

As detailed in the Waimakariri District Council Standard Drawing 251 (Appendix A), the discharge will be through a restricted flow outlet.


The stormwater discharge will be a minimum of 20 m from the effluent discharge area, as illustrated in the site plan.

Appendix A





Masport
HEATING



WAIMAKARIRI DISTRICT COUNCIL
AMENDED Plan and/or Specifications APPROVED
BC230501.05 17/02/2025 johnb
Addition of a Velux Skylight to the attic space,
Addition of a Secondary private stair, Change
Wood Burner to Masport Hurunui F/S, Updated
Effluent Disposal Design & Amended elevations.

HURUNUI

ULTRA-LOW EMISSION (ULEB) WOOD FIRE RANGE

Meet the Hurunui wood fire, named after the Canterbury regions 4th largest principal rivers. Like Hurunui river which braids attributes of different streams of Canterbury, the Hurunui combines excellent features that are required to heat your home along with the latest technology. Built as a future proof solution to heating your home, the Hurunui can be installed in all regions in New Zealand - clean air zones and rural installations.



masportheating.co.nz

HURUNUI

ULTRA-LOW EMISSION (ULEB) WOOD FIRE RANGE

The Hurunui has the latest Masport Ultra M3 technology which offers high performance, clean burning and lower maintenance costs. With a 8 mm hard wearing, radiant cook top and 6mm firebox, the Hurunui is suited to medium to large sized homes and available in 3 base options: Pedestal, Ash Pan, and Legs.

- ▶ Ultra-clean burning that is better for air quality
- ▶ Three base options to suit your needs and taste
- ▶ Built-in, easy clean ash pan option
- ▶ 8mm radiant cook top and 6mm steel firebox
- ▶ Extended burn time*
- ▶ Ceramic Fire Bricks for greater heat retention and durability
- ▶ Stainless Steel Boxed Baffle for superior performance and longevity
- ▶ Lower long-term running costs due to quality components
- ▶ Start-Up Latch mechanism for ease of operation and safety
- ▶ Does not require electricity
- ▶ A future proof solution for all NZ regions - clean air zones and rural installations

*Extended burn time: Is achievable, when using a mixture of pine and hardwood. Burn period may vary due to factors such as moisture, density of fuel, environmental factors and how the unit is operated.

Finish	Metallic Black VHT
Space Heat Output***	Suitable for Medium to Large homes (3-4 bedrooms)
Dimensions w x d x h	700 x 594 x 760 mm

BASE OPTION



Fire Only	999915	999923	999924
Flue Only	GDFLU013M	GDFLU013M	GDFLU013M
Fire & Flue Pack	HURUNUIPEDPACK	HURUNUIASHPACK	HURUNUILEGPACK

Ultra M³
TECHNOLOGY

Ultra M3 technology incorporates a fusion of 3 key features to elevate the performance, clean burning, safety and lower maintenance costs.



Future proof your purchase to protect the New Zealand natural environment.

Clearance Specifications*

Minimum distance to heat sensitive materials (mm) when a Masport double skin flue shield is fitted as per Masport specifications.

Model	Space Heat Output	Type of Flue Shield	Type of Floor Protector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	R	W
⊕ Hurunui Ped/Ash/Leg	MED-LRG	MDSM	AFP	110	225	300	100	85	306	575	441	600	900	944	1262	1104	638	624	700

Flue Shields

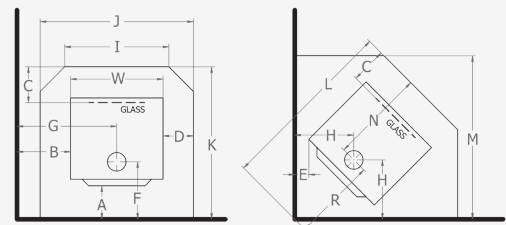
MDSM	Masport Double Skin Flue Shield 900mm long with special heat diverter and ceiling plate
------	---

Floor Protectors

AFP	Ash Floor Protector
-----	---------------------

Masport Steel Floor Protectors

Parallel - 998903
Corner - 998904



* Refer to the specifications sheet for full product details and compliance testing.

**Space Heat Output is only a guide based on homes with average insulation, window area, and 2.4m ceiling heights. Differences in these factors, as well as others like, geographical location, layout of the house, living room size, type of windows all play a part in choosing the right model for your heating needs. Consult your dealer or installation contractor for more information.

Glen Dimplex New Zealand Ltd PO Box 58473, Botany, Auckland

Glen Dimplex New Zealand Ltd's policy is one of continuous development. We reserve the right to change size and specifications without notice. For the latest product information and warranty details please refer to www.masportheating.co.nz. Please refer to the installation and operation instructions before having your Masport Wood Fire installed. A full set of these instructions is supplied with each fire.

masportheating.co.nz



April 2024

Masport Hurunui ULEB - Technical Specifications - All Variants (including Rural)

(These instructions must be used in conjunction with the Installation Instructions for Masport Hurunui Fire)

Hurunui burner model has been tested and complies with the following standards & tests:

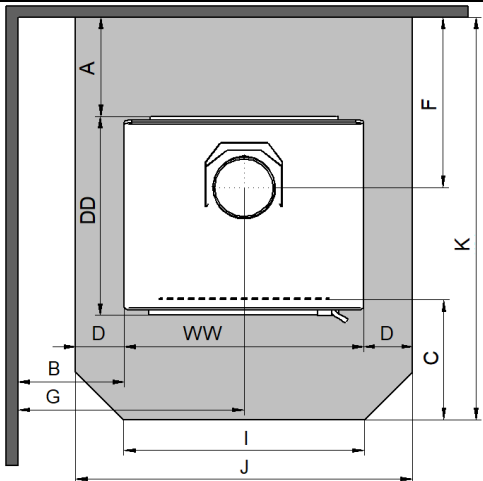
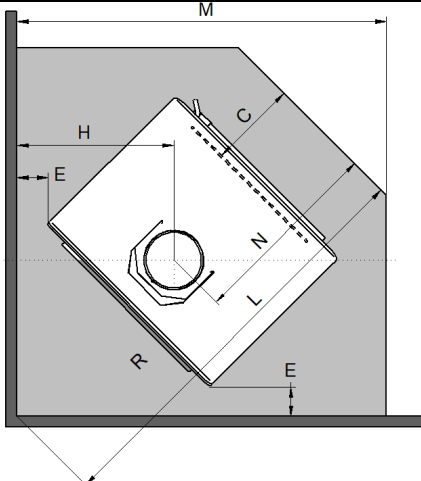
Environment Canterbury's Real-life test - Canterbury test method CM1

NZ National Environmental Test Standards - AS/NZS 4012:2014 and AS/NZS 4013:2014.

NZ National Environmental Safety Test Standard - AS/NZS 2918:2001

Overall Dimensions	700mm Wide x 594mm Deep x 760mm High			
Net Weight of the Burner	130 kg approx.			
Test Method	Emissions mg/MJ	Emissions g/kg	Efficiency %	Authorization No
Real-Life Test Canterbury Method V1.6 (ULEB)	31 mg/MJ	-	-	PED - CRC 222641 ASH - CRC 234266 LEG - CRC 234268
National Environment Standard AS/NZS 4012/13:2014	-	0.55 g/kg	65%	PED - CRC 222643 ASH - CRC 234265 LEG - CRC 234267
Approx. Heating Capacity	Medium to Large Homes (3~4 Bedrooms)			
Flue Shield	900mm Long Masport SS Double Flue Shield (Included in flue kit)			
Flue System	Std 4.2M Long, 150mm Masport Flue System or Flue System that has been tested to and comply with AS/NZS 2918:2001 Appendix F ** For installation in Canterbury & South of Canterbury, we recommend extending 200 outer casings within 250~300 from flue termination. Also, we recommend not to use Masport Opti or equivalent flue kits in this area, as they take ceiling or external cold air and cool the flue casings, leading to accelerated creosote build-up in the main flue pipe.			
Floor Protector Requirement	Ash Floor Protector or equivalent. Masport Steel Floor Protector – 998903-Parallel or 998904-Corner			

Minimum Clearances to Combustibles: Parallel, Corner & Alcove configurations

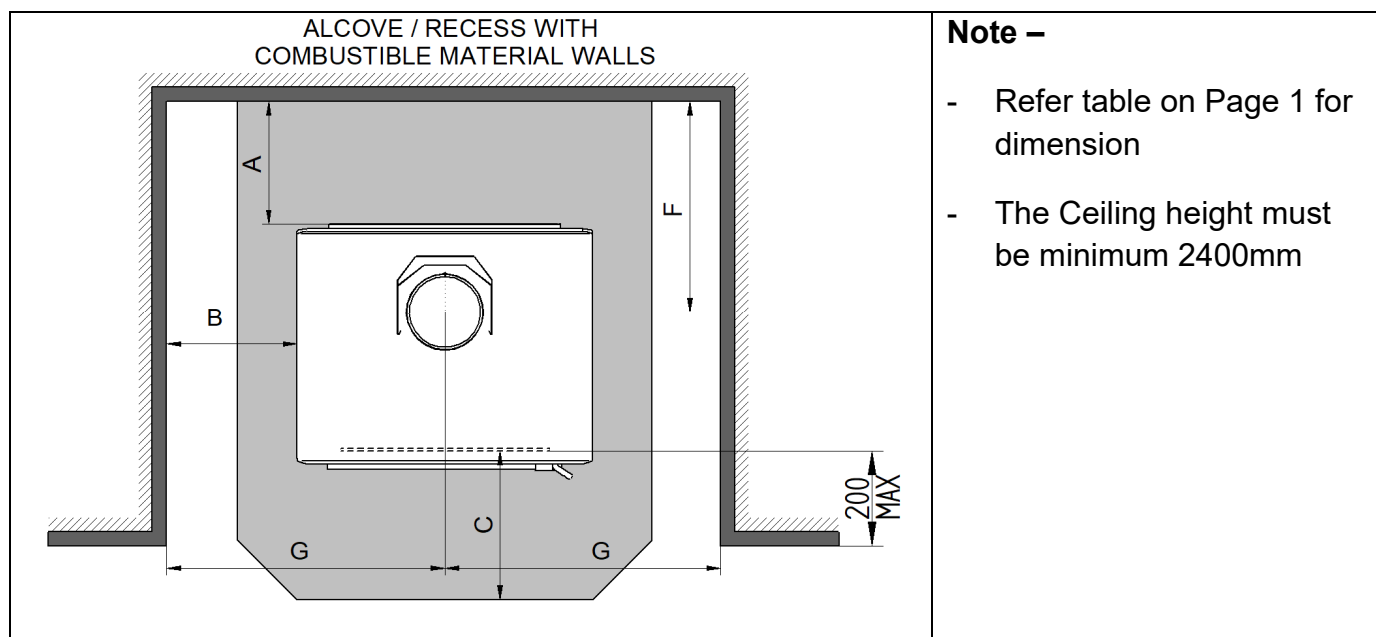
Parallel Installation		Corner Installation	
			
A- Rear Panel to Rear Wall	110 mm	C- Glass to Floor Protector Front	300 mm
B- Cooktop Edge to Side Wall	225 mm	E- Cooktop Corner to Wall	85 mm
C- Glass to Floor Protector Front	300 mm	H- Flue Centre to Wall	441 mm
D- Floor Protector Side	100 mm	L- Floor Protector Diagonal	1262 mm
F- Flue Centre to Rear Wall	306 mm	M- Floor Protector Side	1104 mm
G- Flue Centre to Side Wall	575 mm	N- Flue Centre to Floor Protector Front	638 mm
I- Floor Protector Front Edge	600 mm	R- Flue Centre to Wall Corner	624 mm
J- Floor Protector Width	900 mm	WW- Overall Width of Fire	700 mm
K- Floor Protector Depth	944 mm	DD- Overall Depth of Fire	594 mm
		HH- Overall Height of Fire	760 mm

Seismic Restraint - In New Zealand it is required that the wood burner and floor protector are secured to prevent shifting in the event of an earthquake. This is best done by fastening the wood burner right through the protector to the floor, using 8mm DynaBolts or 8mm coach screws or equivalent toggle fasteners for wooden floors of appropriate length.

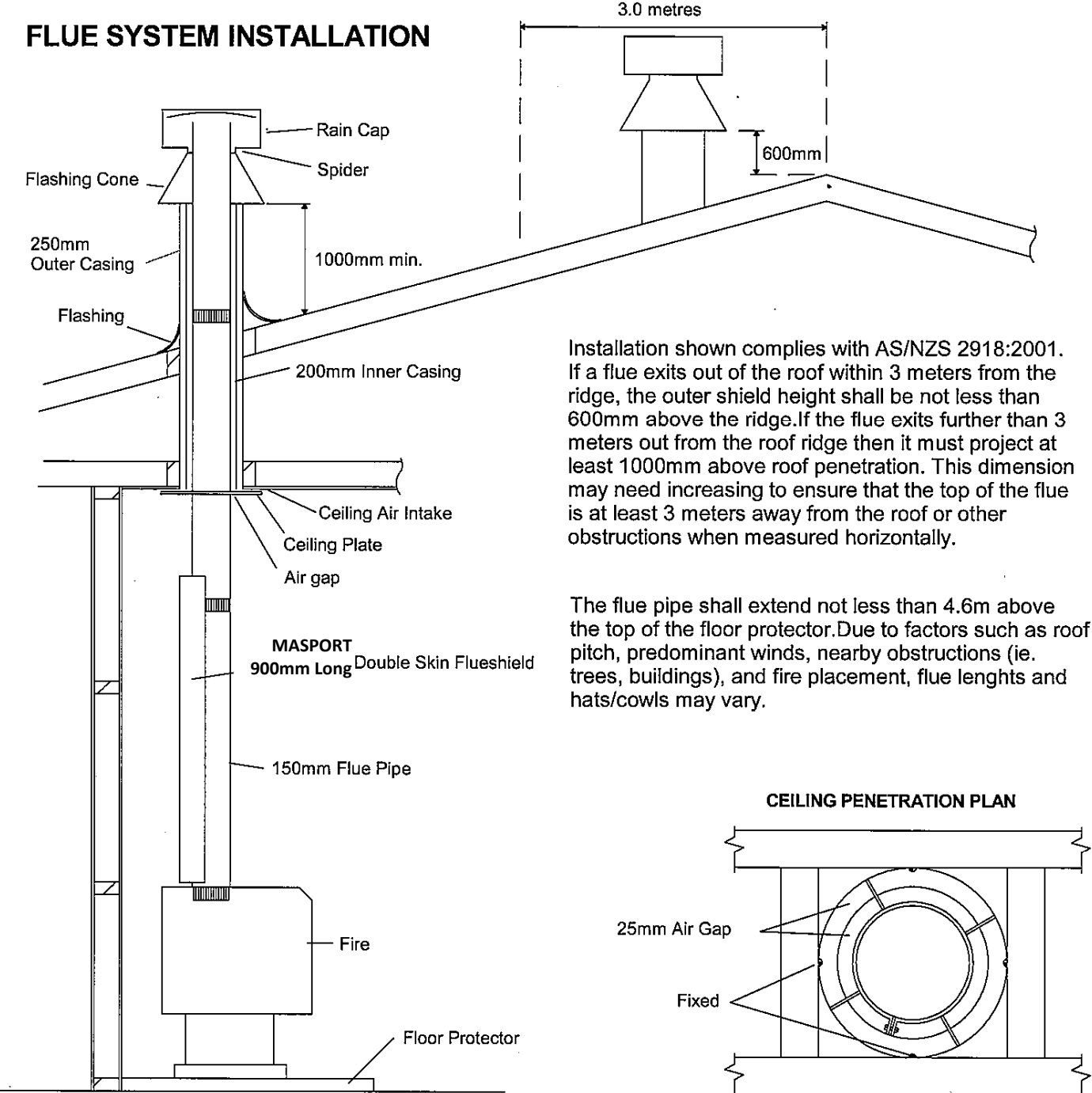
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Hurunui Installation in Alcove/Recess situation

Hurunui burner models has been tested for alcove (recess) made of combustible material and complies as per safety standard AS/NZS 2918:2001

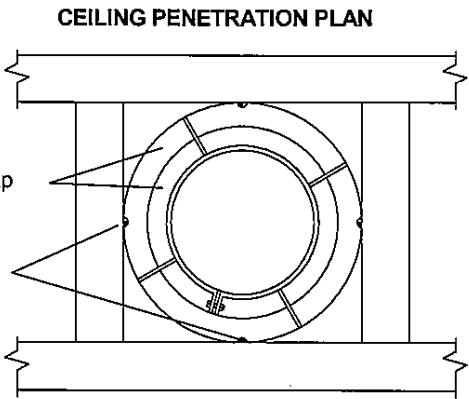


FLUE SYSTEM INSTALLATION



Installation shown complies with AS/NZS 2918:2001. If a flue exits out of the roof within 3 meters from the ridge, the outer shield height shall be not less than 600mm above the ridge. If the flue exits further than 3 meters out from the roof ridge then it must project at least 1000mm above roof penetration. This dimension may need increasing to ensure that the top of the flue is at least 3 meters away from the roof or other obstructions when measured horizontally.

The flue pipe shall extend not less than 4.6m above the top of the floor protector. Due to factors such as roof pitch, predominant winds, nearby obstructions (ie. trees, buildings), and fire placement, flue lengths and hats/cowls may vary.



Above plan is valid only for flue manufactured by Glen Dimplex New Zealand Ltd

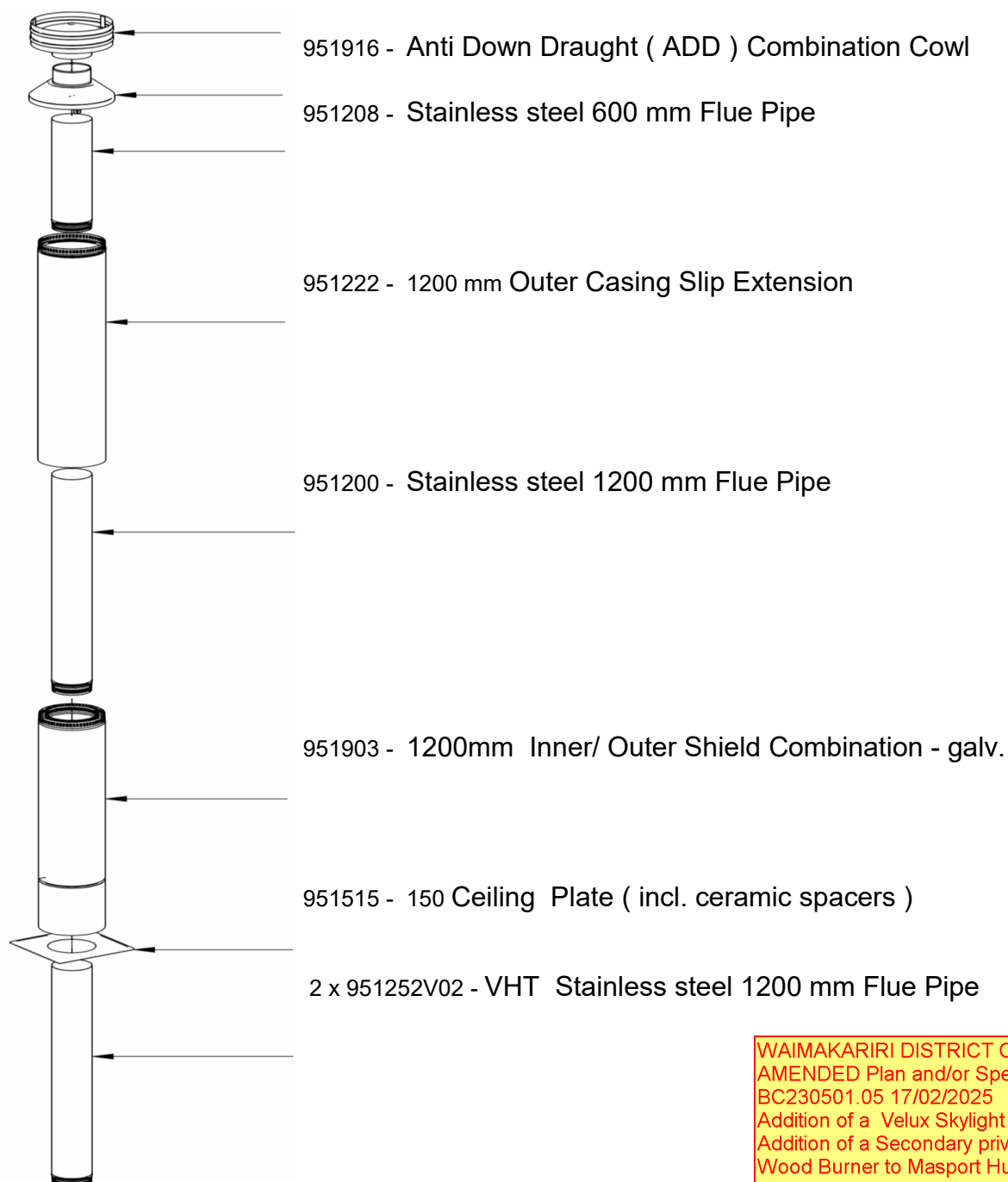
For other products, use specific flue installation specifications supplied by the manufacturer.

FLUE SYSTEM INSTALLATION 150mm



150 mm
Free Standing Wood Fire flue kit (1200 Slip Case) with combination Cowl
Complies with AS/NZS 2918:2001

Installation Instructions



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150mm Freestanding Wood Fire Flue Kit Installation Instructions

This flue kit has been manufactured in accordance with AS/NZS 2918:2001 and tested to Appendix 'F'. To ensure safety, this flue kit must be installed as outlined in these instructions. Heater and flue clearances from combustible walls must be in accordance with Masport's specifications and **AS/NZS 2918:2001 minimum height 4.6m above floor protector.**

CAUTION: IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT THE INSTALLATION OF THIS FLUE KIT COMPLIES WITH AS/NZS 2918:2001, THE APPLIANCE MANUFACTURERS SPECIFICATION FOR THE FLUE PIPE SHIELD AND CEILING PLATE AND THAT THE RELEVANT BUILDING CODES ARE ADHERED TO

CAUTION: MIXING FLUE SYSTEM COMPONENTS FROM DIFFERENT SOURCES OR MODIFYING THE DIMENSIONAL SPECIFICATION OF THE COMPONENTS MAY RESULT IN HAZARDOUS CONDITIONS. WHERE SUCH ACTION IS CONSIDERED, THE MANUFACTURER SHOULD BE CONSULTED IN THE FIRST INSTANCE.

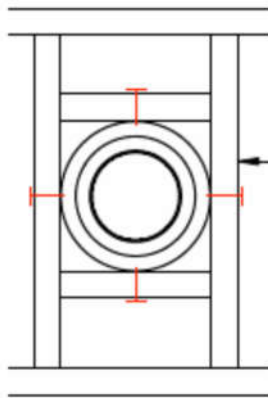
- 1) Locate heater in its proposed position and mark a point on the ceiling that is directly above the center of the heater's flue outlet. Check that the heater's location allows the OUTER HEAT SHIELD CASING to clear all structural roof timbers.
- 2) Cut a 250mm square hole in the ceiling. Directly above cut a hole in roof to accommodate OUTER HEAT SHIELD CASING
- 3) Fit timber nogs around ceiling and roof holes, i.e. Nogs form a 250mm square aperture which allows air to circulate freely over the OUTER HEAT SHIELD CASING surface.
- 4) Position the OUTER HEAT SHIELD CASING so that it is flush with the underneath of the ceiling and protrudes through the roof the required height. When calculating roof penetration height allow for extra 500mm that can be achieved by using the OUTER HEAT SHIELD SLIP EXTENSION
Refer to AS/NZS 2918:2001 page 37 (diagram C)
 - A) The minimum height of the flue system within 3m distance from the highest point of the roof shall be 600mm above that point
 - B) The minimum height of a flue system further than 3m from the highest point of the roof shall be 1000mm above roof penetration.
 - C) No part of any building lies in or above a circular area described by a horizontal radius of 3m about the flue system exit

Additional OUTER HEAT SHIELD CASING and INNER SHIELD (BAFFLE) may have to be added to ensure the correct roof penetration heights are obtained. Outer Liner and Inner Baffle must be installed crimp up. **The inner shield must penetrate through roof material a minimum of 200mm.**

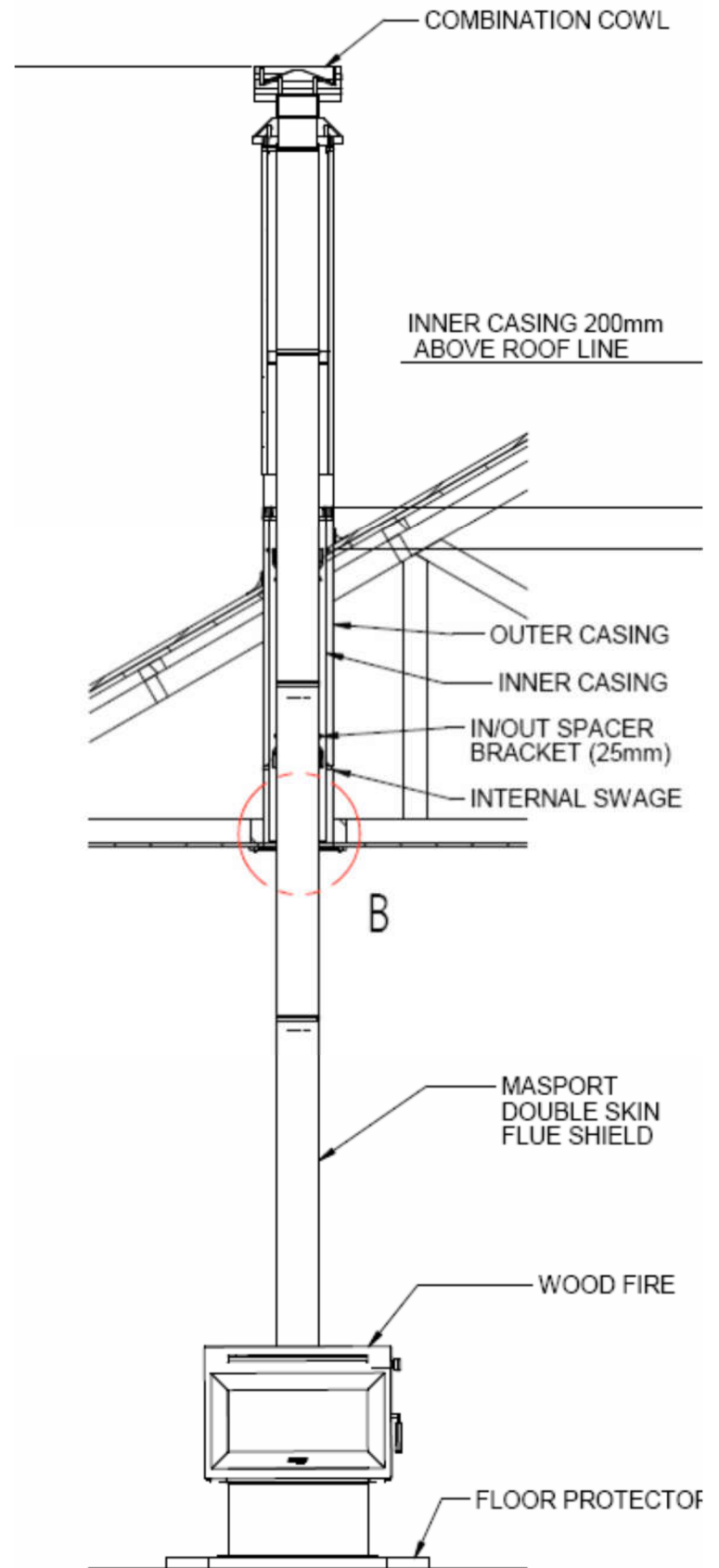
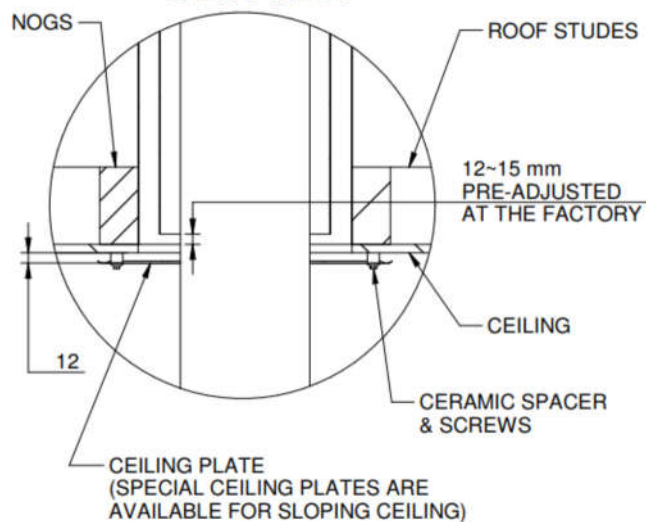
- 5) Fix an appropriate flashing around the OUTER HEAT SHIELD CASING to seal onto the roofing material
- 6) From the roof slide the INNER SHIELD into the OUTER HEAT SHIELD CASING until it rests 12mm above ceiling level
- 7) Assemble FLUE PIPES together ensuring seams are off-set for a neat fit. Secure each joint with 3 stainless steel rivets. FLUE PIPES must be assembled with crimped ends down (towards heater), short crimped pipes must be used into the flue spigot. **Flue must be sealed into Firebox using Maniseal**
- 8) Drill holes in the CEILING PLATE for the fixing screws. Place CEILING PLATE over heater flue spigot, ensuring the folded edge is facing the ceiling.
- 9) Install Flue pipes ensuring there is no damage to the VHT paint.
- 10) Before securing the OUTER HEAT SHIELD SLIP EXTENSION to the OUTER HEAT SHIELD with 3 rivets or self tapping screws, ensure the FLUE PIPE extends above the top of the OUTER HEAT SHIELD SLIP EXTENSION by 10.0 mm. Adjust SLIP EXTENSION to obtain this measurement. If minimum roof penetration heights described earlier cannot be achieved add sufficient stainless steel FLUE PIPE and OUTER CASINGS.
- 11) Fit CASING COVER over the FLUE PIPE and push down firmly onto TOP FLUE SPACER BRACKET. Secure with a rivet or self-tapping screw.
- 12) Fit COWL making sure of a tight fit, but do not secure, as removal for flue cleaning will be necessary
- 13) Fasten CEILING PLATE to ceiling using screws and spacers provided. Ensure an even air gap around FLUE PIPE when fixing. Remove protective plastic from CEILING PLATE
- 14) Leave all installation and operation instructions with the owner.

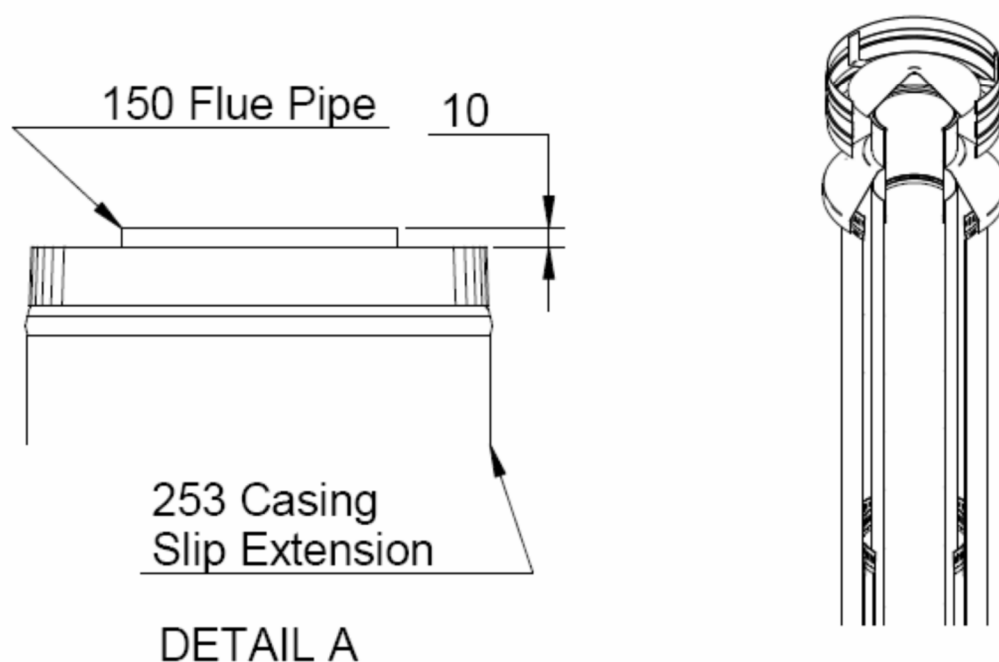
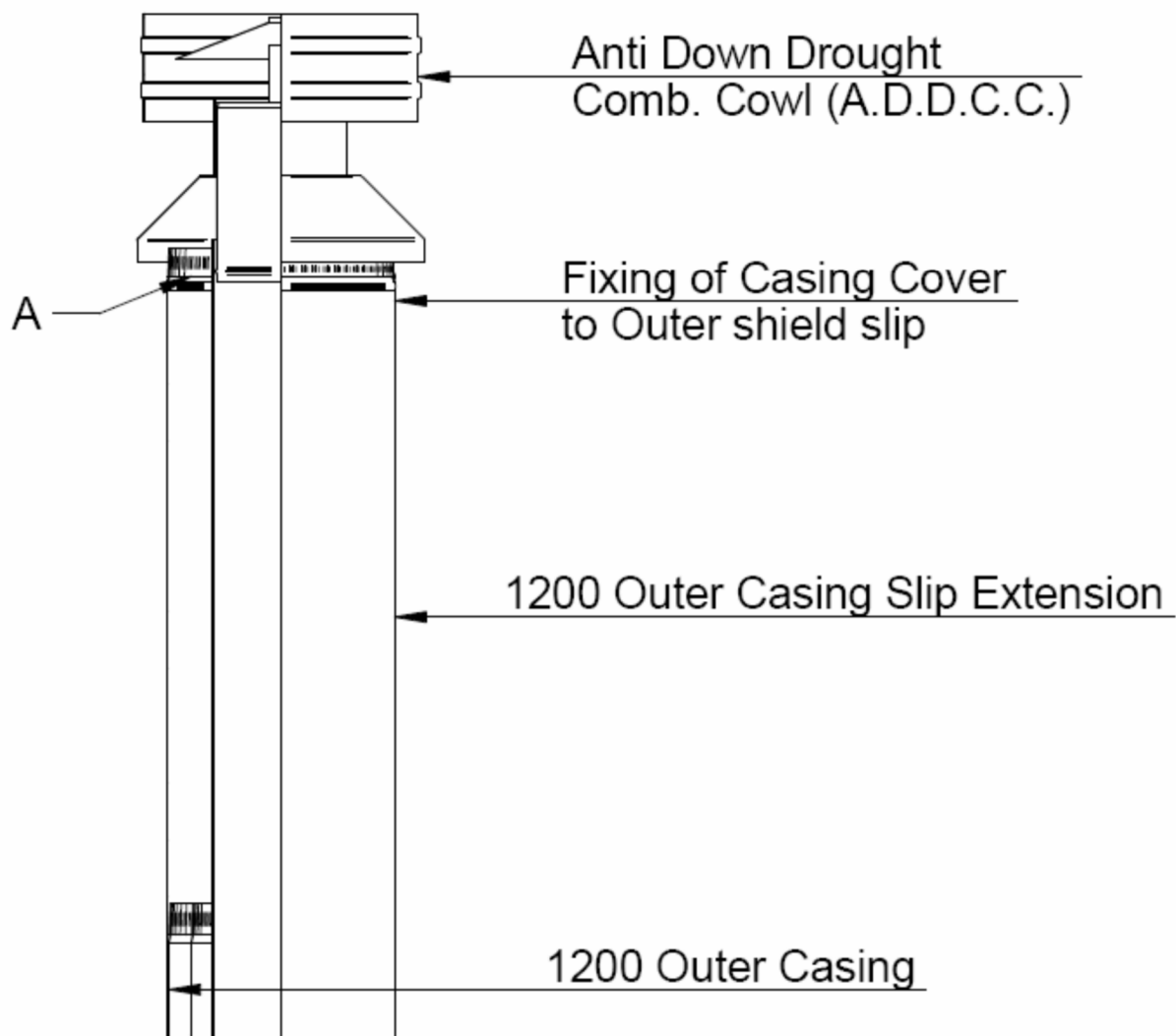
Schematic Diagram

**FIXING
TOP VIEW**



DETAIL B





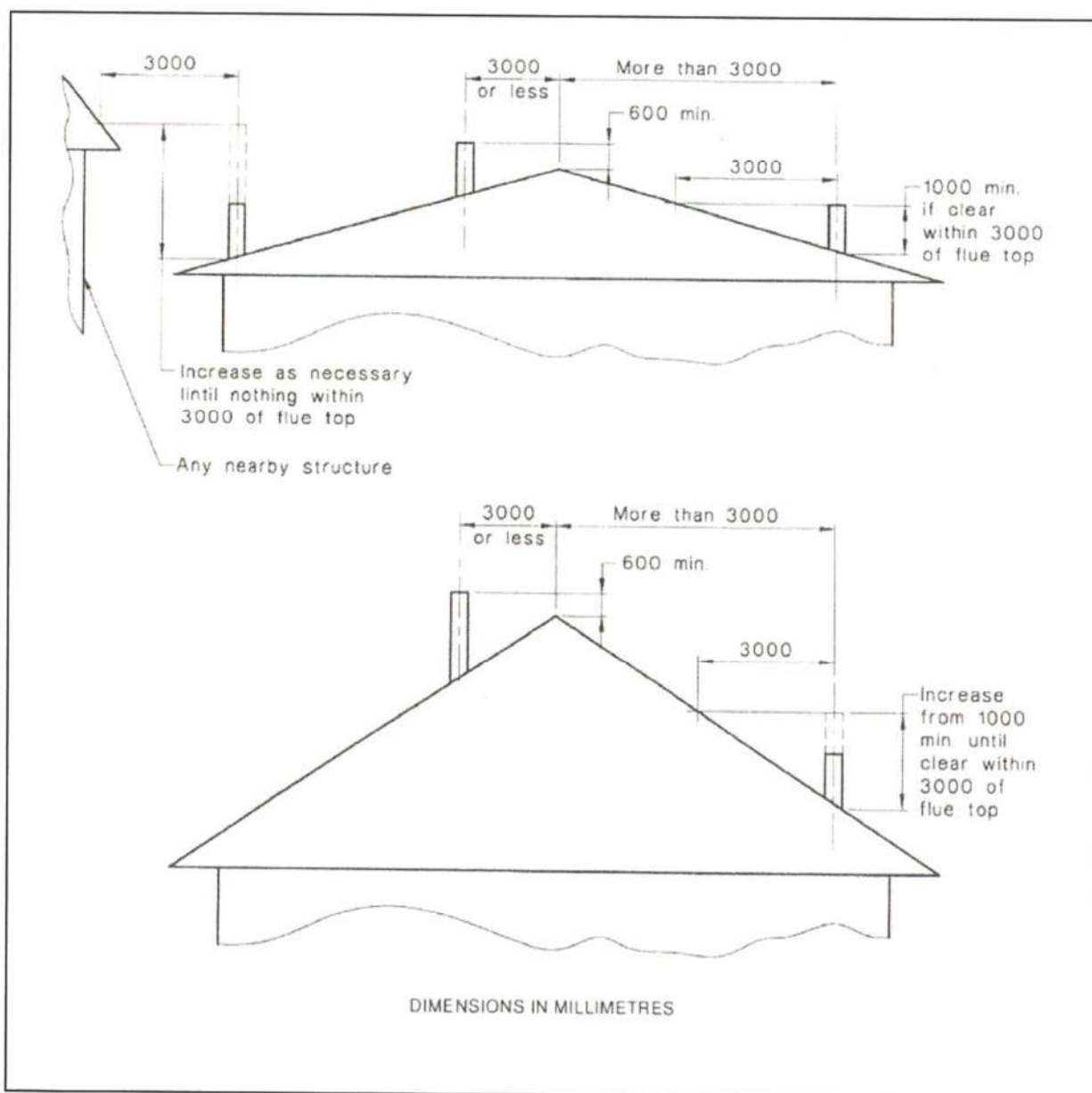
Note : Masport Free Standing Flue kit was tested in accordance with AS/NZS 2918:2001 , with 250mm outer casing in contact with combustible materials.

Stainless Steel Flue Pipe

Conditions of use

- The wood fire must be operated in accordance with the manufactures instructions, local clean air guidelines and regulations.
- The flue must be installed in accordance with GDA installation instructions, using flue components supplied by GDA. It is the responsibility of the installer to ensure no water leaks into the flue system
- The flue should not be used on a wood fire burning chemically treated, salt laden or unseasoned wood. Only use newspaper when lighting, never burn printed brochures or junk mail.
- The Flue must be swept by mechanical means only. We recommend mixed head or polypropylene brushes be used, Under No circumstances should chemical flue cleaners, soot destroyers or steel chimney brushes be used.
- The stainless flue pipe is warranted against mechanical defects for 5 years, providing the above conditions are met.
- Installation and performance are not covered under the warranty
- The paint finish appearance may change, depending on appliance operation and is designed to be a maintainable finish. To maintain the paint finish or touch up use genuine STOVEBRIGHT aerosol

Failure to observe these conditions may negate warranties

Diagram C AS/NZS 2918:2001 pg 37




**Please attached the label “ IMPORTANT “ here
and give the Installation Instructions
to the Owners !!!**

Date of Installation : _____

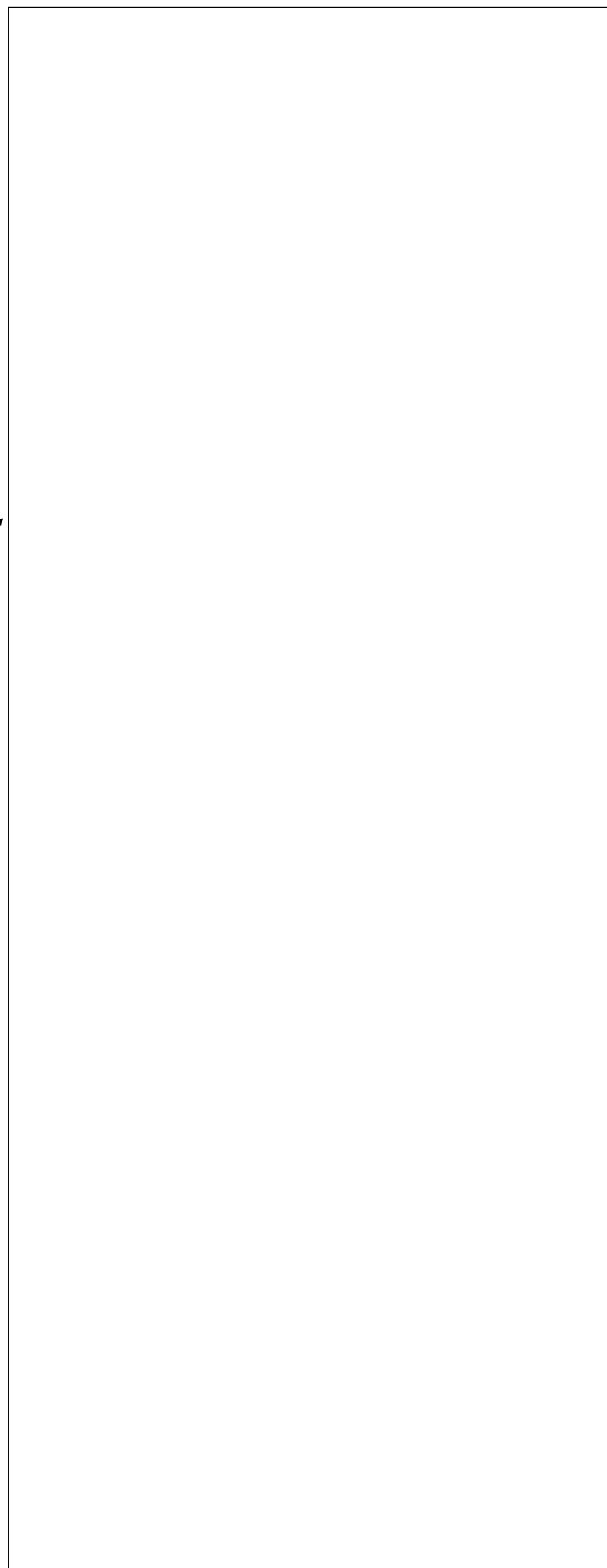
Wood Fire Make : _____

Wood Fire Model : _____

Serial No.: _____

Installed By : _____

Owners: _____



SPECIFICATION

For the erection of / addition to a house at:

For Client:

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in
accordance
with the Building Act 2004, clause 49 and the
Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

This is the *Specification* referred to in an “Agreement” between
as client,

and to-be-advised as builder,

dated:

ARBITRATION

If disputes or differences arise between the Client and the Builder, the Contract shall be subject to
arbitration under the Arbitration Act 1908.

PRODUCT CERTIFICATE

Allied Superslab Concrete Floors



KEY INFORMATION

CERTIFICATE: **GM-CM30086 Rev G**

1	SUMMARY OF DESCRIPTION OF BUILDING METHOD OR PRODUCT
Allied Superslab Concrete Floors are reinforced concrete, slab-on-ground floors using polystyrene void formers or QPOD moulded plastic pod void formers.	
2	SUMMARY OF INTENDED USE OF BUILDING METHOD OR PRODUCT
<p>Allied Superslab Concrete Floors has been designed to support timber framed residential houses up to 2 storeys generally satisfying the requirements of NZS3604, with the following general applications:</p> <ul style="list-style-type: none"> • With a maximum height of 10 m measured from the ground to the apex and, • Supported on “good ground” as defined by the Acceptable Solutions and Verification Methods for New Zealand Building Code Clause B1 Ministry of Business, Innovation and Employment, First Edition, July 2005 (Amendment 19, 28 November 2019) and, • With a floor maximum length of 30 m unless detailed with free joints in accordance with Allied Ready SuperSlab – Technical Manual (June 2020) Rev H; and, • Situated in Wind Zones up to and including Extra High 	
3	BUILDING CODE PROVISIONS
<p>The Allied Superslab Concrete Floors when designed, installed, used and maintained in accordance with the statements and conditions of this certificate will meet the following provisions of the NZBC:</p> <p>Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4 for the relevant physical conditions of B1.3.3 (a), (b), (f), (h), (m) and (q)</p> <p>Clause B2 DURABILITY: Performance B2.3.1 (a), B2.3.2 (a) – not less than 50 years</p> <p>Clause E2 EXTERNAL MOISTURE: Performance E2.3.3 and E2.3.7</p> <p>Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1</p>	

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4	CERTIFICATE HOLDER DETAILS
<p>Allied Concrete Ltd</p> <p>35 Inglewood Road, Invercargill 9810.</p> <p>info@alliedconcrete.co.nz</p> <p>Tel: .03 2171600 or 0800 4 255433</p> <p>www.alliedconcrete.co.nz</p>	

ISSUED	LAST UPDATE	EXPIRY
03/09/2020	7/12/2021	03/09/2023
5 SIGNATURE		
		
Herve Michoux, Global Mark Managing Director		

6	PRODUCT CERTIFICATION BODY
<p>Global-Mark Pty Ltd</p> <p>57 Willis Street</p> <p>Wellington, 6011</p> <p>customer.service@global-mark.co.nz</p> <p>+64 9 889 0622</p> <p>www.global-mark.co.nz</p>	
The complaints process for this certificate can be found here:	
https://www.global-mark.com.au/?s=complaint	

PRODUCT CERTIFICATE

Allied Superslab Concrete Floors

7	CONDITIONS AND LIMITATIONS OF USE
1.	Allied Superslab Concrete Floors have been certified for use in buildings within the following scope limitations: <ul style="list-style-type: none"> a. Timber framed buildings, up to two storeys high, within the scope of NZS 3604:2011 (paragraph 1.1.2), b. With a maximum height of 10 m measured from the ground to the apex, c. Supported on "good ground" as defined by the Acceptable Solutions and Verification Methods for New Zealand Building Code Clause B1 Ministry of Business, Innovation and Employment, First Edition, July 2005 (Amendment 19, 28 November 2019), d. With a floor maximum length of 30 m unless detailed with free joints in accordance with Allied Ready SuperSlab – Technical Manual (June 2020) Rev H; and e. Situated in Wind Zones up to and including Extra High
2.	Allied Superslab Concrete Floors shall be specified, designed, installed and maintained in accordance with the following Technical Documentation: <ul style="list-style-type: none"> a. BRANZ Appraisal No. 964 [2017] Amended 15 October 2021 Allied Superslab Concrete Floors b. Allied Ready SuperSlab – Technical Manual (June 2020) Rev H
3.	Reinforcing Steel, Polystyrene Pods or QPOD, Bar Chairs, Pod Spacers and Damp Proof Membrane must be selected, used, handled and stored in compliance with the requirement of the Technical Documentation
4.	The installation must be either done or supervised by an LPB who holds either a carpentry or a foundation license and have access to the Technical Documentation
5.	A minimum of 20 MPa Allied CSS or RSS mixes must be used except in Exposure Zone D where the minimum requirement is 25 MPa concrete. The specified concrete mixes must be manufactured in accordance with NZS 3104:2010 and in Allied Concrete plants
8	HEALTH AND SAFETY INFORMATION
	Standard industry safety practices and manufacturer safety requirement as detailed in the technical literature including applicable SDS must be observed at all time.
9	SUPPORTING INFORMATION ABOUT DESCRIPTION
	Nil
10	SUPPORTING INFORMATION ABOUT INTENDED USE
	Refer to Allied Ready SuperSlab – Technical Manual Rev H, dated September 2021.
11	SUPPORTING INFORMATION ABOUT CONDITIONS AND LIMITATIONS OF USE
	Nil

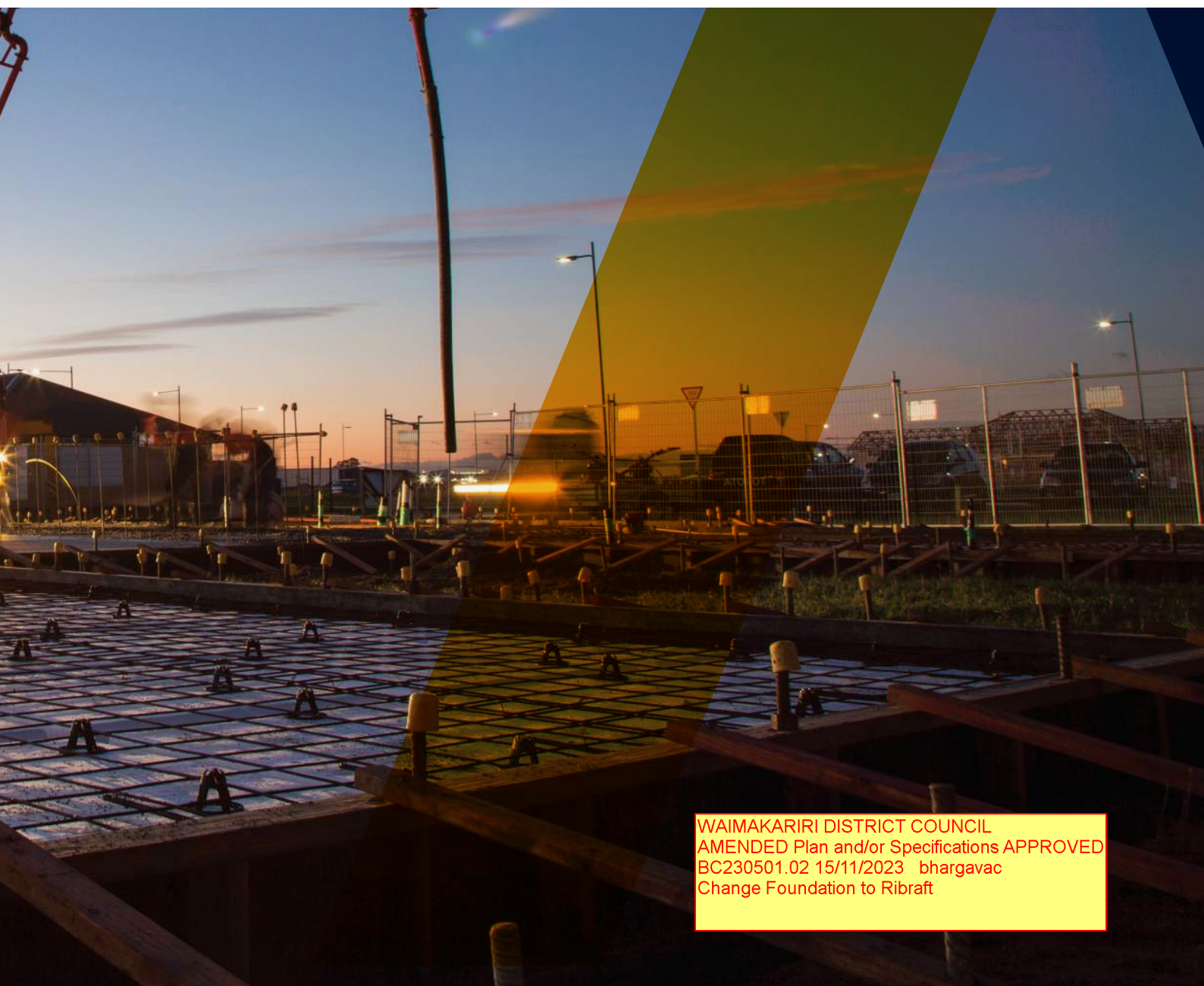
PRODUCT CERTIFICATE

Allied Superslab Concrete Floors

12 BASIS FOR CERTIFICATION			
The certification decision is based independent technical review(s) of engineering opinion(s) and other documented evidence(s), factory audit(s) and site review(s)			
Code Clause		Compliance pathway	Evidence
Clause B1 STRUCTURE:		Acceptable Solution – Testing and assessment	Items 1, 2 and 3
Clause B2 DURABILITY:		Acceptable Solution – Reference to use of acceptable materials	Items 2 and 3
Clause E2 EXTERNAL MOISTURE		Acceptable Solution – Reference to New Zealand Standard	Items 1, 2 and 3
Clause F2 HAZARDOUS BUILDING MATERIALS		Alternative solution – Expert judgement	Item 4
13 SUPPORTING DOCUMENTATION FOR CERTIFICATION			
Ref	Author	Title	Date and/or revision
1	Allied Concrete Ltd	Allied Ready SuperSlab Technical Manual	Rev-H September 2021
2	BRANZ	BRANZ Appraisal No. 964 (2017) – Allied Superslab Concrete Floors	15 October 2021
3 *	BRANZ	BRANZ Appraisals Means of Compliance – BRANZ Appraisal No. 964 (2017)	14 October 2021
4	Allied Concrete	Material Safety Data Sheet for Ready Mixed Concrete (plastic concrete, concrete slurry, concrete bleed water, wet concrete)	20 January 2020
* This document was provided commercial in confidence and is not publicly available.			
14 CONDITIONS RELATING TO NOTIFICATION			
<p>a) the certificate holder notifies the product certification body in writing of any intended change to any of the following particulars:</p> <ul style="list-style-type: none">i. the name, address, or contact details of the certificate holder:ii. any address of a location where a certified product is produced or manufactured: <p>b) the certificate holder notifies the product certification body in writing of any intended change, modification, or alteration to any of the following:</p> <ul style="list-style-type: none">i. the certified building method or product:ii. the method of its production or manufacture:iii. the product quality plan prepared in respect of the certified building method or product:iv. the application or installation instructions for the certified building method or product:v. any documentation relating to the use and maintenance of the certified building method or product: <p>c) if the certificate holder has any reason to suspect that the certified building method or product does not comply with the Building Code, the certificate holder notifies the product certification body in writing of the reason for that suspicion:</p> <p>d) if the certificate holder or the product certification body finds that a certified building method or product that has been released on the market does not comply with the Building Code, the certificate holder discloses that fact in disclosure statements published in a form that is acceptable to the product certification body and to the chief executive:</p> <p>e) if the certificate is suspended or revoked, the certificate holder—</p> <ul style="list-style-type: none">i. notifies all customers to whom the building method or product is regularly supplied; andii. immediately ceases using the certificate, the mark of conformity, and any reference to the number of the certificate.			
End of the document			

READY SUPERSLAB

TECHNICAL MANUAL



WAIMAKARIRI DISTRICT COUNCIL
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DISCLAIMER

This document provides design and installation information for the Allied Superslab system as per Codemark and Branz appraisal to comply with the New Zealand building code. Providing the conditions of the Codemark are adhered too rigidly, the foundation will not require specific design or a producer statements from an engineer to gain building consent. If the conditions are not able to be met, the system will require Specific Engineering Design (SED)

1.0 - GENERAL

This document outlines the specifications, construction requirements and Codemark conditions and limitations for the Allied Superslab system.

The document covers the components, site requirements, details and construction of a standard Allied Superslab. For more advice, please contact your local Allied Concrete supplier.

2.0 - SUPERSLAB COMPONENTS

The Allied Superslab floor system consists of a reinforced insitu concrete perimeter footing, internal square polystyrene void formers (pods) spaced at 1200mm centers to form 100mm wide voids which are filled with concrete. Concrete is poured on top and within the 100mm wide gap between the pods (ribs) to form a 'waffle raft'. The polystyrene pods act as a formwork to minimize the concrete consumption and achieve the depth. The depth and alternate spacing of the reinforced concrete ribs create a stiff and robust foundation solution which is suitable on most soil conditions.

2.1 Pod Void Formers

The Allied Superslab uses 1100mm x 1100mm square and 220mm deep polystyrene pods. 1100mmx1100mm square and 300mm deep polystyrene pods can also be used where extra height is needed.

Often sites with deep topsoil or flood risks require compacted hard fill or certified fill to build up the site to achieve the required finished ground level. Adopting an Allied Superslab can save you time and cost. A deeper pod can be selected to reduce the cost of fill as well as increasing the strength and stiffness of your foundation.

Where the geometry of the slab dictates the polystyrene pods to be smaller than 1100mm x 1100mm these can be easily cut on site to fit. The 100mm internal rib and perimeter footing width (300mm) need to be maintained at all times.

Allied Superslab is proud to offer a greener alternative to the polystyrene pods. Qpod is a recycled plastic dome system which clips together to form a 1100mmx1100mm and 220 deep void former which can be substituted for the polystyrene pods. Refer to section 6.1 for the alternative detailing using the Qpod void fillers.

2.2 Topping Slab and Rib Reinforcement

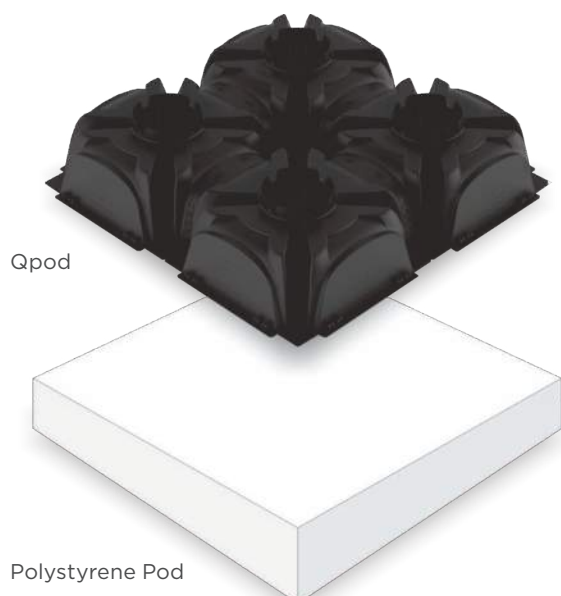
The Allied Superslab requires 85mm (minimum)

and 100mm (maximum) thick topping slab as outlined in section 4.7. The topping slab shall be reinforced with ductile steel mesh (SE62 – minimum weight of 2.29kg/m²). The mesh must comply with the minimum requirements of the New Zealand Building Code. The mesh is to have a tensile strength of 500 MPa and needs to be ductile, achieving 10% elongation when tested to NZS4671 and the building code testing requirements. As an alternative topping reinforcement, SE62 mesh can be substituted with 10mm diameter, grade 300, class E reinforcing bars placed at 300 centers each way. Loose bars shall be chaired and tied as per NZS3109, cover shall be as outlined per section 4.7.

The 100mm wide ribs are reinforced with 12mm diameter steel reinforcing rods grade 500, class E (HD12 seismic grade). These HD12 bars are located at the bottom of the ribs with 50mm minimum bottom cover and extending across the slab in two orthogonal directions. HD12 "hockey stick" bars are located in the top of the ribs. The hockey stick bars are tied to the underside of the mesh at the top of ribs intersecting at right angles to the perimeter footing. These bars are 1350mm long and have a 150mm hook to anchor the perimeter footing to the floor slab.

Perimeter reinforcement typically consists of 2 x HD12 bottom bars and a single HD12 top bar. Additional perimeter or rib reinforcement can also be adopted for specific design cases to accommodate higher loads or spanning capabilities such as: expansive soils, liquefiable soils or piled foundations. These cases are outside the scope of this document and require specific engineering design.

Bar chairs and spacers are used to ensure the correct cover to all the reinforcement and to keep the pods in place while the slab is poured.



2.3 Typical Superslab layout and details

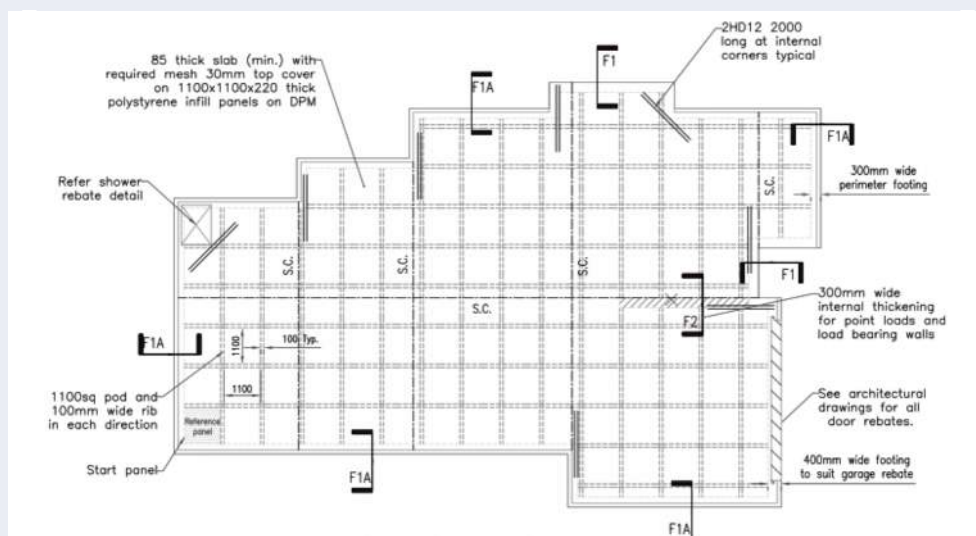


FIGURE 1 – Allied Superslab layout (slab area = 197 m²)

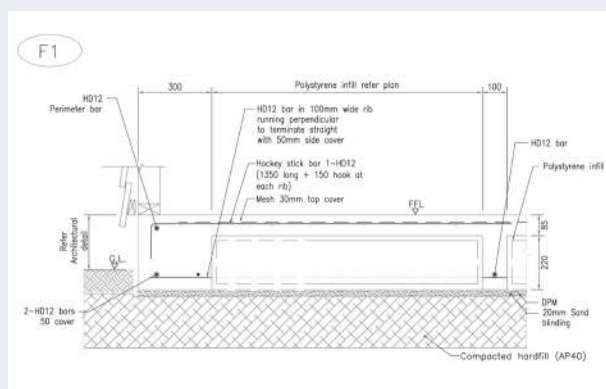


FIGURE 2 – Light clad perimeter footing detail

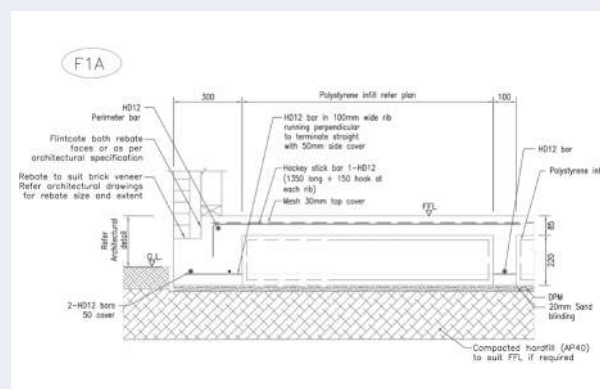


FIGURE 3 – Brick clad perimeter footing detail

2.4 Concrete

Allied Superslab mix shall be used for all Allied Superslabs. The strength of the concrete is dependent on the exposure category of the proposed foundation.

Sites located near coastal areas may be subject to windblown sea salt deposits resulting in a greater risk of corrosion. As such a higher concrete strength is required to satisfy the NZBC durability requirements of the foundation. NZS3604 clause 4.2.3.3 defines such areas as Zone D (all outer islands and coastal areas within 500m from the sea or within 100m from tidal estuaries and sheltered inlets). Foundations proposed in Zone D are to be 25 MPa minimum. For sites located away from corrosive environments (greater than 500m from the sea – Zone B or C) 20 MPa concrete can be used. The designer shall select one of the appropriate concrete mixes as per the following:

- Mix code 252CSS is used for 25 MPa applications for foundations within 500m to

the sea or 100m to fresh water.

- Mix code 202CSS is used for 20 MPa applications for foundations beyond sea spray and corrosive environments.

Note: foundations located in tidal slash zones within 50m of the beach frontage may require higher strength concrete and are subject to specific advice. So too are contaminated sites or soils within 500m of geothermal bores, mud pools, steam vents or other such sources which pose a chemical or corrosive environments. Such conditions are beyond the scope of this document.

The builder and designer shall also discuss the desired finish and the placement method with the Allied Concrete when ordering the concrete to ensure the best mix for the specific application can be delivered.

3.0 - SCOPE OF USE

Designers need to understand and adhere to the conditions and limitations as outlined below. If in doubt, please check with Allied Concrete for advice on your Allied Superslab project.

3.1 Building types and loading suitable for the Allied Superslab System

The Allied Superslab has been designed to support timber framed residential houses generally satisfying the requirements of NZS3604 and as detailed below. The verification of the compliance of the design with this document is the responsibility of the designer and shall be confirmed by the building control authority issuing the building consent. Items 1-6 shall be verified by the designer. Refer to check list procedure in section 7 for further guidance.

1. **SOIL CONDITIONS** – Buildings founded on 'good ground' as defined by the New Zealand Building Code (B1) and NZS3604. This is summarised in section 3.2 below
2. **BUILDING TYPE** – Importance level 1 and 2 structures as per NZS1170 and NZS3604 – Standard residential house
3. **HOUSE SIZE** – No more than two storey timber framed buildings with max height of 10m (to apex). Maximum length of 30m unless detailed with free joints in accordance with this manual as per figure

21 and 33. The foundation needs to be a regular shape with a minimum area (m²) to perimeter (m) ratio of 1. Irregular shaped foundations need specific engineering input and are beyond the scope of this document. Refer Table 2 below for guidance on shape requirements.

4. **WEIGHTS** – Permanent (gravity) and imposed (live) loads as defined in section 3.4 – The foundation system is designed to accommodate a standard residential house generally as defined in NZS3604:2011 and defined in section 3.4
5. **MAXIMUM SPAN AND HEIGHTS** – Maximum Roof span of 12m, first floor joist span of 5m, and maximum storey height of 3m (Cladding combinations as per table 1 and building types A-E)
6. **WIND AND SEISMIC LOADING** – Maximum wind loading of Extra High as per NZS3604:2011 and maximum seismic hazard factor (Z) of 0.45 and soil classes A-E as per NZS1170. Also, refer section 3.4

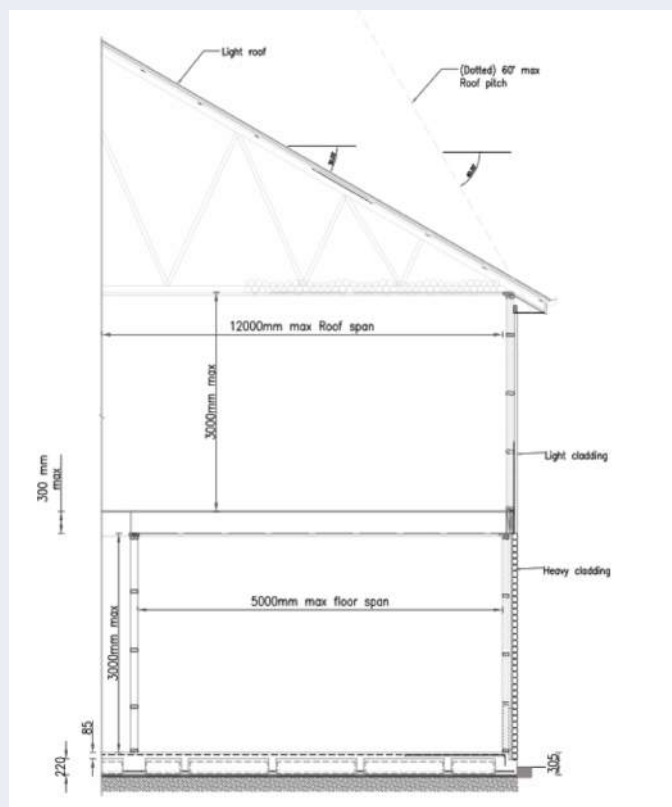


FIGURE 4 – Typical house layout

Table 1

Building type	Number of levels ¹	Level 1 Wall cladding ²	Upper storey cladding	Roof Type ³	Minimum bearing capacities and penetrometer blows ⁴	Within scope of this document
A	Single	Light	–	Light	150 kPa	Yes
B	Single	Heavy	–	Light	200 kPa	Yes
C	Single	Heavy	–	Heavy	200 kPa	Yes
D	Two Storey	Light	Light	Light	200 kPa	Yes
E	Two Storey	Heavy	Light	Light	300 kPa	Yes
F	Two Storey	Heavy	Light	Heavy	300 kPa	No, Specific Design
G	Two Storey	Heavy	Heavy	Heavy	300 kPa	No, Specific Design

Notes as referenced in table 1 above

- Two Storey external wall supporting a timber floor with maximum floor joist span of 5.0m.
- Maximum brick wall cladding height of 3.0m to lower level of two-storey building. 4.5m on a single storey building.
- External wall supporting a maximum 12m clear span of roof trusses.
- The designer shall confirm minimum bearing capacities as required for building type as per table 1. The building platform is to have consistent bearing capacity across the house floor plan. Specific design or geotechnical input is required if bearing capacities vary significantly across the building platform. Penetrometer testing and soil investigations are to be completed as per NZS4402, NZBC (B1) and NZS3604. If the designer adopts a less conservative testing criteria to determine the bearing capacity from penetrometer testing such as Stockwell 1977 or MBIE guidance document for repairing and rebuilding houses affected by the Canterbury earthquakes (section A 3.4.1), they shall be suitably qualified to interpret the “index” bearing strengths as described in the document. Suitably qualified as defined in the MBIE document includes soil technicians or other suitably trained and supervised people. Refer table 2 for penetrometer blow count criteria. Cohesive soils could also be tested using shear vanes as penetrometer testing often underestimates the strength of cohesive soils. A geotechnical engineer can provide the bearing strength to be adopted in

the design. Generally, the geotechnical ultimate bearing strength can be taken as 5 times the undrained shear strength of the cohesive soil. E.g. Undrained shear (S_u) = 60 kPa would equate to 300 kPa geotechnical ultimate bearing or 100 kPa allowable bearing – “good bearing” as per NZS3604.

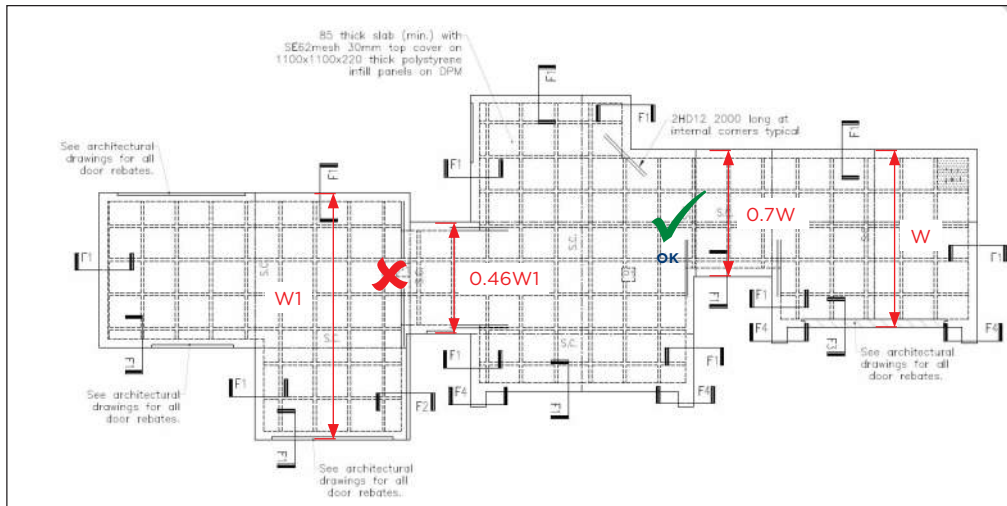
Buildings deviating from the limitations listed are outside the scope of this document. However, an economical Allied Superslab solution can still be adopted with specific engineering design. Contact Allied Concrete for further information and advice.

Table 2

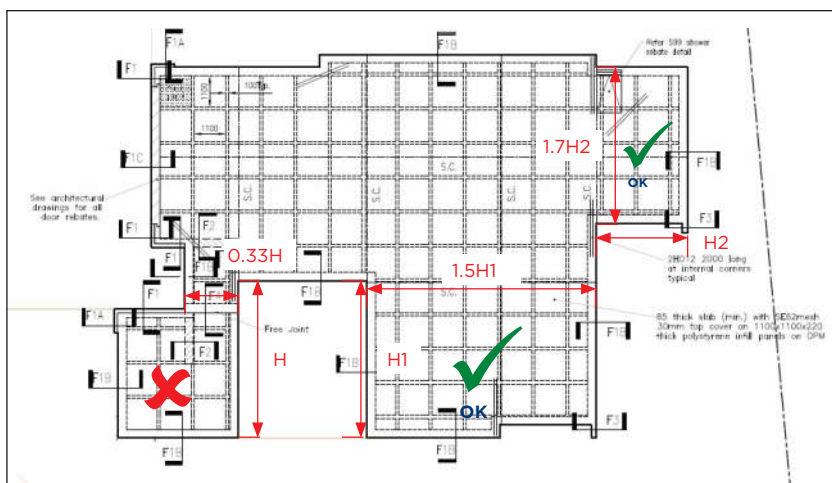
NZS3604/B1 penetrometer testing criteria for Geotechnical ultimate bearing	Number of blows per 100mm – upper 600mm subgrade	Number of blows per 100mm – below 600mm subgrade
300 kPa (good ground)	5	3
200 kPa	3.33	2
150 kPa	2.5	1.5
MBIE/Stockwell penetrometer Criteria testing criteria for Geotechnical ultimate bearing	Number of blows per 100mm – upper 600mm subgrade	Number of blows per 100mm – below 600mm subgrade
300 kPa	3	3
200 kPa	2	2
150 kPa	1.5	1.5

Foundations shape requirements

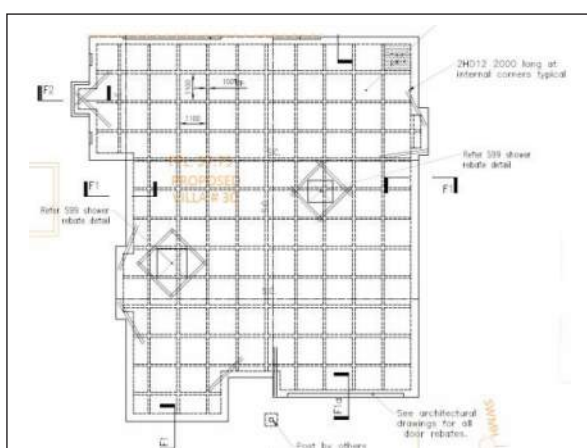
Two foundations connected by a narrow corridor will require specific engineering design (SED) and appropriate free joint detailing. Narrow corridors can be defined as a width less than 50% of the width of the smaller of the adjacent slab (W) areas as per example below. Foundations of this layout are beyond the scope of this document.



Projections which extend out from the slab by H need to be maintain a minimum width of $0.5H$ to fall within the scope of this manual. Projections smaller than $6m^2$ need not comply with this requirement



Projections are permitted providing they are regular and a minimum area to perimeter ratio of 1 is maintained for the foundation has a whole. Detailing of control joints (saw cuts) and re-entrant corners is important to minimize the risk of shrinkage cracking for buildings with projections.



3.2 Ground conditions

The Allied Superslab has been developed for 'good ground' in accordance with NZS3604 (and the definition from the New Zealand Building Code B1) with custom bearing requirements as per Table 1 for the different building types A-E.

The New Zealand Building Code places the responsibility on the designer to confirm the soil conditions or to nominate a representative to undertake site verification of the of the soil conditions prior to construction. Refer B1/VM4 - 2.0.8. The conditions of the Allied Superslab require confirmation of "good ground" by the designer and local building authority prior to construction. The designer shall discuss with the local building authority and obtain their geotechnical reporting requirements for the building consent process. Often local building authorities will have hazard maps for liquefaction, expansive soils, instability and low bearing strengths that can be utilized to aid the designer with establishing "good ground". It is highly recommended the designer obtain a project specific geotechnical report prior to building consent to establish the site soil

conditions and confirm the site is suitable for an Allied Superslab.

"Good ground" is defined by NZS3604 and items 1-4:

1. Consistent bearing capacities of the building platform and underlying soils as per NZS3604 and per Table 1 for given building types A-E.
2. Stable platform, free from any instability or settlement from any scenario where vertical movement greater than 25mm over the 50-year design life is expected. Refer NZS3604 - site requirements for further information.
3. Slightly expansive soils, with a maximum characteristic movement (Y_s) of 20mm as per AS2870.
4. Filled platform - Confirm Items 1-3 on the cut platform. Imported fill (well graded compacted hard fill or suitable fill material approved by a geotechnical engineer) less than 600mm deep placed as per NZS4431 and NZS3604. Cut and fill batters to be completed in accordance with NZS3604 and figure 5 and 6.

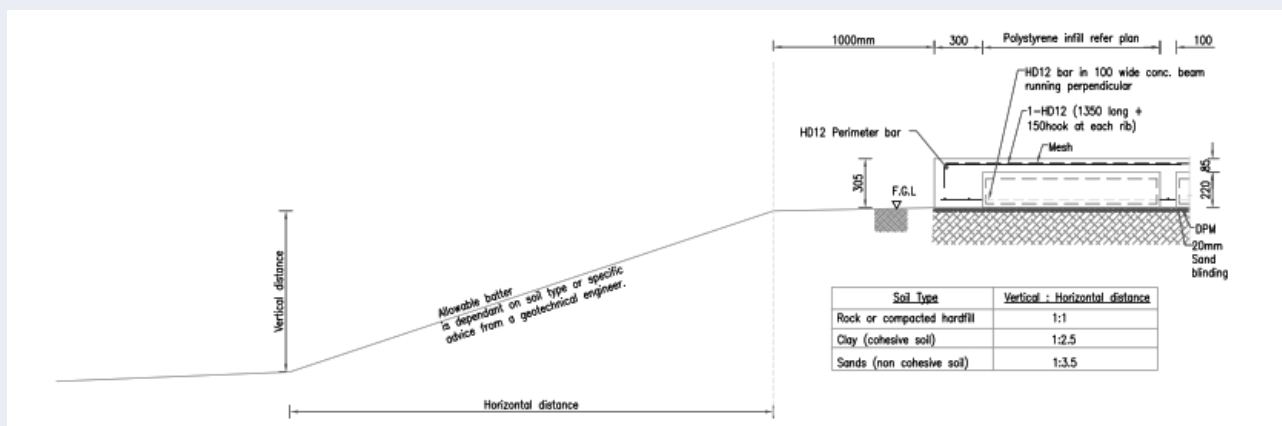


FIGURE 5 – Safe batters for raised building platform

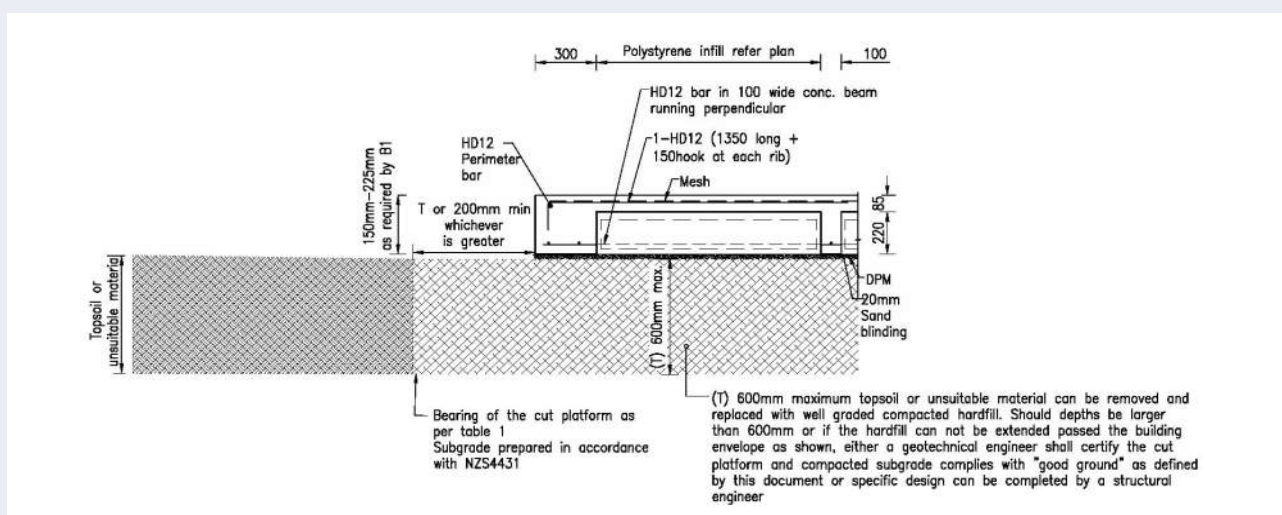


FIGURE 6 – Deep top soil subgrade limitations (Updated)

The following are conditions excluded from the definition of “good ground” and are beyond the scope of the Allied Superslab Technical Manual.

5. EXPANSIVE SOILS – Cohesive clays may be prone to drying out and shrinking or expanding and heaving with seasonal moisture changes. Clay or cohesive soil with liquid limits of more than 50% or linear shrinkage of more than 15% as per NZS4402 (test 2.2 & 2.6) shall be classified as expansive soil, prone to seasonal shrink swell movement. Any movement greater than 25mm is beyond the scope of NZS3604 and the definition of good ground. For example, class M (moderately expansive, $Y_s = 40\text{mm}$) or class H1/H2 (Highly expansive, $Y_s = 60, 75\text{mm}$). The soil class as per B1 NZBC shall be determined before building on any cohesive soils.

6. TOPSOIL AND PEAT - Construction on organic topsoil or buried organic material (peat). Peat and any organic material can be prone to decay and settlement over time and when loaded. Buried top soil is common in swampy areas or sites with uncertified fill such as landfills or re-contoured sites (Uncertified earthworks).

7. BUILDING PLATFORM AND BEARING STRENGTH - Soft or weak soils with bearing strengths below 50-67 kPa allowable bearing as required for given building type as per table 1. Soil can be soft for a number of reasons however the most common reason is due to poor compaction and consolidation. Fluctuating ground water can also cause soils to lose bearing strengths. Consistent bearing capacity across the building platform is also very important. If there is significant variability of the bearing strength across the building platform this can result in differential settlement which needs to be considered with specific engineering design of the foundations.

8. SITE INSTABILITY - whether global or local.

- Construction within “close proximity” (1:2, vertical to horizontal) of any retaining walls, existing or proposed
- Construction on sites within slopes steeper than 5 degrees and as defined by NZS3604. If there are any signs or historical instability a full investigation by a chartered geotechnical engineer is required to determine the conditions and recommend foundation design parameters

9. UNCERTIFIED FILL AND BRIDGING.

Construction on any uncertified fill of any depth is prohibited. Uncertified fill can be defined as disturbed soil which has not been placed and properly compacted and as such is prone to settle under self or imposed load. Construction near any buried services, detention tanks or soakage trenches also requires specific design. Construction above or near services or soakage trenches can often encounter uncertified trench back fill or ground that is unstable. Where public services are identified near the foundations, the local building authorities shall be consulted as there are often minimum design standards required to protect their assets. If piling and bridging is required, piling parameters shall be provided in the geotechnical report and will need to be designed by a structural engineer and are beyond the scope of this document.

10. LIQUEFACTION - Construction on sites with liquefaction risks (resulting in settlement beyond B1 limits as defined in item 2 above). Loose sand and silts soils (non-cohesive) in combination with high ground water. Sites with significant risk are usually located around river deltas or reclaimed land with extensive silt and or sand deposits. Most local councils have hazard risk maps to aid in identifying these sites as Liquefiable soils are excluded by the building code

NOTE:

Foundations constructed or proposed on sites with any of the above soil conditions (items 5-10) may still be accommodated by an Allied Superslab however will require specific engineering design from a structural engineer. The structural engineer will most likely require design parameters covering the items 1-10 and these shall be addressed by a geotechnical engineer carrying out the investigation. A geotechnical engineer is able to certify ground improvements (cut and fill) to confirm the building platform achieves “good ground” and satisfies the requirements of this manual to allow the designer to proceed with an Allied Superslab. It is recommended the designer obtain a statement and inspection schedule from a chartered geotechnical engineer confirming the conditions of this manual are achieved by their subgrade design which shall be submitted to the building consent authority.

3.3 Lateral resistance under wind and earthquake

Lateral resistance to sliding under wind or seismic actions is generally resisted by friction between the slab and the ground surface. Seismic action generally governs the design for sliding rather than wind loading.

The Allied Superslab system has been designed for seismic loading allowing for a maximum hazard factor of 0.45 and class E soils as per NZS1170. Refer figure 7 and 8 below for seismic hazard map of New Zealand.

The design criteria set by NZS1170.5 allows for a serviceability limit state earthquake (SLS) and an ultimate limit state earthquake (ULS). The severity, probability and required performance for these two events are very different.

A SLS event is a relatively small earthquake which has a higher probability of occurring over the design life of the building (50 years). As such the required performance of the foundation is to withstand the earthquake with no structural damage and minimal cosmetic damage. The building is to remain useable following the earthquake. The frictional resistance provided by the slab against the ground will be sufficient to resist that SLS sliding force of the earthquake. Any movement is very unlikely in an SLS event.

An ULS event is a large earthquake which has a lower probability of occurring over the design life of the building. Given the lower probability of such an event the required performance is to preserve life safety. Structural and major cosmetic damage is expected. In higher seismic areas with Z factors of 0.15 and above, it is likely the acceleration of the earthquake will be large enough to overcome the frictional resistance provided by slab against the ground surface. Thus, the slab would be expected to slide. The foundation is designed to withstand the sliding forces generated (based on a co-efficient of friction of 0.6).

Protection of services (refer figures 9, 10,11 &12)

Following the Canterbury earthquakes MBIE released a guidance document that recommends specific detailing of the plumbing services either within the foundation depth or beneath the slab. Both options require flexible connections outside the building perimeter and flexible lagging around the pipe where the pipes penetrate up through the slab. This is to avoid critical damage to the services under the slab in the event of an ULS earthquake. There is no requirement for this detail, as major structural and cosmetic damage is permitted in a large earthquake, however the services are a critical element in maintaining the economical repair of the house following a large earthquake.

The Allied Superslab requires all plumbing pipes to be installed as per Figure 9 for any sites with Z factors larger than 0.15. It is also recommended that the pipe penetration details are adopted on all other foundations.

Shear Keys (refer Figures 13 &14)

An alternate option which is more robust would be install shear keys. Shear keys consist of drilled piles (900mm deep) and are spread around the perimeter of the slab. These piles are designed to lock the slab into the ground and prevent the foundation from sliding. The number of shear keys required is dependent on the seismic zone, building type and the area of the floor slab. Shear keys are not to be used in areas where there is a risk of lateral spreading from liquefiable soils. If shear keys are desired they shall be specifically designed and are outside the scope of this document.

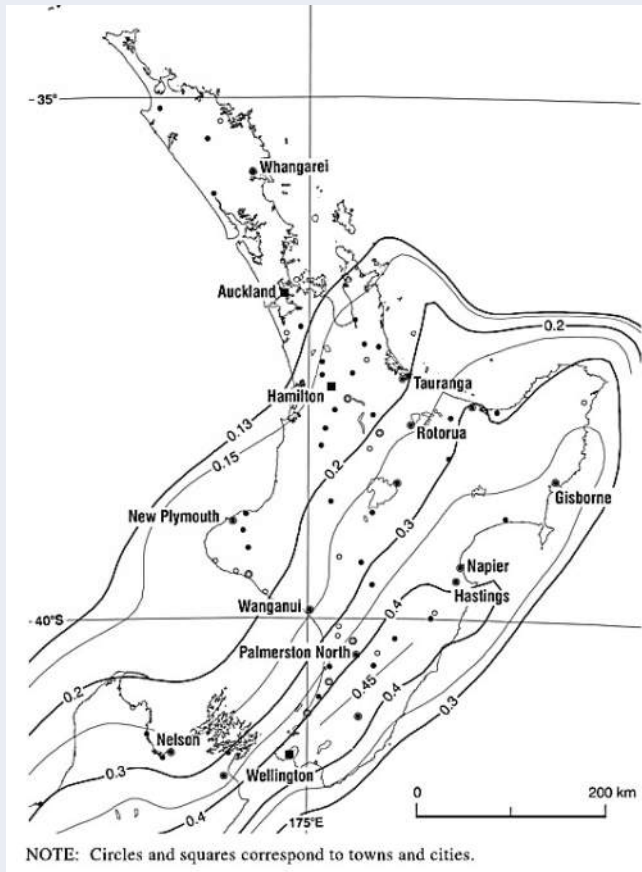


FIGURE 7 – Seismic hazard factors North Island © Standards NZ NZS1170

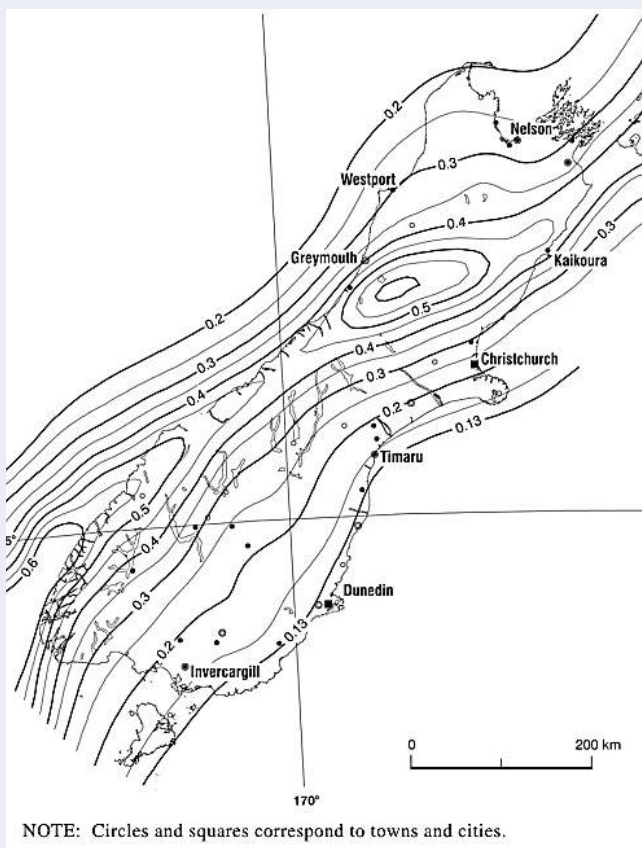


FIGURE 8 – Seismic hazard factors South Island © Standards NZ NZS1170

Pipe Penetration Details For High Seismic Zones Refer to MBIE Guideline Section A figure S14 & S15 and building code clause G13

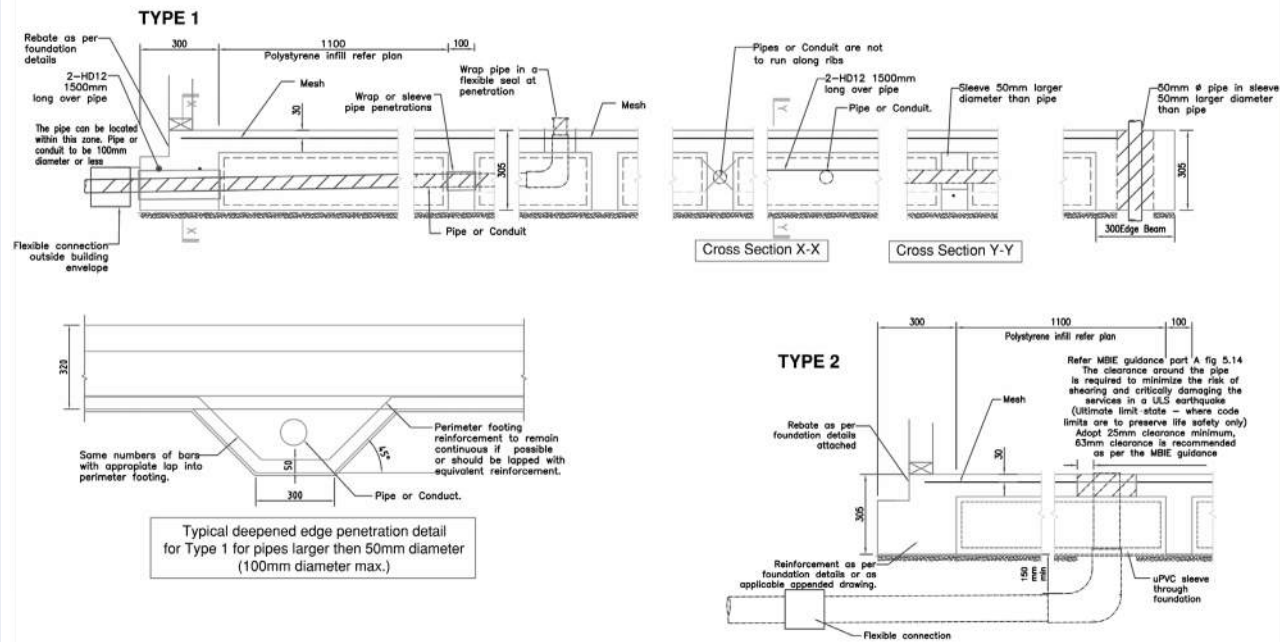


FIGURE 9 – Pipe penetration details

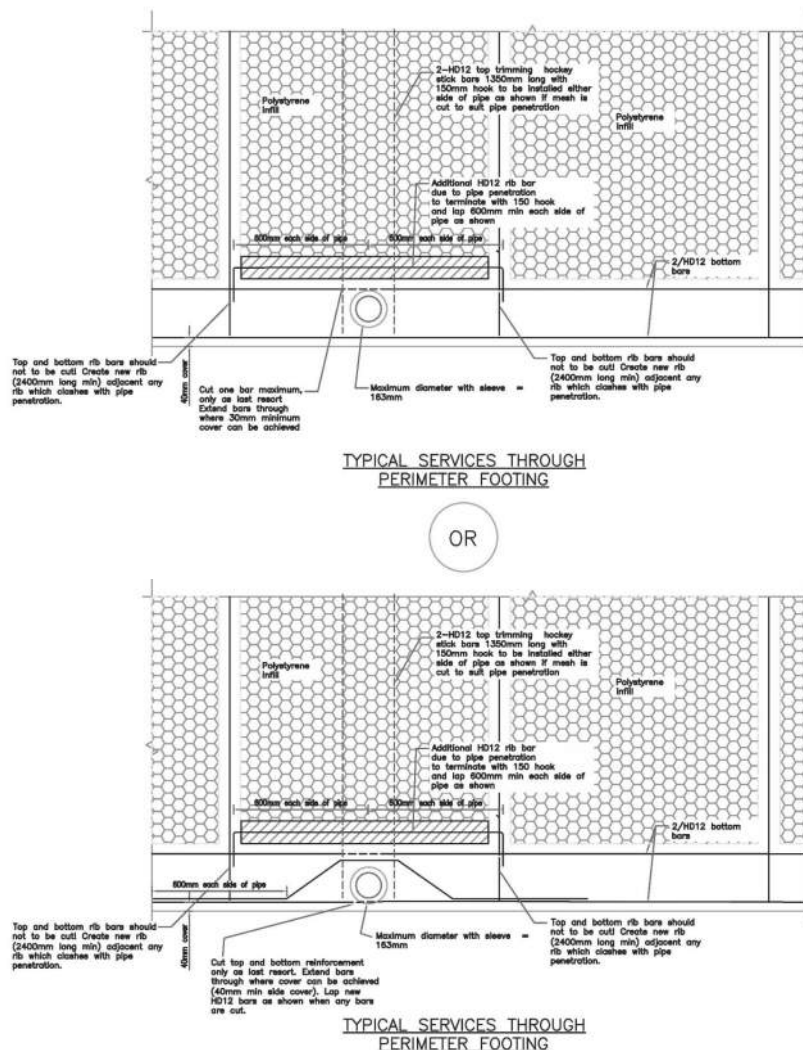


FIGURE 10 – Pipe penetration in perimeter footing

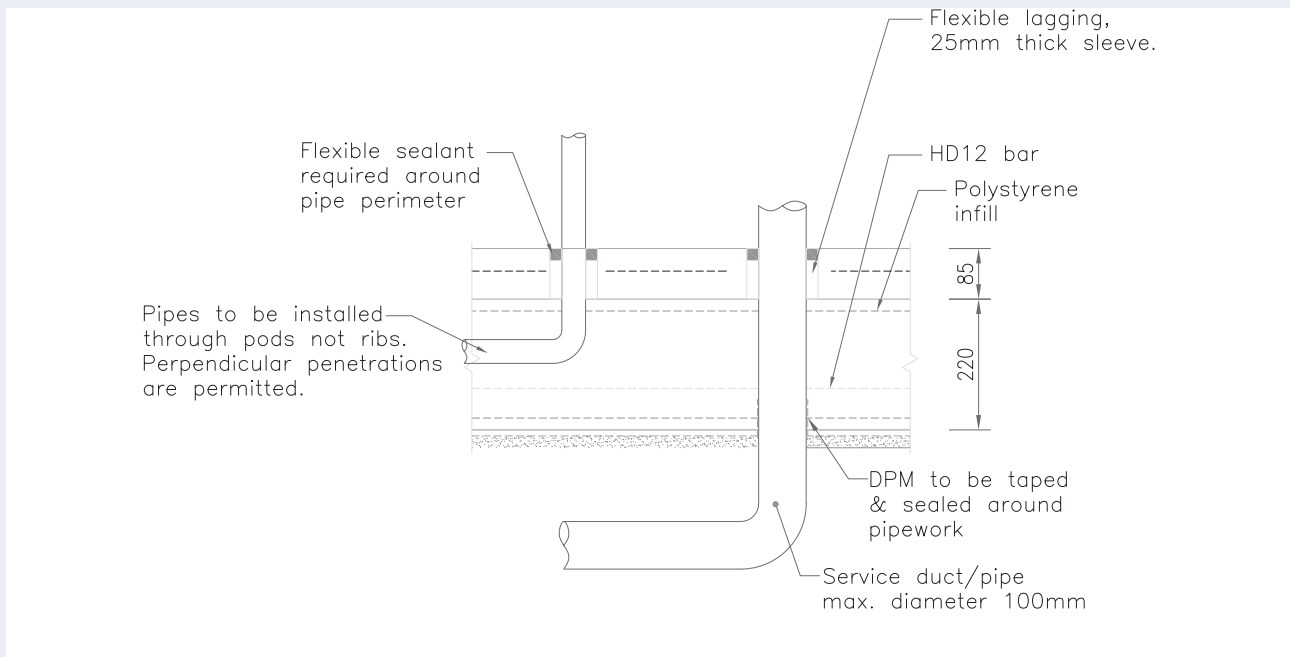


FIGURE 11 - vertical penetrations

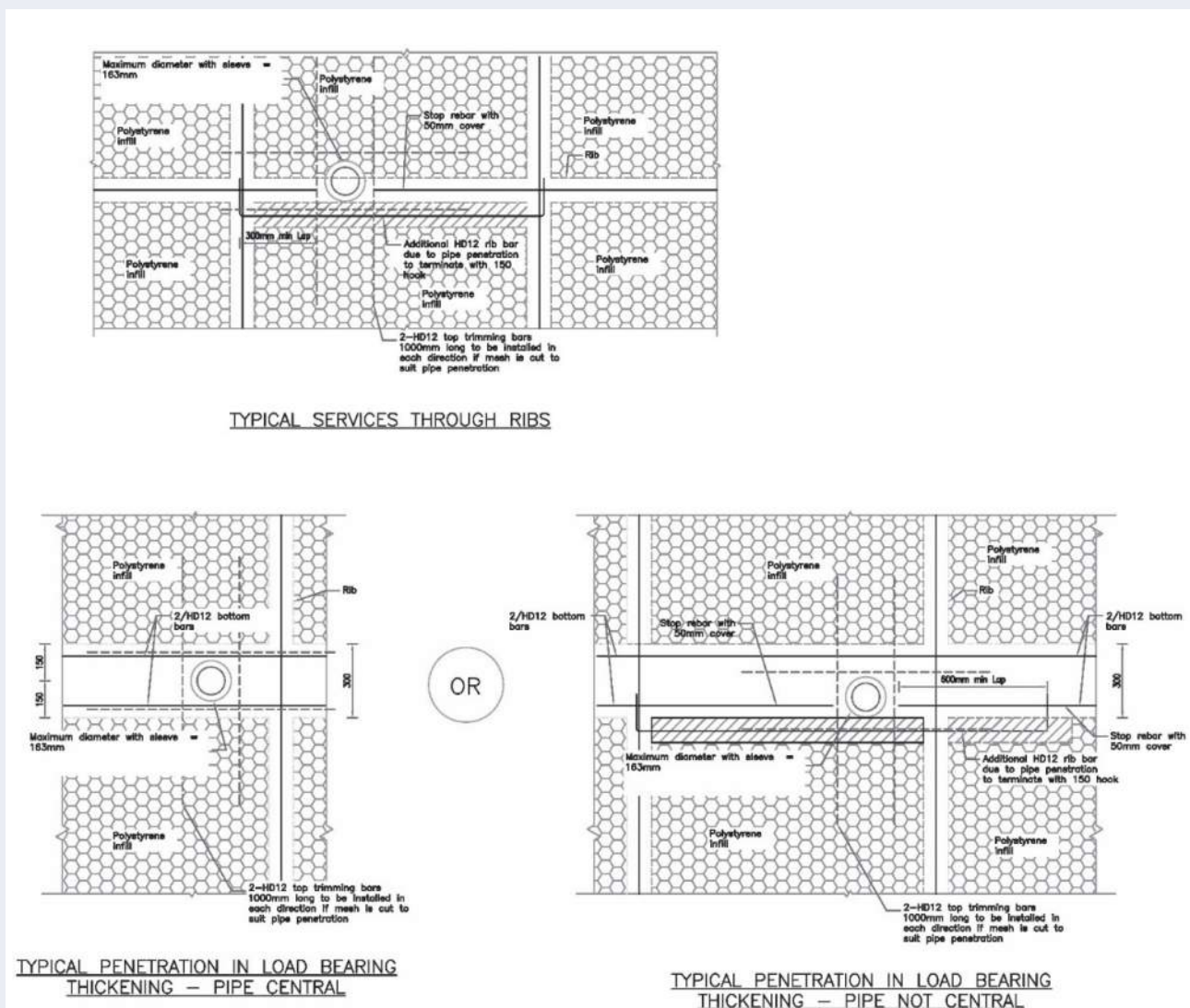


FIGURE 12 - vertical penetration through external footing or rib

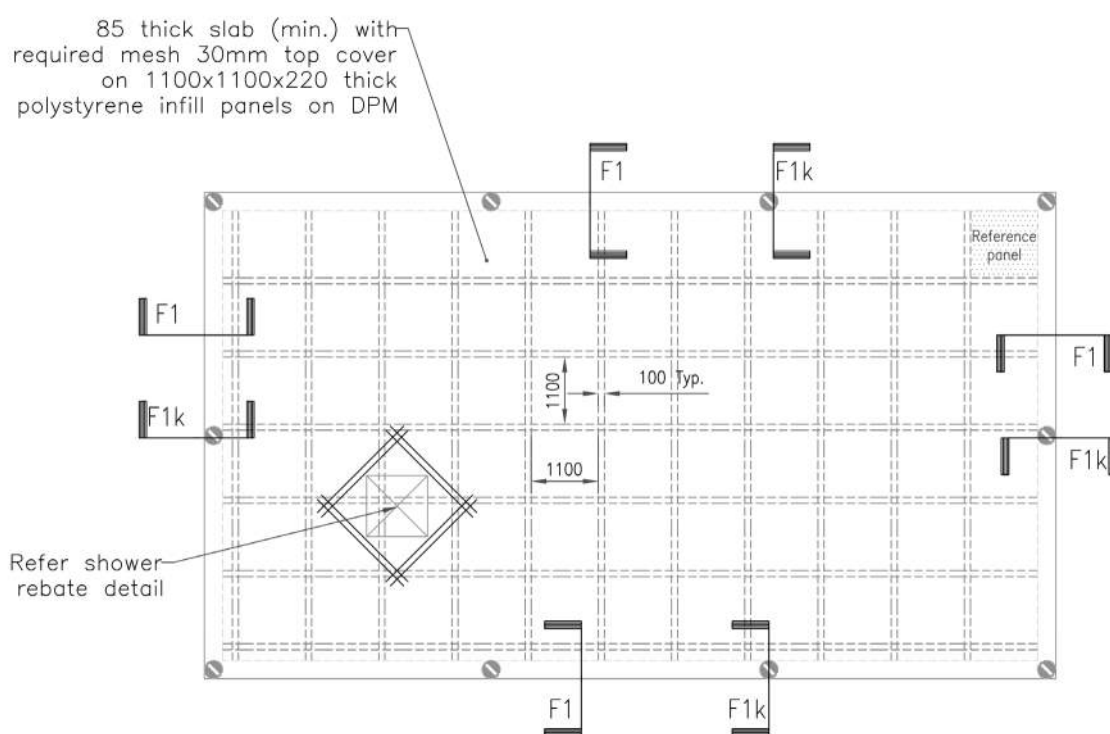


FIGURE 13 – Shear key layout

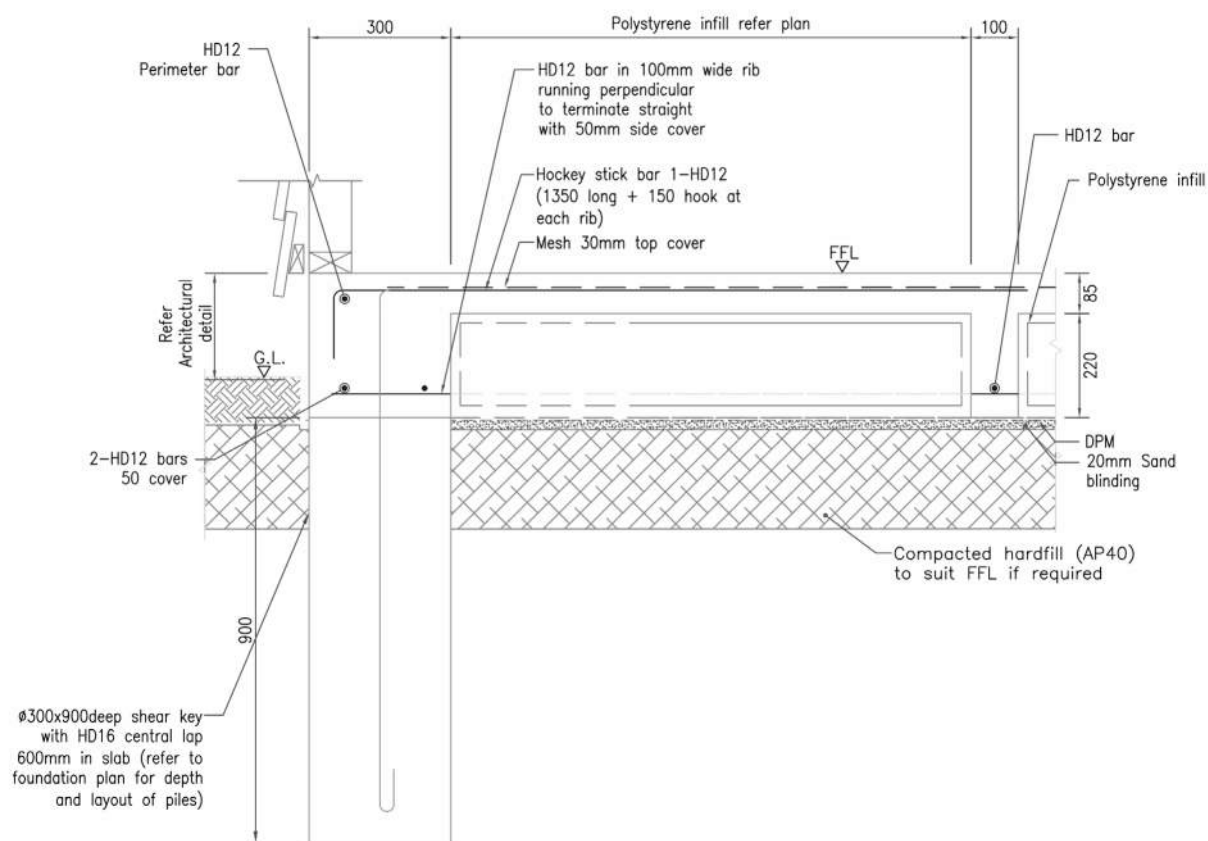


FIGURE 14 – Typical shear key detail

3.4 Weights and loadings

The Allied Superslab allows for standard residential and garage loading as per NZS3604, NZS1170 and maximum loading as per the below.

Dead or permanent loads

- Heavy roof loading 1.0 kPa - including cladding, roof framing, insulation and ceiling
- Light roof loading 0.5 kPa - including cladding, roof framing, insulation and ceiling
- First floor (timber) - 0.6 kPa - Including joists, nogs and services, flooring and lower level ceiling
- Lower level heavy cladding - 2.2 kPa (220 kg/m²)
- Upper/lower level light cladding - 0.6 kPa (60 kg/m²)

Live or imposed loading

- First floor loading 2 kPa
- Slab loading 3 kPa with 2.7 kN point load
- Slab loading of 2.5 kPa with 13 kN point load applied over an area of 300mm x 300mm
- Max vehicle weight of 25 kN or 2500 kg
- Max Snow loading as per sections 15 of NZS3604 - (2kPa, refer figure 15.1 of NZS3604)

Load bearing walls and point loading from beams, lintels and girder trusses.

Where line loads from load bearing walls exceed 10kN/m, internal thickenings shall be installed as per figure 18. Where thickenings are used the designer shall also confirm loadings do not exceed limitations as defined in 3.1 and 3.4 above.

Internal point loads (larger than 13kN) from posts or studs supporting beams, lintels or girder trusses will require a pad or thickening (1.2m long minimum and 300mm wide, located centrally to the load) as per figure 19. Point loading shall not exceed 30kN (ultimate limit state, 1.2G+1.5Q). Larger point loads are beyond the scope of this document however could be detailed by specific design such as by the truss designer.

Point loading on the perimeter footing exceeding 20kN shall require a pad as per figure 20. Point loading exceeding 30kN are beyond the scope of this document.

4.0 - INSTALLATION INFORMATION

The following section outlines the standard installation details for the Allied Superslab designed in accordance with this technical literature. Nonstandard or specially designed projects may require site specific specifications. The consented drawings, NZ Building Code and current best practice shall be adhered to at all times.

If Specific engineered design (SED), all construction shall be inspected by an engineer, the council and/or an approved representative of Allied Concrete who has been specifically trained prior to pouring any concrete.

Codemark compliant Superslabs must be supervised by suitably qualified LBP with relevant carpentry or foundation qualification.

All bending of bars shall be carried out in accordance with NZS 3101. Minimum bend diameters for main reinforcing bars (between 6-20mm dia.) bar shall be 5 x diameter of the bar (db) measured to the inside face of the bend.

All bar laps shall be 50 x db or greater.

4.1 Site preparation and Earthworks

All topsoil, organic material and any soft soil (below design bearing strength) shall be removed from the building platform (refer figure 6) and in accordance with the building consent specification and as per section 3.0 above. Any isolated soft spots shall be excavated to a depth where adequate bearing is achieved.

Compacted hard fill (well graded AP40) or geotechnically approved fill material may be required to achieve the finished floor levels.

It is very important to achieve adequate compaction of a filled subgrade. The earthworks contractor shall compact granular fill in 150mm maximum layers in accordance with NZS4431 and NZS3604 (section 7.5.3). Fill depths exceeding 600mm thick, will need to be certified by a geotechnical engineer to achieve a minimum of 95% compaction of the maximum dry density as determined by test 4.1.1 per NZS4402. The geotechnical engineer shall also confirm the building platform meets all the requirements of section 3.2 of this document.

Clay or cohesive fill shall be compacted to achieve the below as per NZS4431. Clay or cohesive fill shall be certified by a geotechnical engineer:

Minimum Shear Strength and Maximum Air Voids Method

AIR VOIDS PERCENTAGE

(As defined in NZS 4402)

Average value less than	8%
Maximum single value	10%

UNDRAINED SHEAR STRENGTH

(Measured by Pilcon shear vane - calibrated using NZGS 2001 method)

Average value not less than	150 kPa
Minimum single value	120 kPa

The average value shall be determined over any ten consecutive tests

The cut platform shall not be left exposed to dry out, this is particularly important in areas where expansive soils (clay soil) have been identified. Where a platform has been left exposed and there are prevalent cracks (10mm or greater) through the building platform it is important to consult with a geotechnical engineer to confirm remedial action prior to constructing the floor slab.

A clean sand blinding layer (10mm minimum, 20mm maximum) shall be installed on the cut ground level or on top of the certified subgrade layer. The blinding layer will create a level platform, reduce shrinkage forces in the floor slab and protect the DPM from being punctured by shape aggregates.

4.2 Damp proof membrane (DPM)

A continuous damp proof membrane shall be placed on top of the sand blinding layer over the entire slab area in accordance with NZS3604 section 7.5.4 - 7.5.6

Where polyethylene (polythene) sheet damp proof membrane is to be used, the material shall be not less than 0.25mm thick, have lapped joints not less than 150mm wide which are sealed with pressure sensitive plastic tape not less than 50mm wide. The DPM shall be protected from damage during construction. Refer section 4.14 for polished concrete

4.3 Set out & boxing

Site profiles, levels and positions on site shall be determined by the builder and/or surveyor. Any discrepancies in the dimensions shall be discussed with the architect as soon as possible.

Boxing of correct height and levels shall be erected around the perimeter of the slab

ensuring that any boxing supports do not penetrate the DPM layer.

All rebates whether for brickwork, garage door thresholds or joinery shall be allowed for in the boxing as per the architectural drawings.

4.4 Pod set out

The polystyrene pods shall be placed on the DPM layer within the perimeter boxing generally as per the set-out drawings provided.

Proprietary spacers will be supplied with the Allied Superslab pods by Allied Concrete or approved allied supplier to ensure the pods are secured in the correct locations and bars achieve adequate cover during construction.

The set out of the pods shall ensure that the perimeter footing width (300mm wide) and rib width (100mm) is always maintained. The drawings and details shall be carefully checked to ensure the construction matches the consented design drawings.

Internal load bearing walls will be marked on the drawings and these also need to be accommodated in the pod set out (or cut into the pods if preferred).

A new reference point can be created providing the footing and rib thicknesses are maintained, ribs are kept continuous and all internal point loads or load bearing walls are supported.

Where pods require cutting to suit the dimensions and set out of the floor, care shall be taken to ensure that the remaining pods are no less than 200mm wide. Where narrow pods occur (less than 200mm width) then the pod shall be removed or the set out merged with an adjacent full width pod to create two narrower pods of 600-800mm wide with a standard 100mm wide rib between. Where footings or ribs are to be wider than detailed an extra HD12 bar shall be installed in the bottom of the footing or rib per 100mm increase in width.

The maximum pod size in all cases shall not exceed 1100mm x 1100mm square. Either depth of 220 or 300 deep polystyrene pods are acceptable providing they are detailed and installed in accordance with this document.

Qpods can be used as an alternative to polystyrene pods. The 1100mm x 1100mm square (maximum) void former is created by clipping four 550mm square Qpods together. Qpods can easily be omitted to allow for pipe service penetrations or pads to be installed. 100mm wide extension pods can also be clipped onto the side of the pod where the spacing is less than 550mm wide to reduce concrete consumption. Refer section 6.1 for detailing.

4.5 Perimeter foundations

The perimeter edge beam is typically 300mm wide however larger widths could be specified when ground conditions or edge detailing of cladding dictate this in the specific design.

Typically, 2 HD12 bars (Grade 500E deformed bars) are used for bottom steel in the footing and 1 HD12 used as top reinforcement where required. The bottom bars shall be placed onto bar chairs to achieve 50mm bottom and side cover.

HD12 starter bars (Hockey stick bars) are used at 1200mm centers (or at the top of each rib). These are 1350mm long with a 150mm hook anchoring the footing to the floor slab. This is particularly important for slabs with large rebates such as brick veneer clad houses. The large rebates prevent the mesh from achieving the required anchorage into the perimeter footing. The Hockey stick bars also give the Superslab the strength it needs to tolerate up to 25mm differential settlement as defined by B1 NZBC. Hockey stick bars of varying lengths are specified in specially designed foundations depending on site conditions and levels of soil expansiveness. Hockey stick bars shall be tied underneath the mesh to ensure 30mm minimum top cover to all the reinforcement. The top HD12 longitudinal bar is tied perpendicular to the underside of the hockey stick bars. All the reinforcement shall be sufficiently chaired so that the mesh maintains 30mm top cover and all reinforcement maintains 50mm side cover.

The perimeter footing may have rebates to accommodate exterior cladding details such as bricks, garage door rebates, and full height joinery rebates. The rebates shall be coordinated and set out in accordance with the architect's drawings. The maximum permitted rebates are 150mm wide by 120mm deep or 200mm wide and 25mm deep.

4.6 Internal ribs, Load bearing thickenings & Pads

A standard internal rib is 100mm wide and has 1 HD12 bar located in the bottom of the rib with 50mm cover to the DPM.

Extra wide ribs or ribs with additional reinforcement including links (shear reinforcement) can be specified to suit site specific design requirements and where required will be detailed on the engineering drawings.

Ribs shall run from one side of the slab to another in a straight line. If an offset is created a 300mm slab thickening is required and terminating rib bars shall be anchored into the 300mm thickening with a 150mm hook and 250mm

development length. HD12 rib bars shall be lapped (600mm minimum) where required. See figure 18 for the internal slab thickening detail.

Load bearing walls, internal and external point loads shall be detailed in accordance with figures 18, 19 and 20.

4.7 Mesh and Topping thickness

The mesh used in the 85mm topping is SE62 (or 2.29kg/m² minimum) grade 500 E as per NZS4671 and NZBC clause B1.

The mesh shall be supported on 40mm chairs for an 85mm topping. Proprietary Castle G25/40 bar chairs are to be used or equivalent bars chairs complying to AS/NZS 2425:2015. Longitudinal rail bar chair chairs without specific testing to confirm there is no reduced performance in shear and flexural capacity of the topping slab are excluded from this document and shall not be used. The chairs shall be located on top of the polystyrene pods and be of sufficient number to ensure the mesh does not sag excessively between support points. Top covering on mesh shall be 45mm maximum and 30mm as a minimum. Qpods have bar chairs built into the pods to support mesh to the appropriate cover and have been load tested to confirm topping performance is not compromised.

Topping thickness shall be a minimum thickness of 85mm in all locations. There is no acceptable construction tolerance for the topping thickness less than 85mm especially in the garage area. Where underfloor heating or polished concrete is specified the topping shall be increased to 100mm. Bar chairs and top cover to mesh to shall be maintained as specified above. Toppings greater than 100mm thick will require increased mesh reinforcement to meet minimum shrinkage requirements of NZS3101 and will require specific engineering input and are beyond the scope of this document.

Where underfloor heating is specified, the pipes shall be no larger than 16mm diameter. It is recommended the underfloor heating pipes are installed below the mesh. This is to avoid increasing the top cover to mesh and to avoid the risk of damaging the heating pipes when saw cuts are installed. Increasing the mesh top cover would increase the risk of shrinkage cracking and as such shall be avoided.

4.8 Reentrant corners

At re-entrant (internal) corners additional steel is required to reduce the risk of cracks propagating from the internal corner into the slab. The additional steel will be indicated

on the drawings and consist of 2 HD12 bars, 2000mm long placed diagonally across the corners. Spaced 100mm apart with the first being located with 50mm side cover to the corner.

4.9 Concrete placing, finishing and curing.

PLACING

The design documentation will specify the required mix code for each design.

It is important to explain the placement method to Allied Concrete to ensure the appropriate mix is supplied.

Only Allied Mix code 252CSS shall be used for 25 MPa applications or Mix code 202CSS used for 20 MPa applications. Refer polished concrete section below (4.14 for polished concrete mix code).

Failure to use the correct Allied concrete mix specified will breach the conditions of the Codemark and may prevent the foundation from obtaining a Code Compliance Certificate (CCC).

Concrete placing shall be carried out by experienced personnel and shall be carried out strictly in accordance with NZS3109

No water shall be added to the as delivered concrete unless approved by the design engineer within the restrictions of NZS3104 clause 2.9.3.1

Concrete shall not be placed until all reinforcement has been inspected by the engineer, council and/or an approved engineer's representative. Failure to carry out a pre-pour inspection may result in difficulties in obtaining a CCC.

Care shall be taken during the pouring process to ensure that the polystyrene pods do not move around. Ideally concrete shall be placed on top of each pod prior to infilling between the ribs to prevent pod flotation or movement during concrete placing.

The concrete shall be placed so that its working face is generally vertical, and normal to the direction of placing. It shall be placed over the width of the slab in such a manner as to minimize segregation.

Concrete shall be thoroughly vibrated around all steel and against all boxing and formed rebates within the perimeter of the slab, as per code and best practice requirements.

Where good access exists around the site and sufficient labor is employed then the concrete can be placed directly from the truck using the

chute or wheel barrows. If these methods are used it is important that the mesh reinforcement and pods are protected from wheel barrow traffic and correct covers are maintained.

Alternatively, a slump pump can be used with either 13mm or 19mm aggregate.

FINISHING

The top surface of the slab shall be screeded immediately after placing/vibration has been completed.

Screeding shall be carried out with a level as a reference to ensure the top surface is finished within tolerance.

A trowel and an edging tool shall be used to finish the slab to a U3 finish in accordance with NZS3114. The finish surface shall be blemish free with all slab edges tooled off to form a rounded edge to help prevent cracking.

CURING

Foundations shall be cured for at least 7 days in accordance with NZS3109. If this process is omitted or modified the contractor will need to take responsibility for controlling shrinkage.

When the possibility of heat, wind, rain or low humidity could induce premature drying of the top surface the contractor shall either delay the pour or take appropriate actions to mitigate plastic cracking forming in the surface of the slab. One such option is to apply an anti-evaporation agent over the concrete surface after screeding to mitigate excessive evaporation of water from the concrete surface. Additional curing measures including ponding of water on the surface of the slab, sprinkling the slab surface regularly or the use of wet sacking placed over the slab can also be adopted.

Where a large change in ambient temperature is expected during the first 24 hours such as a very cold night then continuous wet curing via ponding or sprinkling is recommended to mitigate thermal shock and cracking in the slab.

Mitigating shrinkage cracking shall also be discussed with the concrete supplier to allow for an adequate mix or concrete additives to be utilized where appropriate.

The surface finishes specified in the building consent documentation need to be achieved by the contractor. These may include colored or polished concrete. The concrete mix and curing method shall be selected to achieve the specified finish.

4.10 Saw cutting (control joints) and free joints.

Saw cut joints shall be cut into the slab within the 24 hours or as early as possible, once the slab is sufficiently hard to walk on.

Saw cuts shall be 20-25mm deep (for the standard 85mm topping). For thicker toppings deeper saw cuts will be required of approximately 1/4th of the topping thickness. Saw cuts shall be made where indicated on the drawings.

Re-entrant corners are at higher risk of cracking due to differential stresses developing in the slab with different rates of curing on the exposed edges than compared with the internal slab. Saw cuts shall be installed at re-entrant corners and at 6m x 6m (maximum) spacing or located to create squares where possible. Refer 4.14 below for polished concrete. Creating a square or regular cut patterns will aid in mitigating differential curing in the topping resulting in shrinkage cracking.

Slabs longer than 30m will require a free joint, which shall be installed as per figure 21 and 33 of this manual. It is important that top reinforcement stops either side of the sawcut and the bottom reinforcement extends perpendicular to the free joint. Should the free joint not be perpendicular to the length of the slab it will not work, and this detail will require specific design. The bottom reinforcement is to extend a minimum of 1200mm either side of the joint and be debonded as per figure 21 and 33. Cladding and floor coverings in particular which cross the free joint need to be detailed appropriately to tolerate the horizontal movement which could occur.

4.11 Plumbing and pipe penetrations

There are two options for installing the plumbing services in combination with waffle slabs. The pipes can either be installed within the subgrade beneath the pods and concrete foundation or within the depth of the waffle slab itself.

Where falls allow and for all gas or critical ducting it is recommended the pipes are installed within the depth of the floor slab (type 1) flexible lagging shall also be included around the pipes. Installing the pipes within the depth of the slab will mitigate the risk of damage occurring underneath the floor (where it would be difficult to repair) in the event of an earthquake.

Where pipes cannot achieve the required fall, or if the diameter is too large, these can be installed within the subgrade (type 2) and penetrate up vertically through the slab. Again, a clearance around the pipe shall be maintained (25mm minimum or recommended 50mm as per the MBIE guidance).

Pipes are not permitted to run along or within ribs and footings or penetrate up through ribs and footings without special detailing. Pipes are permitted to cross perpendicular through a rib

or footing providing they are located with the middle third of the depth of the waffle slab and are 50mm diameter or less.

Standard detailing requirements are to be followed for all standard Allied Superslab foundation. Detailing beyond the limitations provided are beyond the scope of this document and would require specific engineering design.

4.12 Shower Rebates

The Allied Superslab has been designed to accommodate a 50mm deep shower rebate. Refer standard details as per figure 15. All pods in contact with the shower rebate are cut down by 50mm and mesh is lowered and chaired appropriately with the correct cover and lap. Trimming bars are required around the shower as per Figure 15. It is important the reinforcement of any perimeter footings, ribs or internal slab thickenings extending across or adjacent to a shower rebate are kept continuous. The maximum area of any shower rebate for the Allied Superslab is 4m². Larger or deeper rebates can be accommodated with specific engineering design and are beyond the scope of this document.

4.13 Wing walls

Small wing wall projections are permitted providing they are detailed as per section 6 of this manual and comply with the below:

- Maximum projection or cantilever from the slab envelope is 600mm
- Single storey with light weight cladding and a maximum height of 2700mm
- No point loading from girder trusses or beams on the 600mm cantilever

Any wing walls not complying with the above are beyond the scope of this document and may require specific design or detailing to NZS3604.

4.14 Polished Concrete floors

Where a Polished aesthetic is selected it is important to take extra precautions to mitigate shrinkage cracking. It is not practical to assume any slab will be crack free however the below will mitigate the risk of shrinkage cracking:

- The mix design may be tailored for the conditions and desired finish. As such it is important to discuss the conditions with your local Allied Concrete supplier before the pour.
- Sawcuts shall be reduced to 4x4m. These shall be installed as soon as practical and no later than 24 hours
- The slab shall be cured in accordance with NZS3109. I.e., flooding the slab for 7 days
- A double layer of DPM shall be adopted
- The polisher shall check the compatibility of the surface hardener with the concrete mix supplied prior to the pour and adjust as required
- Polished mix codes for 13mm or 19mm aggregate shall be as per the below
 - » 3013GRN
 - » 3019GRND

5.0 - LANDSCAPING AND ONGOING MAINTENANCE

Foundation maintenance shall be broadly in accordance with AS2870: Appendix B. Care shall be taken on clay sites which are expansive within the limits of section 3.2, as work and planting around the slab perimeter can have a detrimental effect on the slabs performance.

5.1 Paving and landscaping heights

The level of permanent paved, concreted and landscaped surfaces shall be kept within the limits stated in NZS3604 clause 7.5 (Figure 7.11 of NZS3604)

For paved or concreted surfaces the minimum step from the internal finished floor level to the finished exterior level shall be no less than 150mm.

For grassed or permeable surfaces the minimum step from the internal finished floor level to the ground level shall be no less than 225mm.

There may be further requirements by the architect or the local building authority in flood prone areas.

5.2 Excavation and retaining walls

Excavation next to the edge of the Allied Superslab shall be avoided where possible. Under no circumstances shall excavation take place which will undermine the edge of the slab

Excavation or construction of retaining walls (lower than the slab level) within a 1:4 gradient from the underside of the slab to the base of the excavation/wall shall be avoided. A qualified engineer shall design all retaining walls within this zone to ensure that loss of vertical and lateral support (during construction or permanently) does not occur.

5.3 Drainage of the site

Sands, silts and clays shall be protected from becoming extremely wet by adequate attention to site drainage and prompt repair of plumbing leaks.

The site shall be graded or drained so that water cannot pond against or near the building. The ground immediately adjacent to the building shall be graded to a uniform fall of 50mm minimum away from the building over the first meter. The site drainage shall be maintained for the design life of the building (normally 50 years)

The development of the gardens shall not interfere with the site drainage requirements. Garden beds immediately adjacent to the slab edge or undermining the slab edge in anyway are not permitted.

5.4 Gardens, trees and shrubs

Planting of trees shall be avoided near the foundations as they can cause damage due to drying of clay and result in excessive seasonal ground movement.

To reduce, but not eliminate, the possibility of foundation damage, tree planning shall be restricted to a horizontal distance equal to that of the mature height of the tree. Where rows or groups of trees are involved the above distances may need to be increased and specific advice shall be sort. Please note that removal of mature trees from the site can also cause issues with ground movement.

6.0 - STANDARD DETAILING

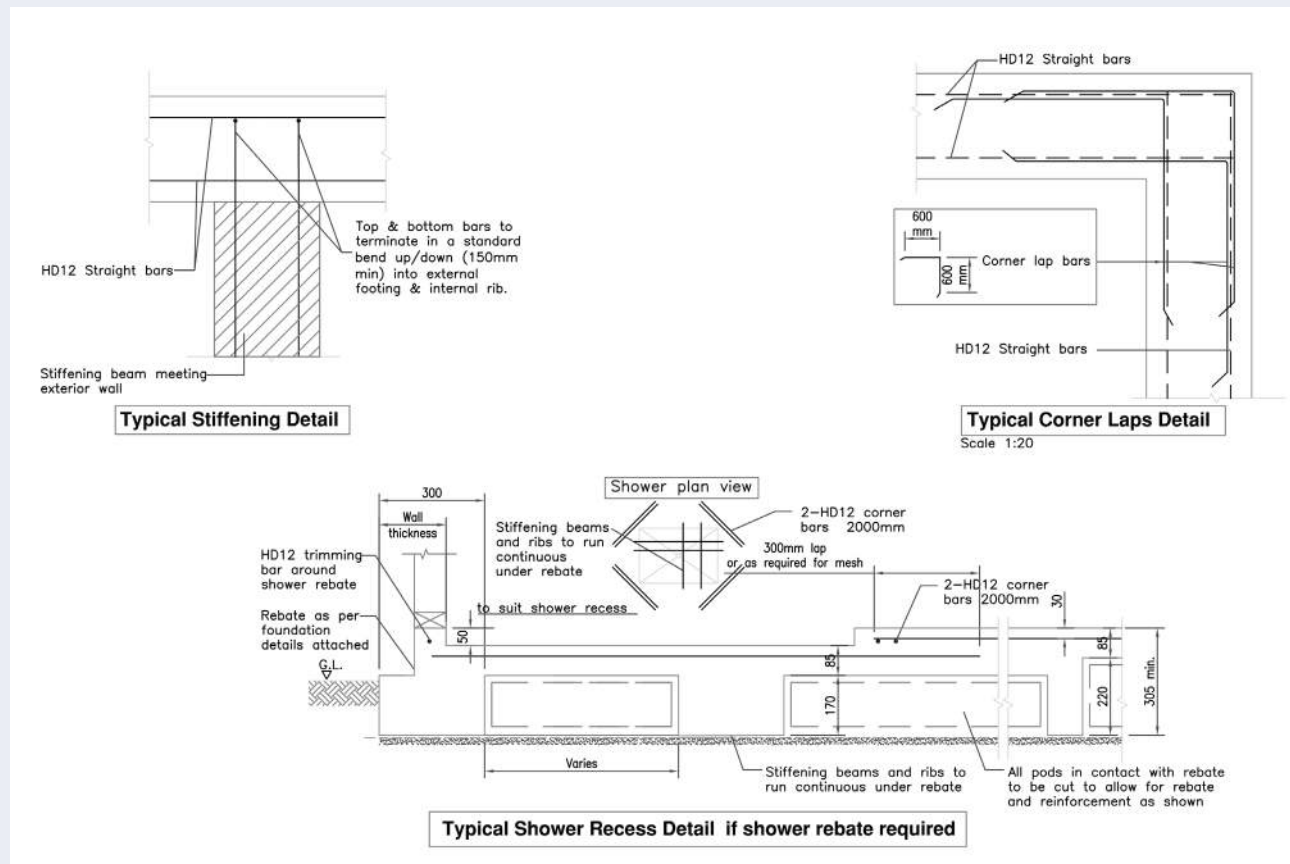


FIGURE 15 - Typical shower rebate details and corner bar lap detail

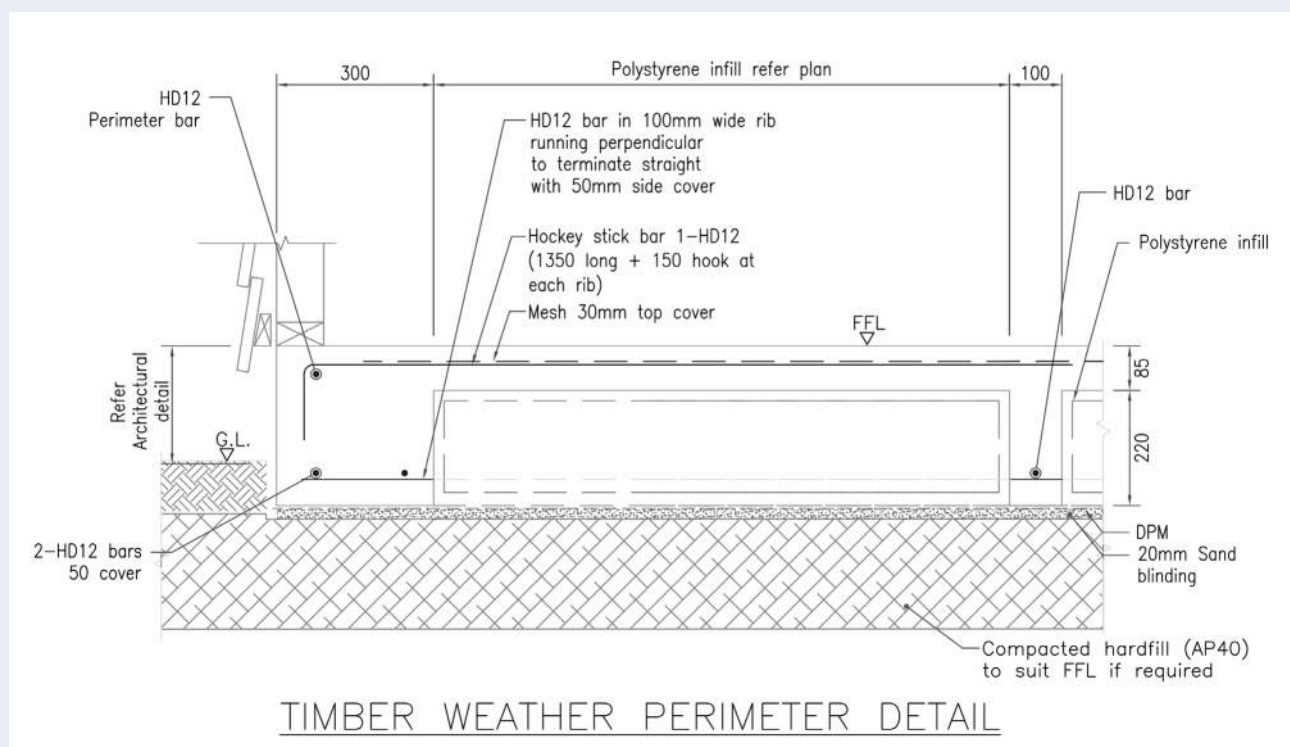


FIGURE 16 - Typical details - Lightweight cladding

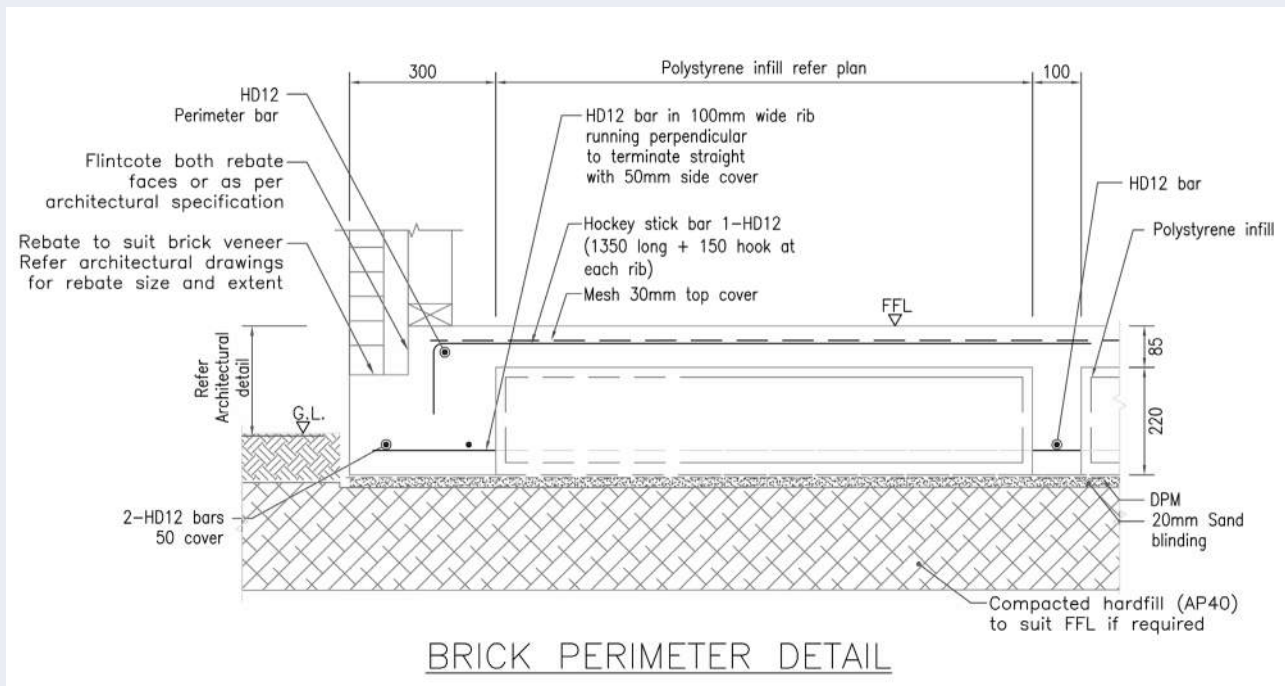


FIGURE 17 - Brick Rebate detail

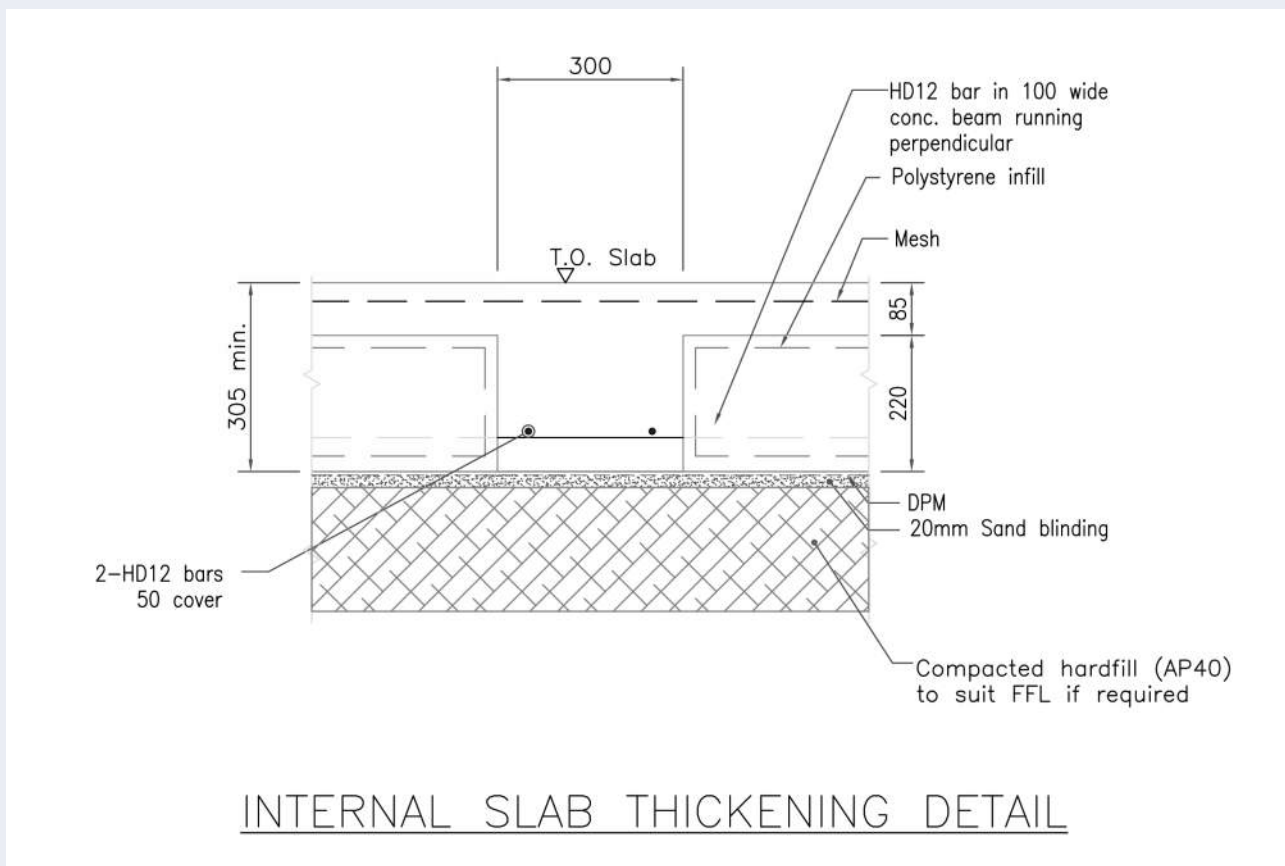


FIGURE 18 - Internal slab thickening

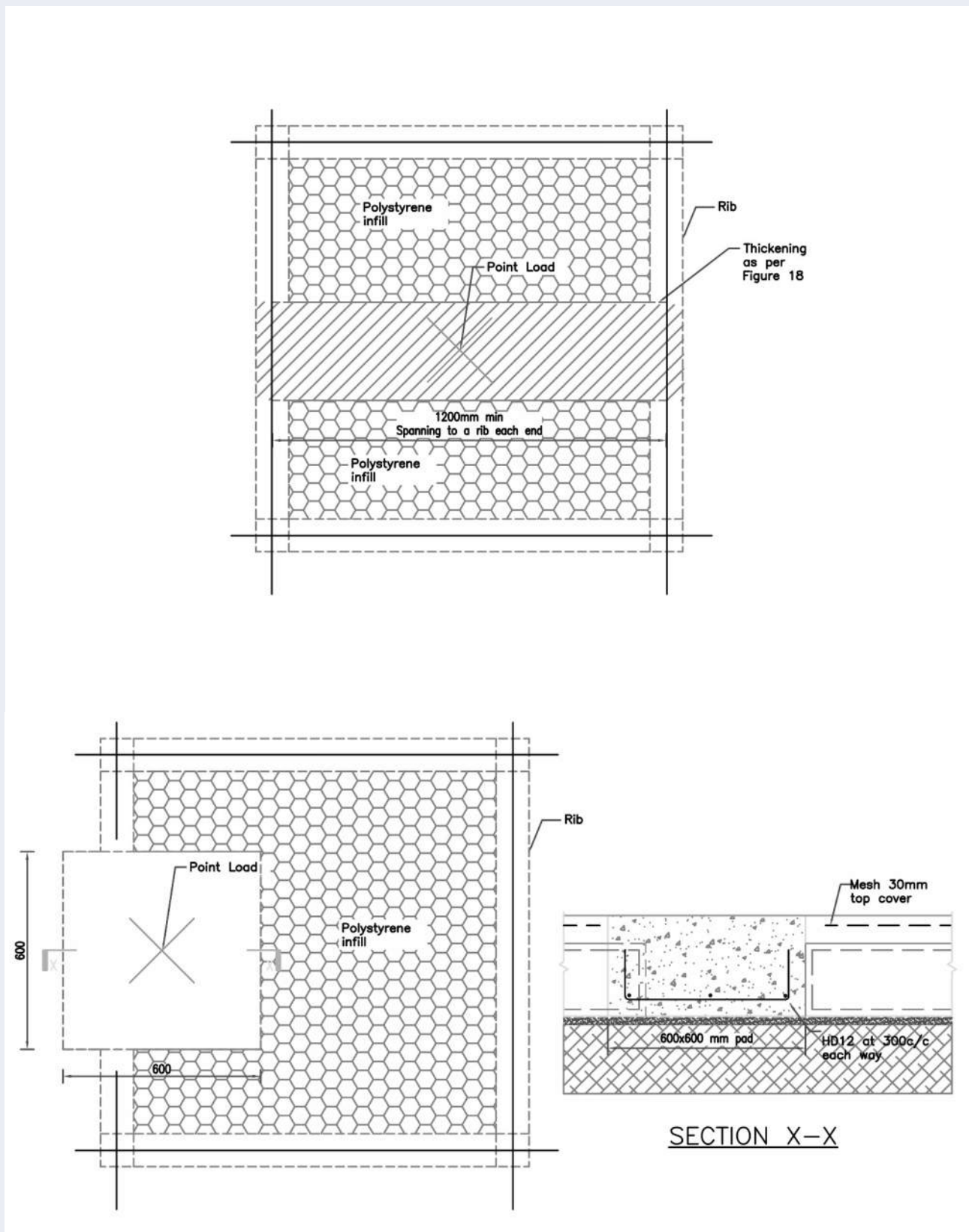


FIGURE 19 – Internal point loads larger than 13kN

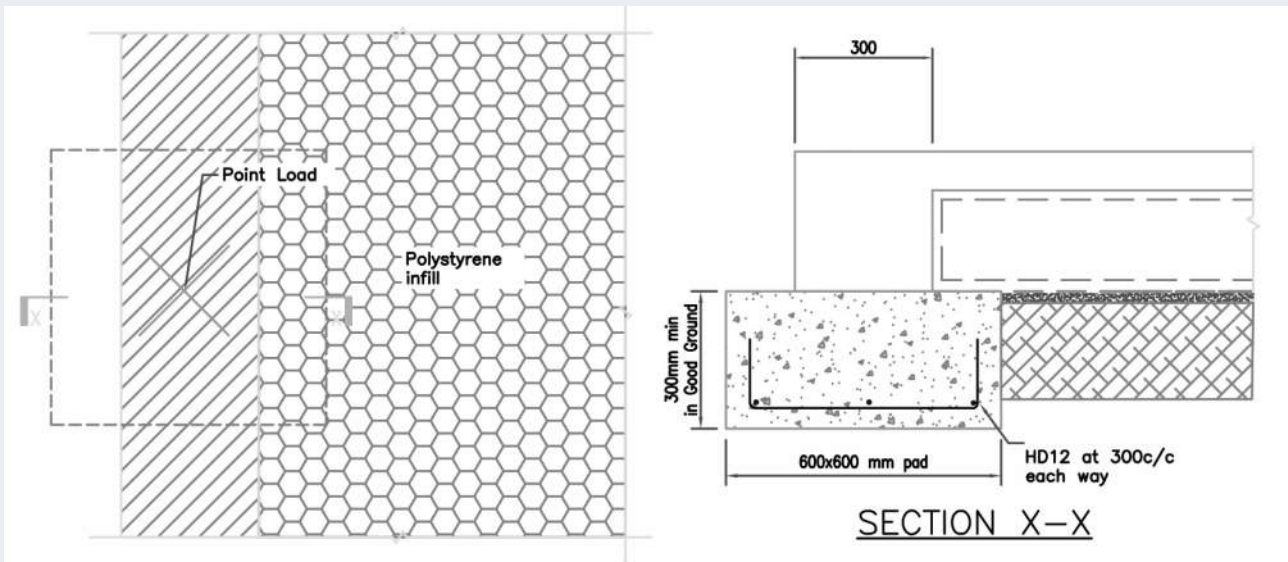


FIGURE 20 – Perimeter point loads larger 20kN

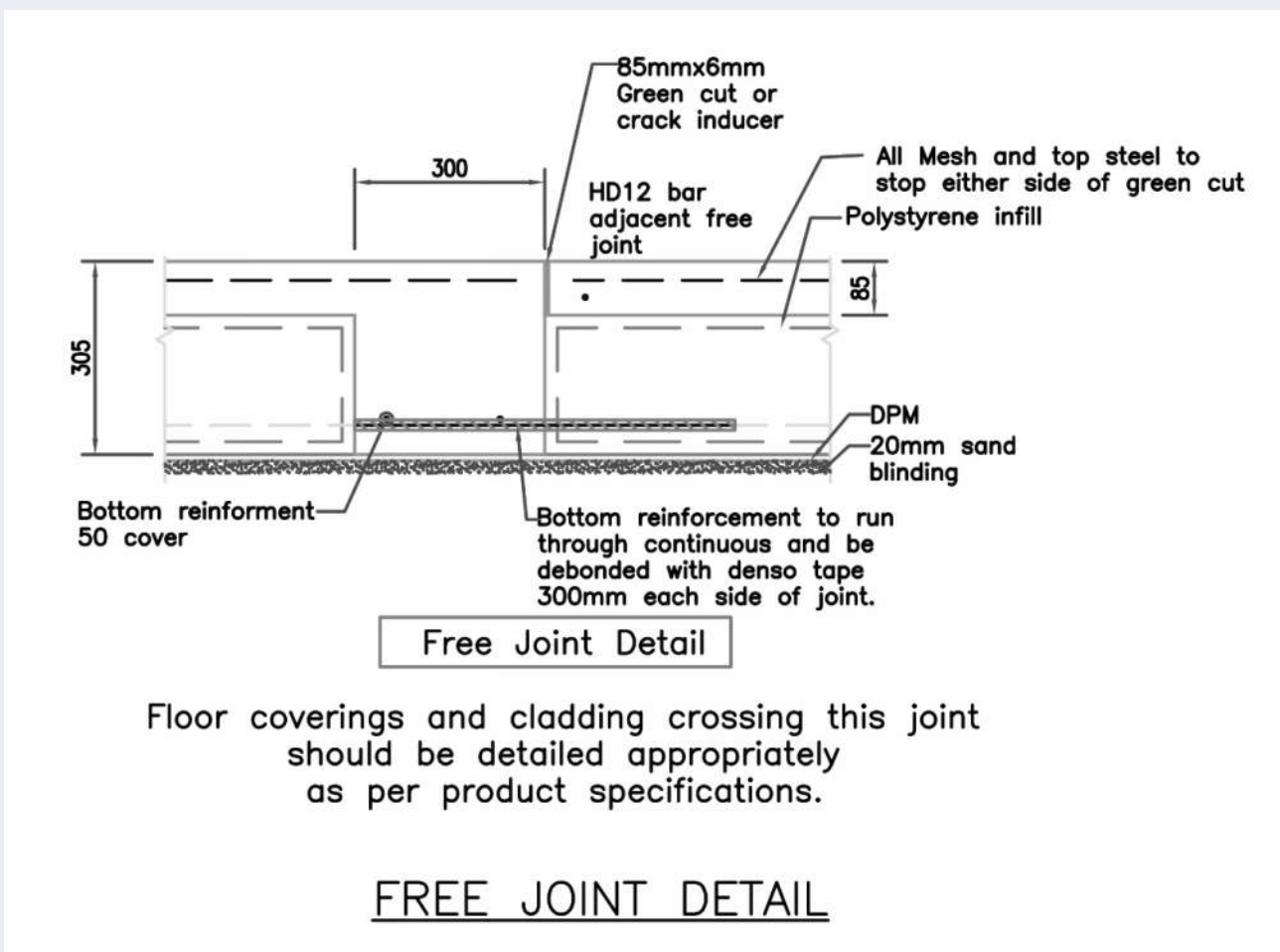


FIGURE 21 – Free Joint

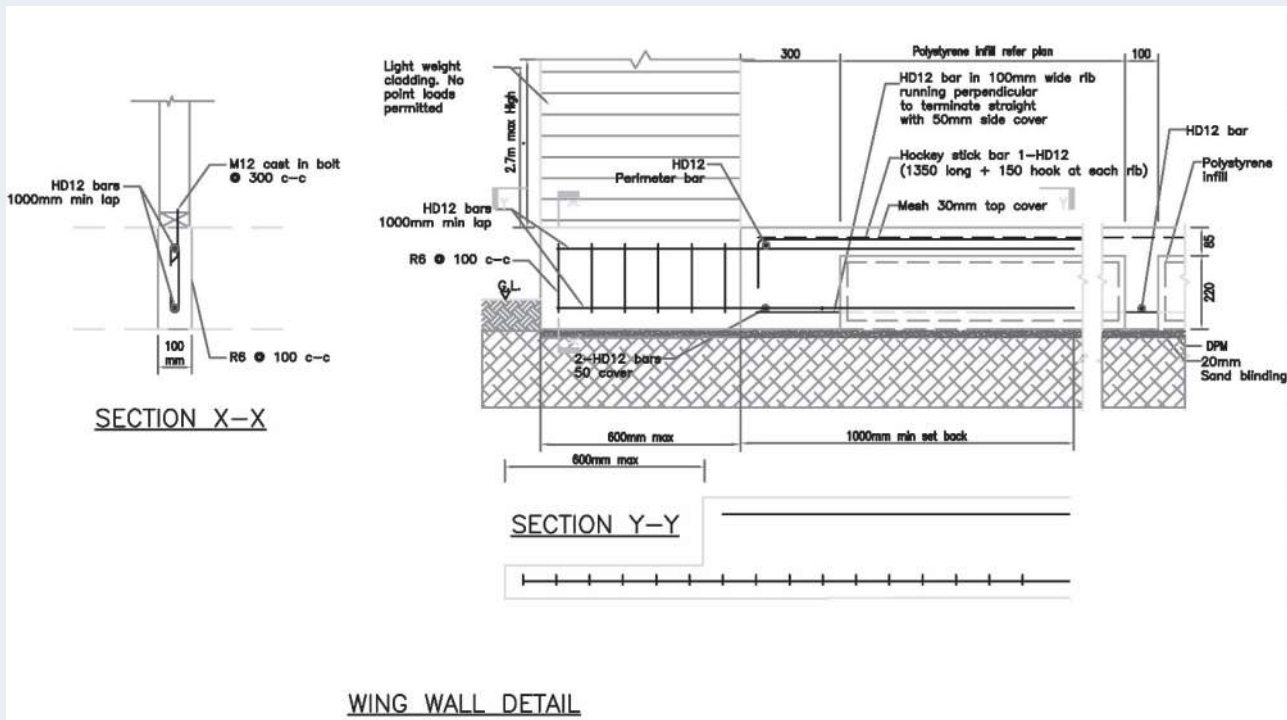


FIGURE 22 – Wingwall detail

6.1 Qpod substitutions detailing

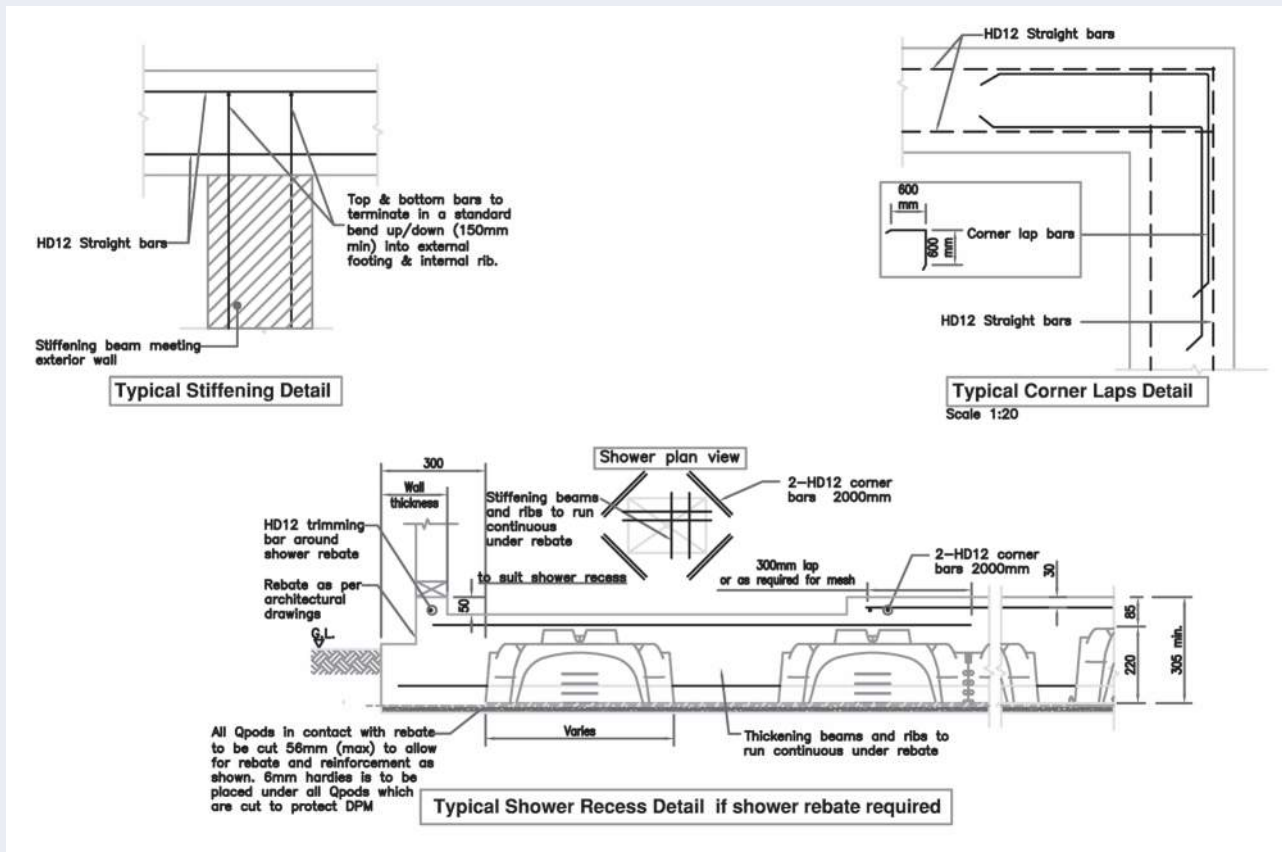


FIGURE 23 – Qpod rebate and corner details

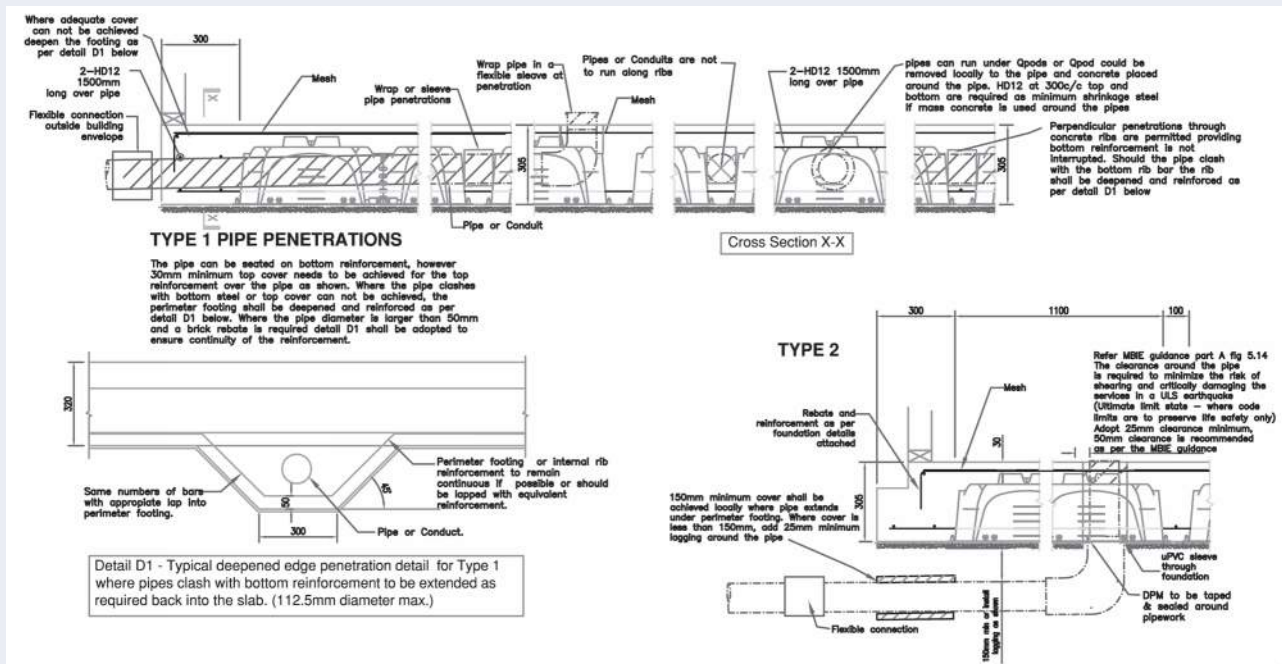


FIGURE 24 – Qpod pipe penetration details for high seismic zones. Refer to MBIE guideline section A figure S14 & S15 and building code clause G13

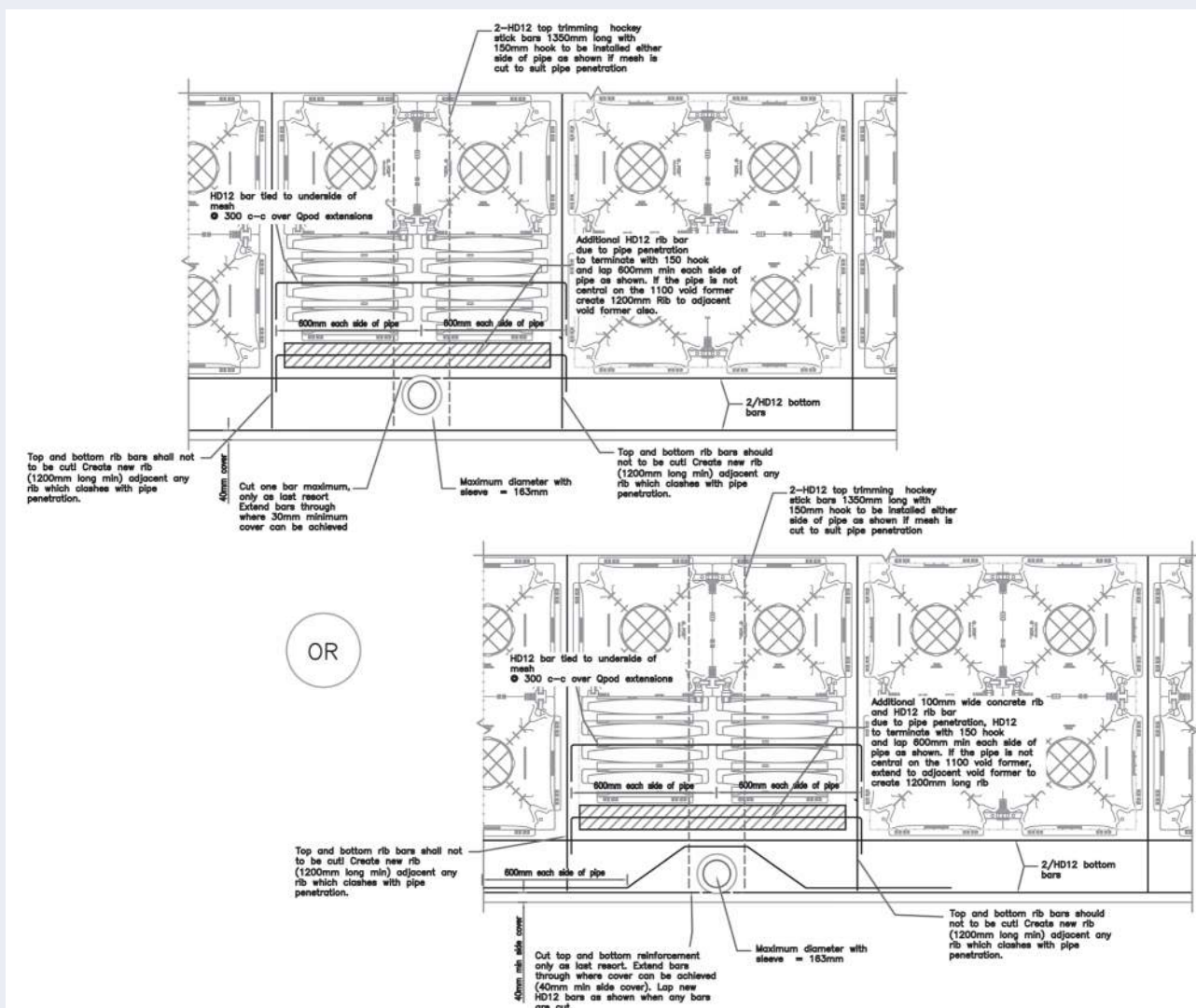


FIGURE 25 – Qpod perimeter footing pipe penetrations

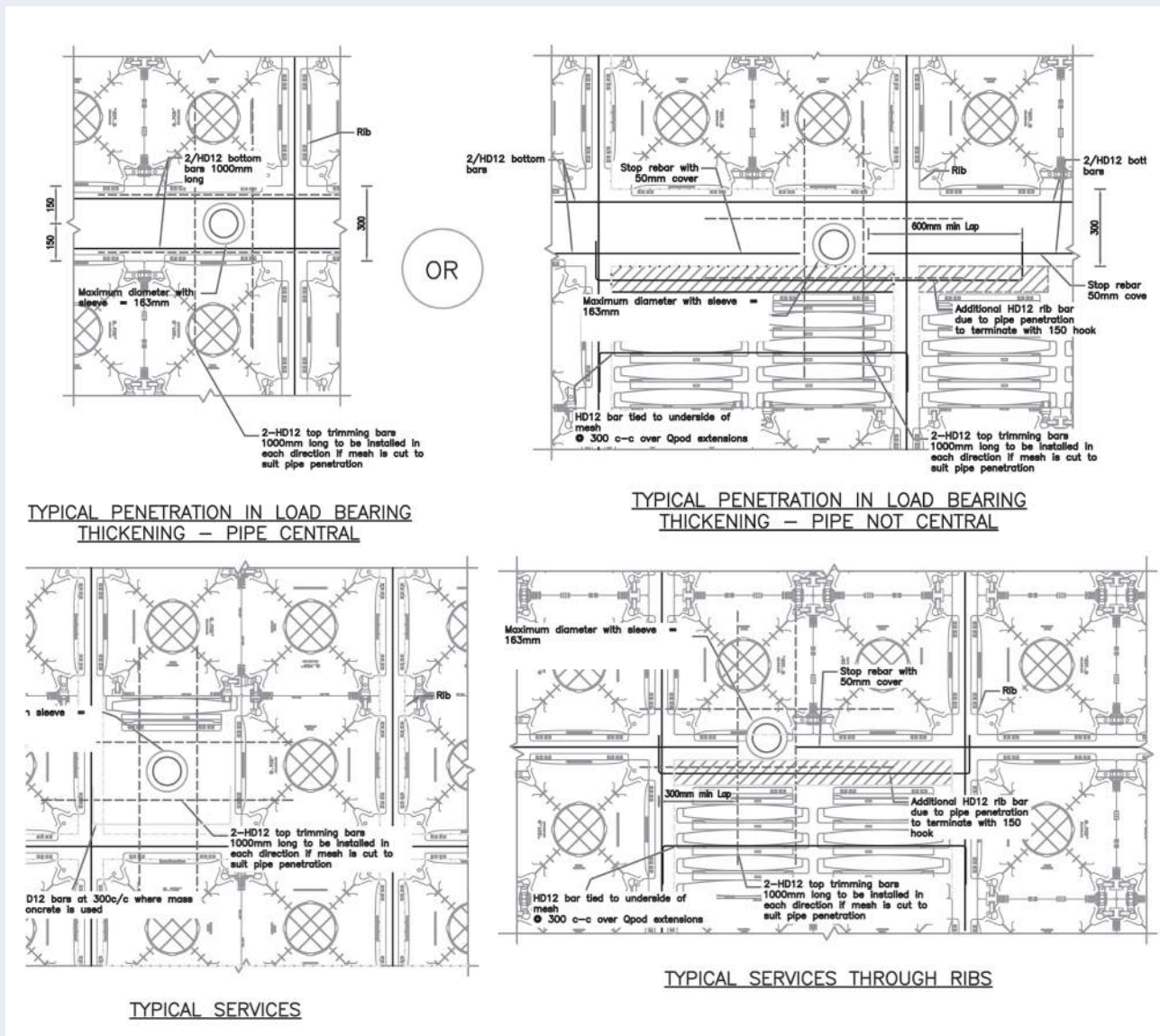


FIGURE 26 - Qpod internal pipe penetrations

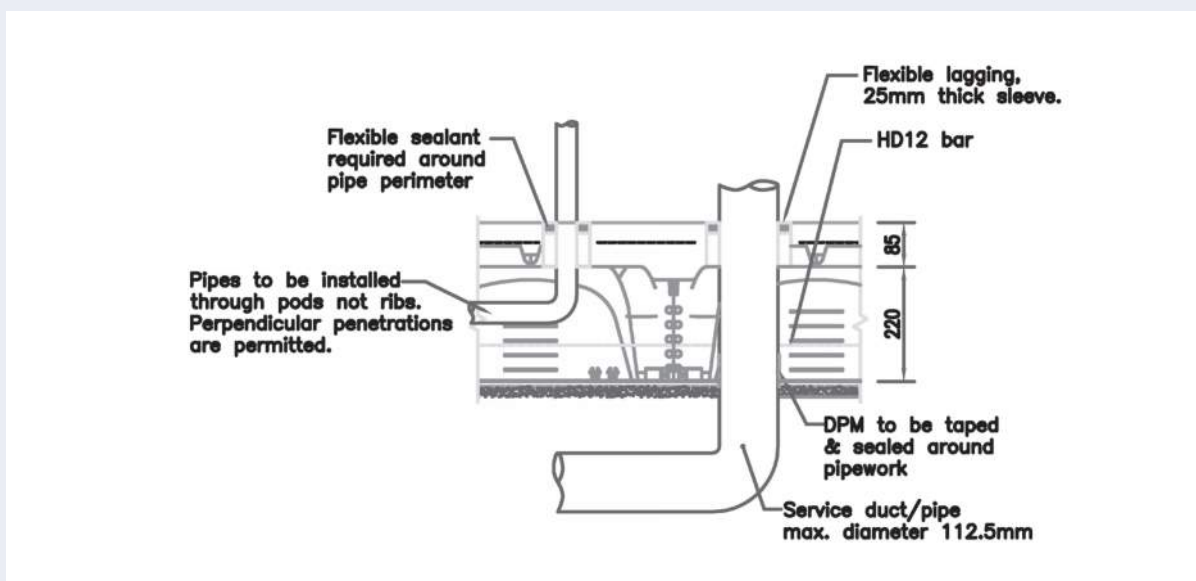


FIGURE 27 - Qpod vertical pipe penetrations

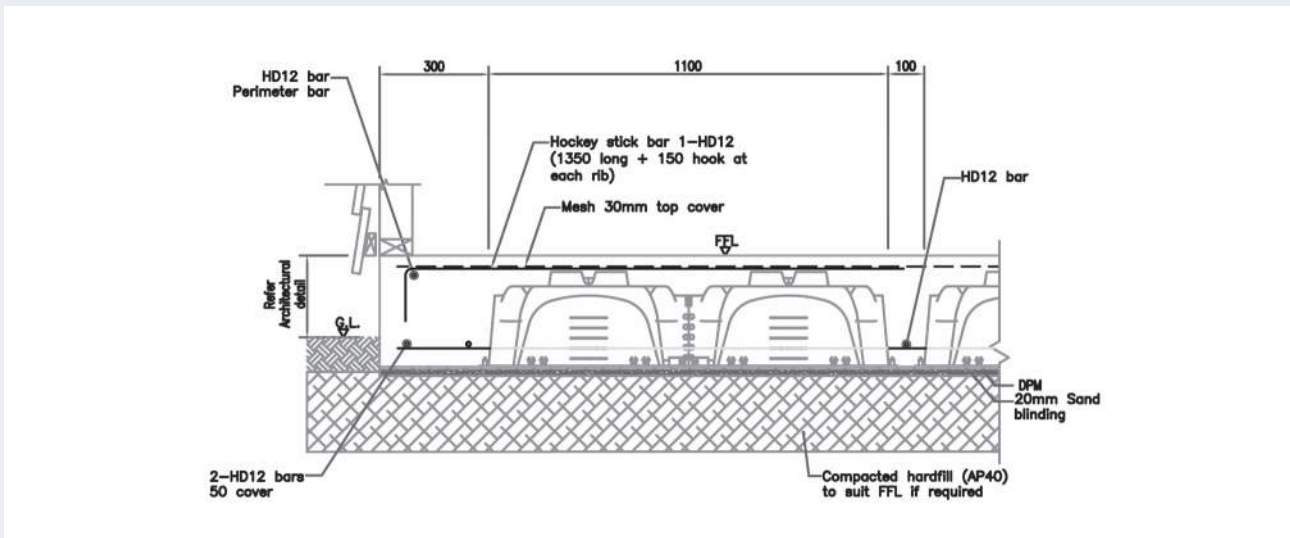


FIGURE 28 – Qpod light cladding perimeter detail

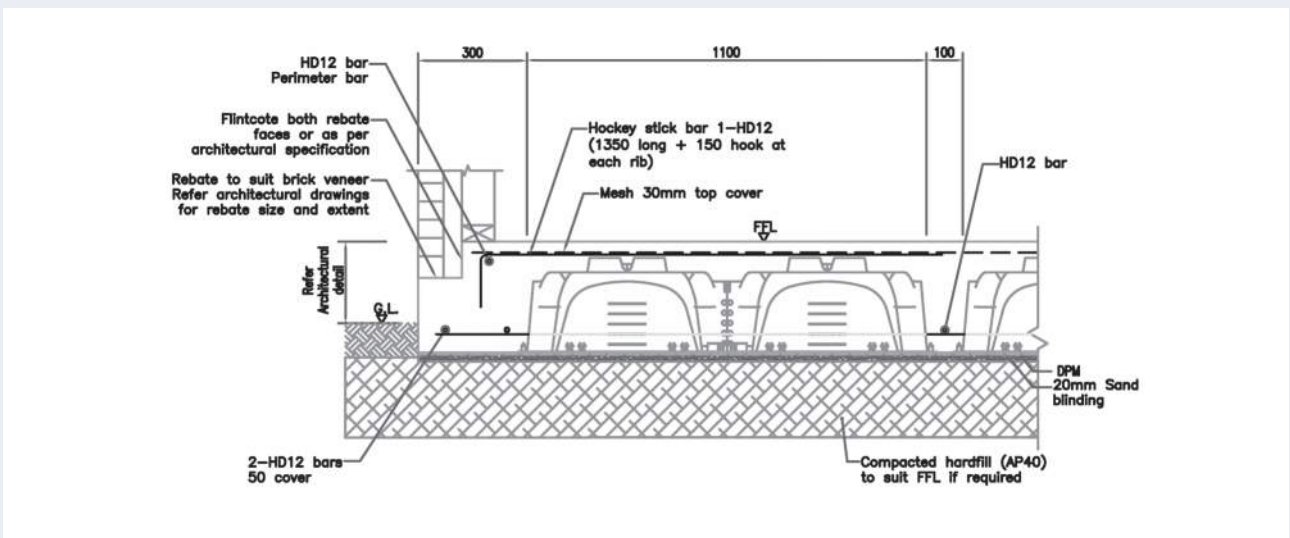


FIGURE 29 – Qpod brick cladding perimeter detail

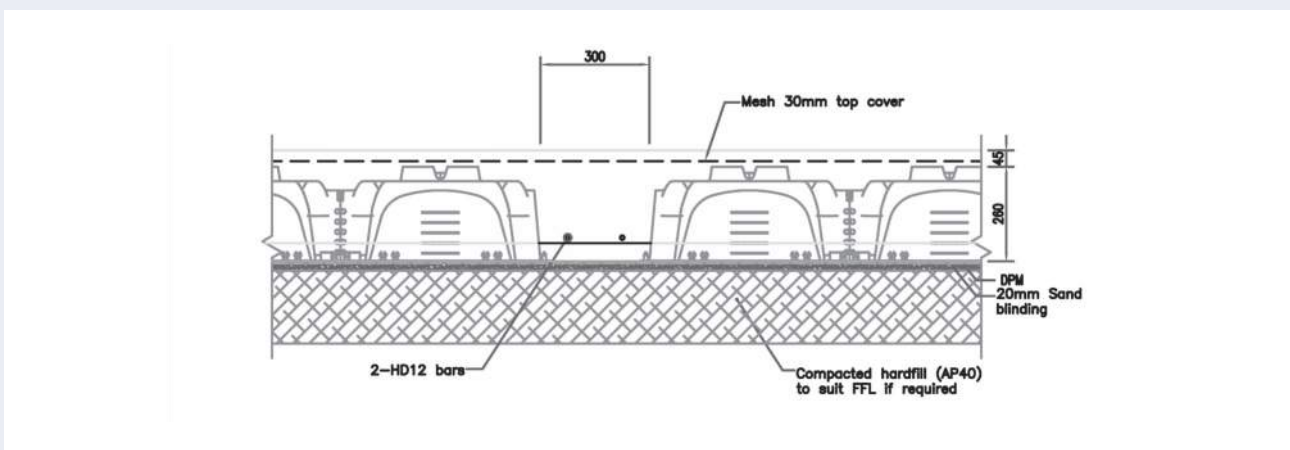


FIGURE 30 – Qpod internal loadbearing wall or slab thickening

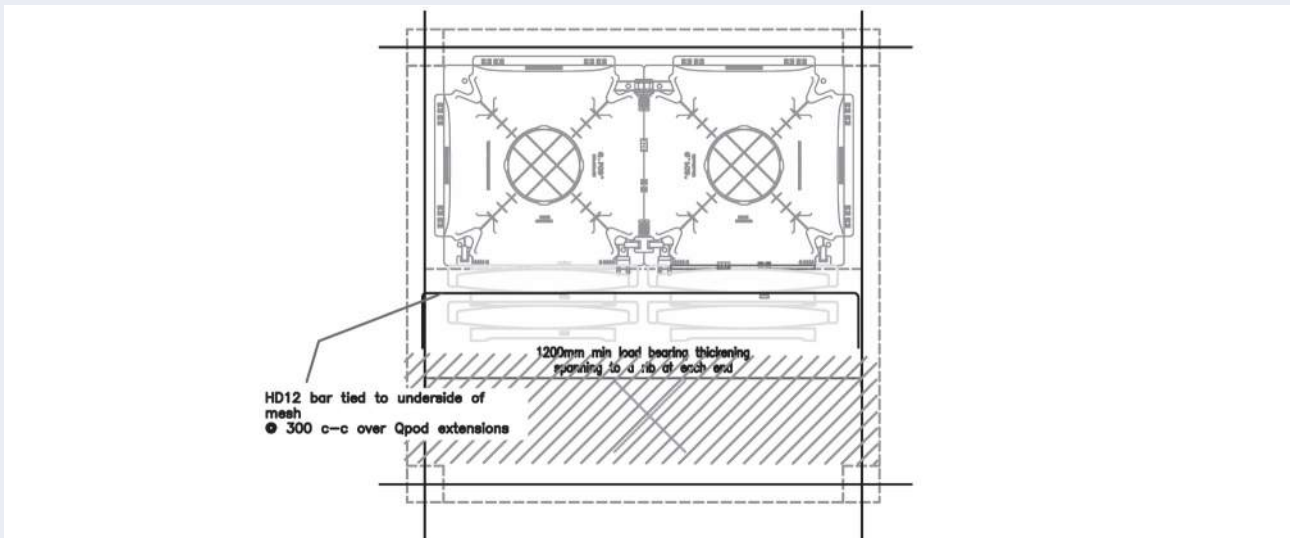


FIGURE 31 – Qpod internal point load – slab thickening

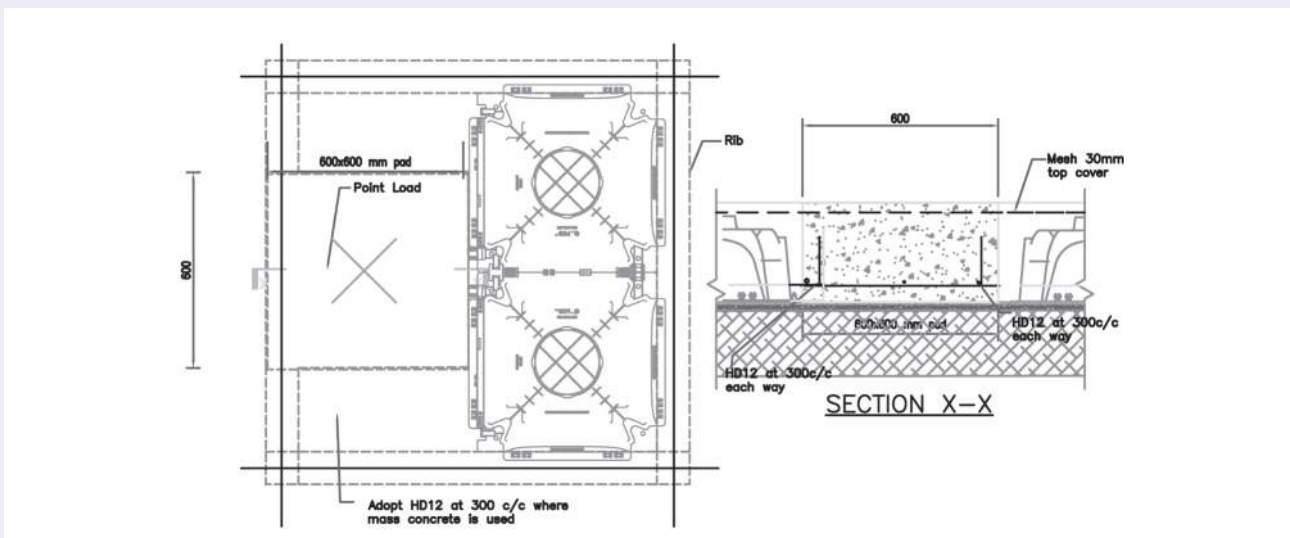


FIGURE 31b – Qpod internal point load – pad footing

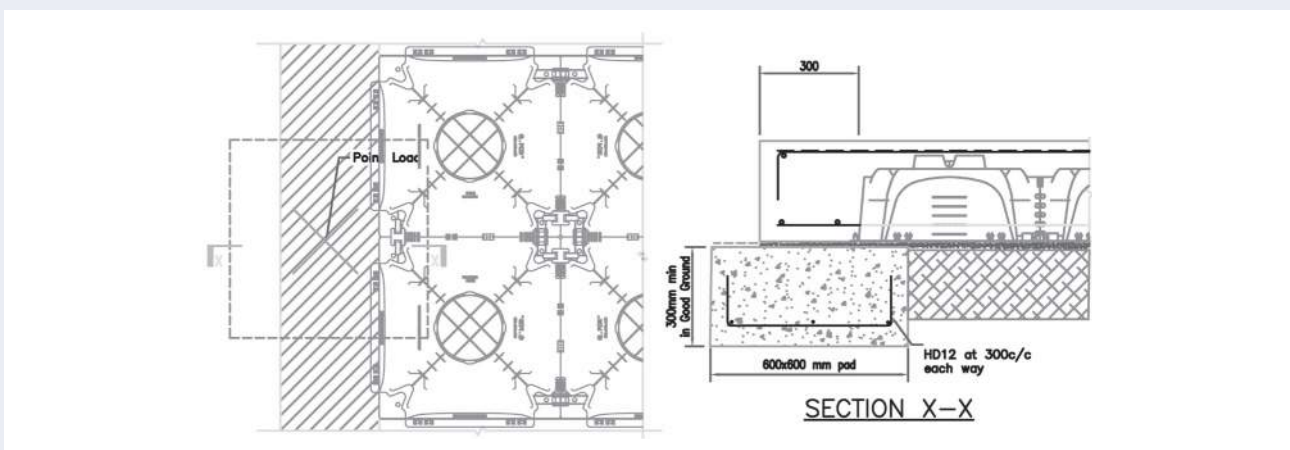
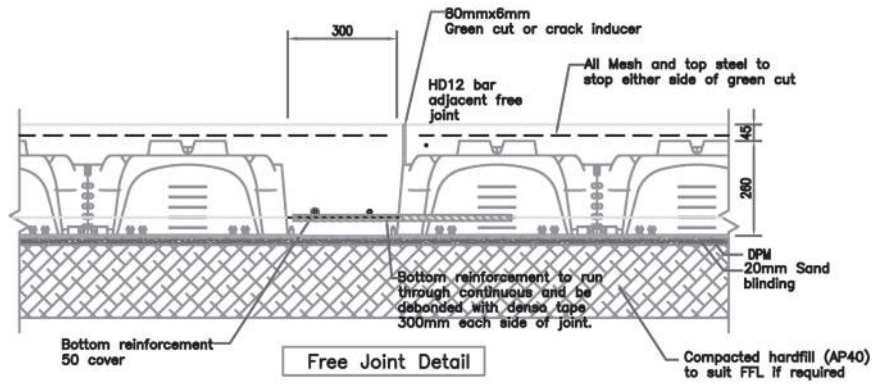


FIGURE 32 – Qpod perimeter point load – pad footing



Floor coverings and cladding crossing this joint should be detailed appropriately as per product specifications.

FREE JOINT DETAIL

FIGURE 33 – Qpod free joint detail

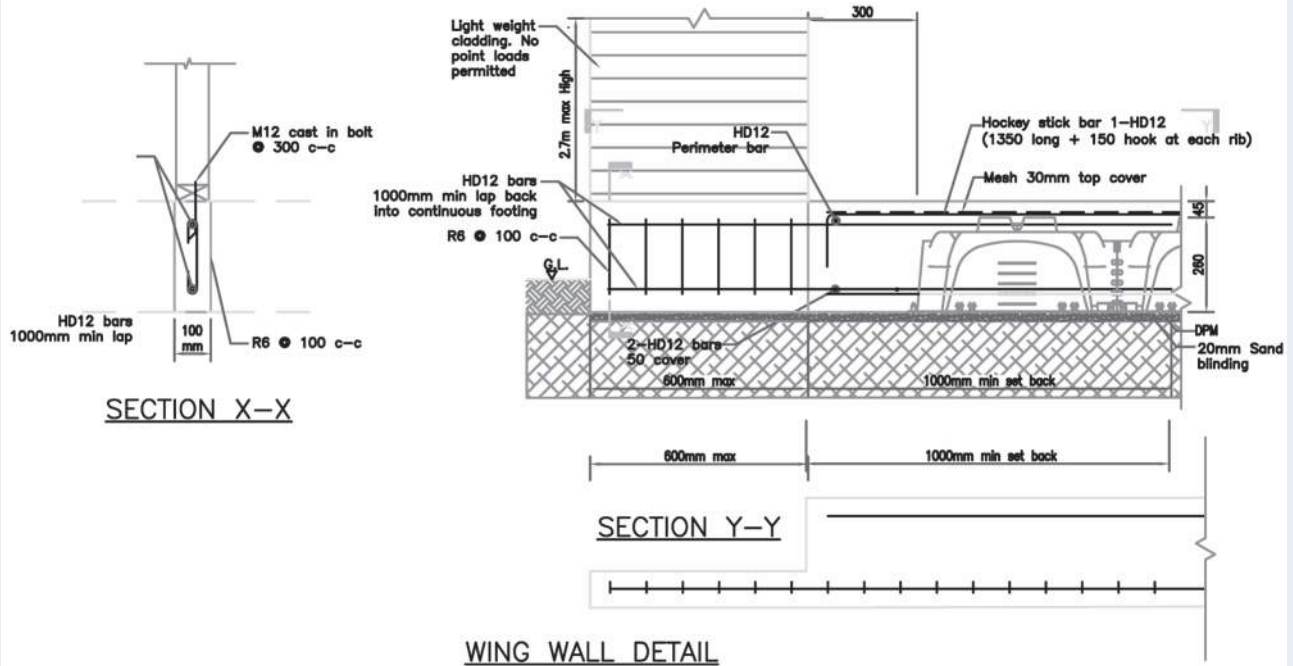


FIGURE 34 – Qpod wingwall detail

7.0 - INSULATED SLABS

The insulation performance of a building is measured based on a theoretical “R-value”. The building code minimum requirement for foundation insulation is R1.3 as per table 1 of H1/VM1 and R1.9 where underfloor heating is specified.

As per the H1 AS1 clause 2.1.5, concrete slab on grade floors are deemed to achieve a construction R-value of 1.3 and can be assumed to comply as an accepted solution with no need for any verification. Where under floor heating is proposed, the designer will need to specifically calculate the R-value in accordance with NZS4214 to satisfy the build code requirements. Some informative R-values can be found below to assist in the designer carrying out the verification.

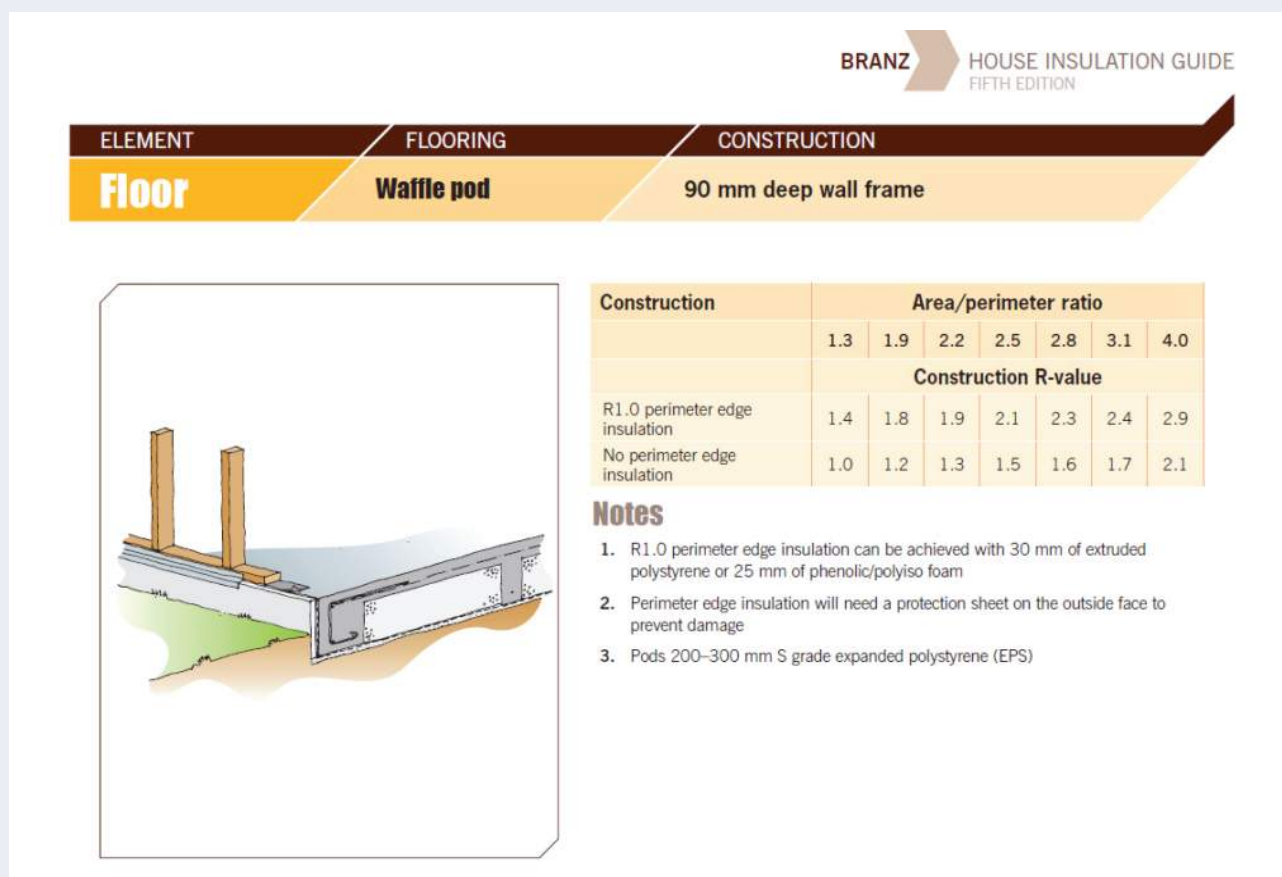


Figure 35 - © BRANZ House Insulation Guide 5th edition, page 131

The R-value is mainly dependent on the area to perimeter ratio of the foundation the edge of the foundation around the perimeter of the building is where most of the heat is lost. Insulating the exposed perimeter edge will achieve the best results relative to cost in comparison to underslab insulation.

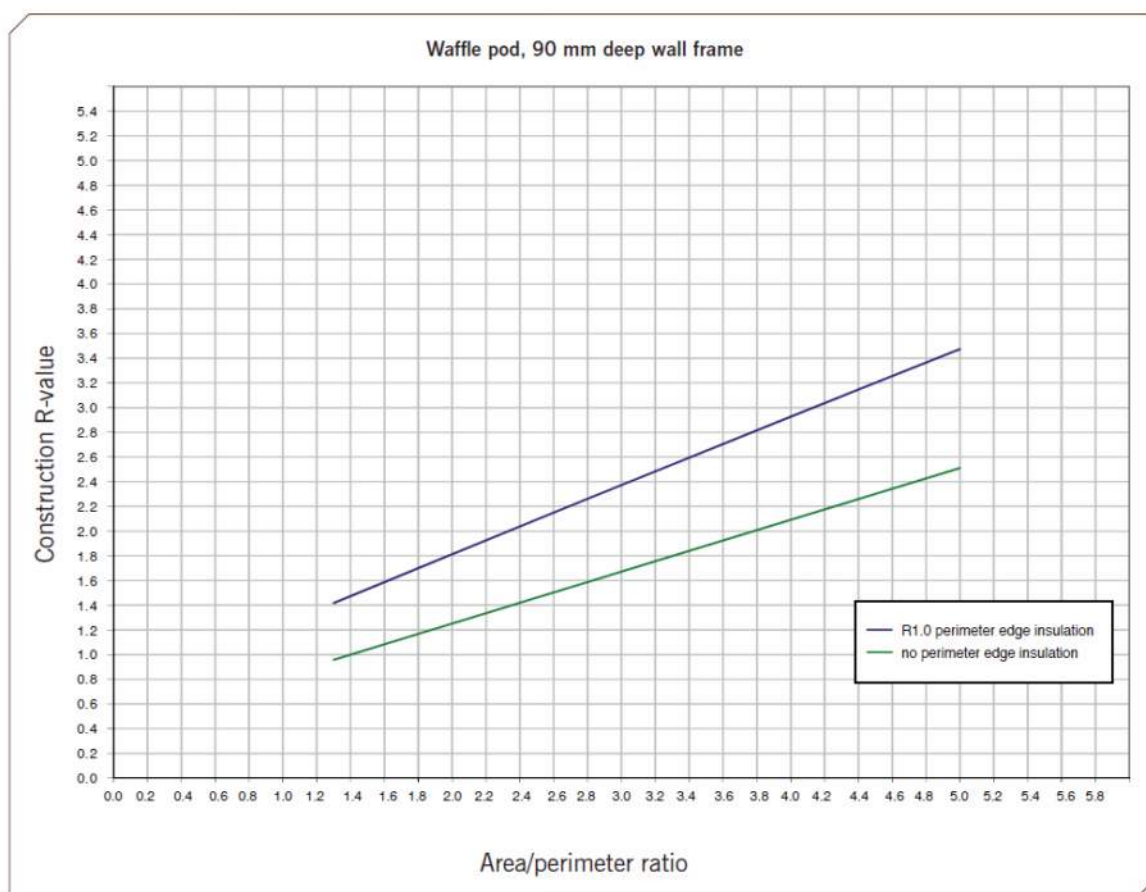


Figure 36 - © BRANZ House Insulation Guide 5th edition, page 131

Insulated slabs are beyond the scope of the document with the exception of the Quickset system which has been designed to work in combination with the Allied Superslab, refer to tables 3 and 4 below for the building types compatible with the Allied Superslab. When underfloor heating is adopted, the designer shall verify the R value of the foundation to ensure it meets the minimum NZBC requirements of 1.9. Refer to www.quickset.co.nz for further information.

7.1 Quickset Edge and Fully Insulated Slab

The perimeter edge form work (16mm PVC foam sheet and 3mm aluminum cap) is not considered to contribute to the vertical strength of the foundations. 100mm down from the slab surface, 20/25mm insulation is built into the edge formwork and can also be extended under the slab for a fully insulated slab. The insulation and boxing system creates an overhang, as a result edge loads are limited by the framing size and building cladding type as per the below.

The Quickset system can be used in combination with the Allied Superslab when complying table 3 and 4 below for the selected wall framing (90mm/140mm) respectably. The Quickset system shall be installed as per the manufacturers installation manual and details as per the below.



90mm Wall Framing:

The Quickset system is suitable for perimeter loading for building types A, B and D as per table 1 of the Allied Superslab Manual when 90mm wall framing is adopted.

Table 3

Building type	Number of levels ¹	Level 1 Wall cladding ²	Upper storey cladding	Roof Type ³	Minimum bearing capacities and penetrometer blows ⁴	Within scope of this document
A	Single	Light	—	Light	150 kPa	Yes
B	Single	Heavy	—	Light	200 kPa	Yes
C	Single	Heavy	—	Heavy	200 kPa	No, Specific Design
D	Two Storey	Light	Light	Light	200 kPa	Yes
E	Two Storey	Heavy	Light	Light	300 kPa	No, Specific Design
F	Two Storey	Heavy	Light	Heavy	300 kPa	No, Specific Design
G	Two Storey	Heavy	Heavy	Heavy	300 kPa	No, Specific Design

- *Refer section 3 for Allied Superslab scope of use
- Point loads larger than 25kN will require specific design.

140mm Wall Framing:

Upgrading the wall framing to 140mm significantly increases the bearing capacity of the timber and edge distance available for the hold down bolts as such heavier building weights are permitted – Types A-E as per the below where 140mm framing is adopted.

Table 4

Building type	Number of levels ¹	Level 1 Wall cladding ²	Upper storey cladding	Roof Type ³	Minimum bearing capacities and penetrometer blows ⁴	Within scope of this document
A	Single	Light	—	Light	150 kPa	Yes
B	Single	Heavy	—	Light	200 kPa	Yes
C	Single	Heavy	—	Heavy	200 kPa	Yes
D	Two Storey	Light	Light	Light	200 kPa	Yes
E	Two Storey	Heavy	Light	Light	300 kPa	Yes
F	Two Storey	Heavy	Light	Heavy	300 kPa	No, Specific Design
G	Two Storey	Heavy	Heavy	Heavy	300 kPa	No, Specific Design

- *Refer section 3 for Allied Superslab scope of use
- Point loads larger than 25kN will require specific design.

Hold down fixings

The hold fixings adopted need to meet proprietary requirements as defined by NZS3604 (7.5.12.3 refer below) and the BRANZ technical paper P21 (15kN characteristic uplift) for wall bracing elements where needed. Should specific wall bracing products require higher uplift capacities that foundation is beyond the scope of this document and shall require specific design.

7.5.12.3

For *external walls*, proprietary anchors shall have a minimum *capacity* when tested in accordance with 2.4.7 as follows:

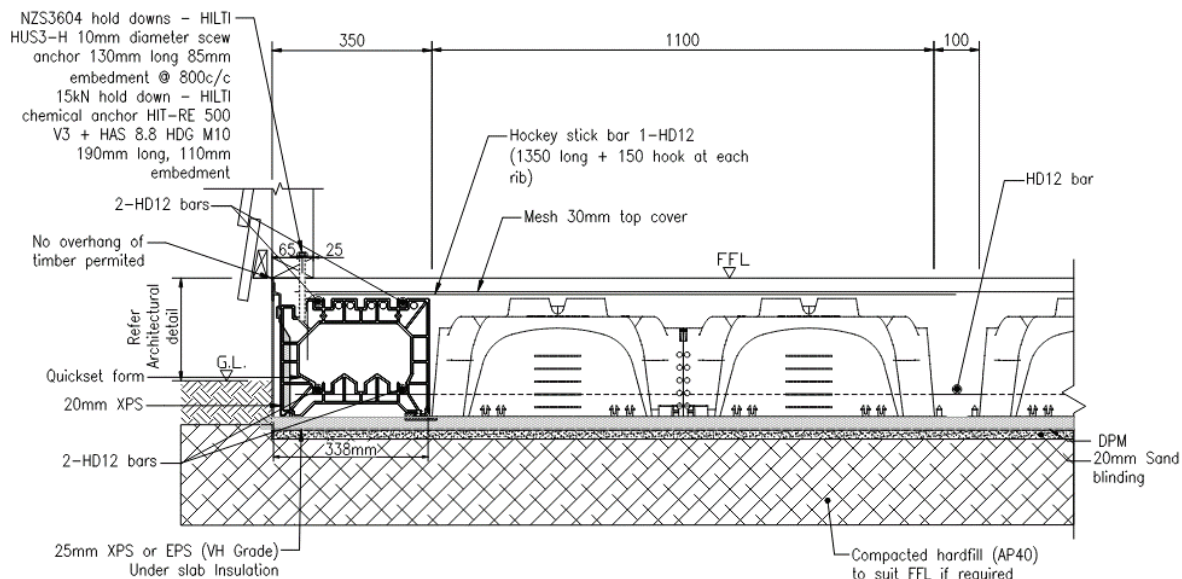
- (a) Horizontal *loads* in the plane of the *wall* 2kN;
- (b) Horizontal *loads* out of the plane of the *wall* 3kN;
- (c) Vertical *loads* in axial tension of the fastener 7kN.

Hilti have carried out verification of the hold downs to meet the NZS3604 loading requirements.

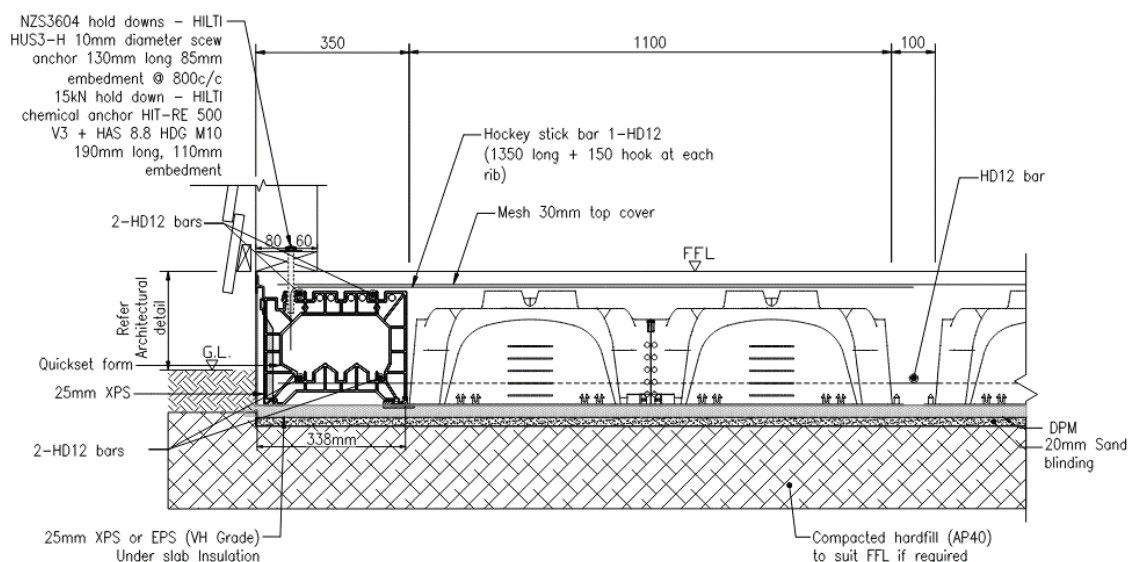
Standard bottom plate fixing: HILTI screw anchor – HUS3-H 10mm diameter (130mm long), 85mm min embedment @ 800c/c – installed as per manufacturers specifications.

15kN brace wall: HILTI chemical anchor – HIT-RE 500 V3 + HAS 8.8HDG M10 (190mm long), 110mm minimum embedment – installed as per manufacturers specifications.

7.2 Quickset Standard detailing

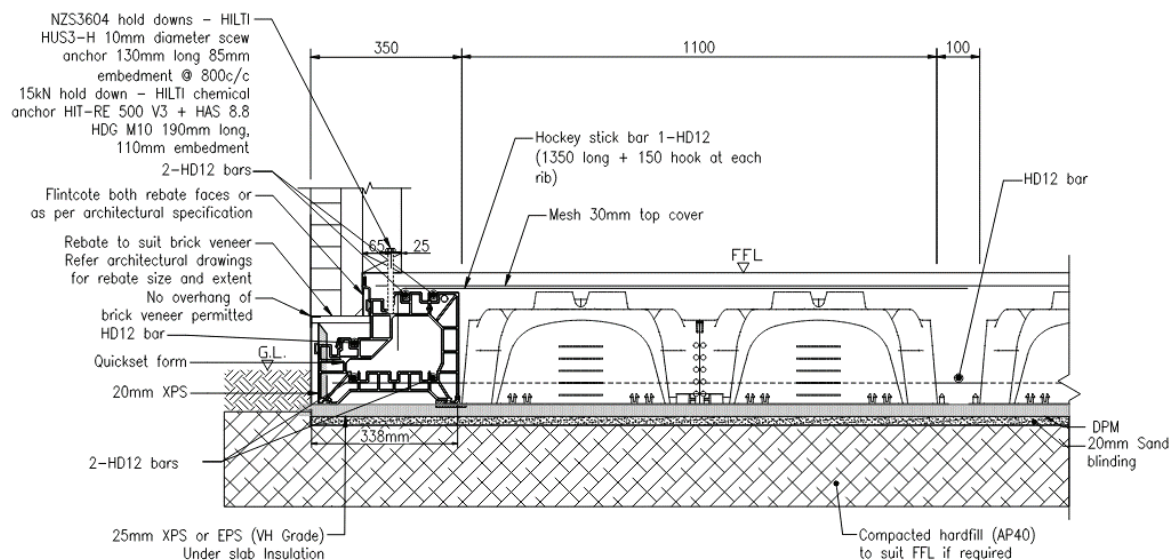


TIMBER WEATHER BOARD QPod PERIMETER DETAIL

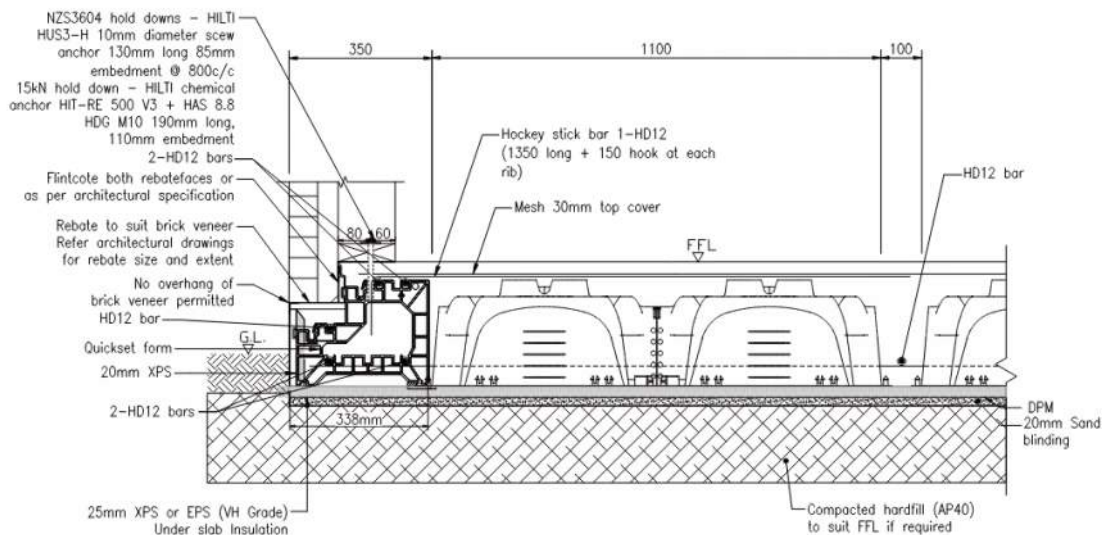


TIMBER WEATHER BOARD QPod PERIMETER DETAIL

FIGURE 37 – Quickset light weight cladding

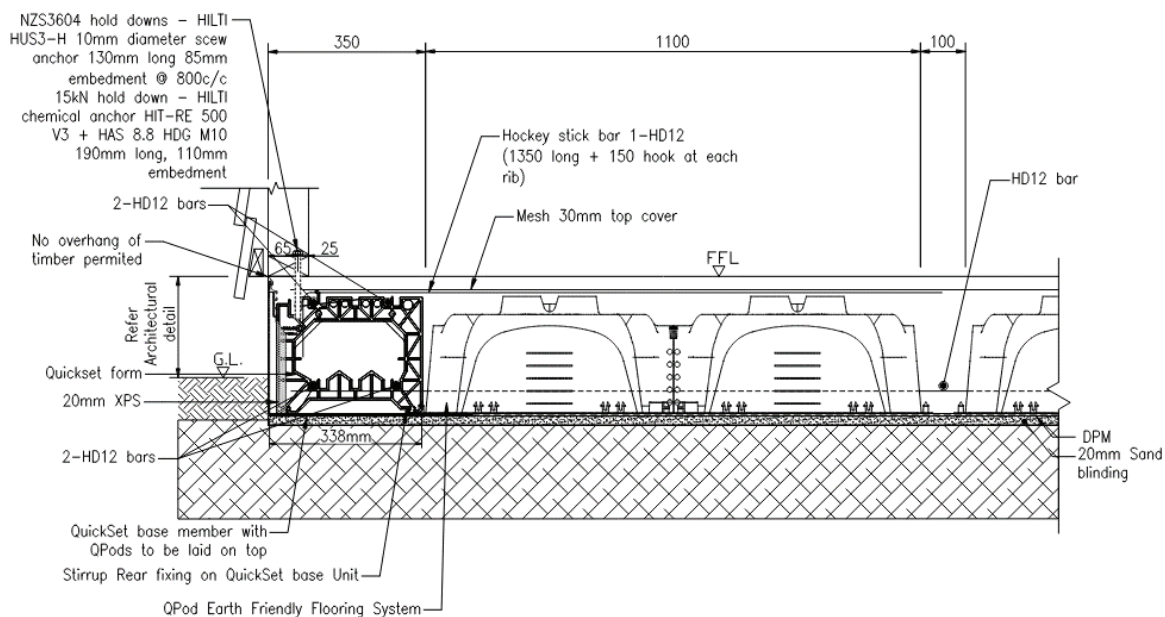


BRICK QPod PERIMETER DETAIL

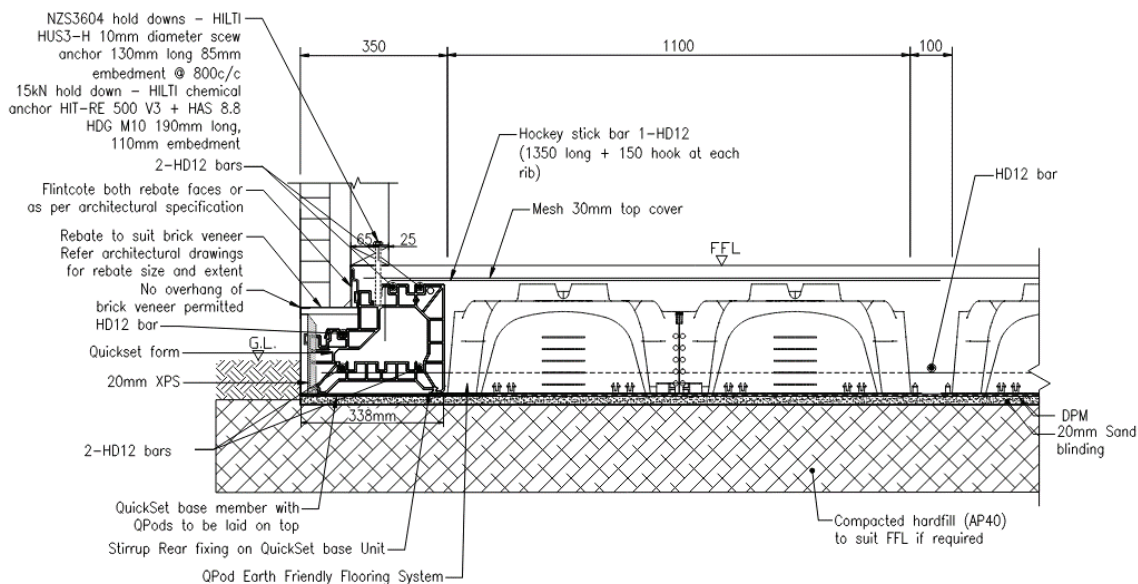


BRICK QPod PERIMETER DETAIL

FIGURE 38 - Quickset Brick cladding

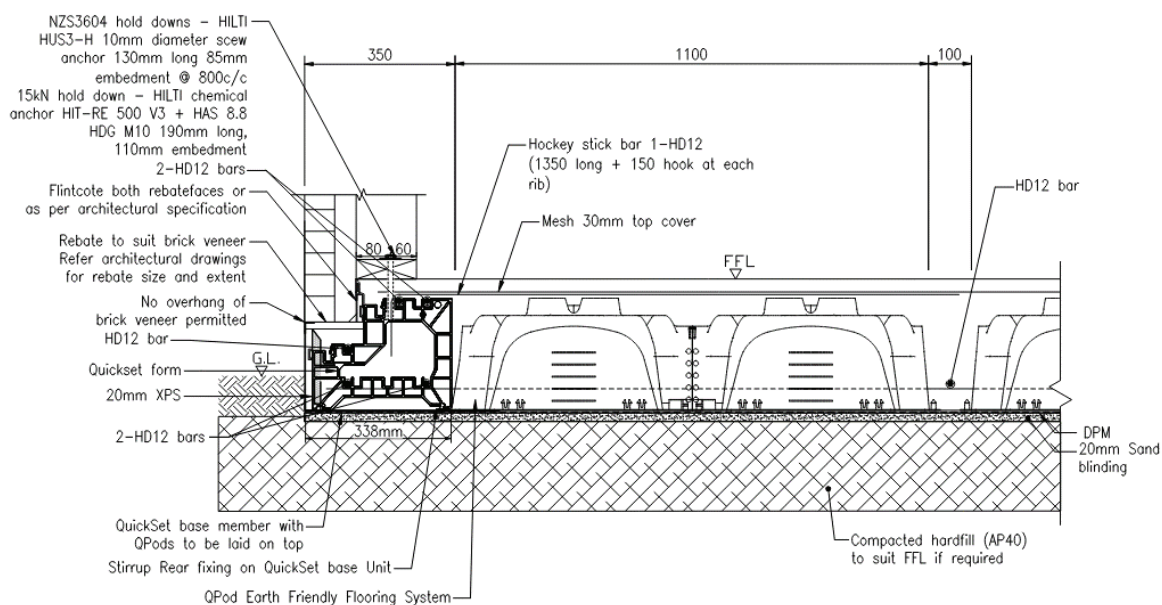


TIMBER WEATHER BOARD QPod PERIMETER DETAIL
WITH NO UNDERSLAB INSULATION

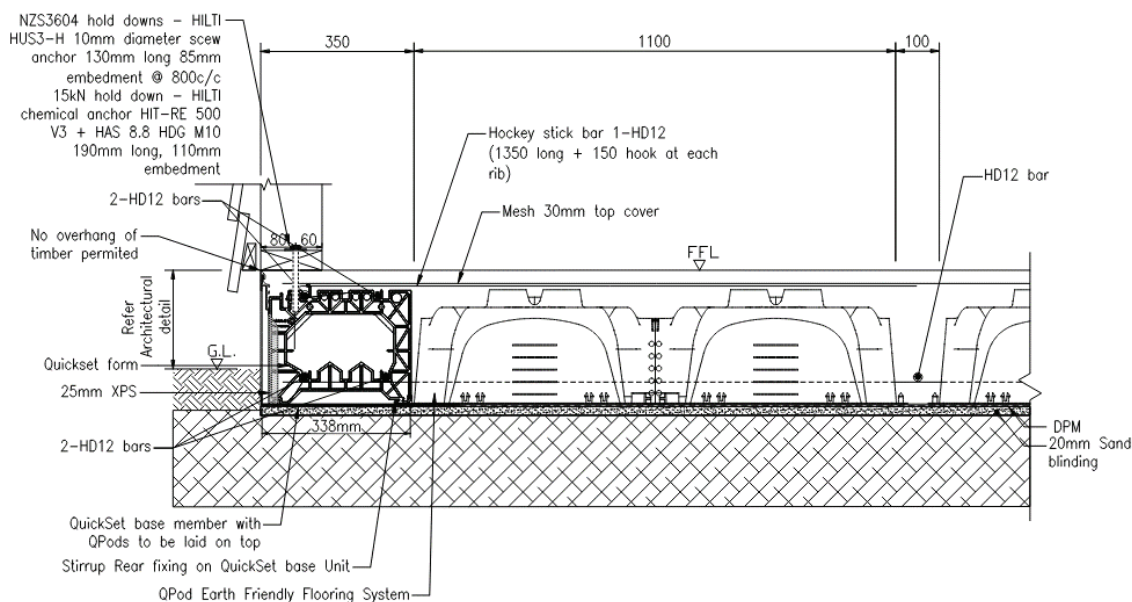


BRICK QPod PERIMETER DETAIL WITH
NO UNDERSLAB INSULATION

FIGURE 39 - Quickset Brick cladding no underslab insulation



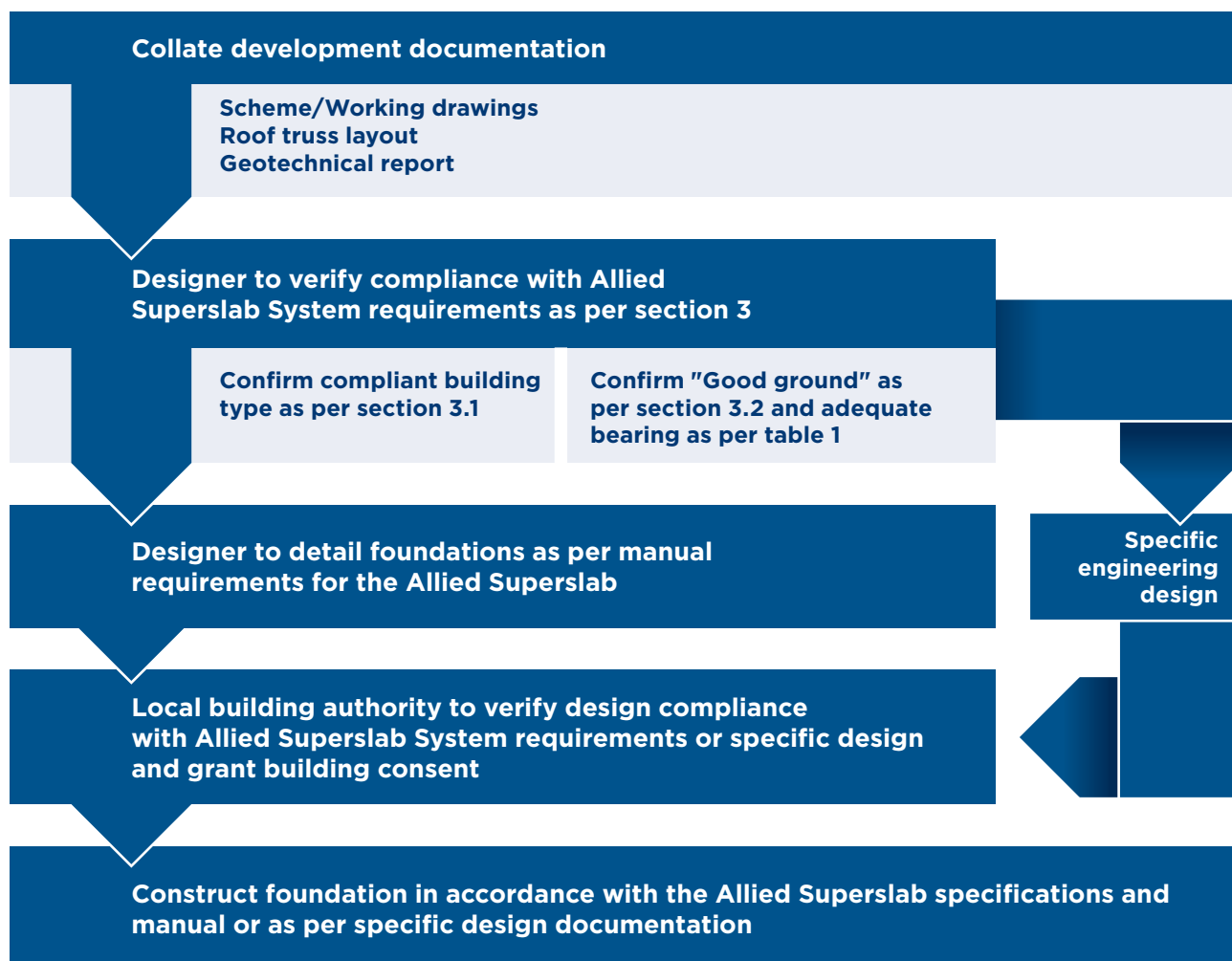
BRICK QPod PERIMETER DETAIL WITH NO UNDERSLAB INSULATION



TIMBER WEATHER BOARD QPod PERIMETER DETAIL WITH NO UNDERSLAB INSULATION

FIGURE 40 - Quickset light weight cladding no underslab insulation

8.0 - CHECK LIST





PRELIMINARY AND GENERAL

1. SCOPE:

This Specification conforming with the attached Agreement and Conditions of Contract describes the work to be done and the materials to be used in the construction of the house shown on the attached drawings. The Contractor is expected to be familiar with the site, especially where relevant sections of NZS3604:2011, NZS 3602:2003 and New Zealand Building Code apply to the contract. The above numbered NZ Standards shall be included in the contract documents and kept on site and made available as necessary for purposes of supervision by the owner or his agent to ensure compliance of work during and on completion of the contract.

2. CONSENTS:

Owner to comply with the Labour and Building Bylaws of the district, to apply for and obtain all the necessary consents and to pay all fees for same, unless otherwise mentioned.

3. PROVIDE AND FIX:

The words "provide" and "fix" shall be construed to mean "provide" and "fix" where mentioned separately unless otherwise mentioned.

4. INSURANCE/INDEMNITIES:

The Owner to take out insurance against fire and theft of materials off-site for a sum sufficient to cover the full amount of the Contract Sum, both policies to remain in force until the building is completed.

5. INTERPRETATION:

Work or materials shown in the drawings or specified and not shown, must be supplied as though both shown and specified. Materials shown but not specified must be of the kinds commonly employed for the service they are intended to perform. **All figured dimensions shall be taken in preference to scale.** The Contractor shall be held responsible for the setting out of work and he shall make good at his own expense any errors that occur through his lack of checking or faulty workmanship.

6. STABILITY:

The Contractor shall brace and support all parts of his work against damage by wind and protect work from the elements as necessary during construction.

7. PROTECTION OF PROPERTY:

The Builder shall protect adjoining properties during the contract and shall make good all damage at his own expense.

8. MAINTENANCE:

Period to be a minimum of sixty (60) days after the Owner has taken possession. Any defects in materials, workmanship or any part or parts that require replacing or adjusting, which have been included in the Contract, shall be adjusted or replaced at the Builder's expense.

9. MATERIALS:

Any materials herein specified that are not procurable at the time they are required, thus tending to retard the progress of the Contract, may be substituted with other similar materials, providing that the substituted materials have the permission of the Client. The Builder is first to notify the Client of any change proposed and at the completion of the Contract will adjust any difference in cost.

10. VISIT SITE:

Builder shall visit the site and ascertain the nature and extent of the work and the rights and interests that may be interfered with and any other matter that may influence the making up of a tender or the carrying out of the Contract in its entirety. The levels shown on the drawings are approximately correct but the Contractor shall verify these as no claims for extra will be allowed on the basis of incorrect levels shown.

11. WORKMANSHIP:

All work shall be carried out in accordance with the best trade practice, in strict conformity with the drawings and Specification and to the satisfaction of the Client. All defective or damaged work shall be removed and made good to the satisfaction of the Client.

A high standard of workmanship is required by all contractors and tradesmen. Should any trade consider that any surface, fitting or joinery not left in such condition as to allow that trade to produce a workmanlike finish, it shall be his responsibility to notify that contractor before any further work is done. No further finishing work shall then be done until acceptable improvements have been made. Failure to notify the contractor in this respect shall render that trade responsible for any subsequent substandard finish.

12. CLEANING:

The Sub-Contractor, at the conclusion of that portion of the Contract, shall have their work finished to the satisfaction of the Builder.

13. SITE CLEARANCE AND MAINTENANCE:

The Contractor shall be responsible for the building site left in a tidy state free from all rubbish and residue and ready for occupation. Any site cleaning up work required to be done in this respect may be charged to the contractor responsible.

EXCAVATIONS AND CONCRETING

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General section applicable to any works of this section.

2. ALLOWANCE IN TENDERING:

Allow for foundation depths as shown on drawings.

3. SETTING OUT:

Set out the work as shown or implied on the drawings. Check accuracy in terms of position, levels and square.

The Contractor shall ensure that all survey markings or builders' pegs are not damaged or disturbed during site clearance. Any marks close to the works should be suitably protected by the Contractor before he begins work. Any marks disturbed or damaged shall be advised to the Building Overseer who shall arrange for their reinstatement. He may be held liable for the cost of reinstating of any marks disturbed by him.

4. CLEAR SITE:

The Contractor shall be responsible for the removal of all vegetation, trees, roots and other unsuitable material from the area to be covered by the new building, decks verandas and other associated works. This material is to be removed from the site and suitably disposed of.

Remove 100mm top soil within area to be covered by the building, driveway and paths. Do not remove any other trees without Builder's consent.

Deposit top soil in heap as directed and avoid covering with subsoil subsequently excavated.

5. LEVELLING AND BULK EXCAVATION:

Excavate for all site levelling, foundation walls, underground services and subsoil drains etc to correct levels, to firm bearing.

6. FOUNDATION TRENCHES:

Take out trenches straight, level and to proper width all as shown on drawings and keep free of water and loose material. Concrete shall not be placed until excavations approved. If, other than under item 2 of this section, trenches are dug too deeply then such excess depth shall be filled with concrete, as specified for foundations, at the Contractor's expense.

7. CONCRETE:

Concrete shall be premixed with a slump of 70 mm and shall not be kept in the concrete mixer for more than two hours. Premix concrete shall be delivered to site at correct slump. Water shall not be added to the premix on site. All concrete to have a crushing strength of 20 mpa. Concrete floor slab to be power floated to a smooth even finish (10 mm tolerance). Foundation boxing to be tapped to allow for a fair faced finish to outside of foundation concrete.

8. REINFORCING:

Reinforce all foundations and floor slab as shown on plans. Take care to conform to all relative NZS4672 clauses. All bars shall be structural grade deformed steel except 10mm diameter links which shall be plain bars. Note: All reinforcing shall be E Grade. Mesh placed on 50BC UPVC Chairs on top of DPM at 900mm centres both ways with 30mm cover to top of slab.

9. HARDFILL:

Use AP40 compacted hardfill not less than 150 mm thick under concrete ground floors and where otherwise specified. Any concrete floors requiring hardfill to a depth exceeding 600 mm shall require an Engineer's specific design in terms of NZS 3604:2011 section 7.5.3 when requested by the local

authority. Depth of hardfill between 150 mm and 600 mm to be compacted with a plate vibrator at 150mm depth intervals.

10. DAMP PROOFING:

Lay black polythene DPM over hardfill with joints lapped 150 mm. It is important to note that hardfill be checked for any sharp edged stones. These are to be removed so as not to puncture the DPM. All pipe protrusions through DPM to be taped. Turn up polythene at edge of floor slab width to extend to top of bottom plate.

11. SITE DRAINAGE:

Fall site drainage to lines as directed.

12. HOUSEHOLD DRAINAGE:

See Drainlayer Section.

13. BACKFILL AND TOPSOIL:

Backfill and well consolidate in 100 mm layers to foundation walls, pile footings and service trenches. Spread previously excavated top soil as directed. Do not damage any water proof coatings or polythene protecting foundation walls from ground water entry.

CONCRETE AND REINFORCING

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General section applicable to any works of this section.

2. EXTENT OF WORK:

Comprises the setting out, boxing and placing of concrete in the foundations, floor slabs and piling to depth and at centres shown on engineer's drawing, and any other concrete work shown in the drawings.

3. MATERIALS:

Concrete which shall be ordinary grade and comply with requirements of NZS 3109, providing a minimum crushing strength is 20 Mpa at 28 days standard cure.

4. FORMWORK:

All formwork shall be ex 25 mm rough sawn timber and braced so as to prevent any distortion. All joints shall be sufficiently tight so as to prevent any leakage and to ensure that a high standard of "fairfaced" finish is achieved.

Formwork shall be so constructed that the concrete thickness and shapes required are obtained as detailed without removal causing damage. Times of removal of formwork, methods of construction and pouring and curing of concrete shall be as set down in NZS 3109.

Pour all foundation walls and footings as detailed on the plans. Allow to build in all pipes, conduits, and fittings as required by other trades. Any verandas, decks or porches shall be tied to the foundation wall as detailed on the plans.

5. CONCRETE FOUNDATION WALLS:

Foundation footings, walls and reinforcing shall be to the sizes shown on drawings in accordance with Table 4 and relevant clauses of NZS 3604:2011, supporting single storey, 2 or 3 storey as appropriate.

6. CONCRETE SLAB-ON-GROUND FLOORS:

Floors having foundation walls that support 1,2 or 3 stories are to be reinforced with SE62RES mesh. Shrinkage control joints are provided at 6m spacings for 100mm thick slabs.

Where floor slabs occur in rooms for habitation they shall have 0.25mm thick polythene sheet under, either welded into one continuous sheet or with joints lapped not less than 150mm and sealed with a self adhesive tape to manufacturer's specification. The Contractor shall not use any other vapour barrier without approval in writing and shall protect from punctures and tears before and during placement of concrete. Any damage done to the vapour barrier during provision of underslab or in the slab services shall also be made good before placing concrete.

7. CONCRETE DECKS AND STEPS:

All concrete decks, steps and porch areas are to fully comply with NZBC D1/AS1 Table 2 for slip resistance: ie a broomed (Class 5 or 6) or wood float finish (Class U2)(6) giving a coefficient of friction (wet) value of 0.65-0.85.

Steps are to have a minimum tread width of 280mm and a maximum tread height of 190mm (refer Table 6 NZBC D1/AS1).

All deck or step heights over 900mm in height above formed ground level are to comply with NZBC F4/AS1 Table 1 in respect to balustrades or handrails.

Balustrades to decks, when required are to comply with NZBC B1/AS2.

BUILD-IN BOLTS ETC:

Provide 12 kN hold down fastenings with 50 x 50 x 3 mm washers in accordance with NZS 3604:2011.

8. PATHS:

Where shown on drawings paths shall be laid in concrete. The surface shall be graded evenly.

9. COMPLETION:

Leave all clean and tidy at finish and make good any defective work.

Seismic Grade Reinforcing Mesh

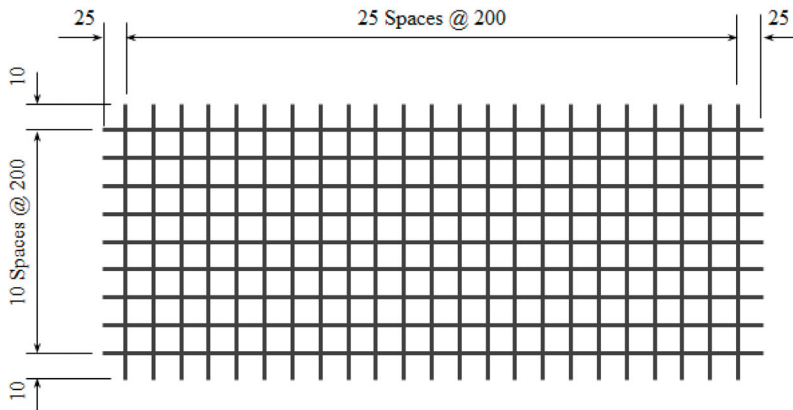
SE62 Res NI

Mesh Specification

Product Description: 5.05m x 2.02m — 200 x 200 Grid R6.1 Line Wire, R6.1 Cross Wire

	Wire Dia. (mm)	Spacing (mm)	Length (mm)	No. of Wires	Overhangs (mm)		mm ² /m	Wire kg/m	Weight (kg)
Longitudinal Wire	6.1 R	200	5050	11	25	25	146.1	0.2294	12.74
Cross Wire	6.1 R	200	2020	26	10	10	146.1	0.2294	12.05
GROSS SHEET WEIGHT (Kg):									24.79
MASS PER SQ METER (Kg/m²):									2.294

Mesh Sketch (not to scale)



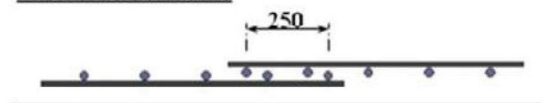
GROSS SHEET AREA (m ²)	10.201
NETT COVER (m ²)	8.312
Ratio STACK & TURNED (Y/N):	Y
No. OF SHEETS / BUNDLE: 2	25
ESTIMATED CUBIC (m ³)	0.0933
BUNDLE WEIGHT (Tonnes):	0.6198

Mechanical Properties (characteristic values)

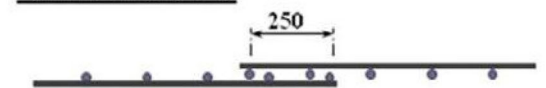
Uniform Elongation %	Yield Strength		Tensile Ratio	
	Min	Max	Min	Max
≥ 10 %	500MPa	600MPa	1.15	1.4

Minimum weld shear strength 7.3kN

LAPPING ON ENDS



LAPPING ON SIDES



Product is fully tested for conformance to AS/NZS 4671:2001 and B1/VM1 paragraph 14-.

*All measurements/weights approximate.

Mesh App:

Download our free smart-phone app by visiting the Apple or Google stores. Alternatively, scan the QR code from your phone to download directly.



CARPENTER AND JOINER

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General section applicable to any works of this section.

2. EXTENT OF WORK:

The work of this section shall include all labour, materials, equipment necessary to carry out and complete the carpentry as shown, or as further required by this Specification. Together with any other items of work reasonably inferred as part of this section.

3. ATTENDANCE AND PROTECTION:

Attend upon all other trades providing all blockings, fixings, trims, nogging as necessary for the full completion of their respective works and make good after all trades.

4. MATERIALS AND WORKMANSHIP:

All material used shall be the best of their respective class and type specified. Any materials which in the opinion of the Builder, loan body or local authority are not up to standard, to be removed immediately from the site. All work shall be carried out in a workmanlike manner in accordance with best trade practice and as or where especially specified. Any work that is intended or implied but not specifically shown, mentioned or specified as necessary for the proper completion of the building shall be included. All work shall comply with the relevant NZS requirements, particularly NZS 3604:2011.

5. TIMBER:

All timber used shall conform to NZBC B2/AS1 and NZS 3602:2003 requirements, "Code of practice for specifying timber and wood-based products for use in building". Timbers shown in the Schedule of Timbers to be treated with an approved preservative process in plants licensed by the Timber Preservation Authority. All structural timber grading as per NZS:3604 2011 unless otherwise stated on drawing or as per producer statement.

6. DAMP PROOFING:

All timber to be protected from dampness with 3-ply bituminous felt or other approved damp proofing material when in contact with concrete or brickwork, as per Section 2.3.3 of NZS 3604:2011.

7. PRIMING:

All exterior finishing timber, all timbers in contact with concrete, shall be primed before fixing unless otherwise specified in Painter.

8. FASTENING AND FABRICATION:

- (a) The Contractor should especially note that all aspects of fastening and fabrication of timber framing members and wood-based products on this Contract shall accord with all relevant fixing sections of NZS 3604:2011, including general fixing, adhesives for timber and wood-based products, nailing and use of wire dogs and for bolting and screwing of timber.
- (b) Reference shall also be made to Section 13 of NZS 3604:2011 for the proper fixing of sheet lining and cladding materials for walls and ceilings that are not wood-based eg Gibraltar board, fibrous plaster or wood cellulose sheeting; especially where such materials are used as diaphragms and for wall bracing.
- (c) Mild steel structural components exposed to the weather or in position and where condensation or dampness will occur shall be hot dipped galvanised after forming and shall provide the necessary "capacities" called for in Section 4 of NZS 3604:2011 dependent on function and location. Stainless steel where less than 600mm above ground level.
- (d) In all other cases, select and use connectors according to manufacturer's literature conforming to NZS 3604:2011 requirements.

9. INSULATION:

All roofs, walls and floors are to be insulated in accordance with NZS 4214:2006 and NZS 4218:2009 and NZBC H1/AS1. (See BRANZ Paper C1 - A construction guide to home insulation.) No insulation material shall be used that does not comply with AS/NZS 4859:2002. All insulation materials are to be installed in accordance with manufacturer's recommendations.

10. MOISTURE CONTROL:

Where a vapour barrier is required in the form of polythene film, this barrier shall be fixed according to BRANZ Bulletins Nos 215 and 217. Polythene film shall not be used as a substitute for building paper. Building paper shall be properly fixed to bottom plates, especially in veneer construction, to prevent entry of sub-floor air into stud cavities. Brick veneer cavities shall be closed off at and by means of soffits so as not to connect with roof cavities. There should be no unsealed openings for service pipes and wiring etc. There should be no discharge from cooking extractors or clothes dryers in to any wall, roof or floor cavity. Linings shall not be fixed until moisture content of framing has been tested and approved.

A water-based enamel finish must be used for plasterboard (Gibraltar board or fibrous plaster) linings to 'wet' rooms, such as kitchens, bathrooms and laundry.

Water-based emulsion paints must not be used.

GENERAL FRAMING

All framing to be either 140 x 45mm or 90 x 45mm (refer plan set) stress graded SG8 H1.2 stud, with 45mm wide studs to all openings not exceeding 3m span where supporting only one storey. Top and bottom plates to be same size as studs in long lengths, halved or nail plated at wall junctions and jointed over studs. All studs at spacings as shown on plans. Provide rows of dwangs as specified in plans. Ceiling plate is to be 140 x 35mm.

1. WALL BRACING:

Provide all wall bracing as shown on drawings and wall bracing calculation sheets.

2. WALL LININGS:

Shall be 10mm plasterboard and shall be fixed to external walls only after placement of thermal insulation (bulk insulants). All nailed or fixed as per manufacturer's instructions and stopped to manufacturer's instructions; in particular where contributing to wall bracing.

All linings are to be carried to floor level, into wardrobes and cupboards and behind all fittings.

The moisture content of all framing (including lintels and beams) shall be within the acceptable range and complying with local authority requirements before fitting of linings.

3. ROOF CONSTRUCTION:

As applicable and shown on plans

Monopitch, skillion and exposed rafter roofs: Construct as drawn in accord with NZS 3604:2011, and per manufacturer's instructions and specifications.

A truss certificate from the roof truss manufacturer showing the layout of the roof truss design is to be included in the set of plans included in this Contract.

4. PURLINS, EAVES AND GABLE ENDS:

Size of framing, spacing, overhangs, and sheathing type as shown on plan.

5. FASCIA BOARDS ETC:

Fix fascia, barge, frieze etc to suit roofing selected (See Roofing Contractor). Installation to be in strict accordance with manufacturer's instructions and specifications.

6. POST AND BEAMS:

Where within the maximum permitted by Section 9 of NZS 3604:2011 secure in equivalent manner and with equivalent materials. An Engineer is to provide "specific design" for all other posts and beams and the contractor is to fix as per details given.

7. EXTERIOR WALL COVERINGS:

Breather type building paper under claddings shown on drawings shall be ThermaKraft (or similar) building wrap.

NOTE: Other exterior wall covering shown on the drawings and mentioned in E2AS1 should be fixed in accordance with all requirements therein. It is important to appreciate that reference is made to E2AS1 wherein advice is given on width of timber weatherboard and finishing. Should the Client specify overwide boards and any finish other than paint and not adequately maintain, the responsibility for any resultant poor performance should not be apportioned to the Contractor.

8. EXTERIOR JOINERY:

All windows shall be to NZS 4211:2008 to suit location.

All aluminium window joinery is to be installed in the positions shown on the plans and to the type specified in the client specification. The Building Contractor is to ensure that window reveals are fitted securely and square and that any flashings, particularly around box garden or bay windows are watertight. Any manufacturer's instructions provided or indicated are to be strictly adhered to.

All glazing is to comply with the NZ Standard 4223:pt3:2016 and the NZBC F2/AS1 in respect to safety glass. Ventilation to all areas of the house to comply with NZBC G4.AS1 except where mechanical or other means of ventilation are used.

9. CEILINGS:

Fix paint quality 13mm plasterboard to battens with proprietary fixings as per the manufacturer's specifications. See plasterboard stopping section for finish. All joints are to be flushed up to a true even smooth surface. In particular fix all ceilings serving as structural ceiling diaphragms under terms of NZS 3604:2011 and or the manufacturers specification. Check that each wall under or connected to has adequate bracing for a diaphragm.

10. WARDROBES:

To be lined to full height. Shelving as specified by the client. Sliding doors, with plasterboard infills, and tracks are to be powder coated aluminium.

11. LINEN AND COAT CUPBOARDS:

Lined to full height inside. Shelving as specified by the client. Sliding doors, with plasterboard infills, and tracks are to be powder coated aluminium.

12. KITCHEN JOINERY:

Install kitchen joinery as shown on the plans and as indicated in the client specification.

Kitchen layout and joinery is to comply with NZBC G3/AS1 with particular emphasis on the preparation area. Refer Surface Finishes.

It is important that the building contractor ensures that all necessary plumbing fittings are installed before fitting of the joinery.

13. HOT WATER CUPBOARD:

To be constructed if and where shown.

14. ARCHITRAVES, SKIRTINGS ETC:

Finish at junction of floor and wall with 90 x 12mm skirtings neatly mitred at angles and scribed to floor. Supply and fix beads, half rounds and where required Scotia moulding at ceiling junction and all trim as required to complete the work.

15. BATHROOM:

Install bathroom joinery including vanity unit and shower cubicle which are to comply with the requirements of the NZBC G1/AS1 and E3/AS1 Clause 3.2.

The building contractor is to ensure that the plumber has installed the shower cubicle (plumbed) and any other required fittings are in place before work commences refer to the 'Plumbing' section of this specification.

Bath to be built in and supported with 75 x 50 mm framing on edge. Fix bath panels as agreed by Client. Allow for toe space. All wall linings other than Gibraltar board to be fixed to manufacturer's specification. Provide for all sanitary fittings shown on plan and given under "Plumber".

16. METER RECESS:

Provide recess for electric meter board where directed to the satisfaction of the Local Electric Supply Authority.

17. MANHOLE:

Provide manhole in ceiling 600 x 600mm where directed.

18. DOORS:

All joinery for interior, exterior, wardrobes and cupboards is to be installed as shown on the plans and of the type shown in the client specification. The building contractor is to ensure that all doors are hung in a tradesman like manner being true and plumb. All sliding doors units are to be installed to permit the doors to slide truly along the tracks.

SECTION 8 – WALLS

NZS 3604:2011

Table 8.19 – Nailing schedule for hand-driven and power-driven nails (see 8.8.6)

Joint	Hand-driven nails		Power-driven nails	
	Length (mm) x diameter (mm) and type	Number/ Location	Length (mm) x diameter (mm) and type	Number/ Location
Bottom plate to floor framing at:				
(a) External walls and internal wall bracing elements	100 x 3.75	2 at 600 mm centres	90 x 3.15	3 at 600 mm centres
(b) Internal walls (may be nailed to floor decking)	100 x 3.75	1 at 600 mm centres	90 x 3.15	1 at 600 mm centres
(c) Trimmer not exceeding 4.2 m long	100 x 3.75	4 (end nailed)	90 x 3.15	6 (end nailed)
Dwang to stud	75 x 3.15 or 100 x 3.75	2 (skewed) 2 (end nailed)	75 x 3.06 90 x 3.15	2 (skewed) 2 (end nailed)
Fishplate to straightened stud	60 x 2.8	4 each side of cut	60 x 2.8	4 (each side of cut)
Half joint in top plate	75 x 3.15	3	75 x 3.06	4
Lintel to trimming stud	75 x 3.15 or 100 x 3.75	4 (skewed) 2 (end nailed)	90 x 3.15	3 (end nailed)
Ribbon board to stud	100 x 3.75	2	90 x 3.15	3
Sill or header trimmer to trimming stud for:				
(a) Trimmer not exceeding 2.4 m long	100 x 3.75	2 (end nailed)	90 x 3.15	3 (end nailed)
(b) Trimmer not exceeding 3.0 m long	100 x 3.75	3 (end nailed)	90 x 3.15	5 (end nailed)
(c) Trimmers not exceeding 3.6 m long	100 x 3.75	4 (end nailed)	90 x 3.15	6 (end nailed)
Solid plaster batten to stud	60 x 2.8 (galv.)	500 mm centres	60 x 2.8 (galv.)	500 mm centres
Stud to plate	75 x 3.15 or 100 x 3.75	4 (skewed) 2 (end nailed)	75 x 3.06 90 x 3.15	4 (skewed) 3 (end nailed)
Top plate 140 mm x 35 mm to 90 mm x 45 mm and top plate to lintel	100 x 3.75	2 at 500 mm centres	90 x 3.15	3 at 500 mm centres
Trimming studs at openings, blocking and studs at wall intersections	100 x 3.75	600 mm centres	90 x 3.15	600 mm centres
Trimming stud to doubled stud immediately under lintel	100 x 3.75	2	90 x 3.15	2
Waling to stud	60 x 2.8	2	60 x 2.8	2
NOTE – (1) Nail lengths and diameters are the minimum required. (2) Refer to 4.4 for required protective coatings for metal fasteners. (3) For studs up to 2.7 in length, 2 / 90 x 3.15 power-driven nails (end nailed) are sufficient.				

ROOFING CONTRACTOR: Colorsteel

1. PRELIMINARY AND GENERAL:

Read and note all clauses under Preliminary and General of this Specification where they apply to this trade (also see "Plumber").

2. ROOF FRAMING AND WALLS:

Roof framing shall provide adequate support and fixings for purlins. No member shall be overloaded by landing heavy, localised stacks of cladding on them prior to fixing, and temporary braces as might be necessary shall be provided in walls below to sustain such loading until roof cladding is complete and wall linings subsequently fixed.

In roof types (B) and (C) of timber schedule, the size of purlins if not shown or stated shall be such as to accommodate the required thickness of thermal insulation to comply with the bylaws; advise and agree with Client.

3. ROOFING UNDERLAY:

Underlay shall be breather type building paper to NZS 4200:1994. Run vertically with sheets lapped 100mm and with bottom edges turned over fascia into gutters. Such underlay shall be provided under all metal roofs and be adequately supported unless self-supporting type.

4. PREPARATORY WORK:

Provide all gutters, valleys and under-flashings before cladding commences. Except where stated, valleys shall be of 0.6mm colorsteel at least 200mm wide with folded edges and with lower end finishing well into spouting. For profiled metal roofing set out purlins to give reduced span at eaves and between top purlin and ridge as recommended.

Ensure all edges of roof cladding are adequately supported around projections such as pipes, ducting and roof lights.

5. ROOF CLADDING MATERIALS AND COMPONENTS:

Roof cladding shall be colorsteel iron. Materials selected shall be set out and fixed by approved FIXERS and all shall accord with the manufacturer's specification and in all cases with NZS Specifications or others where appropriate.

Thickness of materials unless otherwise specified shall not be less than the following: Colorsteel cladding, spouting downpipes and overflows 0.6mm

6. FACTORY PREFINISHED MATERIAL:

Treat all such material with great care and obtain matching colour for making good minor damage and covering fixings made through the face of the claddings.

7. CAPPINGS AND OVERFLASHINGS (ALSO SEE PLUMBER):

Adequately and neatly secure all ridgings, cappings and over-flashings wherever needed to make and keep roof watertight. As much as possible use only materials compatible with the roof cladding. If dissimilar metals are used they are to be kept from making direct contact by a medium suitable to prevent galvanic corrosion.

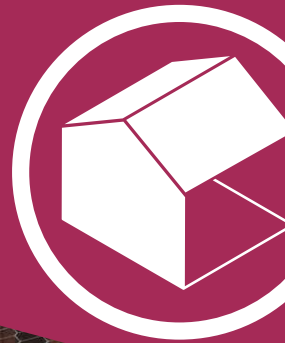
Sealants shall not be used except where approved. Do not leave swarf, broken rivets, screws, nails, or waste metal on roof, nor in gutters or spouting.

8. FACIA AND SPOUTING:

Facia/Spouting system shall be that manufactured by the roof cladding manufacturer and fixed as recommended with even fall to downpipes. Provide all necessary stopped ends, mitred returns and outlets and ensure all joints in metal spouting are adequately fixed and sealed to comply with NZBC E1

9. GUARANTEES:

On completion of all roofing thoroughly clean down and furnish Owner with written guarantees to watertightness and security of the roof cladding. Guarantees to be signed by the approved FIXER/FIXERS and run for a period of fifteen (15) years from date of completion of the Building Contract.

**Thermakraft™
COVERTEK
407**

Thermakraft™ COVERTEK 407

Heavy duty self-supporting roof and wall underlay

Kingspan Thermakraft Covertek 407 is our strongest synthetic underlay, designed as a means of managing condensation, water vapour transfer and water ingress in the most trying conditions including applications where the roof pitch is 3° and above. Covertek 407 is fire retardant.

Product usage

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

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk



Covertex 407

Heavy duty self-supporting roof and wall underlay



Roof Application Method

Long-run metal roofing/vertical or horizontal installation method

- Fix Covertex 407 underlay with printed side facing the exterior.
- Fix using stainless steel 8-12mm staples or 20mm flat head clouts, or appropriate proprietary fastenings on timber framed structure. Fixing at 300mm centres. Fixing types and requirements for steel framed structure can be found in the NZ Metal Roof and Wall Cladding Code of Practice (COP).
- Refer to table below to determine underlay support requirements.

Roof Pitch	Span	Underlay Support Required	
		Horizontally Installed	Vertically Installed
≥ 10°	> 1200mm	Yes	Yes
	≤ 1200mm	No	No
< 10° (Min 3°)	> 1200mm	Yes	Yes
	≤ 1200mm	No	Yes

- 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.
- Must be laid firmly (tight/taut) without creases. All laps either vertical or horizontal must be a minimum of 150mm lap.
- When underlay support is required, Kingspan recommend using AUSMESH Safety Mesh, AUSNET hexagonal netting or Thermastrap 201. Note: Commercial Buildings may require the use of Roof 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.
- If required to achieve a lap seal (refer to NZ Metal Roof and Wall Cladding COP), use Thermakraft Premium Joining Tape or any Thermakraft Window Flashing Tape.

- Covertex 407 will provide some temporary weather protection during construction (maximum 7 days), same day coverage recommended. DO NOT over expose the product for more than 7 days.
- Covertex 407 may be unwound to the full length from the gutter to the ridge. However, when ridge ventilation is required Covertex 407 may be terminated or slit at the ridge purlin to allow a free passage of air.
- Covertex 407 must NOT overhang the gutter line by more than 20 mm, or if eaves flashings are used, terminate on the upper side of the flashing. More details can be found in the NZ Metal Roof and Wall Cladding COP.
- Flue penetrations must have a minimum clearance of 50mm from Covertex 407 (refer to NZ Metal Roof and Wall Cladding Code of Practice 10.11.5 and the flue suppliers instructions).
- Covertex 407 must be free of tears and punctures, fit taut and be lap taped around all penetrations (except flue penetrations), to provide drainage for any condensation, or surface water from leaks.
- Lap taping can be done with Thermakraft Premium Joining Tape or any Thermakraft Window Flashing Tape.

Note: Do not use Aluband on penetrations where Polybutene water pipes have been installed. Refer Pipe Manufacturers for instructions on sealing penetrations.

Concrete/Metal tile roofing

- 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 must have antiponding boards in accordance with NZBC E2/AS1 Paragraph 8.2.5.
- Installed Covertex 407 may be laid over the top of the antiponding boards and draped into the gutter by no more than 20mm.
- Covertex 407 must be installed by, or under the guidance of a licensed building practitioner.

Application Tips

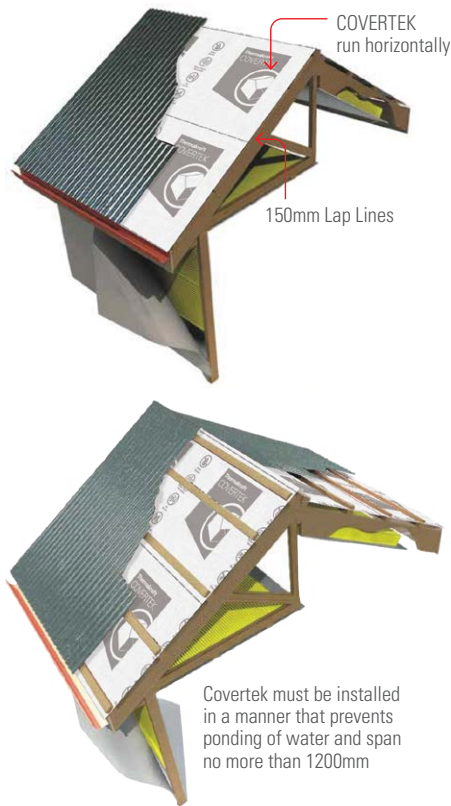
Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in a well ventilated area. Recommended minimum 7 days.

Covertex 407

Heavy duty self-supporting roof and wall underlay

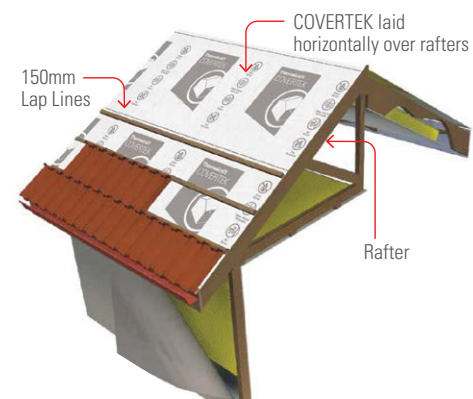
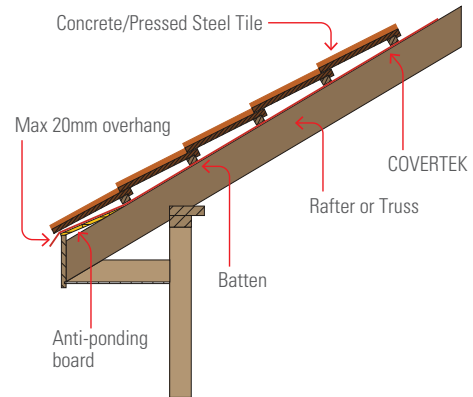


Corrugated roofing:



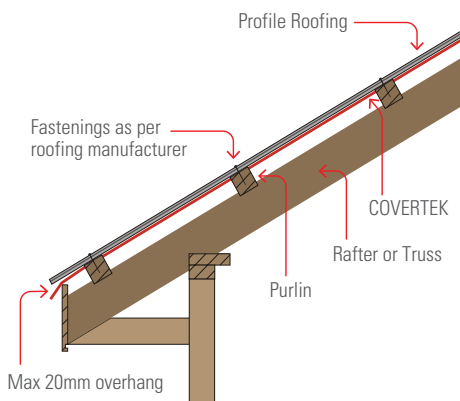
Concrete/metal tile roofing:

Tile roofing

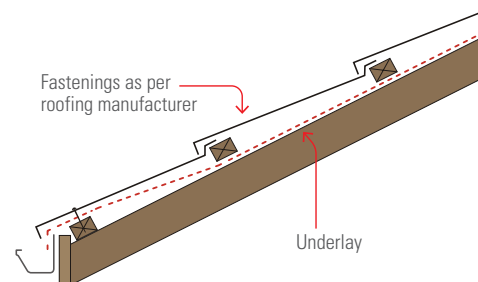


Long run metal roofing:

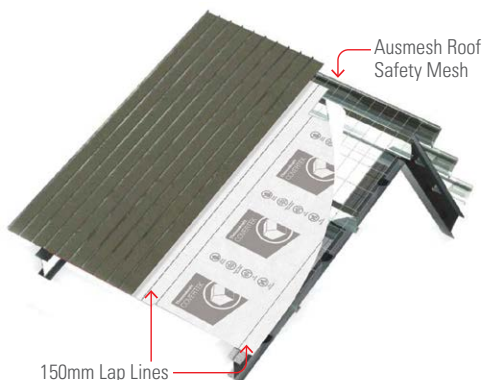
Wooden construction



Metal tile installation



Steel construction



Covertex 407

Heavy duty self-supporting roof and wall underlay



Wall Application Method

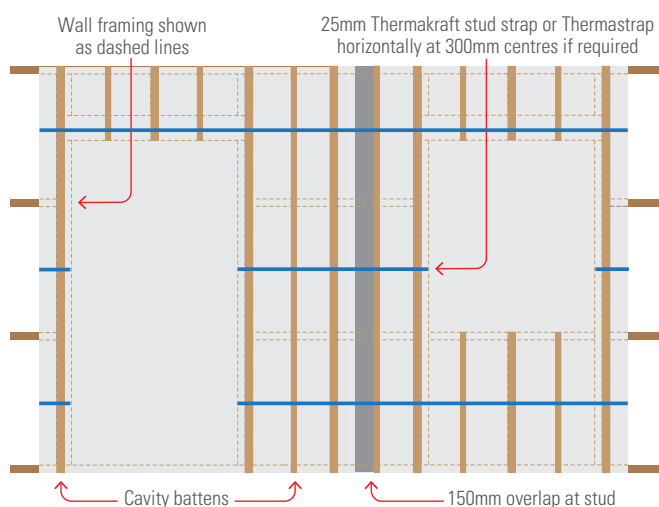
- Fix Covertex 407 underlay with printed side facing the exterior.
- Fix to all exterior walls from below bearers to the top plate. Pull the Covertex 407 underlay tight and fix securely to the frame with fasteners such as galvanized Little Grippers, 6mm-8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically. Additional fasteners should be used around each opening to be cut out. Fixing types and requirements for steel framed structure can be found in the NZ Metal Roof and Wall Cladding COP.
- When fixing Covertex 407 underlay to Steel framing the same procedure applies, use adhesive spray or tape or flat head screws to fasten to the framing or thermal break. The exterior cladding fastenings will act as the permanent fixings.
- Fastenings behind Brick Veneer Cladding must have an equivalent service life to that of Brick Veneer (50 years). Refer to NZBC Clause B2.3.2.
- Covertex 407 underlays are available in widths of 2550mm and 1250mm.
- Cover all windows and door openings with Covertex 407 underlay.
- It is recommended that the Covertex 407 underlay is not cut and prepared for window installation until the arrival of the windows. Minimum of 150mm is required at joins, all vertical laps must be made over studs.

Horizontal laps to be laid ship lap style allowing water to be shed to the outer face of the membrane.

- When windows and doors are ready for installation, the Covertex 407 underlay covering the openings should cut at 45° and folded into the opening and securely fastened. Thermakraft window flashing tapes are recommended as the window flashing system.

Note: In accordance with NZBC Acceptable Solution E2/AS1, wall underlay must be prevented from bulging into the drained cavity. Where stud spacing is greater than 450mm Thermakraft stud strap or Thermastrap run horizontal at 300mm centres is an acceptable means of prevention.

- Once installed, Covertex 407 must not be left exposed to the weather or UV for a maximum of 60 days. Covertex 407 underlays will provide some degree of temporary weather protection during construction allowing work to continue. Internal linings and insulation must not be installed until the exterior cladding is completed.
- Make good any forced tears with Thermakraft window flashing tapes. Any large areas which require repair may be covered with a second layer of underlay - a lap of 150mm is required.
- Lap taping can be done with Thermakraft Premium Joining Tape or any Thermakraft Window Flashing Tape.
- Covertex 407 underlay must be installed by, or under the guidance of a licensed building practitioner.



Application Tips

- Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in a well ventilated area. Recommended minimum 7 days.

Handling and Storage

- Covertex 407 must be handled with care to prevent damage such as tearing and roll deformation.
- The product must be stored under cover well away from direct moisture, rainfall contact and sunlight (UV). Care should be taken not stack other materials on top of the product.



0800 806 595
www.thermakraft.co.nz

Thermakraft and Ausmesh products are brought to you by Kingspan Insulation NZ Limited.



A young girl with long dark hair is sitting on a set of wide, light-colored wooden stairs. She is looking down at her white sneakers. The stairs are part of a modern interior with dark wood walls and a large window in the background. The floor at the bottom of the stairs is a dark metal grate. In the foreground, there are some green plants and a dark metal grate floor.

Failure to follow these handling and storage precautions could result in spoiling the surface appearance of the products and severely reducing their service life. On Galvsteel® material this will appear as a white corrosion product (white rust), whereas on Zinalume® the corrosion product is black. This should not be confused with fretting. On COLORSTEEL®, the result of wet storage damage could be a bubbling of the paint surface. Damage resulting from such failure invalidates the warranty and is not recoverable from New Zealand Steel Limited.

INSTALLATION



Safety

Installing roofs involves many hazards including laceration, electrocution, puncture and falling from height. Prudent PPE and installation practices must be employed, and the guidelines of MBIE “Best Practices for Safe Working at Height” must be strictly adhered to.

Handling

New Zealand Steel products are of high quality and perform best when handled correctly.

- Don’t handle them roughly or carelessly.
- Don’t drag or slide new sheets over other sheets or rough surfaces.
- All equipment and materials taken on to the roof should be clean and care taken to prevent damaging the surface.

Footware

- Anyone walking on the roof should wear clean flat rubber-soled footwear to prevent marking.
- Put an old mat or piece of carpet at the base of the ladder so that shoes can be cleaned before going up on the roof, or dirty shoes should be removed and replaced at base of ladder
- Care should be taken walking on roofs as they may be slippery at times.

Strippable protective film

Strippable film is a clear pressure sensitive polyethylene plastic film that is applied to some COLORSTEEL® products in the New Zealand Steel paint line to assist in protecting the COLORSTEEL® surface from damage and scratching during forming, transportation, handling, storage and erection.

Strippable film is designed to provide some protection to the COLORSTEEL® product prior to and during installation on the building. It is not designed to protect against corrosion, humidity or chemicals.

Storage

COLORSTEEL® product with film applied must be stored at temperatures less than 50°C and out of direct sunlight to avoid prolonged UV exposure. The product needs to be kept dry to prevent moisture ingress between the film and the painted surface. In the longer term this may cause issues to the COLORSTEEL® and in the shorter term cause the film adhesive to whiten and breakdown leaving residue on the painted surface when the film is removed.

Usage

Storage requirements for formed products on building sites are as above. The film is intended to protect the painted product up to and during installation, it must be removed directly before or immediately after installation. Failure to do so may result in the film adhesive leaving a residue on the painted surface.

On removal of the film the painted surface must be inspected and any adhesive residue cleaned off. Mild household cleaners be may be used, check that the cleaning product manufacturer recommends the product as being suitable for use with painted surfaces and all of the recommended safety precautions are followed. Ensure the cleaning product is washed off the COLORSTEEL® surface with fresh water after use.

Marking

Black lead pencils must never be used for marking COLORSTEEL®, Zinalume® or Galvsteel® products. The carbon in the pencil promotes corrosion which will etch the surface of the material, leaving a permanent mark. Use a pencil of any colour other than black, a marker pen, chalk or crayon.

Cutting

Cut COLORSTEEL® with care to avoid marring the high-quality finish. Cut by shear only, using nibblers or hand shears. Friction blades and high-speed saw blades must not be used. These blades will damage both the metallic coating and the COLORSTEEL® surface by creating excessive heat, and generate large amounts of hot swarf which may embed into the coating surface.

All debris must be swept off the job at the end of each day. Prevention of swarf damage is far easier than its cure. See Swarf Staining Bulletin for more information.

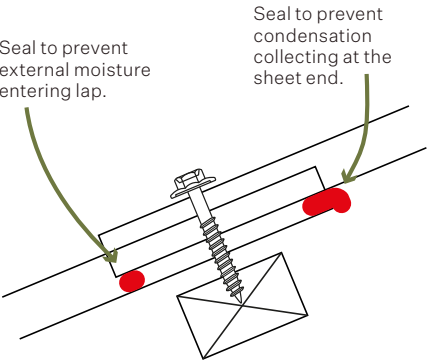
Sealing and joining

Sealing

Soldering should not be used on COLORSTEEL® or Zinalume®, use only neutral cure silicone rubber or MS polymer sealants. Pre-align the pieces to be joined and pre-drill if possible. Thoroughly clean off surplus sealant and swarf using a dry, lint-free cloth or plastic scraper. Apply two beads of sealant close to each edge of the joint. Align pieces together and fasten with sealed rivets at 50mm centres.

End Laps

End laps in profiled metal roofing should be avoided where possible. When unavoidable, the end laps should be sealed with a double bead of sealant as in the illustration below.



Fastening

The selection of the appropriate form of fastener is important. Fastener durability should equal or exceed that of the material being fastened. Fasteners used on COLORSTEEL® products should be factory colour matched prior to installation.

Screw fasteners

Screw fasteners of a length sufficient to give adequate penetration into supporting structure are to be used. Refer to manufacturer for specific recommendations. Fasteners should be a minimum of Class 4 for severe environments, and Class 5 for very severe. They should be manufactured and coated in materials compatible with the material being fastened, and be fitted with a low carbon, non-conducting sealing washer.

Rivets

Rivets should be minimum 4mm diameter aluminium. Sealed rivets are preferred over unsealed as they do not require the addition of a dab of sealant on the face to achieve weatherproofing.

Spacing

Fasteners should be of grade and type suitable for the application, installed at spacings required by design loads and manufacturer’s recommendations. On buildings constructed to NZS 3604 a consistent fixing pattern should be used on all fastener rows, for other buildings, greater fastener density may be required around the periphery. All purlins must be fastened so that they each contribute to resisting uplift forces.

Rivets on flashings should be placed at 50mm centres.

Setting

Fasteners should be seated snugly to give a good seal, without distorting the roofing profile. Overdriving, over-tightening or using too many fasteners can cause purlin marking and other damage, and can contribute to roof noise.

Driving

Impact screw guns can cause damage to the heads of screws and cause damage to protective coatings, as can worn driving sockets. Use only drivers recommended by the fastener supplier, and snug fitting drive sockets.

Allowance for expansion

All roofing and cladding is subject to expansion and contraction due to temperature extremes. This is particularly evident with darker colours and long spans where the expansion may be as much as 8.0mm for a 10.0 metre sheet. Screws fitted with profiled washers for the purposes of allowing thermal expansion must be installed centrally through a 9mm diameter pre-drilled hole in the roof sheeting.

Flashings

For transverse flashings, aluminium soft edging may be used, or flashings may be notched into rib and secret fixed profiles. Where penetration flashings are required, proprietary EPDM boot flashings may be used, or bespoke flashings may be fabricated in accordance with the Profiled Metal Roofing Code of Practice.

Flashings should not have edges that impinge on adjacent coated surfaces, and longitudinal edges such as barge downturns must have a small gap between downturn edge and neighbouring pan.

Sheet ends

The pans at the top end of sheets must be turned up to form a stop end. On roof pitches below 8°, ensure that the gutter end of profiled sheets is turned down.

PREVENTING PROBLEMS

Water ponding

Roofs

Ponding will create prolonged time of wetness, and increase the build-up of debris. Ponding will detract from coated steel product life and will invalidate the product warranty.

Where the roof pitch is low, changes in structure alignment or damage to the roof sheets may result in a negative pitch and consequently lead to water ponding. The following conditions commonly cause water ponding:

- Over-spaced purlins
- Deformation of timber purlins
- Placement of external loads such as air conditioning units
- Careless roof foot traffic
- Excessive canning of the profile pans
- Incorrectly installed penetrations

Gutters

Gutters must be installed with adequate fall to ensure all water is transported to appropriately located downpipes. The installation and downpipe construction should allow the gutter to drain completely. Regular gutter cleaning and maintenance is required to remove leaves and other debris that may restrict water flow to downpipes. Particular care should be taken at the entrance to downpipes and corners, to avoid blockages leading to water ponding.

A gutter protection system (or any other product) that entraps debris and/or water between itself and any steel product surfaces, restricting the coated steel’s ability to dry, is not recommended and is an exclusion in the product warranty.

Foot traffic

1. Use purlin spacing guidelines for Heavy Traffic if roofs are to be accessed by maintenance personnel.
2. Consider the use of walkways to prevent damage where the roof may be subject to heavy foot traffic.
3. Do not use the roof surface as staging for work on adjacent building facets.

Colour match paint

Colour match paint is designed for matching accessories to the COLORSTEEL® material. Colour match paint is not designed for repairing marks or blemishes. Fasteners and accessories requiring colour matching should be painted prior to installation.

Minor scratches

Air-dried paints used to disguise marks will weather at a rate different from that of COLORSTEEL®, sometimes dramatically so, and will often become more apparent than the mark they are intended to disguise. Minor scratches are best left alone, they will not affect the performance of the COLORSTEEL® product due to the self-healing qualities of the primer and metallic coating, and become less evident as the coating weathers.

Minor scratches may be described as scratches that do not extend to the metallic coating, are less than 3mm in width, and are not visually noticeable from a distance of 3 metres. This definition will however vary with the concentration of the scratches, and the visibility of the area affected.

Widespread coating damage to any COLORSTEEL® product can only be rectified by replacement of the affected sheets.

Lichen

Temperature, dust and rainfall can create a good environment for lichens to establish and flourish, and this can occur on almost any surface. For more information on Lichen treatment refer to Removal of Lichen bulletin.

Sunscreen

Sunscreen containing titanium dioxide or zinc oxide can accelerate the degradation of organic materials including auto finishes and COLORSTEEL® surfaces. This damage is irreparable so prevention of its occurrence is the only defence. See Sunscreen bulletin for more information.

FIELD PAINTING

Zincalume® and Galvsteel® are readily paintable using good quality primers and topcoats. Metallic coated roofs can be painted immediately after installation. Dirt, grease and any loose materials must be cleaned off so the surface is clean and dry prior to the first coat being applied. A popular solution is to apply a good quality galvanised iron primer and two topcoats, following the manufacturer's recommendations.

COLORSTEEL® can be painted after exposure to weather. Normally 12-18 months exposure is required to achieve surface modification of the surface to allow the new coating to adhere.

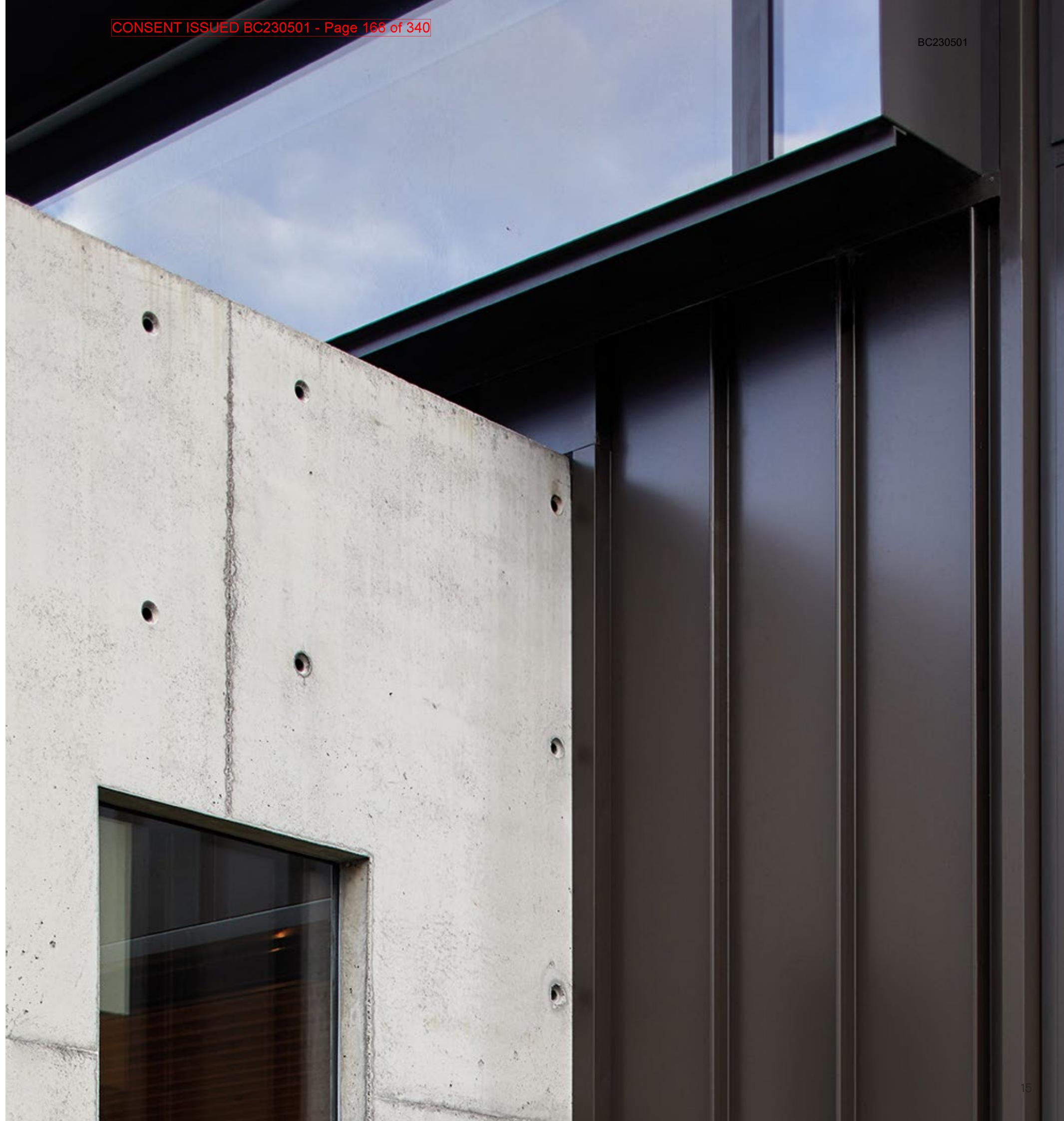
Side laps of unpainted Zincalume® steel do not require lap priming.

MAINTENANCE

Regular maintenance will increase the life of your COLORSTEEL®, Zincalume® or Galvsteel® roof. Rain washing will keep most exposed roofs clean and free of contaminants, but regular inspections should be conducted and any localised build-up of debris removed. Unwashed roof areas and wall cladding may require regular manual washing in accordance with New Zealand Steel guide: *Maintenance Recommendations*.

WARRANTIES

Warranties specific to each contract are issued through the Rollformer by New Zealand Steel Limited. In order to ensure the appropriate product is specified for the intended service life in any given environment, New Zealand Steel Limited recommends that they be consulted as early as possible in the design stage to ensure correct material selection and backing by an appropriate warranty. For information on environments, warranties and maintenance see Environmental Categories, Warranty and Product Maintenance Recommendations brochure.



4.0 Downpipes

4.1 Materials

4.1.1 Materials for downpipes shall comply with Table 4.

Table 4: Acceptable Material Standards for Downpipes
Paragraph 4.1.1

PVC-U	AS/NZS 1260 or AS/NZS 1254
Galvanised steel	AS 1397
Copper	BS EN 1172
Aluminium	AS/NZS 1734
Stainless steel	NZS/BS 970
Zinc aluminium	AS 1397

Amend 1
Sep 1993
Amend 2
Aug 1994
Amend 8
Oct 2011

Amend 7
Sep 2010

4.1.2 Downpipes, gutters, roofing, fastenings and all adjoining components shall be of the same or a compatible material to eliminate the risk of galvanic corrosion.

4.2 Sizing of downpipes

4.2.1 Downpipes sized using Table 5 are acceptable. Other downpipes are acceptable provided their cross-sectional area is no less than that required by Table 5, and they permit passage of a 50 mm diameter sphere.

4.3 Installation of downpipes

4.3.1 Where thermal movement of downpipes cannot be accommodated by movement of the guttering, expansion joints shall be incorporated.

4.3.2 All internal downpipes shall withstand without leakage, a water test with an applied head of 1.5 m of water, or a high pressure air test as described in E1/VM1 Paragraph 8.3.

Amend 5
Jul 2001

5.0 Roof Gutters

5.1 Size of roof gutters

5.1.1 Roof gutters shall discharge to downpipes that are sized as given in Paragraph 4.2.

5.1.2 Any gutter under consideration shall be divided into sections and each section shall be sized. A section shall comprise the length of gutter between a downpipe and the adjacent high point on one side only of that downpipe. Each section of gutter shall have a cross-sectional area of no less than that determined from Figure 15 or Figure 16 (depending on whether the gutter is external or internal), and increased where required in accordance with Paragraph 5.1.3.

5.1.3 Figures 15 and 16 are based on a rainfall intensity "I" of 100 mm/hr. Where "I" exceeds 100 mm/hr the required gutter size shall be increased by taking the value read from the figures and multiplying it by the ratio of "I"/100. Paragraph 3.2.2 describes how to determine the value of "I".

Amend 2
Aug 1994

Amend 2
Aug 1994

Amend 1
Sep 1993

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

Amend 1
Sep 1993

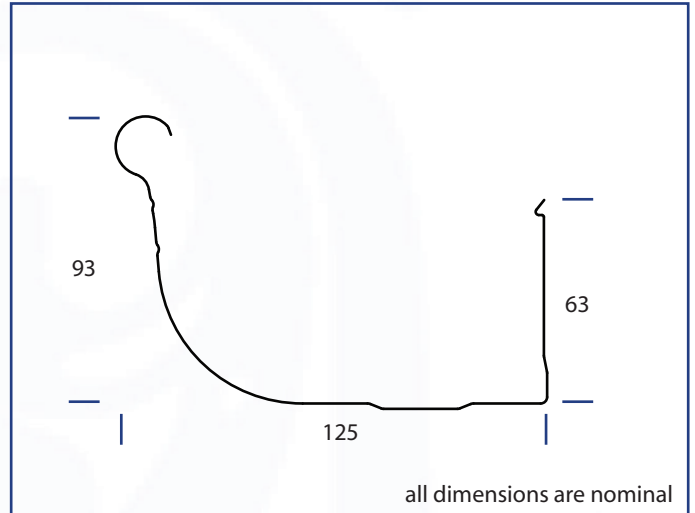
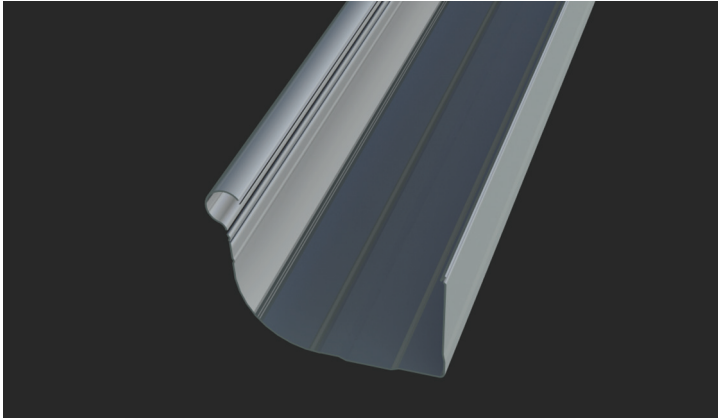
Amend 2
Aug 1994

Metalline Quad Gutter

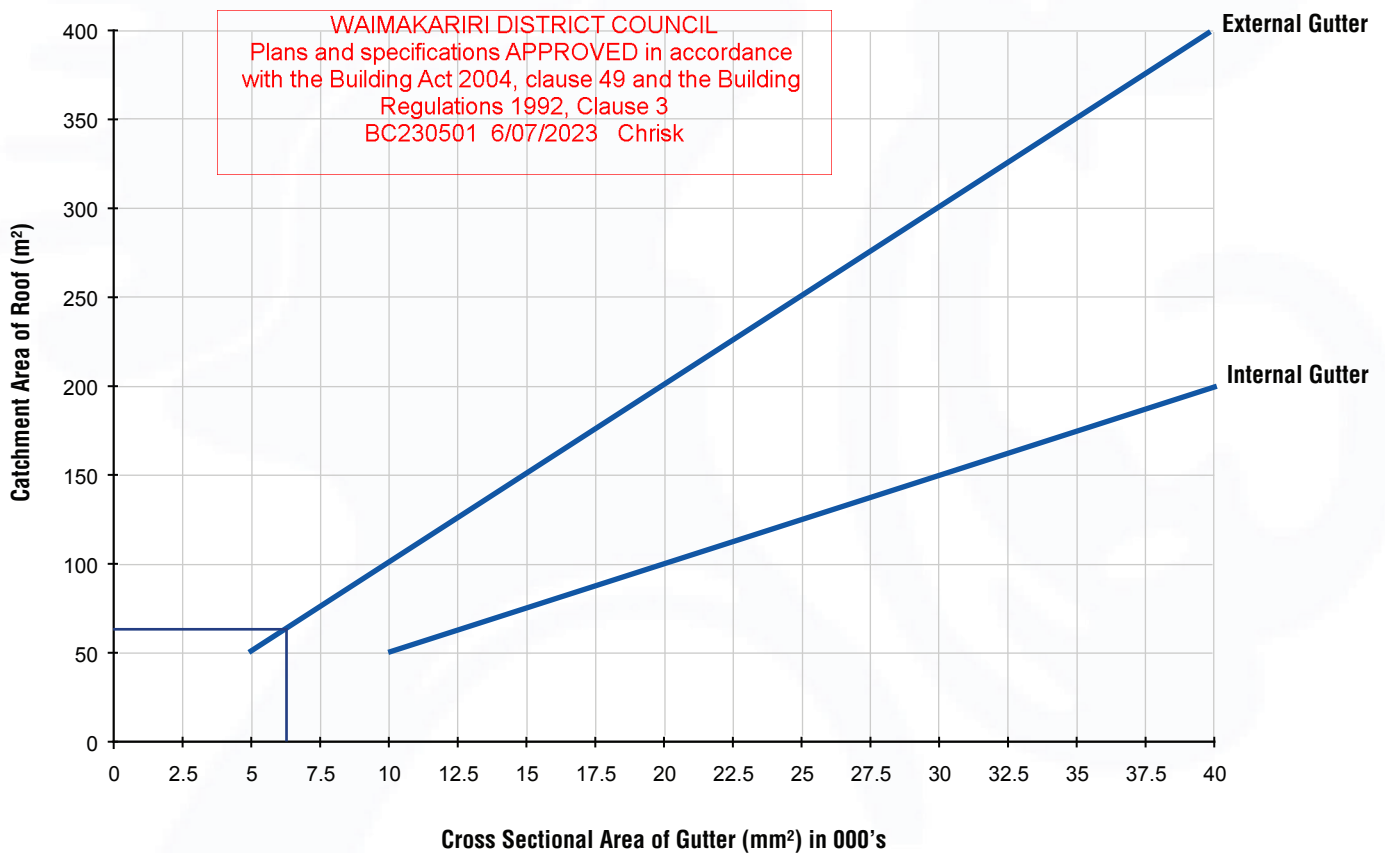
In Christchurch product is known as Colonial Quad Gutter

Metalline Quad Gutter is our most popular residential profile. Whether you are renovating or involved in a new build, this profile will enhance the appearance of your home. The Metalline system uses concealed brackets and is compatible with Metalcraft Metalline Fascia or timber fascia. Metalline Quad Gutter is available with overflow slots to prevent flooding from blockages, and snow straps are stocked to suit this profile if required. Metalline Quad Gutter is available in Zinalume, Galvsteel, Colorsteel Endura and Colorsteel Maxx.

Cross-sectional Area: 5550mm²



Catchment Area of Roof v Cross Sectional Area of Gutter



Note: The graph is based on a rainfall intensity of 100mm / hour and roof pitches less than 10 degrees.
For more information on roof catchment areas and the effect of gutter cross sectional areas download the document on Roof Drainage

Manufacturing Locations Hamilton, Christchurch

Metalline Quad Gutter is available for purchase from all Metalcraft branch locations

www.metalcraft.net.nz

**Thermakraft™
WATERGATE
Plus**



**Thermakraft
ONE WRAP
SYSTEM**

10 Products - One system
One warranty

Thermakraft™ WATERGATE PLUS

New Zealand's premium all-purpose, fire retardant wall wrap.

Watergate Plus is specifically designed as a wall underlay for use behind exterior wall cladding. Made from synthetic materials Watergate Plus is fire retardant, water resistant and vapour permeable. The water vapour transfer rate of the product has been optimised to minimise condensation risk in homes without compromising its primary water barrier properties.

Watergate Plus is part of the Thermakraft One Wrap System. Its unique construction allows for easier installation while maintaining best in class performance qualities.

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chris



Watergate Plus

Premium Synthetic Wall Wrap



Application Method

- Fix Watergate Plus underlay with printed side facing the exterior and run horizontally.
- Fix to all exterior walls from below bearers to the top plate. Watergate Plus underlay is available in widths of 2740mm and 1370mm. The 2740mm width product is generally wide enough to cover from below the bottom plate to the top plate.
- **Timber Framing:** Pull the Watergate Plus underlay tight and fix securely to the frame with fasteners such as galvanized Little Grippers, 6mm-8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically.
- **Steel Framing:** Ensure frame is free from oil, dust and dirt. Fix securely using construction grade double-sided tape or adhesive or galvanized flat head screws that are appropriate for external framing and roofing use, at 300mm centres.

Note: Check adhesive compatibility with Watergate Plus and the steel framing materials before use.

If using a tape: Apply double-sided tape onto steel frame studs and only peel off the forward-facing liner once Watergate Plus is ready to be installed. When ready, peel off approximately 2m of tape liner at a time and press Watergate Plus firmly onto tape, ensuring it is taut.

Note: The double-sided tape is to temporarily hold the Watergate Plus in place until the batten and/or cladding is installed. The screws used to fix these are the permanent fixings for Watergate Plus.

- Minimum of 150mm lap is required at joins. All vertical laps must be made over studs. Horizontal laps to be laid ship lap style allowing water to be shed to the outer face of Watergate Plus.
- Cover all windows and door openings with Watergate Plus underlay. It is recommended that the Watergate Plus underlay is not cut and prepared for window installation until the arrival of the windows.
- When windows and doors are ready for installation, the Watergate Plus underlay covering the openings should be cut at 45° and folded into the opening and securely fastened. Thermakraft window flashing tapes are recommended as the window flashing system.

Note: In accordance with NZBC Acceptable Solution E2/AS1 and NASH Building Envelope Solutions: 2019 (E2/AS4), wall underlay must be prevented from bulging into the drained cavity. Where stud spacing is greater than 450mm, Thermakraft Stud Strap or Thermostrap run horizontally at 300mm centres is an acceptable means of prevention.

- Once installed, Watergate Plus must not be left exposed to the weather or UV for a maximum of 90 days. Watergate Plus underlays will provide temporary weather protection during construction allowing work to continue.

Internal linings and insulation must not be installed until the exterior cladding is completed.

- Fastenings behind Brick Veneer Cladding must have an equivalent service life to that of Brick Veneer (50 years). Refer to NZBC B2 Durability.
- Repair small damaged areas with any Thermakraft window flashing tape or Thermakraft Premium Joining Tape. Any large areas which require repair may be covered with a second layer of underlay with a lap of 150mm and then taping.
- Watergate Plus underlay must be installed by, or under the guidance of a licensed building practitioner.



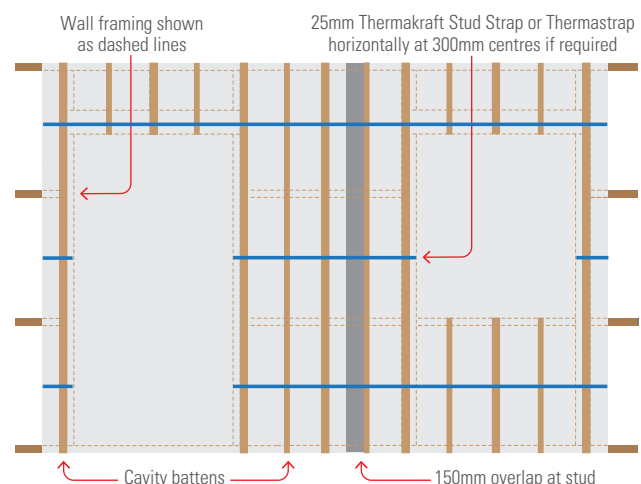
Fix Watergate Plus securely to the frame.



On arrival of doors and windows, cut Watergate at each opening on a 45° angle away from each corner. Pull the Watergate flaps inside and fasten to the inside of frame.

Application Tips

Watergate Plus is unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent to flash off in a well-ventilated area. Recommended minimum 7 days.



Watergate Plus

Premium Synthetic Wall Wrap



Handling and Storage

Watergate Plus underlay must be handled with care to prevent damage such as tearing and roll deformation. Due to the width of the product, care should be taken when installing in windy conditions.

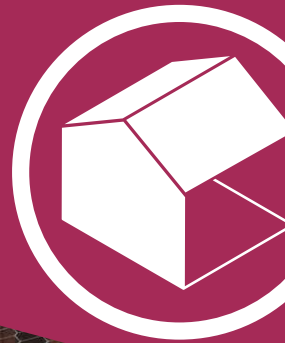
The product must be stored under cover well away from direct moisture, rainfall contact and sunlight (UV). Care should be taken not stack other materials on top of the product.



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Thermakraft™
COVERTEK
407

Thermakraft™

COVERTEK 407

Heavy duty self-supporting roof and wall underlay

Kingspan Thermakraft Covertek 407 is our strongest synthetic underlay, designed as a means of managing condensation, water vapour transfer and water ingress in the most trying conditions including applications where the roof pitch is 3° and above. Covertek 407 is fire retardant.

Product usage

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

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Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk



Covertex 407

Heavy duty self-supporting roof and wall underlay



Roof Application Method

Long-run metal roofing/vertical or horizontal installation method

- Fix Covertex 407 underlay with printed side facing the exterior.
- Fix using stainless steel 8-12mm staples or 20mm flat head clouts, or appropriate proprietary fastenings on timber framed structure. Fixing at 300mm centres. Fixing types and requirements for steel framed structure can be found in the NZ Metal Roof and Wall Cladding Code of Practice (COP).
- Refer to table below to determine underlay support requirements.

Roof Pitch	Span	Underlay Support Required	
		Horizontally Installed	Vertically Installed
≥ 10°	> 1200mm	Yes	Yes
	≤ 1200mm	No	No
< 10° (Min 3°)	> 1200mm	Yes	Yes
	≤ 1200mm	No	Yes

- 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.
- Must be laid firmly (tight/taut) without creases. All laps either vertical or horizontal must be a minimum of 150mm lap.
- When underlay support is required, Kingspan recommend using AUSMESH Safety Mesh, AUSNET hexagonal netting or Thermastrap 201. Note: Commercial Buildings may require the use of Roof 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.
- If required to achieve a lap seal (refer to NZ Metal Roof and Wall Cladding COP), use Thermakraft Premium Joining Tape or any Thermakraft Window Flashing Tape.

- Covertex 407 will provide some temporary weather protection during construction (maximum 7 days), same day coverage recommended. DO NOT over expose the product for more than 7 days.
- Covertex 407 may be unwound to the full length from the gutter to the ridge. However, when ridge ventilation is required Covertex 407 may be terminated or slit at the ridge purlin to allow a free passage of air.
- Covertex 407 must NOT overhang the gutter line by more than 20 mm, or if eaves flashings are used, terminate on the upper side of the flashing. More details can be found in the NZ Metal Roof and Wall Cladding COP.
- Flue penetrations must have a minimum clearance of 50mm from Covertex 407 (refer to NZ Metal Roof and Wall Cladding Code of Practice 10.11.5 and the flue suppliers instructions).
- Covertex 407 must be free of tears and punctures, fit taut and be lap taped around all penetrations (except flue penetrations), to provide drainage for any condensation, or surface water from leaks.
- Lap taping can be done with Thermakraft Premium Joining Tape or any Thermakraft Window Flashing Tape.

Note: Do not use Aluband on penetrations where Polybutene water pipes have been installed. Refer Pipe Manufacturers for instructions on sealing penetrations.

Concrete/Metal tile roofing

- 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 must have antiponding boards in accordance with NZBC E2/AS1 Paragraph 8.2.5.
- Installed Covertex 407 may be laid over the top of the antiponding boards and draped into the gutter by no more than 20mm.
- Covertex 407 must be installed by, or under the guidance of a licensed building practitioner.

Application Tips

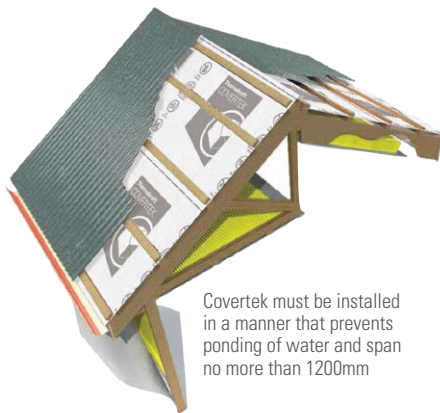
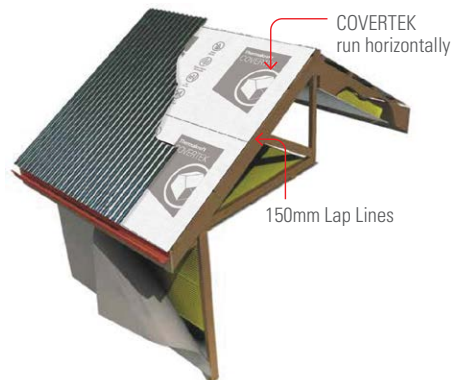
Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in a well ventilated area. Recommended minimum 7 days.

Covertex 407

Heavy duty self-supporting roof and wall underlay

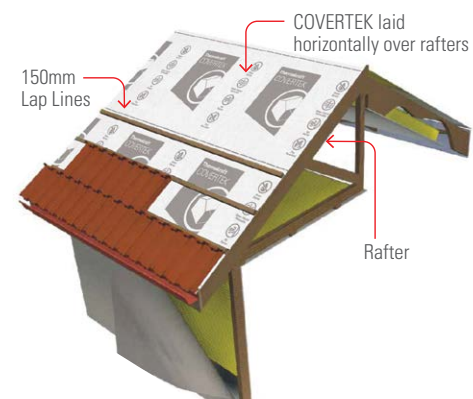
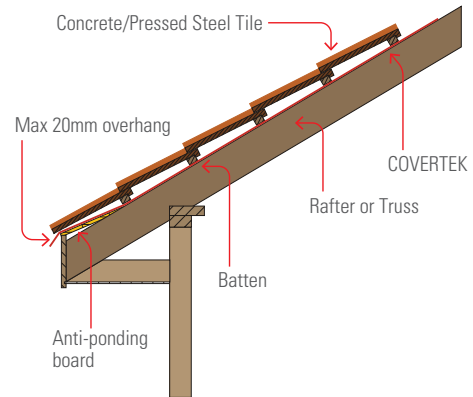


Corrugated roofing:



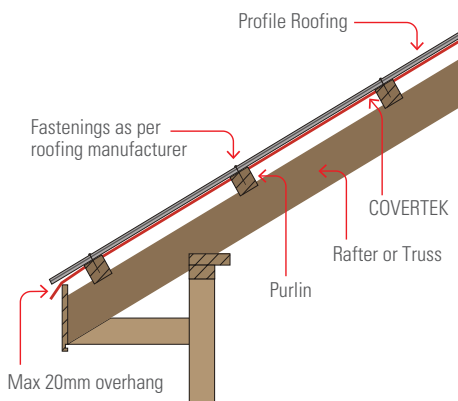
Concrete/metal tile roofing:

Tile roofing

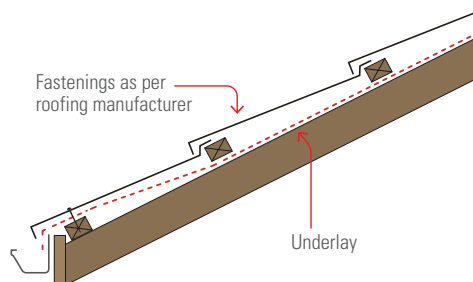


Long run metal roofing:

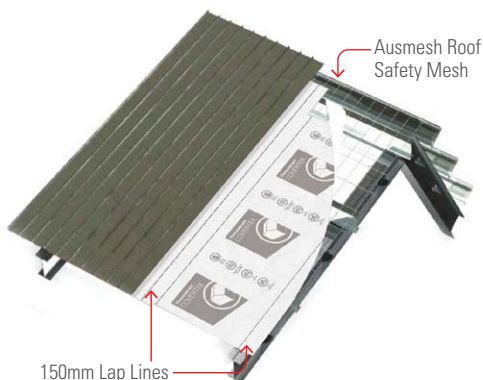
Wooden construction



Metal tile installation



Steel construction



Covertex 407

Heavy duty self-supporting roof and wall underlay



Wall Application Method

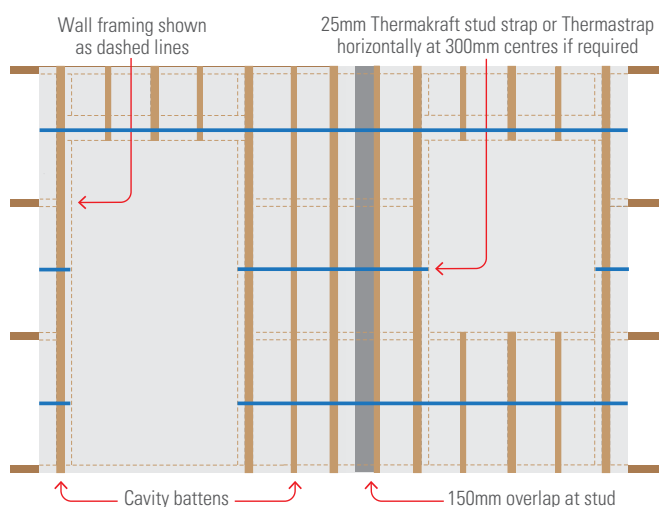
- Fix Covertex 407 underlay with printed side facing the exterior.
- Fix to all exterior walls from below bearers to the top plate. Pull the Covertex 407 underlay tight and fix securely to the frame with fasteners such as galvanized Little Grippers, 6mm-8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically. Additional fasteners should be used around each opening to be cut out. Fixing types and requirements for steel framed structure can be found in the NZ Metal Roof and Wall Cladding COP.
- When fixing Covertex 407 underlay to Steel framing the same procedure applies, use adhesive spray or tape or flat head screws to fasten to the framing or thermal break. The exterior cladding fastenings will act as the permanent fixings.
- Fastenings behind Brick Veneer Cladding must have an equivalent service life to that of Brick Veneer (50 years). Refer to NZBC Clause B2.3.2.
- Covertex 407 underlays are available in widths of 2550mm and 1250mm.
- Cover all windows and door openings with Covertex 407 underlay.
- It is recommended that the Covertex 407 underlay is not cut and prepared for window installation until the arrival of the windows. Minimum of 150mm is required at joins, all vertical laps must be made over studs.

Horizontal laps to be laid ship lap style allowing water to be shed to the outer face of the membrane.

- When windows and doors are ready for installation, the Covertex 407 underlay covering the openings should cut at 45° and folded into the opening and securely fastened. Thermakraft window flashing tapes are recommended as the window flashing system.

Note: In accordance with NZBC Acceptable Solution E2/AS1, wall underlay must be prevented from bulging into the drained cavity. Where stud spacing is greater than 450mm Thermakraft stud strap or Thermastrap run horizontal at 300mm centres is an acceptable means of prevention.

- Once installed, Covertex 407 must not be left exposed to the weather or UV for a maximum of 60 days. Covertex 407 underlays will provide some degree of temporary weather protection during construction allowing work to continue. Internal linings and insulation must not be installed until the exterior cladding is completed.
- Make good any forced tears with Thermakraft window flashing tapes. Any large areas which require repair may be covered with a second layer of underlay - a lap of 150mm is required.
- Lap taping can be done with Thermakraft Premium Joining Tape or any Thermakraft Window Flashing Tape.
- Covertex 407 underlay must be installed by, or under the guidance of a licensed building practitioner.



Application Tips

- Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in a well ventilated area. Recommended minimum 7 days.

Handling and Storage

- Covertex 407 must be handled with care to prevent damage such as tearing and roll deformation.
- The product must be stored under cover well away from direct moisture, rainfall contact and sunlight (UV). Care should be taken not stack other materials on top of the product.



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SPECIFICATION FOR RESIDENTIAL WINDOWS & DOORS

Responsibility

The structural and weathertight performance of the completed joinery, including the glazing is the responsibility of the window fabricator.

Compliance

Windows and doors are to be manufactured and, when applicable, installed in accordance with NZBC E2/AS1.

Performance

Windows and doors are to comply with NZS4211 (Specification for the Performance of Windows) including;

- Serviceability deflection, Operation of opening sashes, Air infiltration, Water penetration, Ultimate strength, Torsional strength of sashes.

Windload

- Non-Specific Design.

Site wind zone as derived from NZS3604:

- Low (wind speed up to 32m/s)
- Medium (wind speed up to 37m/s)
- High (wind speed up to 44m/s)
- Very High (wind speed up to 50m/s)
- Extra High (wind speed up to 55m/s)

Thermal Performance

Thermal performance as determined from NZBC H1/AS1 or H1A/M1: 'R' value = 0.37

SURFACE FINISHING

Duralloy Powder coat

Duralloy is the most commonly applied powder coat and offers a 10 year warranty on both film and colour integrity. Duralloy is suitable for applications more than 100m from salt water in mild to tropical environments.

Duralloy Powder coat is applied to a minimum 50mic thickness with a typical range of 50 - 90mic.

GLASS OPTIONS

Typical Glazing *Double glazing*

- Low-e / Clear IGU with a nominal thickness of 22mm with thermally improved spacer and argon gas filled.

JAMBLINERS

Standard Jambliners

19mm thick timber reveals with, minimum H3.1 treatment, pre-primed for paint finish and grooved for 10mm wall linings.

FLASHINGS

Head Flashings

- Extruded aluminium head flashings, colour matched to window frames, sized to suit cladding and construction type, all in accordance with NZBC E2/AS1, 9.1.10.4

Cavity Construction

- * Extruded aluminium sill support bar, with in-built drainage and ventilation, to provide continuous support to the window or door unit. The bar is supplied in mill finish aluminium. *The bar is to be used in accordance with E2/AS1 9.1.10.5 b) and comply with BRANZ EM6 and is sized to suit the cladding thickness.*

HARDWARE

Typical Hardware

Standard lockable window and door catches

Special Hardware

- f. - Restrictor stays to comply with NZBC F4

Entrance Door Hardware

Icon lever lock

AWNING and CASEMENT WINDOWS

Windows shall be constructed using FIRST brand Residential frames or similar, utilising a 35mm platform and an IGU thickness up to 22mm.

- Opening sashes include a cover facing and have both bead-glazed and pocket glazed options.
- Mullions and transoms have external fins for added strength where required.
- Include passive ventilation in the form of:
 - Vented Sash - fitted to the sill of an opening sash.

SLIDING DOORS

Residential sliding doors are rated to 2.1m high in 'very high' wind zones and are offered in two types and four frame variations, the standard frame type (where the panel slides on the inside of the fixed pane) includes single sliding, double sliding, multi sliding, and the external single sliding. The standard sliding door frames have a 'flushline' sill and easy-glide panels for a clean appearance and smooth operation.

Standard Sliding Door

Doors shall be constructed using FIRST sliding doorframe, utilising a 35mm platform and an IGU thickness up to 22mm.

- Mullions and transoms have external fins for added strength where required.
- Ⓜ Threshold strips can be either; Sloping (05816) or Square (05818).
- Ⓜ Opening sashes include a cover facing and have both bead-glazed and pocket glazed options.
- » Include passive ventilation in the form of;
 - Ⓜ Vented Sash - fitted to the sill of an opening sash.



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Linea™ Weatherboard Cavity Fix

Technical Specification
June 2023 New Zealand





We value your feedback!

To continue with the development of our products and systems, we value your input. Please send any suggestions, including your name, contact details, and relevant sketches to:

Ask James Hardie™
literaturefeedback@jameshardie.co.nz

Make sure your information is up to date

When specifying or installing Hardie™ fibre cement products, ensure that you have the current manual. Additional installation information, warranties and warnings are available at www.jameshardie.co.nz or **Ask James Hardie™** on 0800 808 868.

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1 Product Overview

1.1 Product Information

Linea™ Weatherboard is an external cladding.

Linea™ Weatherboard is a 16mm thick, pre-primed bevel back fibre cement weatherboard. The bottom front edge of Linea™ Weatherboard is chamfered. It has tongue and groove ends for jointing and is classified as lightweight wall cladding for use in residential and light commercial buildings using timber or lightweight steel framed external walls. Linea™ Weatherboard is available in 150mm and 180mm widths.

James Hardie also has available:

- Hardie™ Axent™ Trim is a 19mm thick, pre-primed fibre cement product available in two widths. For use as decorative trims around openings and external corners.

For fixing to a steel frame. Ask James Hardie™ on 0800 808 868 for specific requirements. Or refer to the Cladding to Steel Framing Technical Supplement by James Hardie about the installation of Linea™ Weatherboard to steel frame.

Table 1

Linea™ Weatherboard and Hardie™ Axent™ Trim sizes							Coverage Information		
Product	Code	Length (mm)	Width (mm)	Thickness (mm)	End details	Effective cover (mm)	No. of planks/ metre height (approx.)	Mass kg/ lineal m (approx. at EMC)	Mass kg/m² (approx. at EMC)
Linea™ Weatherboard 150	402533	4200	150	16	T & G	120	8.3	3.1	24.93
Linea™ Weatherboard 180	401847	4200	180	16	T & G	150	6.7	3.57	23.92
Hardie™ Axent™ Trim	405260	3000	45	19	Square	N/A	N/A	1.1	N/A
Hardie™ Axent™ Trim	405257	3000	70	19	Square	N/A	N/A	1.6	N/A
Hardie™ Axent™ Trim	405258	3000	89	19	Square	N/A	N/A	2	N/A

The effective thickness of finished Linea™ Weatherboard on the wall at the lap is approximately 33 to 35mm

All dimensions and masses provided are approximate only and are subject to manufacturing tolerances.

Linea™ Weatherboard is categorised as a Light Weight Wall Cladding as described in the NZS 3604.

1.2 Manufacturing and Classification

The manufacturing process of Linea™ Weatherboard by James Hardie is ISO 9001 Certified.

Linea™ Weatherboard is an advanced lightweight cement composite cladding manufactured using a basic composition of Portland cement, ground sand, cellulose fibre, water and proprietary additives. The product is easily identified by the name 'Linea' printed on the back.

Hardie™ Axent™ Trim is an advanced lightweight cement composite cladding manufactured using a basic composition of Portland cement, ground sand, cellulose fibre, water and proprietary additives. The trims come pre-sealed on all sides, ready for paint..

Linea™ Weatherboard is manufactured in Australia to the Australian/New Zealand Standard AS/NZS 2908.2 'Cellulose-Cement Products' (ISO 8336 'Fibre-Cement Flat Sheet').

Linea™ Weatherboard is classified Type A, Category 2 in accordance with AS/NZS 2908.2 "Cellulose-Cement Products".

For Safety Data Sheets (SDS) visit www.jameshardie.co.nz and view them in the technical literature section or Ask James Hardie™ on **0800 808 868**.

1.3 Components and Accessories

Table 2

Accessories/tools supplied by James Hardie			
Accessories	Description	Size (mm)	Code
	External corner soaker 90° for Linea™ Weatherboard 180mm • Aluminium	200 long	301186
	External corner soaker 135° for Linea™ Weatherboard 180mm • Aluminium	200 long	301178
	External corner soaker 90° for Linea™ Weatherboard 150mm • Aluminium	170 long	302820
	External Slimline Box Corner Mould Etched primed aluminium extrusion used to create external corner	2700 long 4000 long	301195 305809
	Linea™ 35mm Cavity Closer	3000 long	306035
	Internal 'W' Mould 90° Etched primed aluminium extrusion used to create 90° internal corner	2700 long 4000 long	301184 305807
	Internal 'W' Mould 135° Etched primed aluminium extrusion used to create 135° internal corner	2700 long	301183
	Hardie™ Corner Under Flashing 50 x 50mm PVC moulding used as under flashing for internal and external corners	3000 long	303745
	Hardie™ Flex Galvanised nail - 5kg	60 x 3.15mm	302784
	Hardie™ Flex Stainless steel nail - 5kg	60 x 3.15mm	302782
	Hardie™ Blade Saw Blade Diamond tip fibre cement circular saw blade. Spacers not included	4 tooth - 184mm	300660
	Hardie™ Blade Saw Blade Diamond tip fibre cement circular saw blade. Spacers not included	6 tooth - 254mm	303375
	Gecko Gauge™ This easy to use tool gauges and supports the weatherboard for a one person install.		305941

Table 3









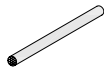



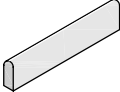



Accessories not supplied by James Hardie			
James Hardie recommends the following products for use in conjunction with its Linea™ Weatherboard. James Hardie does not supply these products. There may also be some other accessories required depending upon the application. Please contact component manufacturer for information on their warranties and further information on their products.			
Accessories	Description	Size (mm)	Material/appearance
	Flexible Underlay To comply with Table 23 of E2/AS1		
	D head or RounDrive Nail Gun nail for concealed fixing Linea™ Weatherboard.	60 x 2.87mm 75 x 3.06mm	Hot Dip Galvanised/ Stainless Steel
	Hardie™ Flex Hot Dip Galv. Nails For concealed fixing by hand nail	60 x 3.15mm 75 x 3.15mm	Hot Dip Galvanised/ Stainless Steel
	Jolt Head Nail for face fixing Linea™ Weatherboard	75 x 3.15mm 90 x 3.55mm	Hot Dip Galvanised/ Stainless Steel
	Titanium Coated High Speed Drill Bit. For pre-drilling prior to face fixing with jolt head.	3.0mm 3.5mm	
	Brad Nail To tie boards together	32mm	
	Joint sealant Paintable flexible sealants are recommended for filling the joints. Refer to Section 7.2 for information.	Tube	Sika®, Bostik® or similar Holdfast®
	CRC® ADOS® Builders Fill Two part exterior grade fill to finish over jolt head nails.		
	PEF Rod	Polyethylene foam	Sika® or similar
	Flexible tape A flexible self-adhesive tape used in preparation of a window. Refer to the Window installation section in this manual for more information.	Proprietary tape to adhere to flexible underlay	Tyvek®, Marshall Innovations or similar
	Flashing Material as per Table 20, 'E2/AS1'		Flashing Fabricator
Dimension to suit 	Planted Sill		H3.1 minimum Treated Timber Timber Merchant or cut on site

Table 3 contd.

Accessories not supplied by James Hardie			
Accessories	Description	Size (mm)	Material/appearance
	Timber Scribe To scribe beside window, site cut to suit.	As required	H3.1 minimum Treated Timber Timber Merchant or cut on site
	Fibre Cement Cutting Blade Diamond tip 305mm diameter circular saw blade to fit drop saw.	305mm	Diamond Tipped
	Cavity Closer - aluminium Used in walls taller than 10m for inter-tenancy fire separation.		
	Primers. Dulux® 1-Step Prep, Resene® Quick Dry etc.		

2 Application and Scope

2.1 Application

This specification includes the installation of Linea™ Weatherboard cavity construction where risk matrix is 13 or more and must be read in conjunction with the current CodeMark Certificate and BRANZ Appraisal. This installation method can also be used for buildings where the risk matrix score is 0 - 12 if desired.

This document is intended for use by architects, designers, specifiers or builders who are involved in specifying Linea™ Weatherboard. The document also serves the purpose of an installation manual for this product.

For use of Linea™ Weatherboard outside this published scope, the architect, designer or engineer must undertake specific design. For advice on designs outside the scope of this specification, Ask James Hardie on 0800 808 868.

Refer to the Linea™ Weatherboard Direct Fixed Technical Specification when installing Linea™ Weatherboard without a cavity.

2.2 Scope

Linea™ Weatherboard cavity construction is suitable for use in timber framed buildings that fall within the scope limitations of the New Zealand Building Code (NZBC) Acceptable Solution E2/AS1, Paragraph 1.1.

Linea™ Weatherboard cavity construction is also suitable for use in specific engineering design projects (SED) subject to a wind pressure of 3.2kPa (ULS) maximum for building heights upto 25m.

2.3 Limitations

- Linea™ Weatherboard cladding must not be used on curved wall applications
- Linea™ Weatherboard cladding must not be installed vertically or angled
- The minimum ground clearances specified must be maintained
- Timber window joinery/recessed openings is subject to an alternative design by the designer
- Maximum SLS inter-story seismic deflections up to span/180 when used in specific design buildings (SED) buildings above 10m height. To accommodate higher inter-story drifts, a deflection should be used.

2.4 Details

Various typical Linea™ Weatherboard details are provided within this document. In addition to these, the construction details with HomeRAB™ Pre-Cladding/RAB™ Board have also been developed and are available on our website. These details are available in dwg, dxf, jpg and pdf file format and can be downloaded at **www.jameshardie.co.nz**.

All dimensions shown are in millimetres unless noted otherwise.

3 Compliance

3.1 NZBC Compliance

When installed in accordance with the conditions of CodeMark number GM-CM30018 Linea™ Weatherboard complies with all relevant requirements of the NZBC. Please refer to www.building.govt.nz or jameshardie.co.nz for a copy of the certificate.



Linea™ Weatherboard cavity fixed cladding also has a BRANZ Appraisal number 447 (2020) available at www.branz.co.nz or www.jameshardie.co.nz.



4 Design

4.1 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.

All New Zealand Standards referenced in this manual are current edition and must be complied with.

Specifier

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.

Installer

If you are an installer ensure that you follow the design, moisture management principles, associated figures and material selection provided by the designer and this technical specification by James Hardie.. All the details provided in this document must be read in conjunction with the project specification.

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 their aesthetic expectations before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation. James Hardie will only offer a replacement product if the Linea™ Weatherboard supplied is found to be out of its manufacturing specification.

4.2 Clearances

The clearance between the bottom edge of cladding and the paved/unpaved ground must comply with section 9.1.3 of E2/AS1. On the roofs and decks the minimum clearance must be 50mm. These clearances must be maintained throughout the life of the building.

Linea™ Weatherboard must overhang the bottom plate on a concrete slab by a minimum of 50mm as required by the NZBC Acceptable Solution, E2/AS1 Table 18.

The site on which the building is situated must comply with the NZBC Acceptable Solution E1/AS1 'Surface Water'.

Do not install cladding such that it may remain in contact with water or ground, refer to figures in section 9 of this manual.

4.3 Structure

4.3.1 Timber Framing

Timber framing must be in accordance with NZS 3604 (Timber-framed buildings) or designed as for specific engineering design (SED) in accordance with NZS 3603 and AS/NZS 1170 where specific engineering design is required, the framing stiffness must be equivalent to or more than the framing provisions of NZS 3604.

The stud spacing must not exceed 600mm centres maximum for buildings within the scope of NZS 3604 and 400mm centres maximum for wind pressures more than 1.5kPa (ULS).

For timber frame walls longer than 12m, it is best practice to allow for construction joints to accommodate movements generated due to timber shrinkage or deflections.

4.3.2 Durability

Timber framing must be treated to a minimum H1.2 treatment requirements and comply with Acceptable Solution B2/AS1 'Durability' of the NZBC. For further timber treatment information refer to the NZS 3602 (Timber and Wood-Based Products for use in Buildings) for minimum timber treatment selection and treatment requirements. Framing must be protected from moisture at sites in accordance with the recommendations of framing manufacturers. Refer to the NZS 3602 for information about the allowable moisture content in timber framing.

4.4 Structural Bracing

Bracing can be achieved by using HomeRAB™ Pre-Cladding or RAB™ Board installed direct to framing instead of a flexible underlay or by using the Villaboard™ Lining bracing system on the internal face.

4.5 Energy Efficiency

External walls constructed as per this technical specification, using Linea™ Weatherboard cladding must use suitable bulk insulation to meet the minimum thermal insulation requirements as per Clause H1/AS1 'Energy Efficiency' of the NZBC.

4.6 Fire Rated Walls

External walls with Linea™ Weatherboard cavity fix construction method can achieve fire resistance ratings up to 60/60/60 when constructed in accordance with the Fire and Acoustic Design Manual by James Hardie. Linea™ Weatherboard must be face fixed for fire rated applications.

Refer to the Fire and Acoustic Design Manual by James Hardie for further information about fire rated systems.

4.7 Control of External Fire Spread

Linea™ Weatherboard material is classified as 'Type-A' when tested to the requirements of Appendix C7.1.1 of C/AS1 and C/AS2 of NZBC and is suitable for use where 'Non Combustible Material' or 'Limited Combustibility Material' is required for use in buildings located anywhere in relation to the relevant boundary for building within the scope of C/AS1 or C/AS2.

- Where the upper floors contain sleeping uses or other property as per C/AS2, a horizontal flashed joint must be provided to block the top of lower cavity at each floor or intervals of no greater than 3.5m vertical height. Refer to Figure 38 & 39.
- On buildings greater than 10m in height a RAB™ Board must be used.

4.8 Alpine Regions

In regions subject to freeze/thaw conditions, Linea™ Weatherboard must not be in direct contact with snow or ice build up for extended periods, e.g. external walls in alpine regions subject to snow drifts over winter.

The Linea™ Weatherboard has been tested in accordance with AS/NZS 2908.2 Clause 8.2.3.

5 Safe Working Practices

WARNING - DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

Hardie™ fibre cement products contain sand, a source of respirable crystalline silica may cause cancer if dust from product is inhaled. Causes damage to lungs and respiratory system through prolonged or repeated inhalation of dust from product.

Intact fibre cement products are not expected to result in any adverse toxic effects. The hazard associated with fibre cement arises from the respirable crystalline silica present in dust generated by activities such as cutting, rebating, drilling, routing, sawing, crushing, or otherwise abrading fibre cement, and when cleaning up, disposing of or moving dust.

When doing any of these activities in a manner that generates dust, follow James Hardie instructions and best practices to reduce or limit the release of dust.

If using a dust mask or respirator, use an AS/NZS1716 P1 filter and refer to Australian/New Zealand Standard 1715:2009 Selection, Use and Maintenance of Respiratory Protective Equipment for more extensive guidance and more options for selecting respirators for workplaces. For further information, refer to our installation instructions and Safety Data Sheets available at www.jameshardie.co.nz.

FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

Crystalline Silica is

- Commonly known as sand or quartz
- Found in many building products e.g. concrete, bricks, grout, wallboard, ceramic tiles, and all fibre cement materials

Why is Crystalline Silica a health hazard?

- Silica can be breathed deep into the lungs when present in the air as a very fine (respirable) dust
- Exposure to silica dust without taking the appropriate safety measures to minimise the amount being breathed in, can lead to a potentially fatal lung disease – silicosis – and has also been linked with other diseases including cancer. Some studies suggest that smoking may increase these risks
- The most hazardous dust is the dust you cannot see!

When is Crystalline Silica a health hazard?

- It's dangerous to health if safety protocols to control dust are not followed when cutting, drilling or rebating a product containing crystalline silica and when cleaning up
- Products containing silica are harmless if intact (e.g. an un-cut sheet of wall board)

Avoid breathing in crystalline silica dust

Safe working practices

- ✗ NEVER use a power saw indoors or in a poorly ventilated area
- ✗ NEVER dry sweep
- ✓ ALWAYS use M Class or higher vacuum or damp down dust before sweeping up
- ✗ NEVER use grinders
- ✓ ALWAYS use a dust reducing circular saw equipped with a sawblade specifically designed to minimise dust creation when cutting fibre cement – preferably a sawblade that carries the Hardie™ Blade name or one with at least equivalent performance – connected to an M Class or higher vacuum
- ✓ Before cutting warn others in the area to avoid dust
- ✓ ALWAYS follow tool manufacturers' safety recommendations
- ✓ ALWAYS expose only the minimum required depth of blade for the thickness of fibre cement to be cut
- ✓ ALWAYS wear a properly-fitted, approved dust mask or respirator P1 or higher in accordance with applicable government regulations and manufacturer instructions
- ✓ Consider rotating personnel across cutting tasks to further limit respirable silica exposures.

When cutting

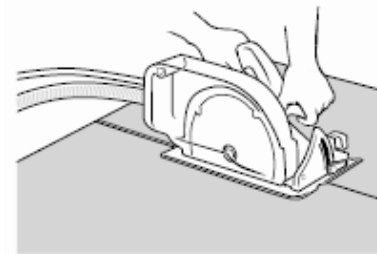
- ✓ Work outdoors only
- ✓ Make sure you work in a well ventilated area
- ✓ Position cutting station so wind will blow dust away from yourself and others in the working area
- ✓ Rotate employees across cutting task over duration of shift
- ✓ Cut products with a Hardie™ Blade Saw Blade (or equivalent) and a dust reducing circular saw connected to a M Class or higher vacuum
- ✓ When sawing, sanding, rebating, drilling or machining fibre cement products, always:
 - Wear your P1 or higher (correctly fitted in accordance with manufacturers' instructions), ask others to do the same.
 - Keep persons on site at least 2 metres and as far as practicable away from the cutting station while the saw is in operation
 - If you are not clean shaven, then use a powered air respirator with a loose fitting head top
 - Wear safety glasses
 - Wear hearing protection
- ✓ Make sure you clean up BUT never dry sweep. Always hose down with water/wet wipe or use an M Class or higher vacuum

If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

Working Instructions

Hardie™ Blade Saw Blade

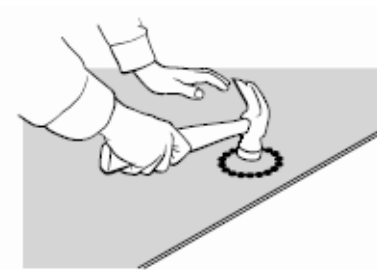
The Hardie™ Blade Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of Hardie™ fibre cement products. A dust-reducing saw uses a dust collector connected to a M Class or higher vacuum. When sawing, clamp a straight edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.



Hole-Forming

For smooth clean cut circular holes:

- Mark the centre of the hole on the sheet
- Pre-drill a 'pilot' hole
- Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill



For irregular holes:

- Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face
- Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported

5.1 Storage and Delivery

Keeping products and people safe

Off loading

- ✓ Hardie™ fibre cement products should be off-loaded carefully by hand or by forklift
- ✓ Hardie™ fibre cement products should not be rolled or dumped off a truck during the delivery to the jobsite

Storage

Hardie™ fibre cement products should be stored:

- ✓ In their original packaging
- ✓ Under cover where possible or otherwise protected with a waterproof covering to keep products dry
- ✓ Off the ground – either on a pallet or adequately supported on timber or other spacers
- ✓ Flat so as to minimise bending

Hardie™ fibre cement products must not be stored:

- ✗ Directly on the ground
- ✗ In the open air exposed to the elements

James Hardie is not responsible for damage due to improper storage and handling.

5.2 Tips for Safe and Easy Handling of Linea™ Weatherboard

- ✗ Do not lift planked products flat and in the middle
- ✓ Carry the products on the edge
- ✓ If only one person is carrying the product, hold it in the middle and spread arms apart to better support the product
- ✓ If two people are carrying the plank, hold it near each end and on edge
- ✓ Exercise care when handling weatherboard products to avoid damaging the edges/corners

6 Installation

The horizontal lap between the two Linea™ Weatherboard must be 30mm minimum. In certain scenarios you may require to creep up the lap, this must not exceed 33mm.

Linea™ Weatherboard must be kept dry whilst in storage prior to and during fixing. Site cut ends that are exposed such as slimline box corners, internal corners etc. and any sanded patches on the boards surface must be primed prior to installation. Dust and loose material must be removed before priming.

6.1 Fastener

6.1.1 Fastener – Size and Method

Linea™ Weatherboard must be fixed to timber with the types of nails specified in Tables 4 and 5, in accordance with the following requirements:

- Linea™ Weatherboard can either be face/exposed fixed or concealed fixed
- Linea™ Weatherboard must be fixed into studs at maximum 600mm centres. Fixing centres to coincide with stud spacing, refer to figures in section 9 of this manual
- All concealed nails must be driven flush with the board surface
- When concealed fixing Linea™ Weatherboard, nails must be driven under the lap of boards, except at all corners and vertical edges of openings where Linea™ Weatherboard must be face fixed, refer to figures in section 9 of this manual
- Nails must be fixed 25mm from the end of the board when hand nailing. For gun nailing refer to Section 6.1.2
- When using concealed fixing method, any gaps that may appear under the lap due to site conditions can be minimised by fixing a jolt head nail through the lap as per the exposed nailing method. Refer to figures in section 9 of this manual
- When using concealed fixing method, Linea™ Weatherboard may be tied together by face fixing through the lap using a 32mm brad nail if desired.
- When face fixing Linea™ Weatherboard, the upper board must be pre-drilled before fixing with a jolt head nail

Table 4

Wind pressure (kPa)	Underlay	Fixing method	Fixing type	Instructions
Up to 1.5 (up to and including VH Wind Zone)	Flexible underlay	Concealed nailing	60 x 3.15mm Hardie™ Flex nail or a 60 x 2.87mm D/round head gun nail	Finish flush with the board surface.
		Face nailing	75 x 3.15mm jolt head nails	Hot-dipped galvanised/stainless steel jolt head nail with pre-drilling through the top weatherboard. Use a 3mm drill bit.
	Rigid air barrier	Concealed nailing	75 x 3.15mm Hardie™ Flex nail or a 75 x 3.06mm D/round head gun nail	Finish flush with the board surface.
		Face nailing	90 x 3.55mm jolt head nails	Hot-dipped galvanised/stainless steel jolt head nail with pre-drilling through the top weatherboard. Use a 3.5mm drill bit.
1.5 to 2.5 (EH Wind Zone and SED projects)	RAB™ Board	Face nailing	90 x 3.55mm jolt head nail	Hot-dipped galvanised/stainless steel jolt head nail with pre-drilling through the top weatherboard. Use a 3.5mm drill bit.

Table 5

Nail requirements for Hardie™ Axent™ Trim	
Single thickness	60mm jolt head nails. If fixing over Linea™ Weatherboard use 75 x 3.15mm jolt head nails through a pre-drilled hole, using a 3mm drill bit.
Single thickness plus packer	If fixing over Linea™ Weatherboard use 75 x 3.15mm jolt head nails through a pre-drilled hole, using a 3mm drill bit. When fixing to timber support use 60mm jolt head nails.

For fire rated wall applications the Linea™ Weatherboard must be face fixed. For more information Ask James Hardie on 0800 808 868.

6.1.2 Gun Nailing

Linea™ Weatherboard can be gun nailed with a D-Head or RounDrive nail when concealed fixing method is used.

- Nails must be no closer than 50mm from the ends of boards when gun nailing is used, double studs will be required.
- Be minimum length and nearest gauge as per Table 4.
- Be finished flush with surface of board.

6.1.3 Fastener Durability

Fasteners must meet the minimum durability requirements of the NZBC. Refer to Table 6 for fixing materials requirements to be used in relation to the exposure conditions.

Table 6

Exposure conditions and nail selection prescribed by NZS 3604		
Zone	Application	
D (sea spray) and geothermal hot spots	General	Stainless steel 304/316
	Fire	
*C and B	General	Hot dip galvanised**
	Fire	

* Zone C areas where local knowledge dictates that increased durability is required, appropriate selection shall be made. Microclimatic conditions as detailed in NZS 3604, Paragraph 4.2.4 require SED.

**Hot dip galvanised must comply with AS/NZS 4680.

Also refer to the NZBC Acceptable Solution E2/AS1 Table 20 and 21 for information regarding the selection of suitable fixing materials and their compatibility with other materials.

6.2 Framing

Framing to be in accordance with the NZS 3604. The following must be provided for fixing Linea™ Weatherboard:

- Studs at 600mm centres maximum for all wind speed zones up to and including very high (VH)
- Studs at 400mm centres maximum for wind pressures more than 1.5 kPa (ULS)
- Double studs are required at internal corners
- Extra packers may be required at external corners
- Extra studs are required for aluminium internal corner sections

6.2.1 Specific Engineering Design (SED)

For EH wind zone and specific engineering design projects the timber framing is required to be designed in accordance with NZS 3603 and AS/NZS 1170. The minimum framing sizes and layout must comply with this specification:

- Stud spacing 400mm centres maximum
- Nog spacing 1200mm centres maximum
- Double studs are required at internal corners
- Extra packers may be required at external corners
- Extra studs are required for aluminium internal corner sections

6.2.2 Gable Ends

In case of gable end trusses sitting on top plates of the external wall frame, the frame size must be in accordance with truss design and specification supplied by the frame and truss manufacturer/supplier supported by independent design producer statement.

6.2.3 Tolerances

In order to achieve an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances must comply with the requirements of NZS 3604 and the manufacturer's specifications. All framing must be made flush. The visual aspects of the finished cladding can differ between two different sites or the builders installing the product. It is recommended that you also refer to a building guidance document published by MBIE to understand an acceptable level of tolerances allowed in building materials and workmanship. www.building.govt.nz Guide to tolerances, materials and workmanship in new residential construction 2015

6.3 Flexible Underlay or HomeRAB™ Pre-Cladding

Flexible underlay or HomeRAB™ Pre-Cladding must be provided to comply with the requirements of E2/AS1 up to and including very high wind zone.

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. HomeRAB™ Pre-Cladding is suitable for use as an air barrier and must be installed in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual.

6.4 Intermediate Support

Where studs are at 600mm centres an intermediate means of restraining the flexible underlay and insulation from bulging into the cavity must be installed. An acceptable method to achieve this is using one of the following:

- Intermediate cavity batten between the studs; or
- 75mm galvanised mesh; or
- Polypropylene tape at 300mm centres fixed horizontally and drawn taut.

No intermediate supports are required:

- Where studs are at maximum 400mm centres; or,
- When rigid sheathings instead of flexible underlays are used.

6.5 Rigid Air Barrier

In EH wind zone or for specific design wind zone, a rigid air barrier i.e. RAB™ Board, must be used instead of flexible underlay.

For buildings more than 10m, RAB™ Board must be used. To achieve the temporary weathertightness using HomeRAB™ Pre-Cladding and RAB™ Board, windows/doors need to be installed with required flashing tapes and seals etc. Refer to HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual for information regarding its installation and to achieve temporary weathertightness.

6.6 Vent Strip

Linea™ 35mm cavity closer vent strip must be installed at the bottom of all walls constructed using the drained and ventilated for cavity construction method. Linea™ 35mm cavity closer vent strip has an opening area of 1000mm²/m length. It is important that the openings in the vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities. Alternate cavity closer can be used ensuring compliance of E2 and may need to be used with a cant strip.

6.7 Cavity Battens

The cavity battens provide airspace between the frame and cladding and are considered a “packer” only in this specification.

The timber battens must be minimum H3.1 treated to comply with the durability requirements of B2/AS1.

Cavity battens must comply with E2/AS1 and:

- Be minimum 18mm thick
- Be minimum 45mm wide
- Until claddings are fixed the battens need only to be tacked to framing with 40 x 2.8mm nails at 800mm centres maximum (batten fixing is required temporarily to keep them straight on the wall during construction)

6.8 Joints

6.8.1 Jointing

The ends of Linea™ Weatherboard are jointed off-stud by means of a tongue and groove joint. Tongue and groove joints may be located centrally between studs but no closer than 100mm from the edge of a stud. The joints must be staggered by 600mm minimum. Flexible sealant must be applied to the front of tongue before pushing into the groove at the time of installation. From a visual perspective, the joint line will be visible and must not be hard filled.

6.8.2 Drainage Joint

After every two floors a horizontal drainage joint flashing is required, refer to Figure 29 in section 9 of this manual.

6.8.3 External Corner Joint

There are a number of options to select from when detailing external corners:

- 90° corner soaker in aluminium
- 135° corner soaker 180mm aluminium
- Aluminium boxed corners
- Box corners using Hardie™ Axent™ Trim
- Mitred corners to weatherboards

Refer to figures in section 9 of this manual.

6.8.4 Internal Corner Joint

There are a number of options to select from when detailing internal corners:

- 90° or 135° Aluminium W-mould
- Scribed corner

Refer to figures in section 9 of this manual.

6.9 Junctions and Penetrations

All windows and doors must be detailed as per the requirements of this specification. James Hardie has developed the window details for Linea™ Weatherboard which meet the performance requirements of E2 'External Moisture', an approved document of the NZBC, refer to figures in section 9 of this manual.

7 Finishes

Protective coating of Linea™ Weatherboard is required in order to meet the durability requirements of the NZBC.

7.1 Preparation and Priming

The Linea™ Weatherboard must be dry before painting. Punch and fill all exposed jolt head nails a maximum of 2mm below the surface. Fill the hole with an exterior grade 2 part builders fill, eg CRC® ADOS® Builders Fill, allow to cure and sand using 60 grit sand paper smooth ready for painting. Prime any sanded patch on board surface or the site cut edges that will be exposed.

It is not recommended to seal gap under the lap of weatherboards as it helps in circulation of air behind the weatherboard cladding. However if sealing of the gaps is undertaken, the product warranty still applies.

7.2 Sealants

All sealants must demonstrate the ability to meet the relevant requirements of the NZBC. Application and use of sealants must comply with manufacturer's instructions. Sealants, if coated, must be compatible with the paint system.

7.3 Painting

All Linea™ Weatherboards are pre-primed on their face and bottom edge with a factory applied acrylic base coat.

Linea™ Weatherboard must be painted within 90 days of installation. Dark coloured paints can be used, i.e. there is no restriction on the Light Reflectance Value (LRV) of paint to be applied. All exposed faces, including the top edges under the sills and bottom edges of Linea™ Weatherboard and accessories must be finished with an exterior paint system.

For best aesthetic results a low sheen paint is recommended.

The dark colours in certain environments may fade quicker. Special paints/coatings are required in certain harsh environments.

Paint selection and the preparation required is dependent on paint chosen. Refer to the paint manufacturer for information before starting painting.

8 Care and Maintenance

The extent and nature of maintenance will depend on the geographical location and exposure of the building. It is the responsibility of the specifier to determine normal maintenance requirements to comply with the NZBC Acceptable Solution B2/AS1. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6-12 months using low pressure water and a brush, and every 3-4 months in extreme coastal conditions or sea spray zones. Do not use a water blaster to wash down the cladding. Refer to your paint manufacturer for washing down requirements.
- Re-coating exterior protective finishes. Always refer to your paint manufacturer for re-coating requirements
- Maintaining the exterior envelope and connections including junctions, penetrations, flashings and sealants
- Cleaning out gutters, blocked pipes and overflow pipes as required
- Pruning back vegetation close to or touching the building as well as ensuring the NZBC ground clearance requirements are maintained especially where gardens are concerned
- The clearances between the bottom edge of Linea™ Weatherboard and the finished/unfinished ground must always be maintained
- Stainless steel soakers used in extreme coastal conditions or in sea spray zones may show some signs of 'tea staining'. It is an aesthetic issue and to minimise staining soaker must be washed/polished frequently

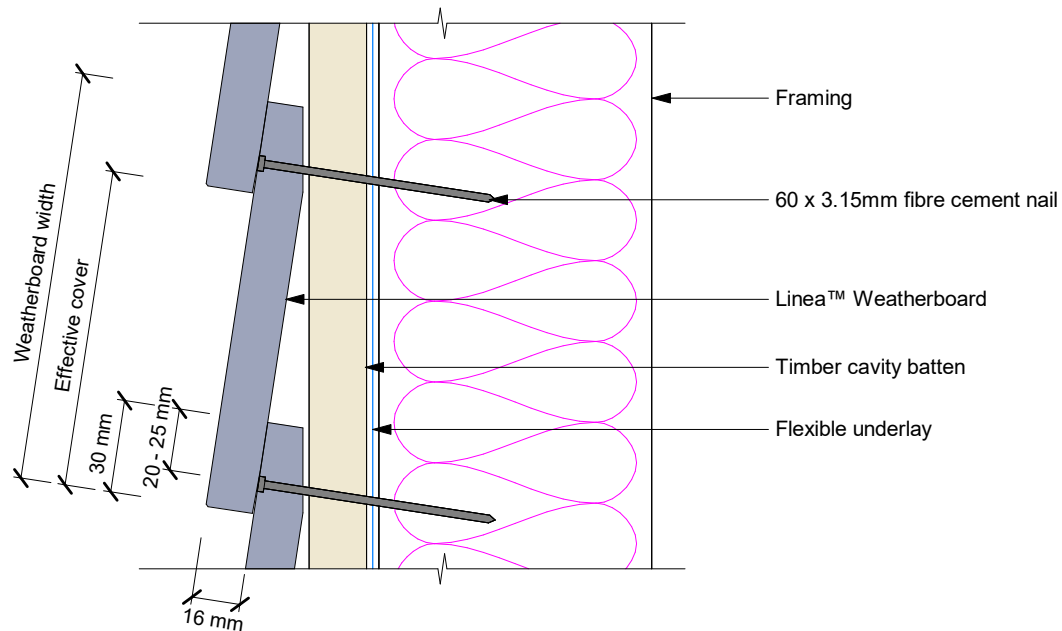
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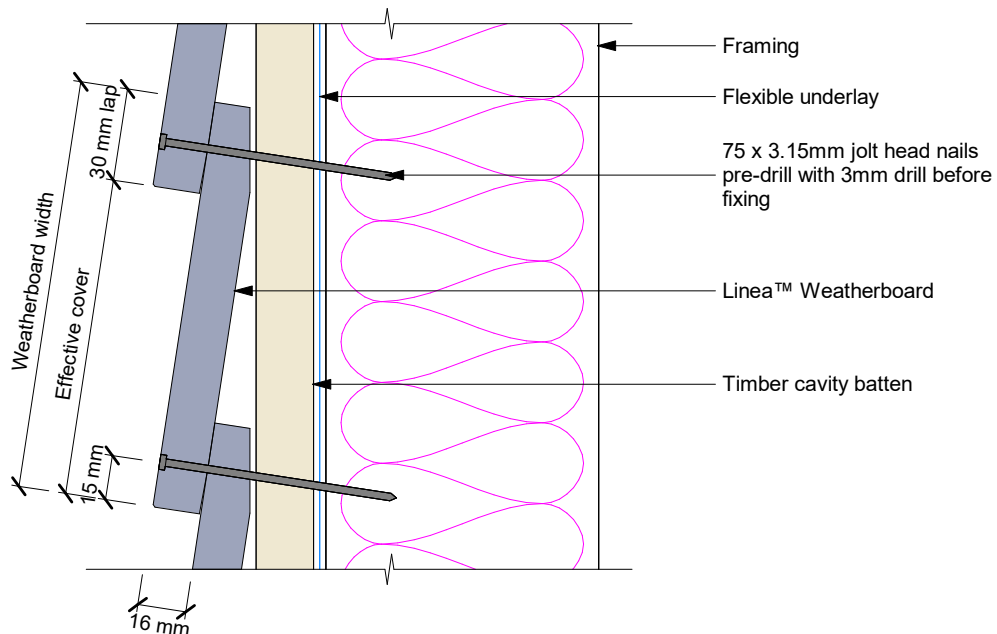
For all meter box details please visit our website at www.jameshardie.co.nz or Ask James Hardie™ on **0800 808 868**.

Figure 1: Weatherboard fixing



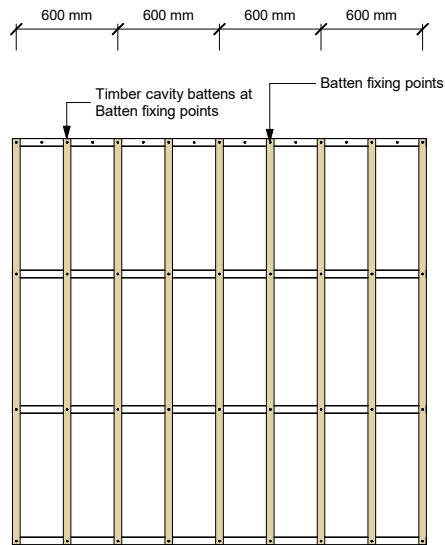
Concealed Nailing

Linea™ Weatherboards to be face fixed at corners and down window and door openings using jolt head nails at 90° to face, punch 2mm below surface and fill. Refer to fixing table 4



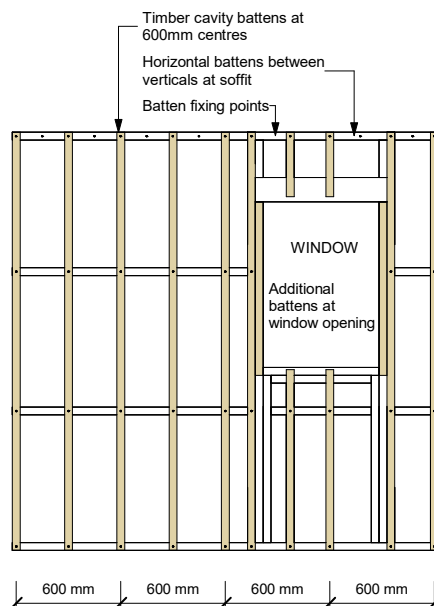
Face/Exposed Nailing

Figure 2: Batten fixing



The intermediate support for insulation between the studs could be a timber cavity batten, polypropylene tape or 75 mm galvanised wire mesh. Refer to E2/AS1 Paragraph 9.1.8.5 Polypropylene tape must be fixed horizontally and drawn taut at 300 mm centres.

Figure 3: Batten layout at window opening



-The intermediate support for insulation between the studs could be a timber cavity batten, polypropylene tape or 75 mm galvanised wire mesh. Refer to E2/AS1 Paragraph 9.1.8.5 Polypropylene tape must be fixed horizontally and drawn taut at 300 mm centres.

Figure 4: Foundation detail

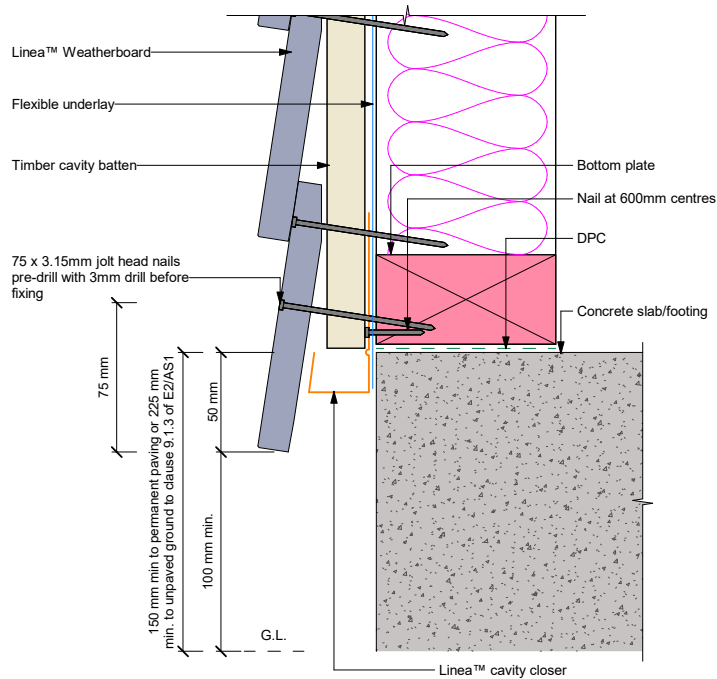


Figure 5: Enclosed Deck

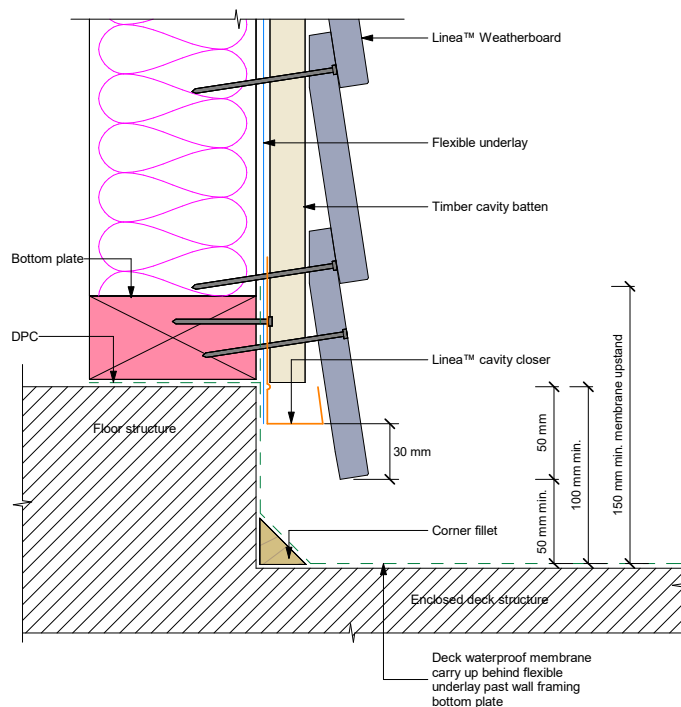


Figure 6: Jointing off stud

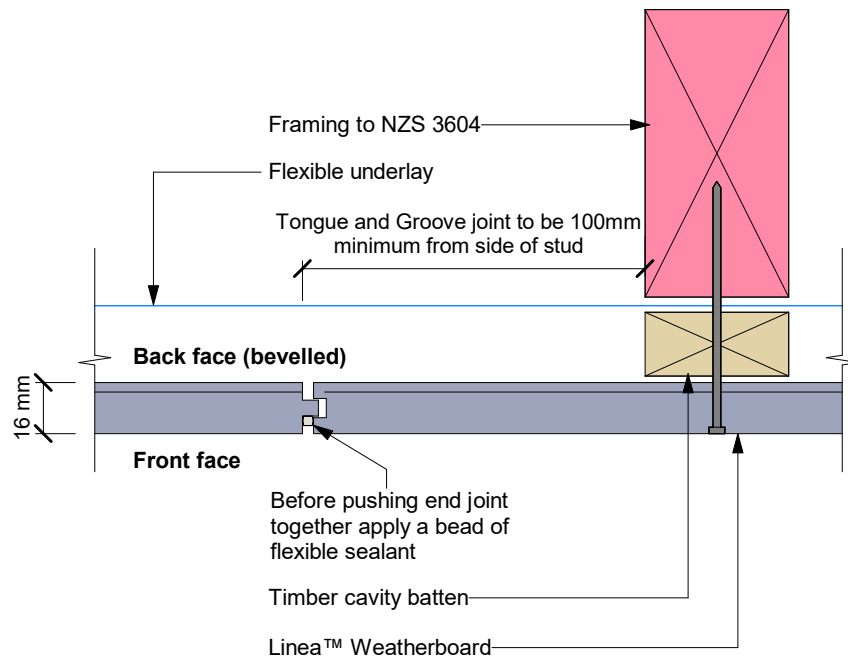


Figure 7: External corner soaker

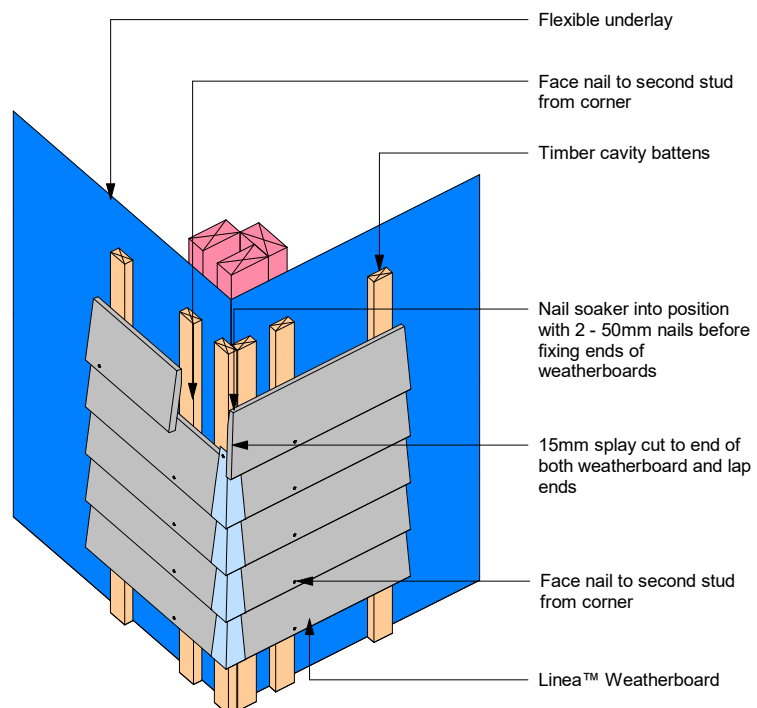


Figure 8: Aluminium box corner

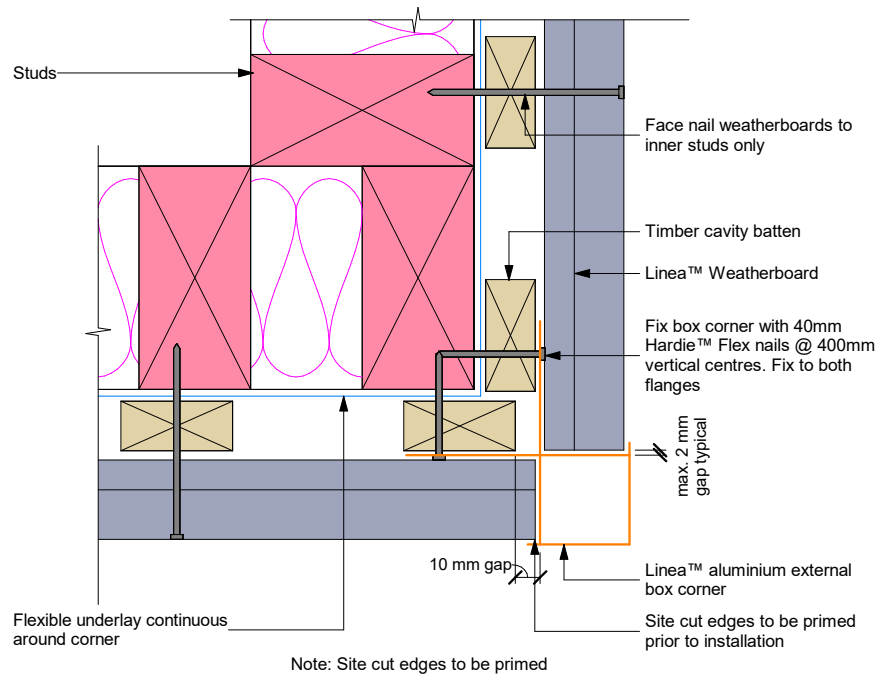


Figure 9: Boxed corner

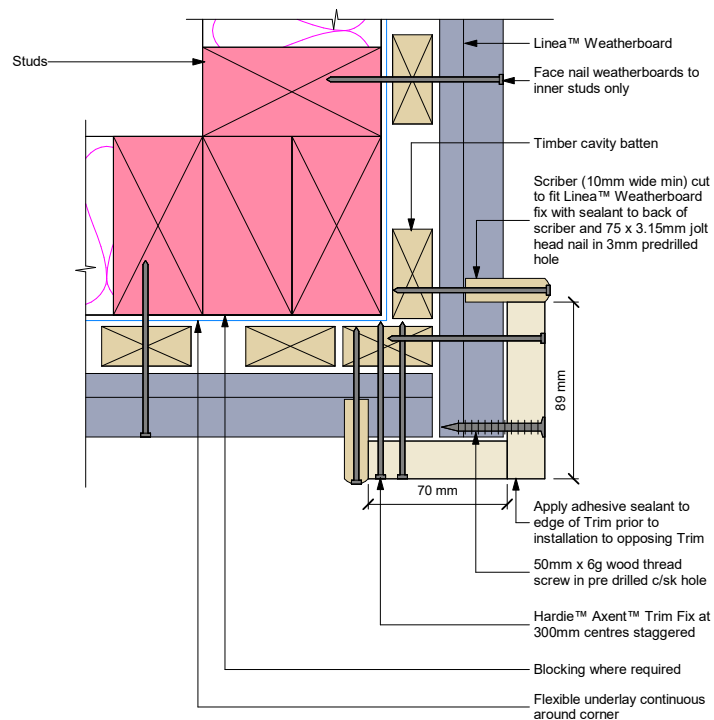
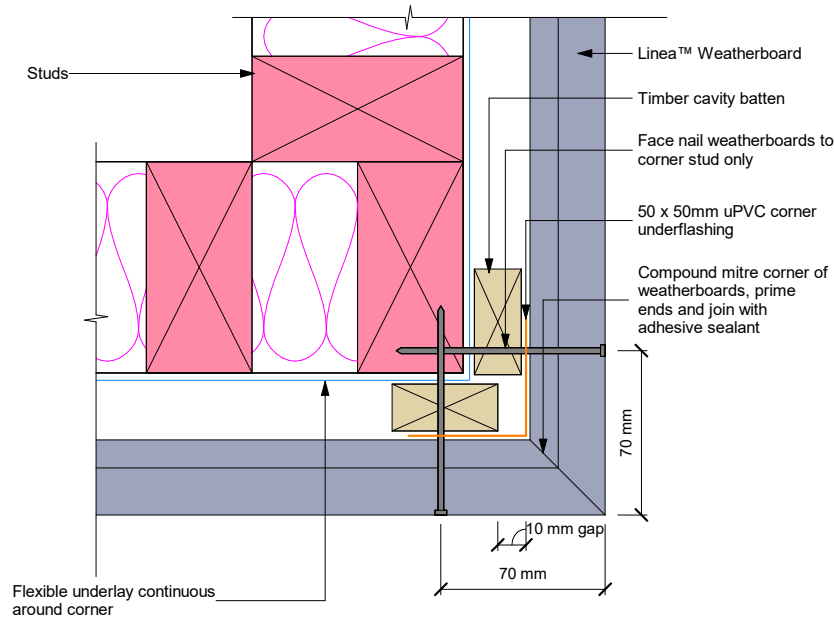


Figure 10: Mitre corner



Note: Adhesive sealant must be used on the full end face of both weatherboards. Push lightly together

Figure 11: Internal 90 ° aluminium 'W' mould corner

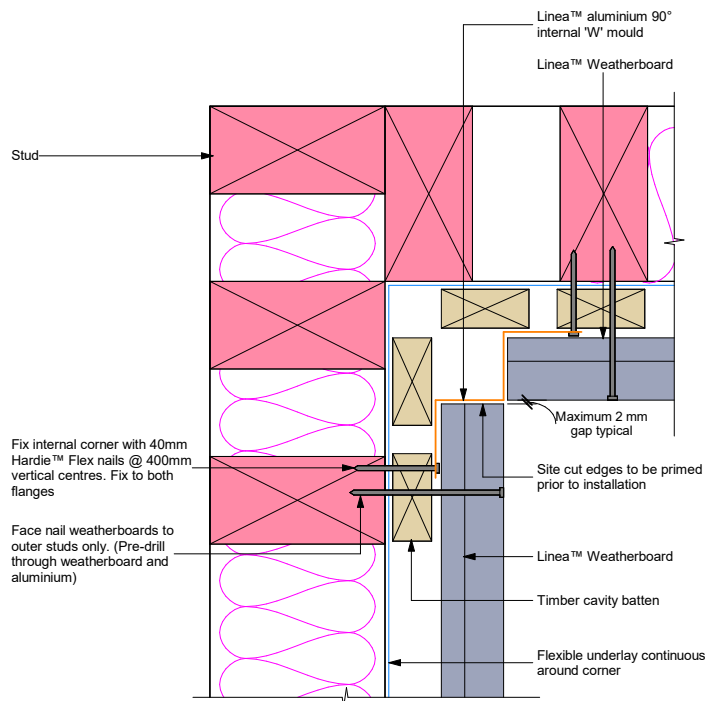


Figure 12: Internal 135 ° aluminium 'W' mould corner

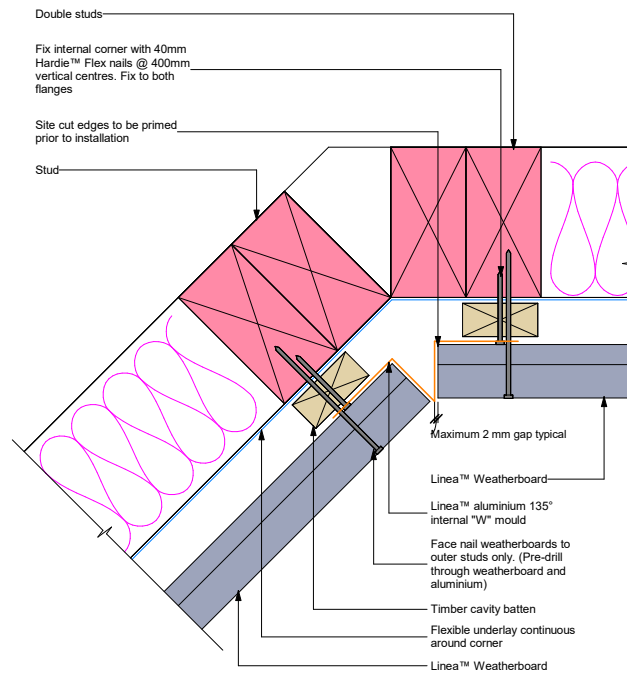


Figure 13: Internal corner joint flashing

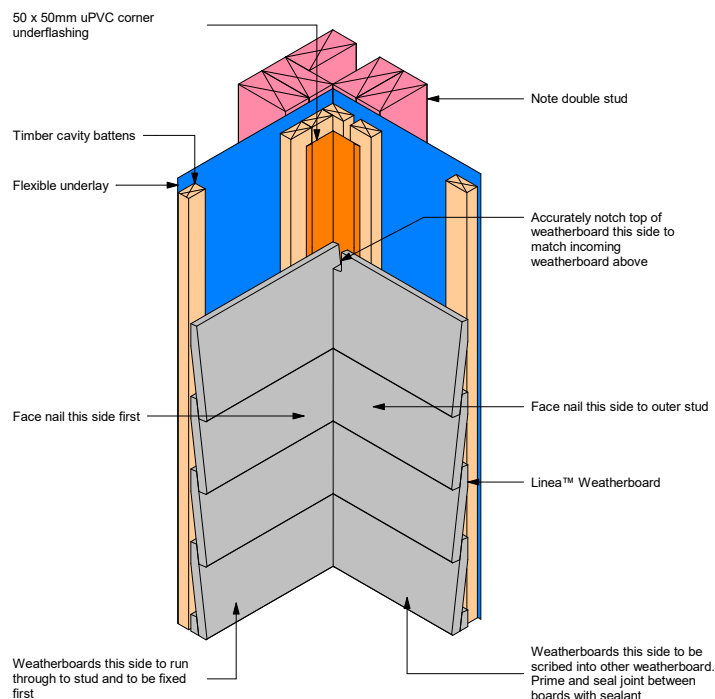


Figure 14: Wall to soffit junction 'X'

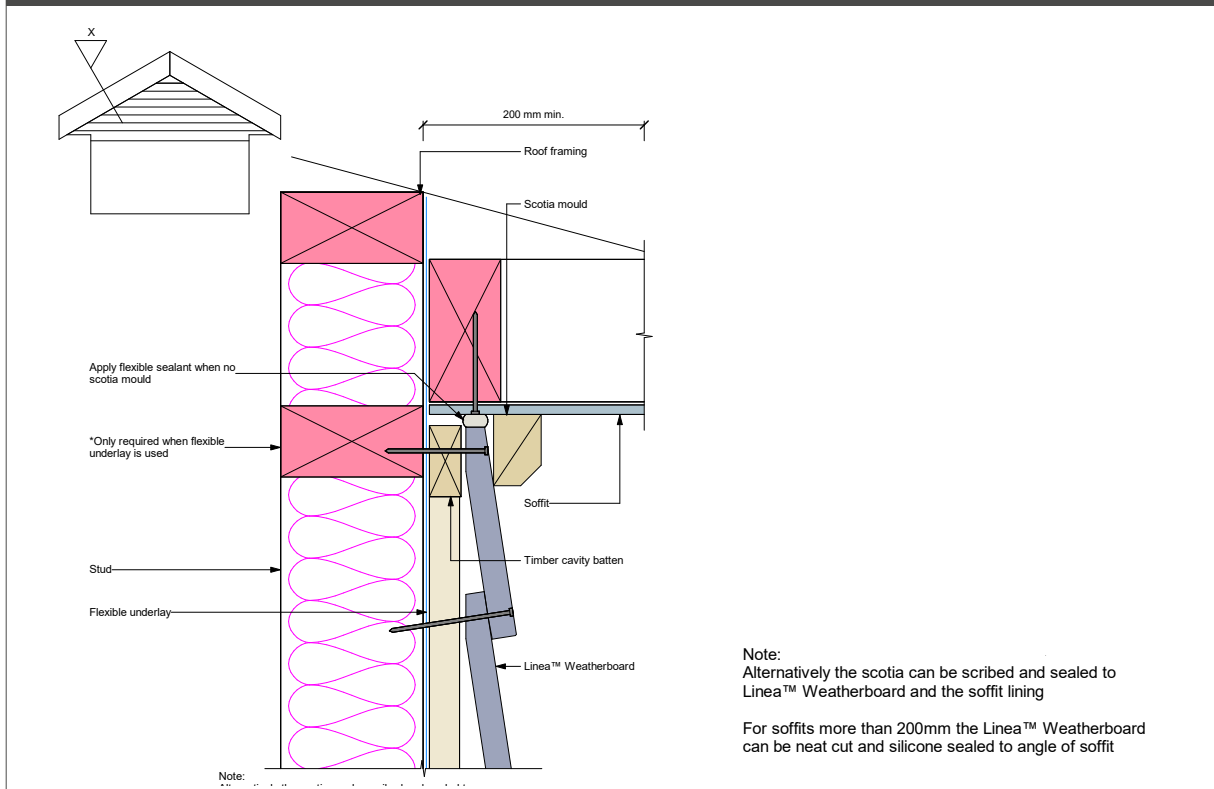


Figure 15: Nil soffit detail

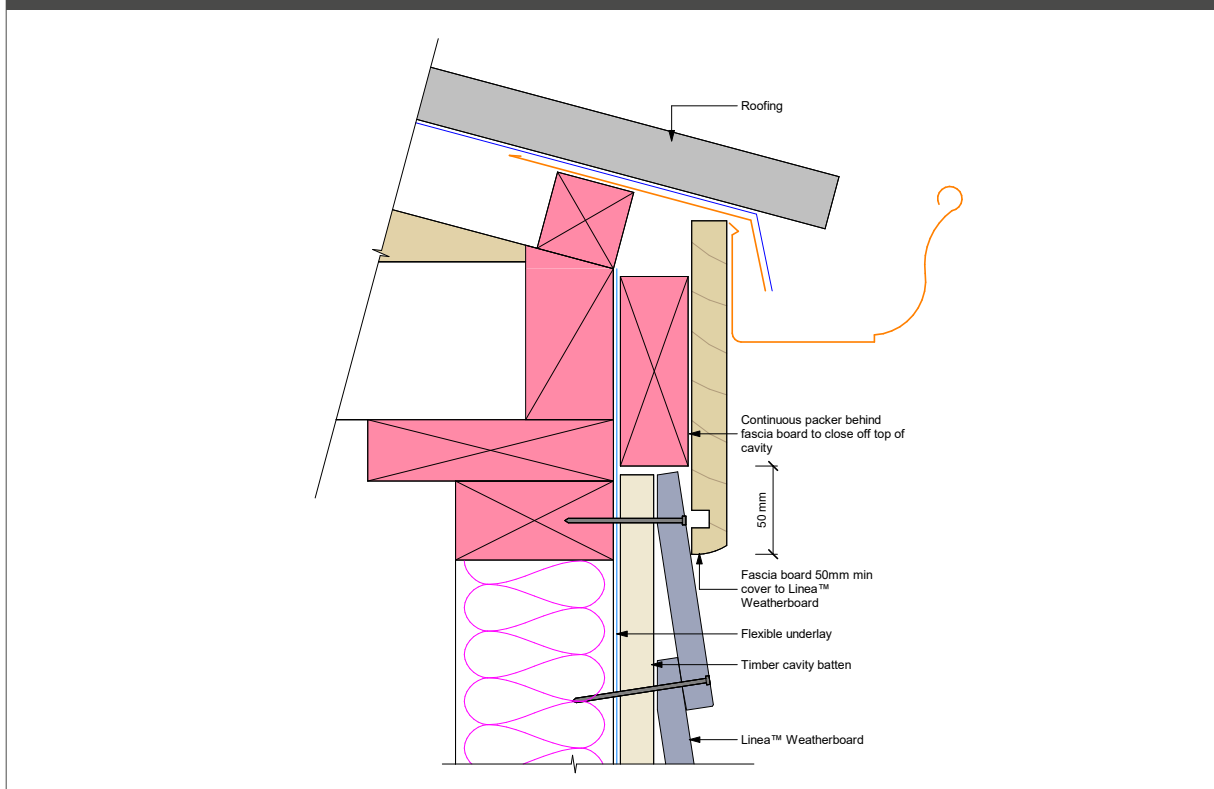


Figure 16: Sloping soffit and wall junction

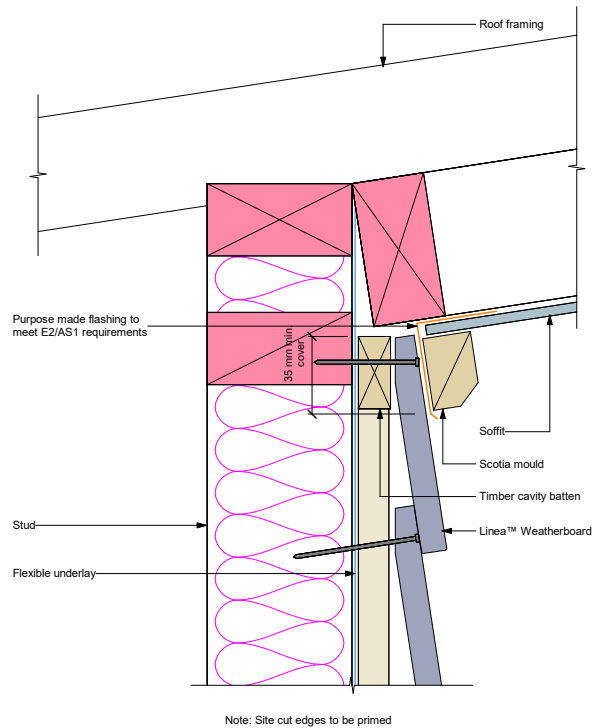
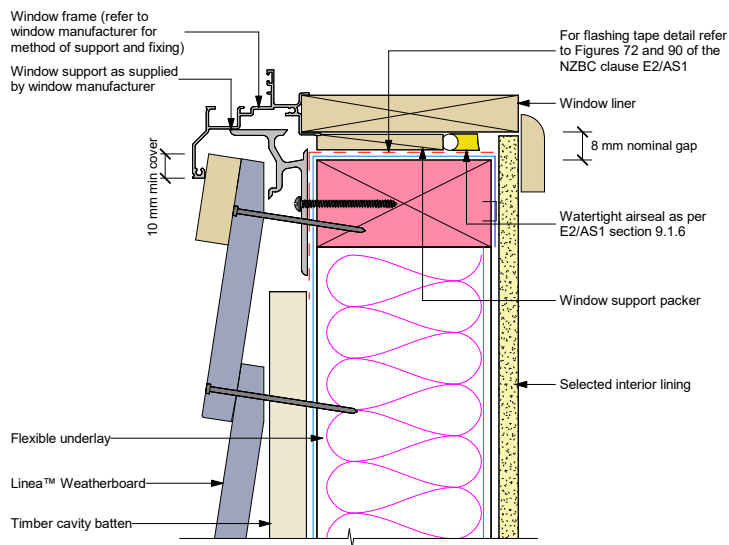


Figure 17: Window and door sill

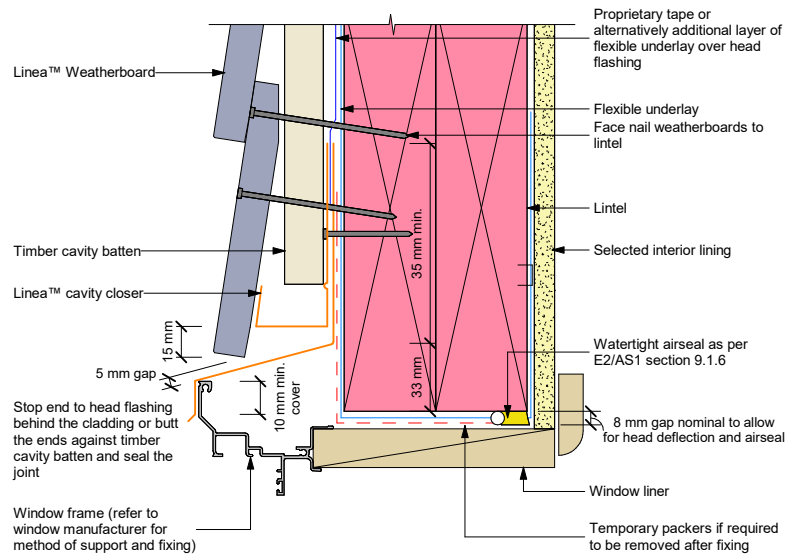


General notes for materials selection

1. Flexible underlay must comply with acceptable solution E2/AS1
2. Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact

Refer to the manufacturer or supplier for technical information for these materials

Figure 18: Window head



Note:

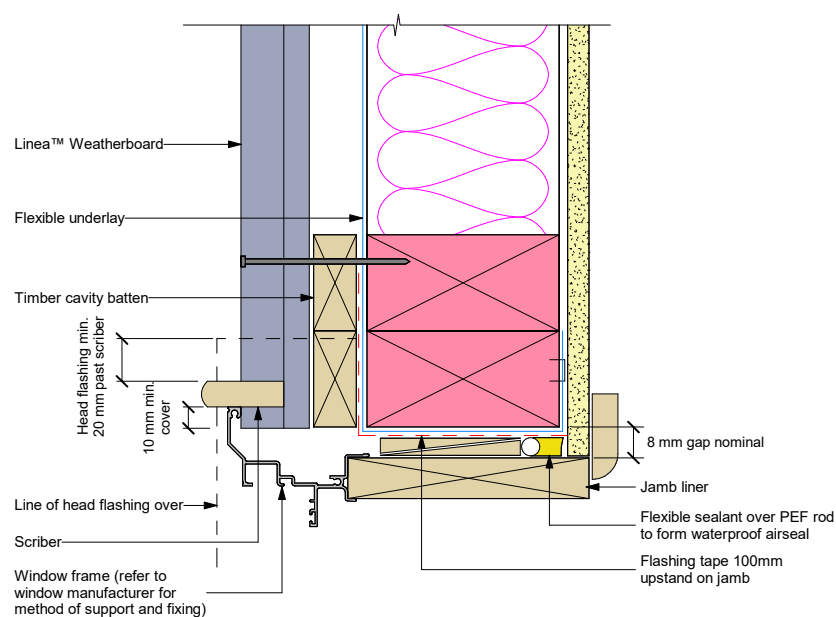
- Sealant must be installed between head flashing and window flange in VH and EH wind zones and SED pressures
- Alternatively, the head flashings can be formed with stop ends as per E2/AS1
- Refer to Figure 22 for sealing end battens to head flashing
- Site cut edges to be primed

interactive assembly
instructions available
<http://wksp.nz/jh-lin-win>



Get **WORKINGSPEC** from
Apple App Store/Google Play

Figure 19: Window jamb



interactive assembly
instructions available
<http://wksp.nz/jh-lin-win>



Get **WORKINGSPEC** from
Apple App Store/Google Play

Figure 20: Window head stop end

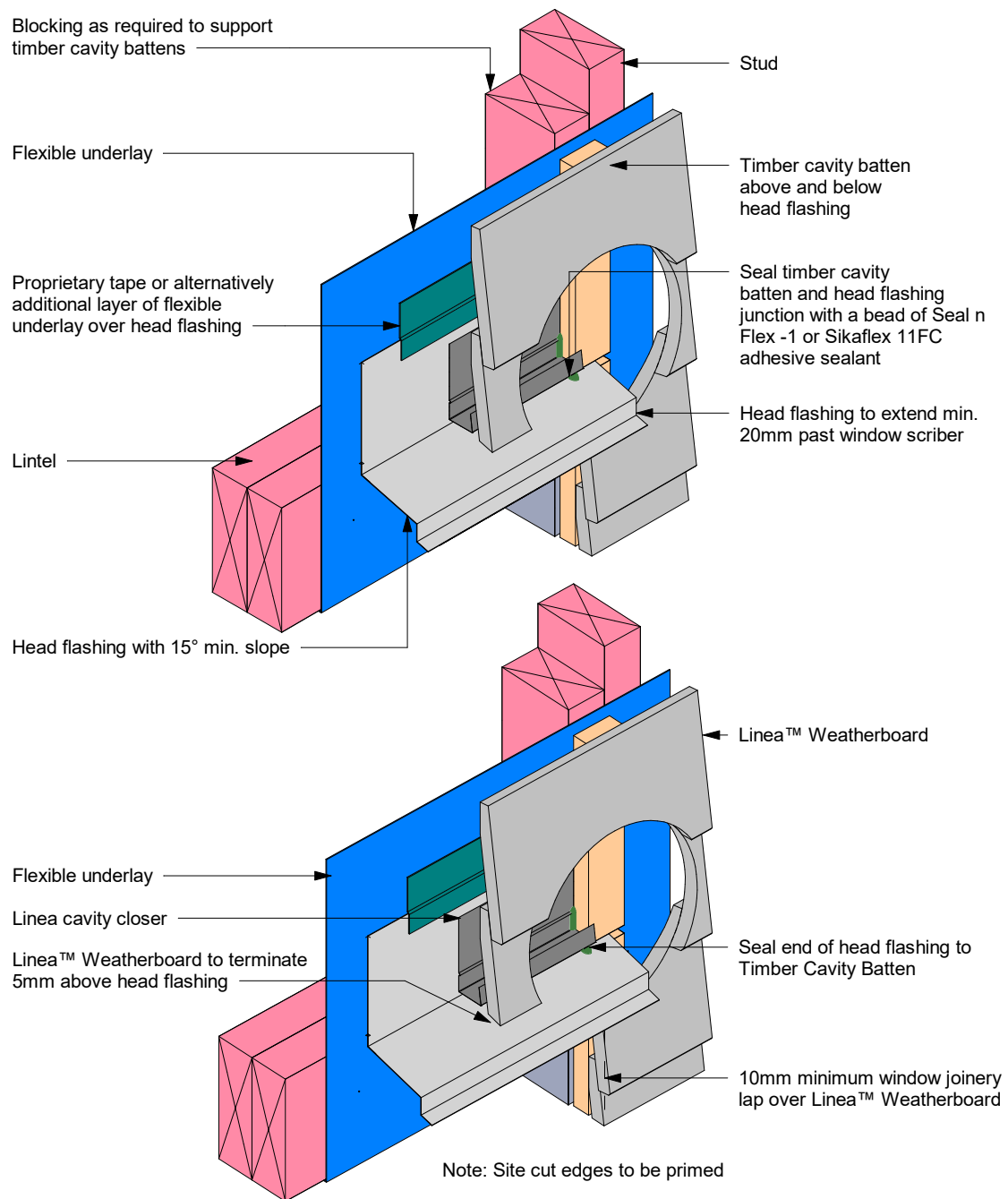
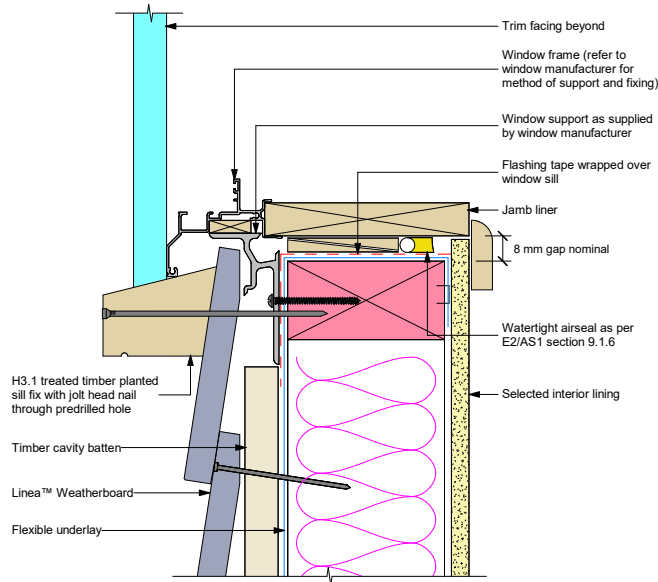


Figure 21: Window sill with facing



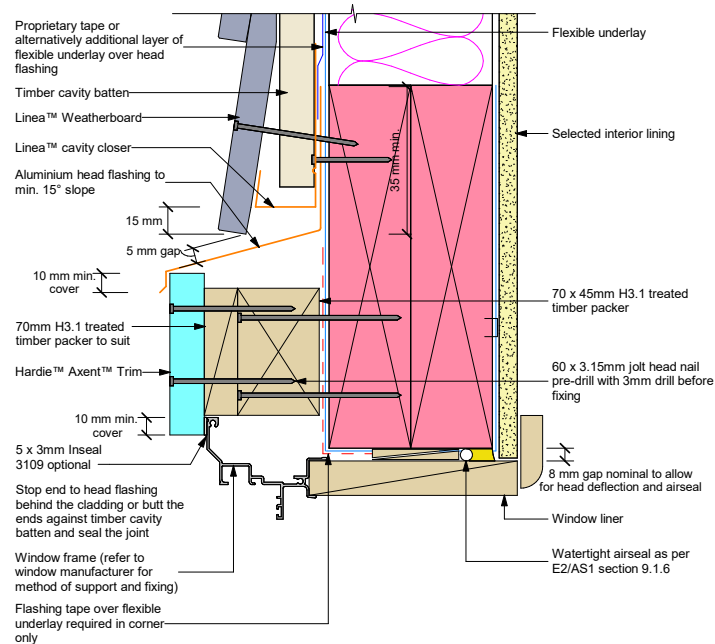
General notes for materials selection

1. Flexible underlay must comply with acceptable solution E2/AS1

2. Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact

Refer to the manufacturer or supplier for technical information for these materials

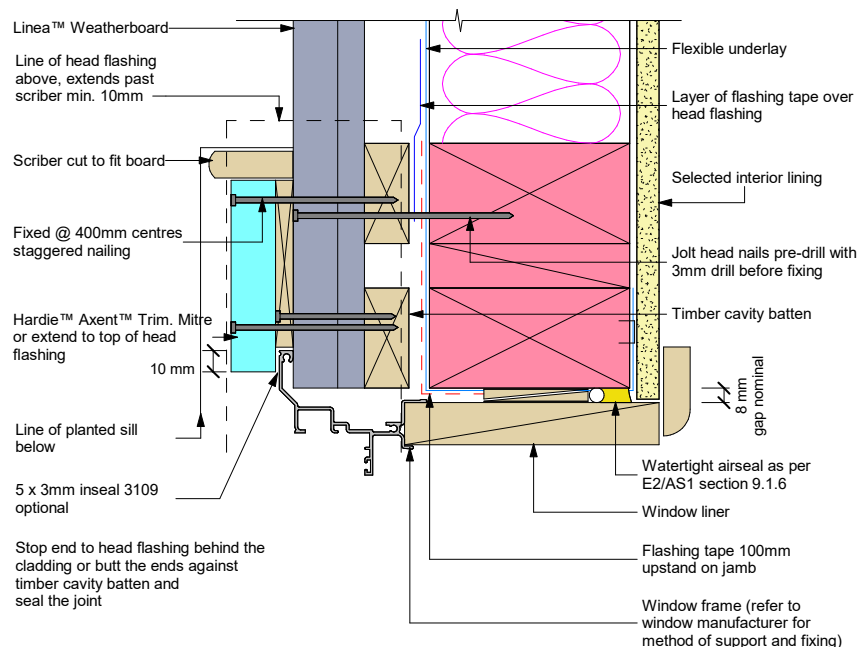
Figure 22: Window head with facings



Note:

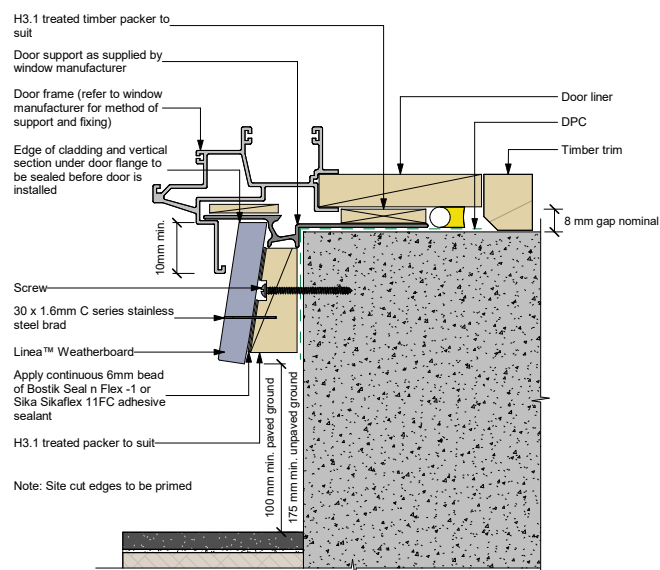
- Sealant must be installed between head flashing and window flange in VH and EH wind zones and SED pressures
- Alternatively, the head flashings can be formed with stop ends as per E2/AS1
- Refer to Figure 22 for sealing end battens to head flashing

Figure 23: Window jamb with facings



Note:
• Site cut edges to be primed

Figure 24: Door sill support detail

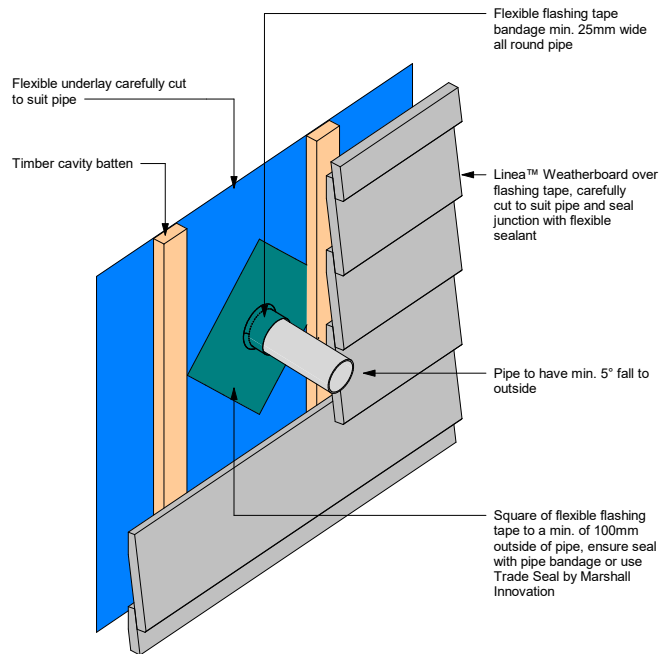


Refer to the manufacturer or supplier for technical information for these materials

General notes for materials selection

1. Flexible underlay must comply with acceptable solution E2/AS1
2. Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact
3. Linea™ Weatherboard to have sealed butt joint over batten at each corner of opening

Figure 25: Pipe penetration



Note: Site cut edges to be primed

Figure 26: Continous cladding over joist

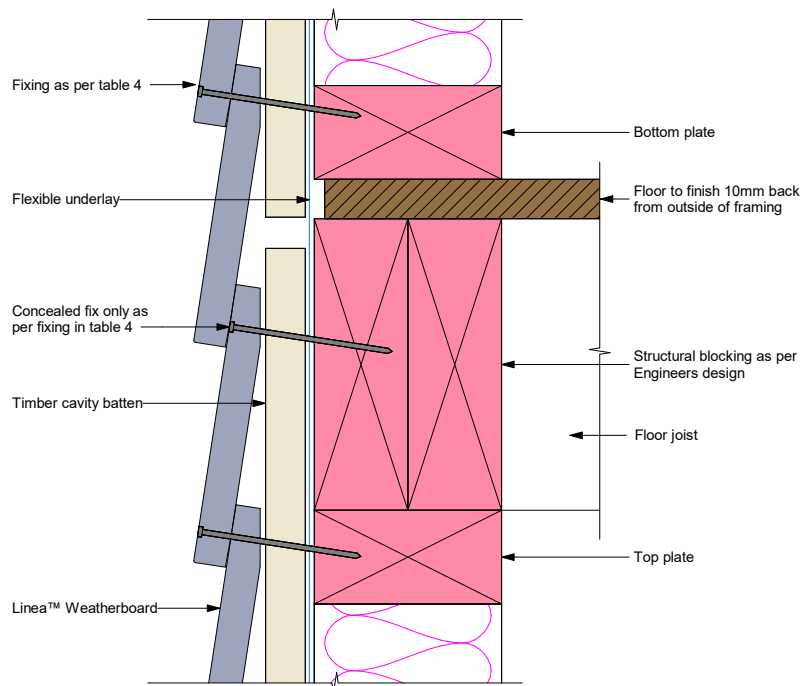
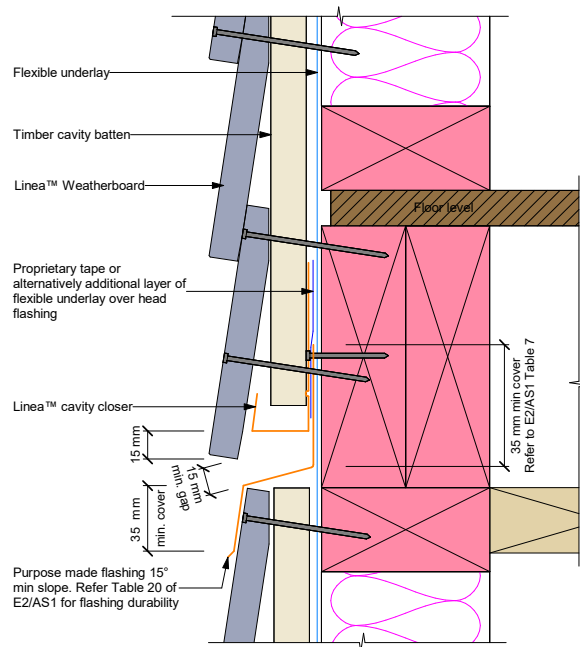


Figure 27: Drained flashing joint at floor level



Note:
This detail is required to limit cavities to a maximum of 2 stories or 7 metres. Refer E2/AS1 clause 9.1.9.4.

Figure 28: Timber deck junction

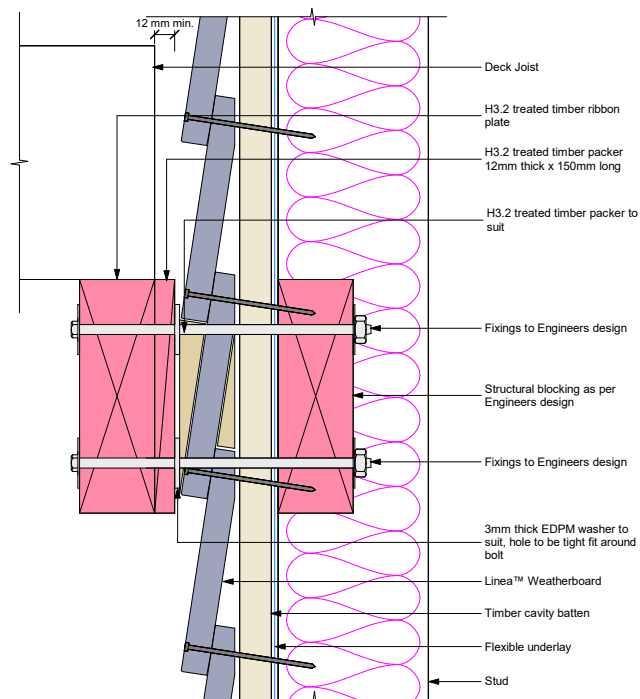


Figure 29: One piece apron flashing joint

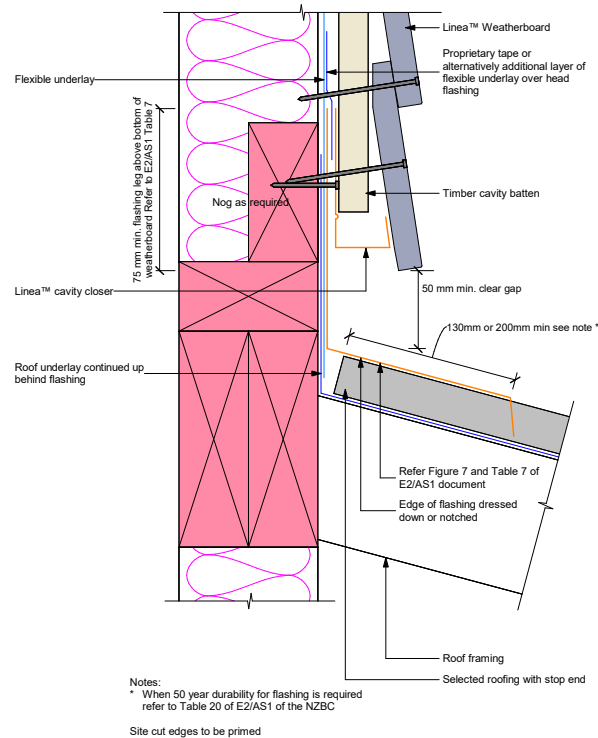


Figure 30: Roof to wall junction detail

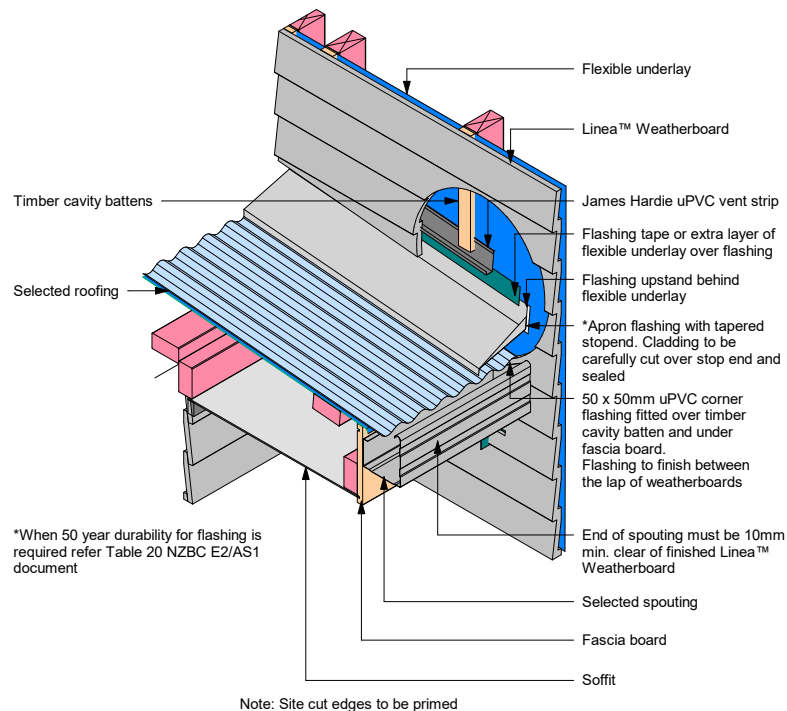


Figure 31: Parapet flashing

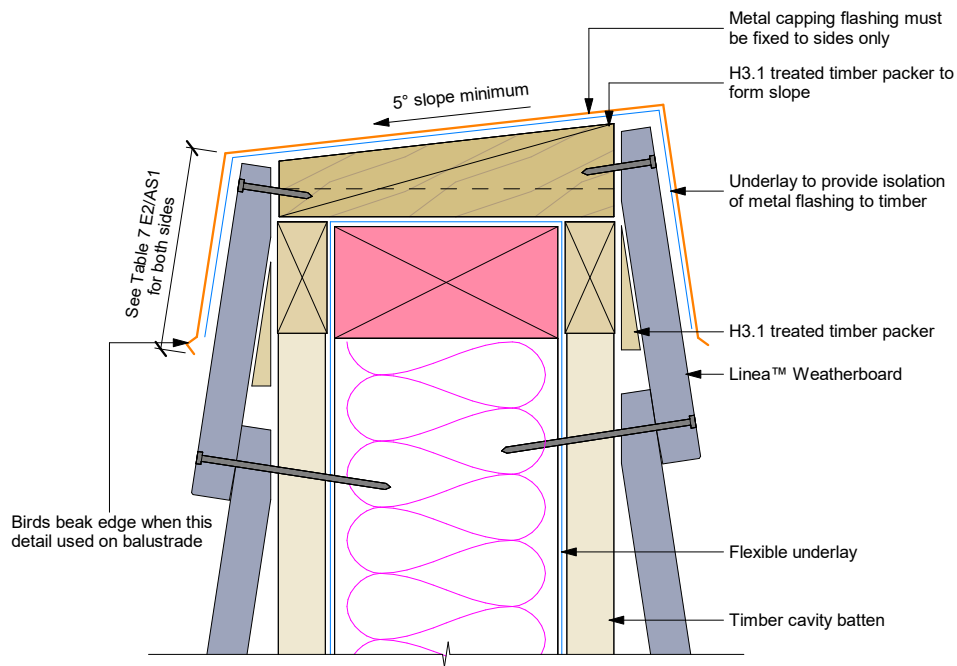


Figure 32: Enclosed deck balustrade to wall

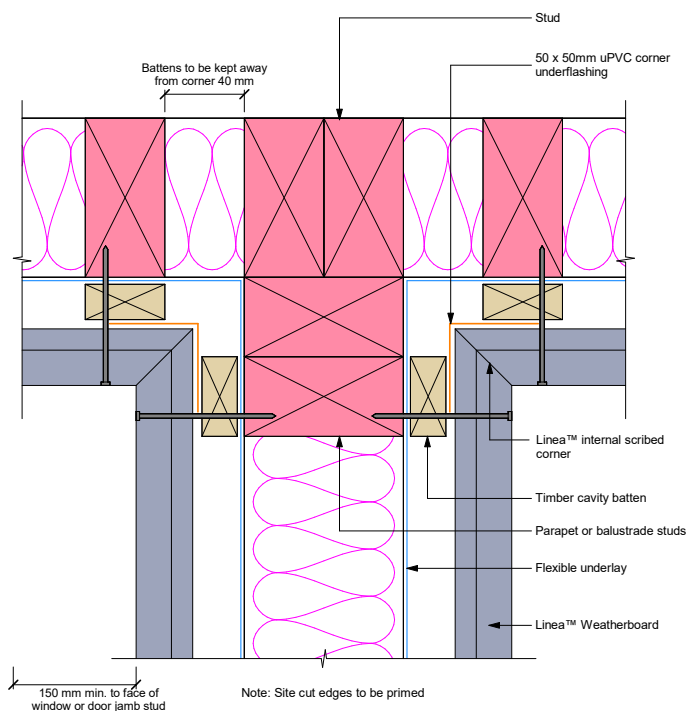


Figure 33: Enclosed balustrade to wall

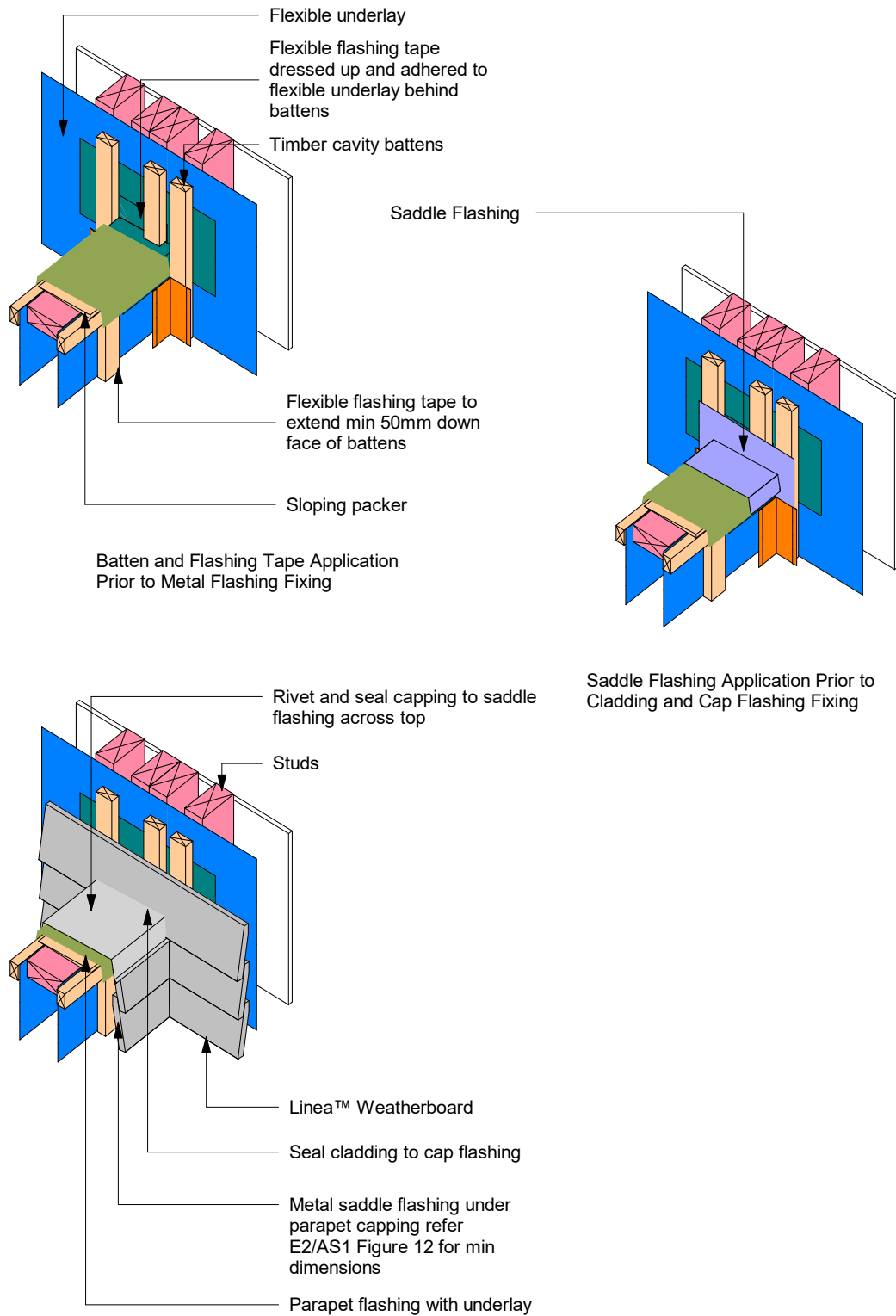
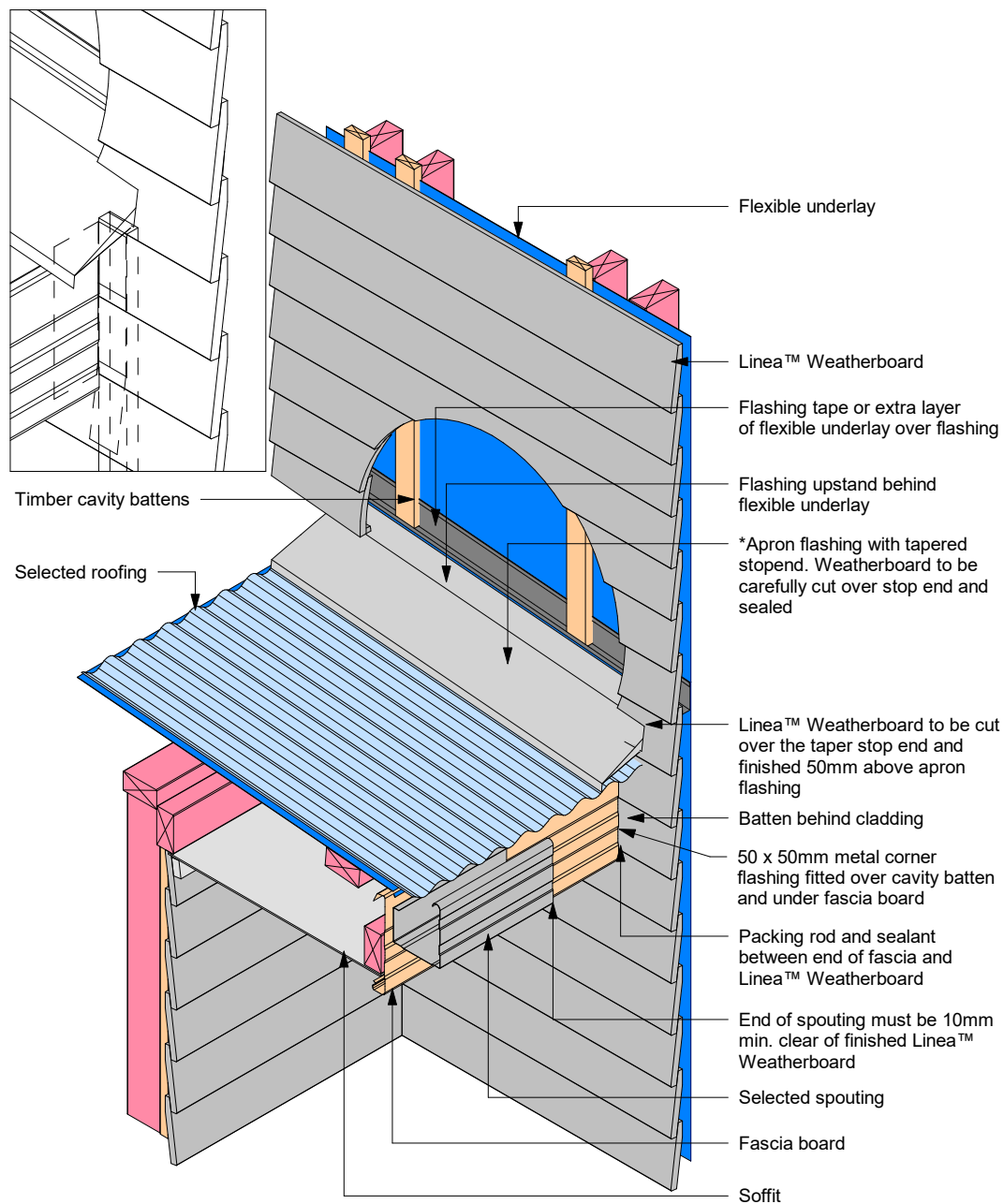


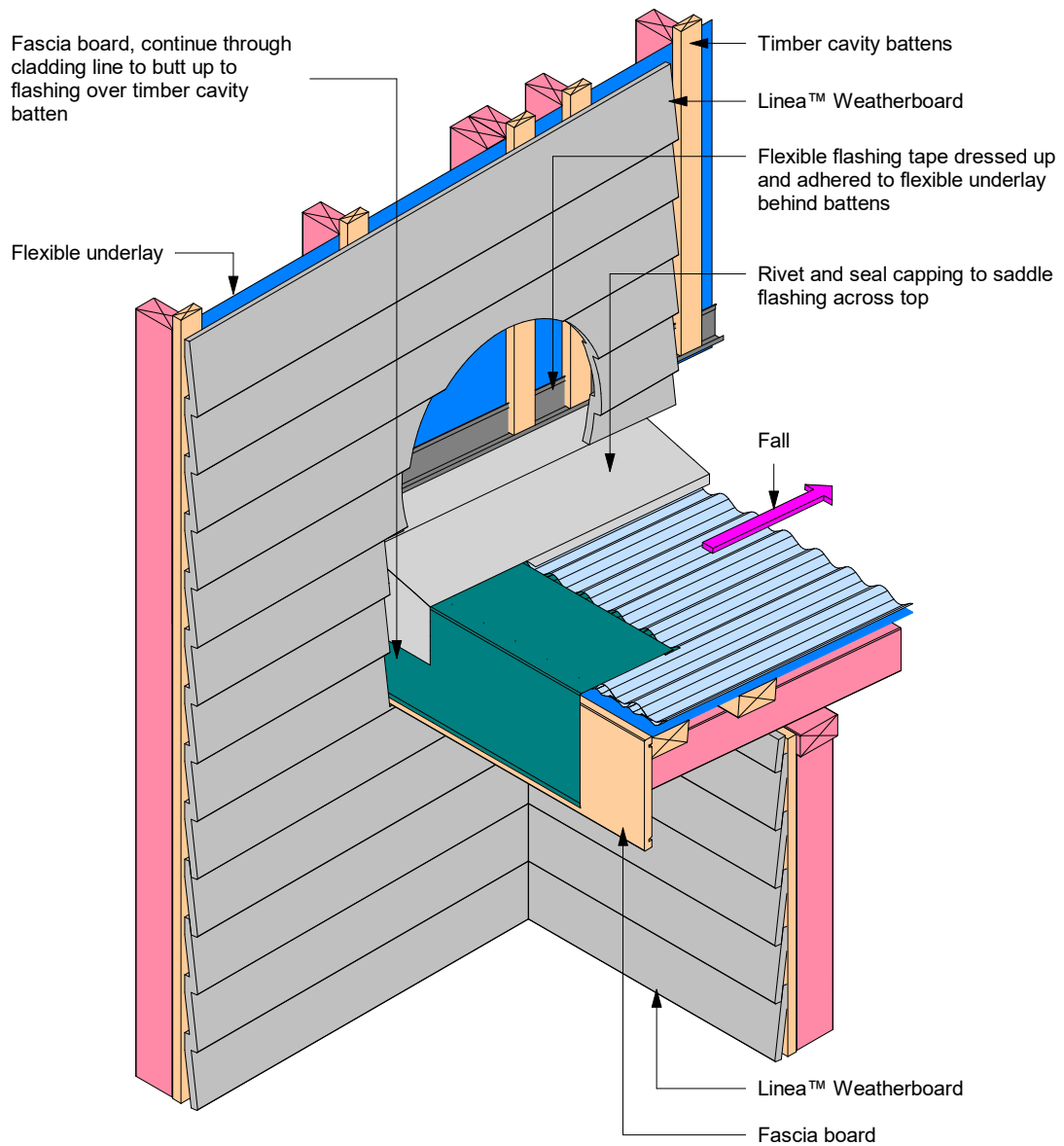
Figure 34: Junction Linea™ Weatherboard and fascia board



*When 50 year durability for flashing is required refer Table 20 NZBC E2/AS1 document

Note: Site cut edges to be primed

Figure 35: Enclosed roof to wall intersection



50mm wide flashing welded to apron flashing

Back flashing

50 x 50mm corner flashing

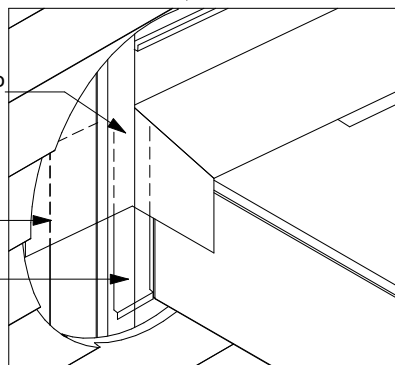
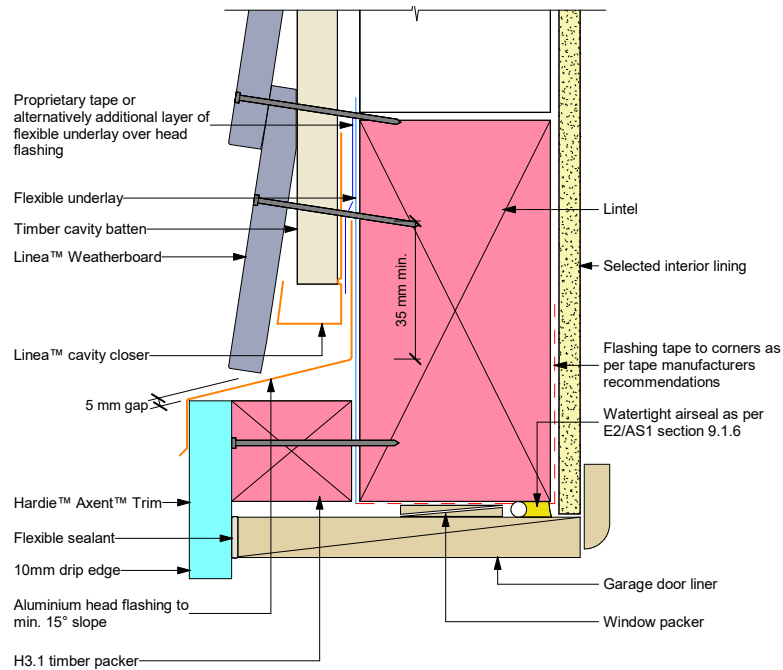


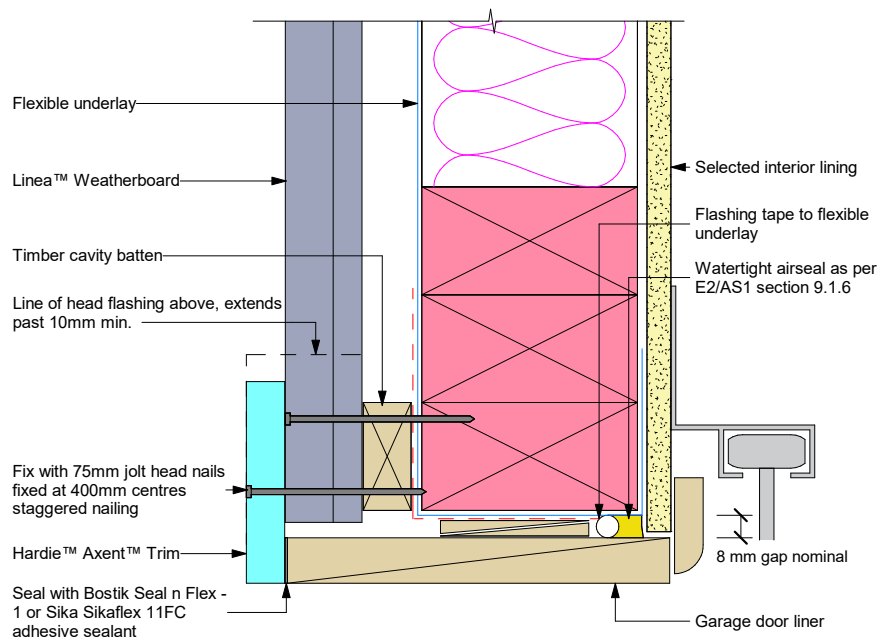
Figure 36: Garage door head



Note:

- Sealant must be applied between head flashing and liner in VH and EH wind zones and SED wind pressures
- Site cut edges to be primed

Figure 37: Garage door jamb



Note: Site cut edges to be primed

Figure 38: Framing setout building height over 10m

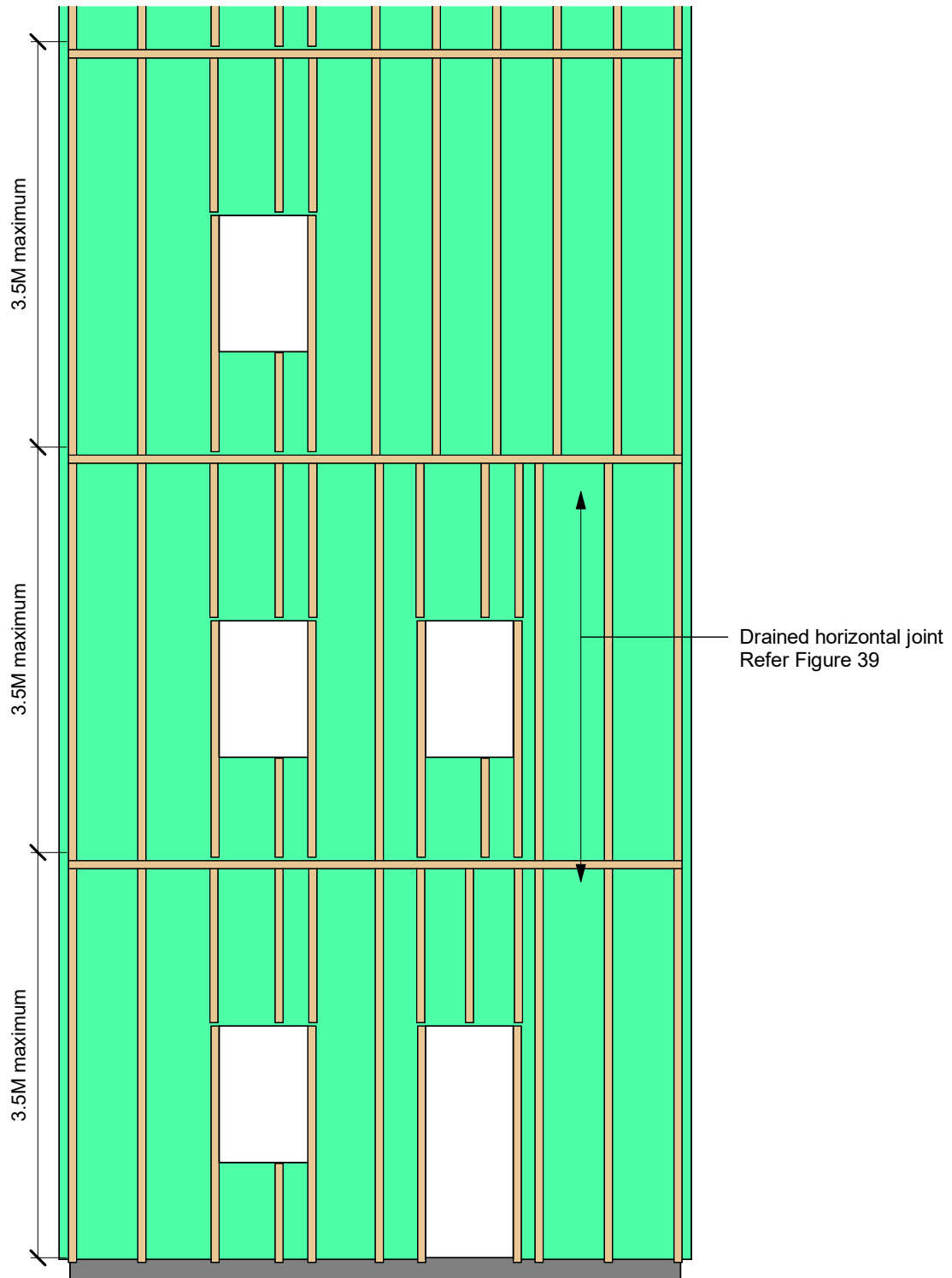
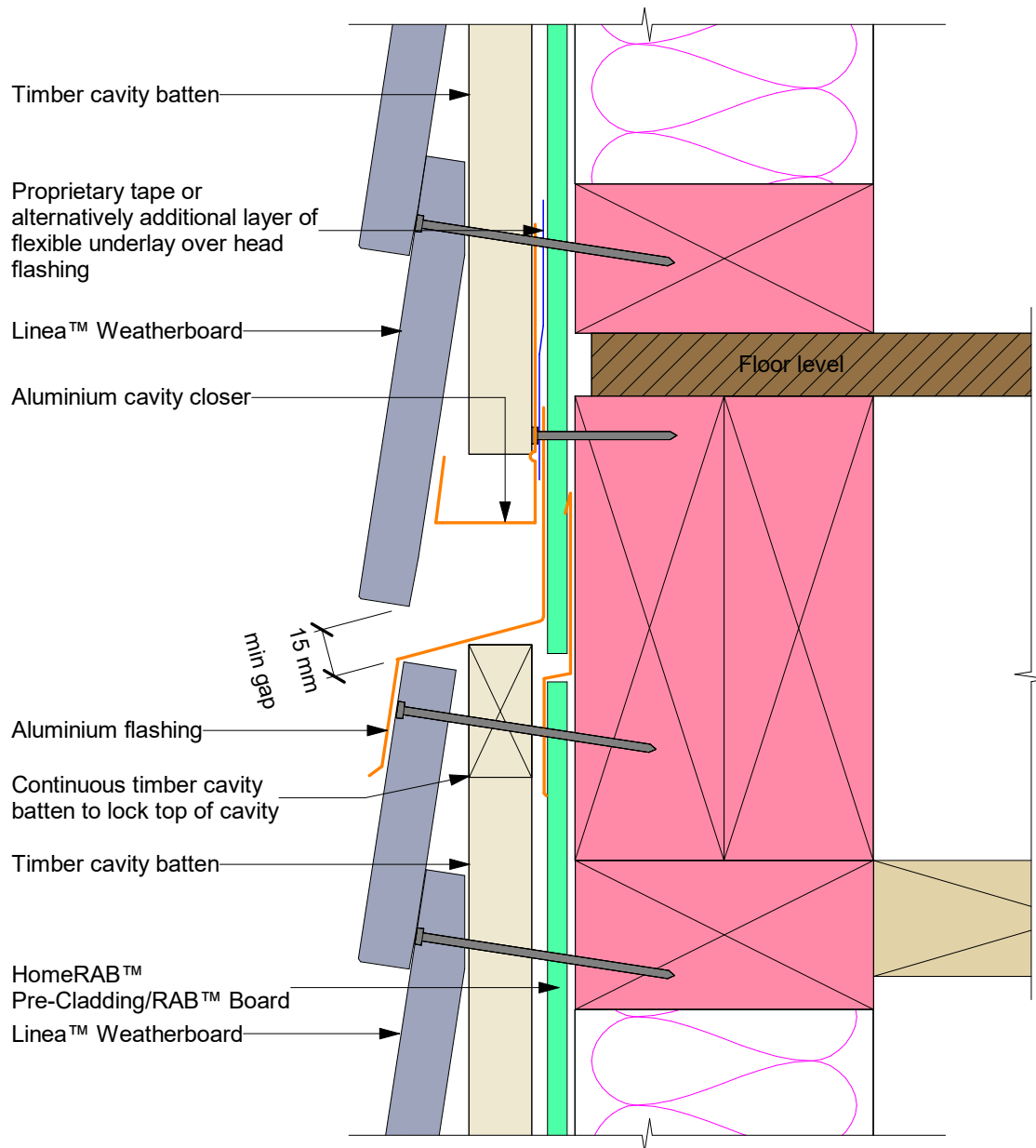


Figure 39: Intertenancy vertical fire separation



Product Warranty

James Hardie New Zealand Limited ("James Hardie") warrants for a period of 25 years from the date of purchase that the Linea™ Weatherboard (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 ("The 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 Linea™ Weatherboard when installed in accordance with the appropriate Linea™ Weatherboard (cavity or direct fixed) technical specifications, 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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Figure 29: One piece apron flashing joint

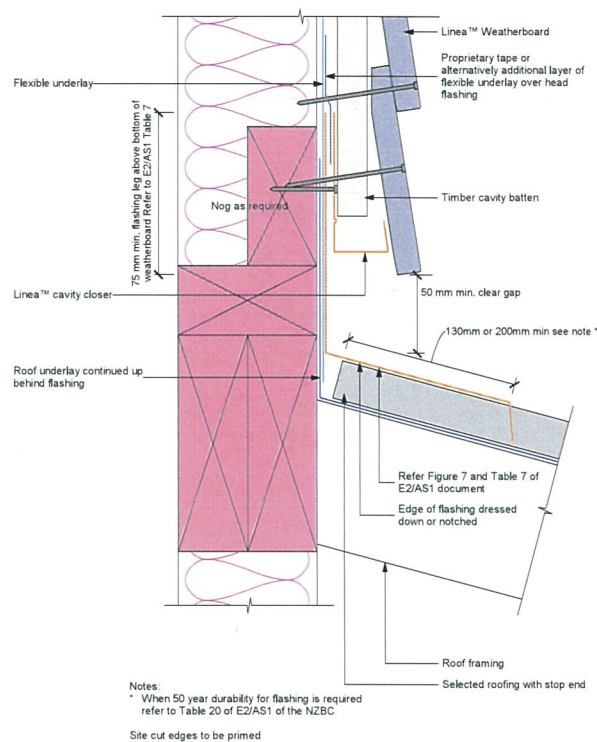
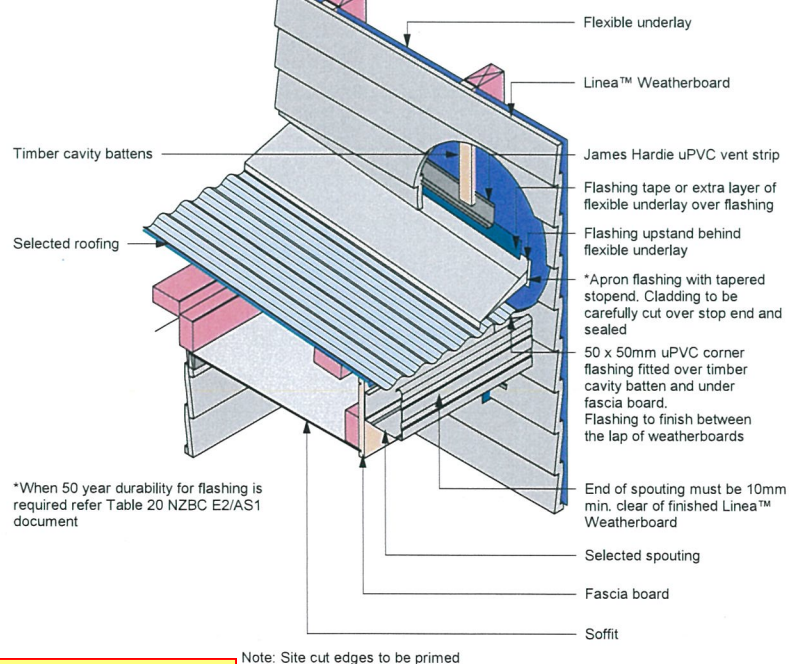


Figure 30: Roof to wall junction detail



WAIMAKARIRI DISTRICT COUNCIL
 MINOR VARIATION to Plan and/or Specifications APPROVED
 BC230501.04 30/04/2024 bhargavac
 Batten over plywood cladding to living wing and chimney stone
 cladding is being swapped out for Linea to match rest of
 house

PLUMBER

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General of this Specification which shall apply to all work in this section (also see Roofing Contractor).

2. GENERAL:

Inclusion of roof flashings, provision of roof drainage and other general flashing requirements in this section shall mean that all shall be of the quality expected of work customarily done by plumbers. The foregoing shall apply whether the ROOFING CONTRACTOR employs a plumber to execute or supervise, or if the Contractor himself fixes flashings to windows and external doors. All other work shall conform to N.Z.B.S.G12. No connections to sanitary fittings or main shall be made except by a Registered Plumber. Builder shall arrange all permits, connection and testing fees.

3. FLASHINGS:

Wherever possible use flashings that are readily available but purpose-made by the roof cladding manufacturer to suit the roofing material and profile selected. Otherwise provide flashings as recommended but not supplied by cladding manufacturer and adequately secure. Flash wherever needed to make and keep roof watertight.

Flashings to each window head and door shall be provided in one piece, each 150mm longer than the head it is to protect.

4. SPOUTING AND DOWNPIPES:

Spouting shall be that manufactured by the roof cladding manufacturer and fix as recommended with even fall to downpipes. Provide all necessary stopped ends, mitred returns and outlets and ensure all joints in metal spouting are adequately fixed and sealed. Connect outlets to 80mm diameter downpipes fixed as shown on drawings. Downpipes to discharge stormwater into soakaways or street channel, NOT into foul water drainage system.

5. COLD WATER SUPPLY:

Tap off from mains service pipe in 19mm TYPE 5 POLYETHYLENE (Polythene). Run pipe not less than 450mm below finished ground level to house with entry through or under the wall foundation. Supply and fix an Apex 3 in 1 non-return valve.

Provide 15mm PVC pipe to hose taps at positions as shown on drawing and to all fittings including hot water cylinder and washing machine. All branches to be as short, straight and at as even gradient as possible with easybends used throughout (NOT ELBOW FITTINGS). Use only approved connections throughout. All pipes are to be adequately supported, well secured and where possible concealed. All pipework to be clipped in accordance with NZBC G12/AS1 table 7 and G13/AS1 6.3.1 Table 8.

6. HOT WATER SUPPLY:

Install 300 litre mains pressure hot water cylinder complete with 3000 watt element and thermostat and including an apex mains pressure valve pack with non-return valve incorporated with 20mm dia supply pipe and 15mm dia branches or risers to sink, wash hand basin, bath, shower and laundry tub. Hot water supply pipework to be copper including relief drainpipe to be fitted with air break. Install the HWC over a safety drain tray fitted with a 40dia drainpipe taken out to exterior. Cylinder is to be restrained top and bottom with seismic strapping to be fixed to wall framing.

HWC tempering valve (with a minimum of 1m copper line between the HWC and tempering valve) to comply with NZ Standard 4617:1989 to all hot water supply pipe work prior to all fittings: Set valve to 55 degrees centigrade in accordance with NZBC G12/AS1 Clause 4.13.2. Fit seismic restraint.

All pipe work to be clipped in accordance with NZBC G12/AS1 Table 7 and G13/AS1 6.3.1 Table 8.

Insulate all hot water pipes with preformed fibreglass insulation or double thickness plumbers felt secured with wire tie wrap.

7. SANITARY FITTINGS ETC:

Bath 1700 x 720mm
Englefield Sapphire Sorrento bath (moulded head and arm rests)

WC
Fowler Tasman Vitreous China with double flap seat

WC Cisterns
Fowler Tasman dual flush pvc

Vanities
Smails 'Pepe'

Shower cabinets
Englefield Sapphire shower including shower tower
Acrylic walls and floor - safety glass side wall and pivot door
OR tiled showers with safety glass side walls.

Sink with single drainer

Supertub Robinhood 3000 with anti flood mechanism

Note: Shower, vanity, kitchen sink bench and bath to be sealed to walls with paintable silicon sealant.

8. TAPS, FAUCETS AND VALVES:

Consult with client specifications on choice of brands and fixing of all taps, faucets and mixing valves. Provide and fix all other water supply fittings as necessary to manufacturer's instructions and specifications.

9. WASTES AND VENTS:

Provide all necessary traps, waste pipes, soil stacks, back vents and terminal vents. Provide cleaning eyes to all waste pipes at junctions and all necessary overflow pipes. Waste pipes to be sleeved through concrete floor slab with 55 mm diameter PVC sleeve.

Waste Pipe Gradients

32 mm diameter 1 in 20
40 mm diameter 1 in 40
50mm diameter 1 in 40
60mm diameter 1 in 60
100 mm diameter 1 in 60

10. TESTING:

At completion of work test all water supply pipework at maximum pressure of 1500 kpa and comply with any local authority requirements or procedures.

PLUMBER - Electric Hot Water

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General of this Specification which shall apply to all work in this section (also see Roofing Contractor).

2. GENERAL:

Inclusion of roof flashings, provision of roof drainage and other general flashing requirements in this section shall mean that all shall be of the quality expected of work customarily done by plumbers. The foregoing shall apply whether or not the ROOFING CONTRACTOR employs a plumber to execute or supervise, or if the Contractor himself fixes flashings to windows and external doors. All other work shall conform to N.Z.B.S.G12. No connections to sanitary fittings or main shall be made except by a Registered Plumber. Builder shall arrange all permits, connection and testing fees.

3. FLASHINGS:

Wherever possible use flashings that are readily available but purpose-made by the roof cladding manufacturer to suit the roofing material and profile selected. Otherwise provide flashings as recommended but not supplied by cladding manufacturer and adequately secure. Flash wherever needed to make and keep roof watertight.

Flashings to each window head and door shall be provided in one piece. each 150mm longer than the head it is to protect.

4. SPOUTING AND DOWNPIPES:

Spouting shall be that manufactured by the roof cladding manufacturer, and fix as recommended with even fall to downpipes. Provide all necessary stopped ends, mitred returns and outlets and ensure all joints in metal spouting are adequately fixed and sealed. Connect outlets to 80mm diameter downpipes fixed as shown on drawings. Downpipes to discharge storm-water into soakaways or street channel, NOT into foulwater drainage system.

5. PIPE SUPPORTS:

Pipes shall be supported at centres as per the following table • Distances Between Supports

Material	Pipe Diameter (mm)	Maximum distance between supports (m)	
		Vertical Pipe	Graded Pipe
Copper pipes	32 to 50	3.0	2.5
	greater than 50	3.5	3.0
uPVC pipes	32 to 50	1.0	0.5
	65 to 100	1.2	1.0
	Greater than 100	1.8	1.2
Water Supply Pipework Support Spacing Pipe Material	Pipe Diameter (mm)	Maximum distance between supports (m)	
		Vertical Pipe	Graded and Horizontal Pipe
Copper	10-15	1.5	1.2
	20-25	2.0	1.5
Galvanised steel	15-20	2.0	1.5
	25	3.0	2.5
uPVC	15-20	2.0	1.0
	25	2.4	1.2
Polyethylene and polybutylene (cold water supply)	15-20	1.5	0.75
	25	1.8	0.9
Polybutylene (hot water supply)	15-18	1.0	0.6
	20-22	1.4	0.7

6. THERMAL MOVEMENT:

All copper and uPVC pipes shall incorporate expansion joints. The provisions described in Chapter 8 of NZS 7643 shall be used for uPVC pipes. At supports, and at wall and floor penetrations not incorporating expansion joints, movement shall be accommodated using pipe sleeves or a durable and flexible lagging material.

7. COLD WATER SUPPLY:

Tap off from mains service pipe in 20mm ALKATHENE. Run pipe not less than 450mm below finished ground level to house with entry through or under the wall foundation. Supply and fix an Apex 3 in 1 non-return valve. All pipework to be Polybutelene sleeved in preformed fibreglass insulation to walls and ceiling space.

Provide 15mm pipe to hose taps at positions as shown on drawing and to all fittings and washing machine. All branches to be as short, straight and at as even gradient as possible with easy-bends used throughout (NOT ELBOW FITTINGS). Use only approved connections throughout. AH pipes are to be adequately supported, well secured and where possible concealed.

8. HOT WATER SUPPLY:

install mains pressure hot water cylinder complete with 3000 watt element and thermostat including an apex mains pressure valve pack with non-return valve Incorporated with 20mm dia supply pipe and 15mm dia branches or risers to sink, wash hand basin, bath, shower and laundry tub. Hot water supply pipework to be copper including relief drain pipe to be fitted with air break.

HWC tempering valve to comply with NZ Standard 4617:1989 to all hot water supply pipe work prior to all fittings: Set valve to 55 degrees centigrade in accordance with NZBC G12/AS1. Fit seismic restraint.

All pipe work to be clipped in accordance with NZBC G12/AS1. HWC to be installed over safe tray drained to outside of building with 40mm pipe.

Insulate all hot water pipes with preformed fibreglass insulation or double thickness plumbers felt secured with wire tie wrap.

9. SANITARY FITTINGS ETC:

- Acrylic Bath
- WC Vitreous China with double flap seat
- WC Cisterns dual flush
- Vanities
- Acrylic cabinet shower or tiled shower with safety glass walls and pivot door, refer to shower specification.
- Sink with single drainer
- Supertub with anti-flood mechanism

Note: Shower, vanity, kitchen sink bench and bath to be sealed to walls with paintable silicon sealant or similar.

Note: Vanity, shower and bath to be sealed to walls with paint-able silicon sealant.

10. TAPS, FAUCETS AND VALVES:

Consult with client specifications on choice of brands and fixing of all taps, faucets and mixing valves. Provide and fix all other water supply fittings as necessary, to manufacturers instructions and specifications.

11. WASTES AND VENTS:

Provide all necessary traps, waste pipes, soil stacks, back vents and terminal vents. Provide cleaning eyes to all waste pipes at junctions and all necessary overflow pipes. Waste pipes to be sleeved through concrete floor slab with 55 mm diameter PVC sleeve, or Denso Tape Waste Pipe Gradients

32 mm diameter 1 in 20

40 mm diameter 1 in 40

100mm diameter 1 in 120

12. TESTING:

At completion of work test all water supply pipework at maximum pressure of 1500 kpa and comply with any local authority requirements or procedures

Figure 8: Mains Pressure Storage Water Heater System (unvented)
Paragraphs 6.1.2 and 6.2.1 b)

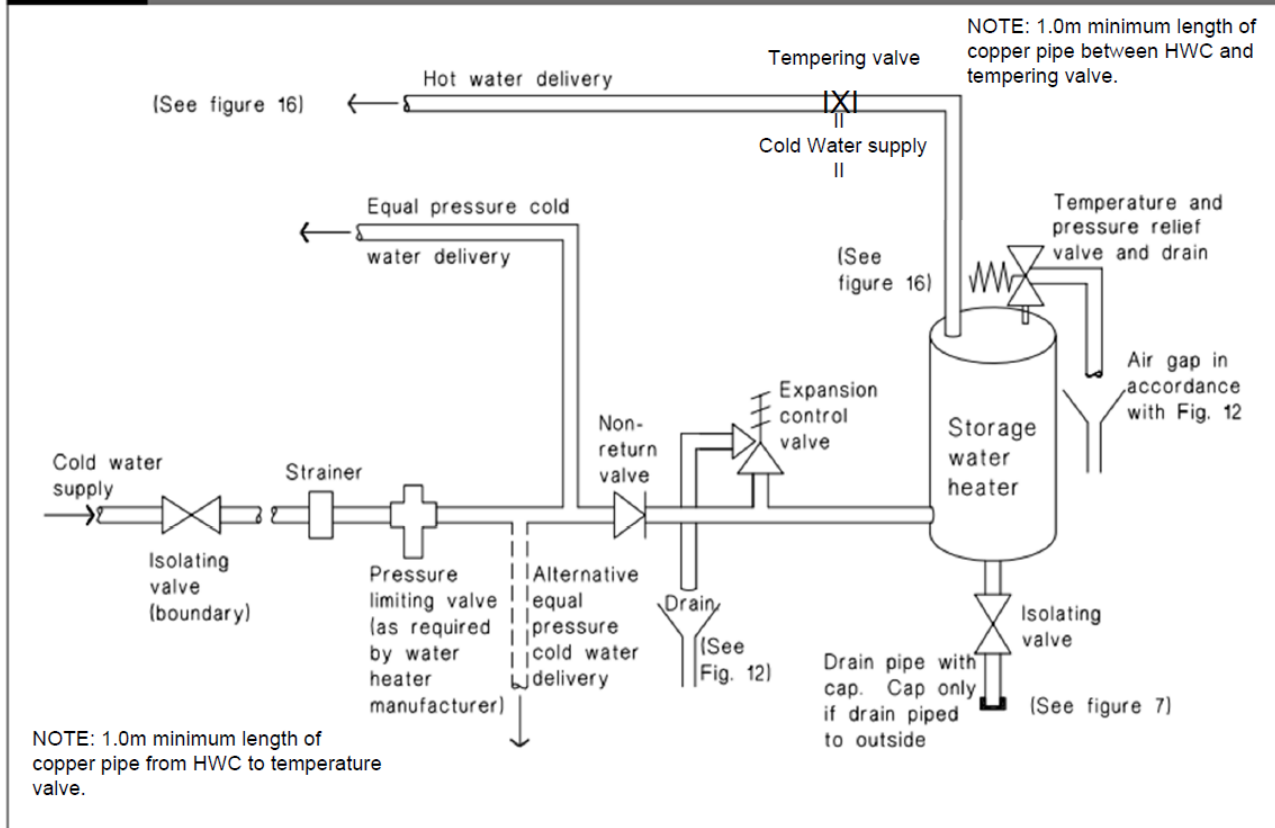
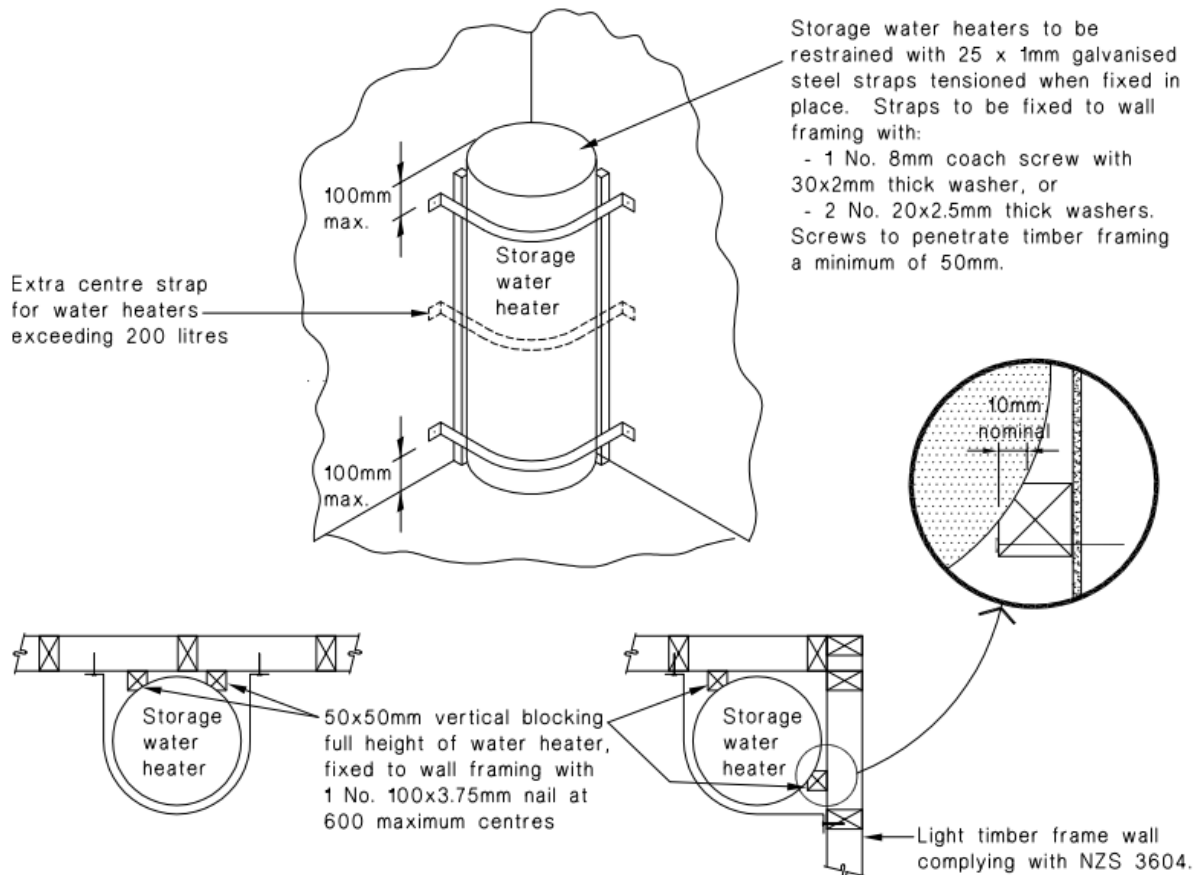


Figure 14: Seismic Restraint of Storage Water Heaters 90 – 360 litres
Paragraph 6.11.4





INSTALLATION INSTRUCTIONS & OWNER'S GUIDE

RHEEM STAINLESS STEEL MAINS PRESSURE ELECTRIC WATER HEATERS

Congratulations for choosing a Rheem Water Heater

It is important that you take a few minutes to read this booklet as this will help you get a long, safe and trouble-free life from your water heater.

If you require any further information or your water heater needs to be serviced, please contact Rheem Service on 0800 657 335 or your local plumber.

Important to the Installer

This water heater must be installed and serviced by a qualified person.

Do not leave this booklet inside the element cover after installation. Please leave the booklet with the householder or owner.

www.rheem.co.nz

WAIMAKARIRI DISTRICT COUNCIL

Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

IMPORTANT INFORMATION

GENERAL

The information contained in this guide, and all other information or advice given at any time by Rheem New Zealand Limited in connection with the purchase, installation or use of a Rheem water heater, is given in good faith. Subject to any rights the owner may have under the "Consumer Guarantees Act 1993", Rheem New Zealand Limited will not be liable to any person for any inaccuracy or omission in the information or advice arising through the fault or negligence of Rheem New Zealand Limited or any other person or through any other cause whatsoever.

This water heater is designed for use in a single family domestic dwelling for the purpose of heating potable water. Its use in an application other than this may shorten its life.

⚠ Warning: *This water heater is only intended to be operated by persons who have the experience or knowledge and capabilities to do so. This water heater is not intended to be operated by persons with reduced physical, sensory or mental capabilities i.e. the infirm, or by children.*

ABOUT YOUR WATER HEATER

DOES THE WATER QUALITY AFFECT THE WATER HEATER?

Your water heater is suitable for most public water supplies, however, some water qualities may have a detrimental effect on it. **If you are in a known harsh water area please read pages 8 and 9.**

HOW HOT SHOULD THE WATER BE?

For reasons of safety and economy, we recommend the thermostat is adjusted to the lowest setting that meets your needs. Some models require an authorised person to make any temperature adjustments. The New Zealand Building Code requires a temperature setting of not less than 60°C within the tank to protect against Legionella.

Regulations require an approved temperature limiting device (tempering valve) be fitted into the hot water pipe work to the bathroom(s) and ensuite(s) to provide safety protection from potential scalding. This will keep the hot water supply temperature to the bathroom(s) and ensuite(s) below 55°C which will reduce the risk of scald injury whilst still allowing hotter water (60°C+) to the kitchen and laundry.

To minimise scalding, especially for those people in high scald risk categories i.e. young children, people with potentially incapacitating medical conditions, elderly people etc, this water heater must be installed in accordance with AS/NZS 3500.4.

Water temperatures within the tank of 85°C or higher are possible if the water heater is connected to solar panels or any other secondary sources (refer page 7).

⚠ Warning: *This water heater can deliver water at temperatures which can cause scalding. Always check the water temperature before use, such as when entering a shower or filling a bath or basin, to ensure it is suitable for the application and will not cause a scald injury.*

HOW DO I KNOW IF THE WATER HEATER IS INSTALLED CORRECTLY?

Refer to the installation requirements on page 5.

HOW LONG WILL THE WATER HEATER LAST?

There are a number of factors that affect the life of the water heater. These include; the water quality, water pressure, water temperature and the usage pattern, however, your Rheem water heater is supported by a comprehensive warranty (refer to page 8).

HOW THE WATER HEATER WORKS

SINGLE AND TWIN ELEMENT MODELS

Water stored within the water heater is heated by the electric heating element. The thermostat controls the electricity supply to the heating element so that a constant water temperature is maintained. As the cold water is heated it expands approximately 1/50 of its volume and as a result, a small amount of water is discharged from the cold water expansion valve.

MODELS WITH ADDITIONAL CONNECTIONS OR COIL(S)

In addition to electric heating elements, models with additional sockets may be connected to alternative energy sources such as heat pump water heaters or solar panels to heat the water stored within the water heater. Models with 'direct' connections allow hot and cold water to be circulated directly to and from the volume inside the water heater. Models with coils allow heat transfer to occur to and from non-potable fluids being circulated through the coil(s).

Warning: Connection to this water heater of any external heating source must be designed and installed by qualified and authorised persons in accordance with relevant regulations and standards. Failure to comply may cause a dangerous situation and void the warranty.

SAFETY

On all models, a Temperature and Pressure Relief valve is supplied with each water heater. It can be found inside the front cover and must be fitted to the appropriate socket on the top side of the water heater. Also fitted to the water heater is a thermostat which incorporates an over-temperature thermal cut-out device.

Warning: The operation of the thermal cut-out indicates a possible dangerous situation. Do not reset the thermal cut-out until the water heater has been serviced by an authorised service person.

Warning: These safety devices must not be tampered with, or removed, and under no circumstances operate the water heater unless both devices are fitted.

REGULAR CARE

MANUALLY OPERATING THE TEMPERATURE AND PRESSURE RELIEF VALVE:

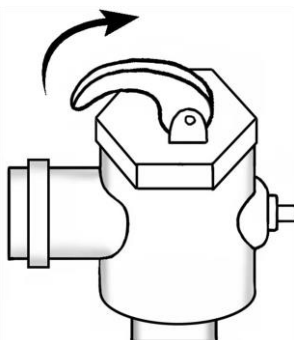
Valve manufacturers recommend that you operate the easing lever (see diagram 1) on the Temperature and Pressure Relief valve once every six months. **It is very important that you raise and lower the lever gently.**

Warning: To ensure the relief valve is working correctly, operate the relief valve easing lever at least every six months. Failure to do this may result in a dangerous situation due to the water heater over-pressurising.

DIAGRAM 1

Lift until
water flows
from the
drain line –
lower gently

Drain line



Water Heater

If water does not flow freely from the drain line or the valve fails to completely close and water continues to be discharged, contact Rheem Service on **0800 657 335**, or your local plumber.

GOING ON HOLIDAY:

If you plan to be away from home for one or two nights, we suggest that you leave the water heater switched on. However, if you plan to stay away more than a few nights, you can conserve energy by switching the water heater off at the isolating switch, or at the main switchboard. In locations where freezing could occur, you should leave the water heater turned on.

Where alternative energy sources are in use, consult the user manual for the energy source for instructions to switch off the system when going on vacation.

SAVE A SERVICE CALL

Check the items below before making a service call. You may be charged for service if the fault is not related to the water heater manufacture or parts supplied with the water heater by Rheem.

WATER DISCHARGING FROM CONTROL VALVES

It is normal for the cold water expansion valve to discharge a small quantity of cold water during the heating cycle. If a cold water expansion valve is not fitted, then the Temperature and Pressure Relief (TPR) valve may discharge a small quantity of hot water. If either of these valves discharges more than a bucket full of water in 24 hours, one of the following may be the cause.

- **Continuous dribble from valve, vent or drain line**

Try gently raising the easing lever on the TPR valve for a few seconds. This may dislodge small particles of foreign matter and clear the fault.

- **Heavy flow of hot water discharging from valve, vent or drain line**

Immediately turn off the electricity supply to the water heater. Call Rheem Service or your local plumber to arrange an inspection.

- **A steady flow of water (often at night) from vent or drain line.**

This may indicate that your cold water pressure sometimes rises above the design pressure of your water heating system. A Pressure Limiting valve should be installed, or if one is installed, it may need replacing.

NOT ENOUGH HOT WATER (or no hot water)

- **Is the electricity turned on?**

Check the switch marked 'water heater' at the switchboard and the water heater isolating switch. Check the fuse or circuit breaker marked 'water heater'.

- **Where the water heater is connected to an off peak (night rate) electrical tariff, the supply may not be available at certain times of the day.**

- **Do you have the correct size heater for your requirements?**

Refer to the sizing guide in the Rheem sales literature or the Rheem website.

- **Is one outlet (especially the shower) using more hot water than you think?**

Carefully review the family's hot water usage and if necessary check the shower flow rate.

For optimum hot water usage we recommend the shower flow rate is between 8 to 10 litres per minute. This can be achieved by either a flow restrictor or a flow control valve.

HIGH ELECTRICITY BILLS

- **Is one outlet (especially the shower) using more hot water than you think? (see above)**

- **Is there a leaking hot water pipe, dripping hot water tap, etc?**

Even a small leak will waste a surprisingly large quantity of hot water and energy. Service dripping taps, and have your plumber rectify any leaking pipe-work.

- **Are either of the expansion valves discharging too much water? (see above)**

- **Consider recent changes to your hot water usage pattern and check if there has been an increase in energy tariffs since your previous account.**

INSTALLATION

BC230501

Please take careful notice of the advice given as Rheem New Zealand Limited will not be liable for any loss or damage suffered as a result of the incorrect installation of the water heater, or any failure to check the capability of the electrical supply and wiring to the water heater.

This water heater is supplied with blanking plug(s), plastic feet and a TPR valve. The blanking plugs are for spare inlets or outlets (if any) and as such vary in quantity for each model.

The water heater must be installed and serviced by a certified person or registered plumber and the installation must comply with the New Zealand Building Code, Rheem Installation Instructions, AS/NZS 3000 Electrical Installations and all local codes and regulatory authority requirements. Please note also that no warranty costs will be payable where the water heater is located in a position that does not comply with the Rheem water heater installation instructions or relevant statutory requirements, causing the need for major dismantling or removal of cupboards, doors or walls, or use of special equipment to bring the water heater to floor or ground level or to a serviceable position.

■ WATER HEATER LOCATION

Rheem electric water heaters with a galvanised outer casing are only suitable for indoor installations, whereas water heaters with a factory painted casing are suitable for both indoor and outdoor installations. Outdoor models must be installed on a hard, level base and the supplied feet must be used between the bottom of the water heater and the base.

Clearance must be allowed for servicing and removal of the water heater and it must be accessible without the use of a ladder or scaffold. Adequate clearance must be provided for: TPR valve removal, element cover and element removal, and anode removal and replacement. Also, the information on the rating label must remain readable once installed.

If the base of the water heater is higher than the lowest hot water outlet by 2.0m or more, the tank may be subject to a negative pressure (partial vacuum) which can cause damage to the water heaters storage cylinder. In this instance, an approved vacuum break valve (RMC #AV50A or equivalent) must be installed at the highest point in the hot water line. Damage to the cylinder caused by incorrect installation is not covered by the Rheem warranty.

■ WATER SUPPLY PRESSURE

- Maximum permitted mains water pressure - refer product label and Table 5.2 AS/NZS 3500.4
Note: Inlet pressure-control valve is required where the maximum permitted mains pressure is likely to be exceeded.
- Minimum inlet water pressure: 60 kPa

■ CONNECTION SIZES

- Hot, cold and alternative energy source connections: RP ¾/20
- Relief valve connection: RP ½/15

■ INLET/OUTLET CONNECTIONS

Unions must always be provided at the cold water inlet, hot water outlet and at any additional connections to allow for removal of the water heater should it be required. All connection sockets on the water heater are parallel threaded and therefore tapered brass nipples must be used to ensure watertight connections. Parallel brass nipples must not be used and could invalidate warranty.

■ NON RETURN VALVE

A non return valve must be installed on the cold water line to the water heater.

■ PIPE SIZES

The cold water line to the water heater should be the same size or bigger than the hot water line from the water heater. For best results, choose the most suitable pipe size for each individual application.

■ COLD WATER EXPANSION VALVE

A cold water expansion valve must be fitted to the cold water line to the water heater.

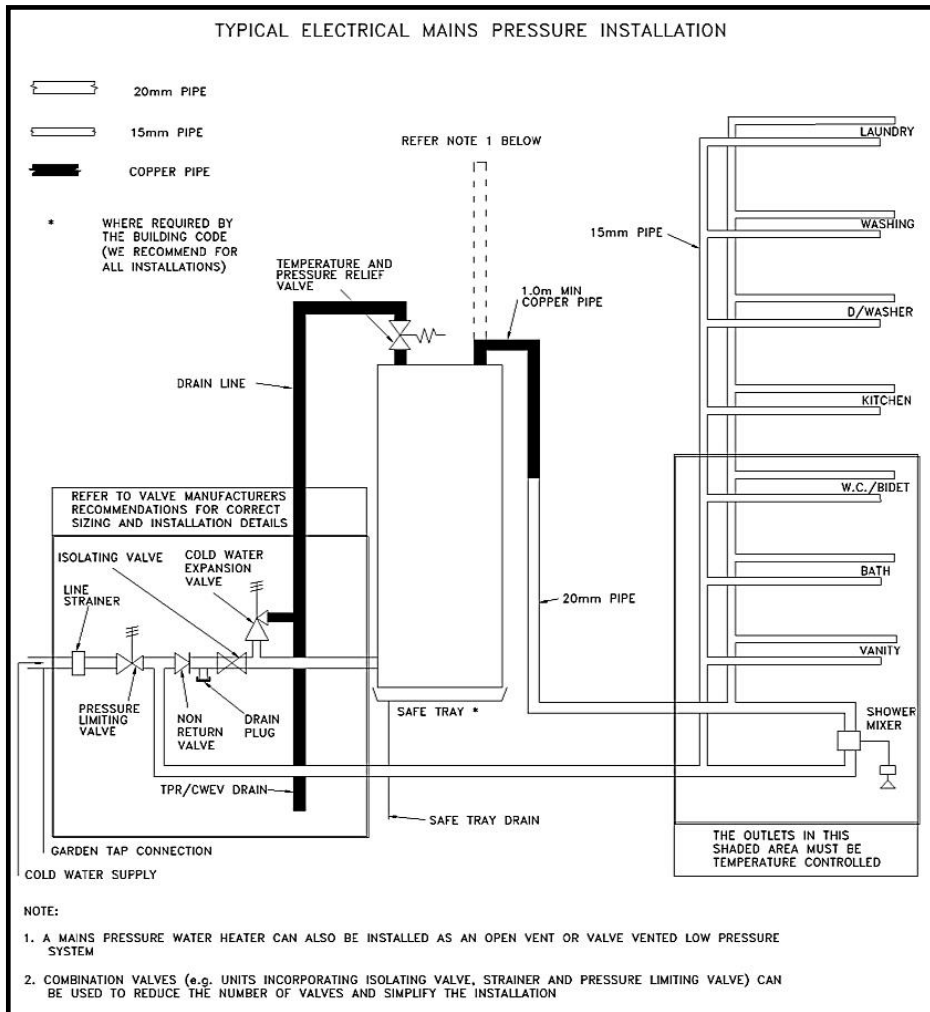
■ TEMPERATURE AND PRESSURE RELIEF VALVE

When fitting the temperature and pressure relief valve, ensure the probe has not been bent. Seal the thread with PTFE tape, or similar, as recommended by the valve manufacturer and screw the valve into the socket provided. Do not use a wrench on the valve body – use the spanner flats provided. Drain from the TPR valve with a pipe the same size as the valve outlet. The drain must

run downwards to a suitable point outside the house and must comply with the Building Code. In locations where the pipe exceeds 3 metres unbroken length, or freezing could occur, an air break must be provided within 300 mm of the TPR valve.

Warning: The drain line from the TPR valve must be in copper. A Rheem mains pressure water heater must not be installed and operated without a suitable temperature and pressure relief valve that complies with AS 1357.1. Under no circumstances block the outlet of this valve or its drain pipe.

DIAGRAM 2



■ PRESSURE LIMITING VALVE

If the water supply pressure exceeds 680kPa (Ref: Table 5.2 AS/NZS 3500.4), a pressure limiting valve with a maximum setting of 500 kPa is to be fitted in the installation.

■ SAFE TRAY

The water heater must be installed with a properly drained safe tray where there is the possibility of water damage to furniture, carpets or building. Failure to do so may jeopardise any warranty claim.

EARTHQUAKE RESTRAINTS

All water heaters must be restrained to protect against seismic forces. Refer to the New Zealand Building Code for acceptable solutions.

BC230501

CONNECTIONS - ELECTRICAL

The electrical installation must be completed in accordance with AS/NZS 3000. All water heaters are designed for 230 VAC, 50 Hz mains operation and a means of disconnection from the power supply must be incorporated in the fixed wiring during installation.

A flexible 20 mm conduit is required for the electrical cable to the water heater. The conduit is to be connected to the unit with a 20 mm plain to screw adaptor. Connect the power supply wires directly to the terminal block and earth tab connection, ensuring there are no excess wire loops inside the front cover. For details, refer to the wiring diagram on the inside of the element cover. **A separate heating element earth wire is not required because the element earths by the flange being in contact with the element socket.**

ELEMENT WIRING

All 325 model series are pre-wired for standard installations where the bottom element only is connected to the mains supply. For alternative energy configurations that require a smaller hot water boost volume, the upper element may be connected instead. The upper element is not factory fitted.

For alternative energy installations the following element kits are available:

KITSET	DESCRIPTION	FOR MODELS:
# 318242	Kitset Element Solar / HP Bolt-on 2kW	3251800x-x, 3252500x-x; 3253000x-x
# 318243	Kitset Element Solar / HP Bolt-on 3kW	3252500x-x; 3253000x-x
# 319141	Kitset Element Solar / HP Screw-in 3kW	3251801x-x, 3252501x-x, 3253001x-x

CONNECTIONS – ALTERNATIVE ENERGY SOURCES

TEMPERATURE SENSOR TUBE

Some models include receptacle tubes for temperature sensors used in alternative energy source water heater products that may be connected to this cylinder. Ensure that any additional sensor wiring is routed away from mains wiring and in accordance with the instructions provided by the manufacturer.

TEMPERATURE CONTROL DEVICES AND SETTINGS

The temperature of water heated by alternative / supplementary energy sources connected either directly or indirectly (through coils) is controlled exclusively by that energy source (e.g. Heat Pump Water Heater or Solar Water Heater). The temperature of water heated by these sources must not exceed 85°C to prevent activation of the over-temperature cut out of the supplied thermostat.

Warning: The connection of any alternative energy source to this water heater could create a dangerous situation and may jeopardise the water heater warranty. Water heater system design must be carried out by licensed competent persons. For further advice contact Rheem. For uncontrolled heat source, such as wetback heaters or some solar systems, the water heater must be open vented.

COMMISSIONING

TO FILL AND TURN ON THE WATER HEATER

Warning: The power supply to the water heater must not be switched on until the water heater is filled with water and an "Earth Continuity Test", as outlined in Annex A of AS/NZS 60335.1, has been carried out. Failure to do so will damage the element and shorten its life and may create a dangerous situation.

- Open all of the hot water taps in the house (don't forget the shower). Open the cold water isolation valve fully to the water heater to force the air out of the taps. As water flows freely from each tap, close it. Check the pipe-work for leaks.
- Switch on the electrical supply at the isolating switch to the water heater.

TO TURN OFF THE WATER HEATER

If it is necessary to turn off the water heater on completion of the installation, such as on a building site or where the premises is vacant, then;

- Switch off the electrical supply at the isolating switch to the water heater.
- Close the cold water isolation valve at the inlet to the water heater.


DRAINING THE WATER HEATER

- Switch off the electrical supply at the isolation switch to the water heater.
- Close the cold water isolation valve.
- Operate the relief valve easing lever to release the pressure in the water heater.
- Drain the water heater through the drain valve or plug.
- Undo the top outlet union or operate the relief valve easing lever again to let air into the water heater and allow the water to drain.

WHAT YOU NEED TO KNOW ABOUT WATER QUALITY

WATER SUPPLY CHEMISTRY

Water quality can have a detrimental effect on water heater operation, components and life expectancy and may affect warranty.

 **Warning:** This water heater must be installed in accordance with this advice to be covered by the Rheem warranty.

This water heater is manufactured to suit the water conditions of most public reticulated water supplies. However, there are some known water chemistries which can have detrimental effects on the water heater and its operation and/or life expectancy. This water heater must only be connected to a water supply which complies with these specifications for the Rheem warranty to apply. If you are unsure of your water chemistry, you may be able to obtain information from your local water supply authority or you can contact Rheem and we will provide you with contact details of a suitable agency capable of testing your water for compliance with Rheem standards. Water quality tests must be carried out at the owner's cost.

Water Chemistry Levels Affecting Warranty

The Rheem warranty of this Stainless Steel water heater will not cover resultant faults on components including the storage cylinder where water stored in the storage cylinder exceeds at any time any of the following levels:

Total dissolved solids	600 mg/Litre
Total hardness	200 mg/Litre
Chloride	250 mg/Litre
Magnesium	10 mg/Litre
pH	8.5 (and not less than 6.5)
Calcium	20 mg/Litre
Sodium	150 mg/Litre
Iron	1 mg/Litre

Note on Total Dissolved Solids (TDS)

The Rheem warranty will not cover resultant faults to the storage cylinder if this water heater is connected at any time to a water supply where the TDS content of the water exceeds 600 mg/L. Some water analysis reports may state the conductivity of the water rather than the level of total dissolved solids. Conductivity, measured in microsiemens per centimetre ($\mu\text{S} / \text{cm}$), is directly proportional to the TDS content of the water. TDS, in mg/L, is approximately 70% of the conductivity in $\mu\text{S} / \text{cm}$.

In locations where TDS approaches 600 mg/L, e.g. due to sediment, we strongly recommend fitting an

appropriate filter to ensure water entering, or in the water heater, does not exceed this level at any time i.e. due to sediment build up.

Scaling Water

Scaling water is water that contains levels of calcium carbonate (total hardness in excess of 200 mg/Litre at any time when the water heater is operating). Scaling water can block and prevent the pressure & temperature relief valve from operating, resulting in damage to the water heater storage cylinder and water heater components.

An expansion control valve must be fitted in ALL areas with scaling water to assist in preventing blockage of the pressure and temperature relief valve.

⚠ Warning: *Failure to install an expansion control valve where scaling water conditions occur may result in the water heater storage cylinder failing, or under certain circumstances, exploding.*

To avoid damage to the storage cylinder and water heater components, Rheem strongly recommends scaling water be treated before entering the water heater by fitting appropriate water filters/conditioners etc. Refer to your Local Water Authority for information on water in your area. A build up of white sediment on hot water taps or shower roses can be indicative of scaling water. Contact Rheem if this condition is observed.

⚠ Warning: *Damage caused by scaling water can affect the Rheem warranty.*

Spring, Dam, Bore & River Water Supplies

The Rheem warranty of this water heater will not cover resultant faults on components including the storage tank due to the effects of sludge and/or sediment as a result of connection to a water supply from silted or treated sources i.e. springs, dams, bores, rivers or towns supplied from a bore.

SATURATION INDEX

The saturation index is used as a measure of the water's corrosive or scaling properties. In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface. When scaling water has a saturation index greater than +0.40 an expansion control valve must be fitted on the cold water line after the non-return valve.

Where the saturation index exceeds +0.80, low watts density elements should be used. Where the saturation index is less than -1.0, a corrosive resistant heating element should be used.

Contact Rheem Service for further information.

RHEEM WARRANTY

Mains Pressure Electric Water Heater Product Warranty --- New Zealand ONLY ---

In addition to your legal rights, in New Zealand, Rheem New Zealand Limited makes the following promise to the owner. We will repair or, if necessary, replace a defective water heater or part of it, which has failed due to faulty manufacture on the following terms and conditions:

1. THE RHEEM WARRANTY – GENERAL

- 1.1 This warranty is given in respect of sales in New Zealand by Rheem New Zealand Ltd, Company number 1175771, 475 Rosebank Road, Avondale, Auckland.
- 1.2 Rheem offer a trained and qualified national service network that will repair or replace components at the address where the water heater is installed subject to the terms of the Rheem warranty. In New Zealand contact your Rheem Service Centre on 0800 657 335.
- 1.3 For details about this warranty, you can contact us in New Zealand at rheem@rheem.co.nz or phone your Rheem Service Centre on 0800 657 335.
- 1.4 The terms of this warranty are set out in Section 2 and apply to water heaters manufactured after 1st April 2012.
- 1.5 If a subsequent version of this warranty is published, the terms of that warranty will apply to water heaters manufactured after the date specified in the subsequent version.

2. TERMS OF THE RHEEM WARRANTY AND EXCLUSIONS TO IT

- 2.1 The decision of whether to repair or replace a faulty component is at Rheem New Zealand's sole discretion.
- 2.2 Where a failed component or cylinder is replaced under this warranty, the balance of the original warranty period will remain effective. The replacement does not carry a new Rheem New Zealand Limited warranty.
- 2.3 Where the water heater is installed outside the boundaries of a metropolitan area as defined by Rheem New Zealand Limited or further than 25 km from an Rheem New Zealand Limited Accredited Service Centre's office, the cost of transport, insurance and travelling between the Rheem New Zealand Limited Accredited Service Centre's office and the installed site shall be the owner's responsibility.
- 2.4 Where the water heater is installed in a position that does not allow safe or ready access, the cost of that access, including the cost of additional materials handling and/or safety equipment, shall be the owner's responsibility. In other words, the cost of dismantling or removing cupboards, doors or walls and the cost of any special equipment to bring the water heater to floor or ground level, or to a serviceable position is not covered by this warranty.
- 2.5 This warranty only applies to the original and genuine Rheem New Zealand Limited's water heater in its original installed location and any genuine Rheem replacement parts.
- 2.6 The Rheem New Zealand Limited warranty does not cover faults that are a result of:
 - a) Accidental damage to the water heater or any component (for example:
 - (i) Acts of God such as floods, storms, fires, lightning strikes and the like; and
 - (ii) Third party acts or omissions).
 - b) Misuse or abnormal use of the water heater.
 - c) Installation or use not in accordance with the Owner's Guide and Installation Instructions or with relevant statutory and local requirements (including failure to install a properly drained safe tray where required by the Owner's Guide and Installation Instructions).

- d) Connection at any time to a water supply that does not comply with the water supply guidelines as outlined in the Owner's Guide and Installation Instructions, or poor water quality outside the limits specified in the Owner's Guide and Installation Instructions.
 - e) Service or repair work, attempts to repair or modifications to the water heater by a person other than Rheem Service or a Rheem Accredited Service Centre.
 - f) Faulty plumbing or faulty power supply.
 - g) Failure to maintain the water heater in accordance with the Owner's Guide and Installation Instructions.
 - h) Transport damage.
 - i) Fair wear and tear from adverse conditions (for example, corrosion).
 - j) Cosmetic defects.
- 2.7 If you require a call out and we find that the fault is not covered by the Rheem warranty, you are responsible for the Rheem Service Centre's call out cost. If you wish to have the relevant component repaired or replaced by Rheem, that service will be at your cost.
- 2.8 Subject to any statutory provisions to the contrary, this warranty excludes any and all claims however arising, including under contract or tort, for damage to furniture, carpet, walls, foundations or any other consequential loss or incidental expenses either directly or indirectly due to leakage from the Rheem water heater, or due to leakage from fittings and/ or pipe work of metal, plastic or other materials caused by water temperature, workmanship or other modes of failure that were not reasonably foreseeable as liable to result from the failure.
- 2.9 This warranty excludes to the extent permissible all implied warranties set out in the Sale of Goods Act 1908 (New Zealand) and all guarantees set out in the Consumer Guarantees Act 1993 (New Zealand) to the extent that the goods are acquired for the purpose of resupply in trade, consumption in the course of a process of production or manufacture or repairing or treating in trade other goods or fixtures on land.

3. WHAT IS COVERED BY THE RHEEM WARRANTY FOR THE WATER HEATERS DETAILED IN THIS DOCUMENT

- 3.1 Rheem will repair or replace a faulty component of your water heater if it fails to operate in accordance with its specifications as follows:

Warranty Cover	The period from date of installation, in which the fault must appear, in order to be covered		*Domestic use is defined as; when the appliance is installed in a single family domestic dwelling.
What components are covered	Domestic use*	Non-domestic use*	What coverage you receive

Stainless Steel

Years

All components	1	1	Repair or replacement of failed component, or if necessary, replacement of the complete water heater, free of charge, including labour.
Cylinder only	3	1	Repair or replacement of the complete water heater, free of charge, including labour.
	10	3	Repair or replacement of the complete water heater, free of charge. Installation and labour cost are the responsibility of the owner.

4. ENTITLEMENT TO MAKE A CLAIM UNDER THIS WARRANTY BC230501

- 4.1 To be entitled to make a claim under this warranty you need to:
- a) Be the owner of the water heater or have consent of the owner to act on their behalf
 - b) Contact Rheem Service without undue delay after detection of the defect and, in any event, within the applicable Rheem warranty period.
- 4.2 You are **not** entitled to make a claim under this Rheem warranty if your water heater:
- a) Does not have its original serial numbers or rating labels.
 - b) Is not installed in New Zealand.

5. HOW TO MAKE A CLAIM UNDER THIS WARRANTY

- 5.1 If you wish to make a claim under this warranty, you need to:
- a) Contact Rheem on 0800 657 335 and provide owner's details, address of the water heater, a contact number and date of installation of the water heater or if that's unavailable, the date of manufacture and serial number (from the rating label on the water heater)
 - b) Rheem will arrange for the water heater to be assessed on-site and may require the unit to be removed and returned to the factory for further testing.
 - c) If Rheem determines that you have a valid warranty claim, Rheem will repair or replace the water heater in accordance with this warranty
- 5.2 Any expenses incurred in the making of a claim under this warranty will be borne by you.

6. THE CONSUMER GUARANTEES ACT 1993 (NEW ZEALAND)

- 6.1 Our goods come with guarantees that cannot be excluded under the Consumer Guarantees Act 1993 (New Zealand). If the goods fail to comply with the applicable guarantees set out under the Consumer Guarantees Act 1993 (New Zealand) being the guarantee as to acceptable quality, the guarantee as to correspondence with description or the guarantee as to repair and parts, or if the goods fail to comply with any express guarantee given by Rheem, then you are entitled to a replacement or refund and for compensation for any other reasonably foreseeable loss or damage.
- 6.2 The Rheem warranty (set out above) is in addition to any rights and remedies that you may have under the Consumer Guarantees Act 1993 (New Zealand)

RHEEM NEW ZEALAND LTD

www.rheem.co.nz

FOR SERVICE TELEPHONE

0800 657 335 NEW ZEALAND

475 Rosebank Road, Avondale, Auckland

Note: Every care has been taken to ensure accuracy in preparation of this publication. No liability can be accepted for any consequences, which may arise as a result of its application.

Wet-seal Project Specification

Internal Waterproofing



WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 ChrisK

Author EB| Reviewer AZ, JA| Approver RC

Version control: 11.11.2020

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Wet-seal™



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1 Waterproofing

1.1 Scope

This specification applies to the installation of Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System ("the Enviro-coat Waterproofing System"). The Enviro-coat Waterproofing System is to be applied in internal areas defined in the contract, quotation, technical drawing and or plans and in accordance with all Wet-seal NZ Ltd. (Wet-seal) Technical literature and in accordance and compliance with all relevant standards and codes.

1.2 Compliance information

System installation must comply with all relevant provisions of the following documents/codes:

NZBC E2/AS1	External moisture
NZBC E3/AS1	Internal moisture
3101.1&2:2006 NZS	Concrete Structures Standard
3602:2003 NZS	Timber and wood-based products for building
3604:2011 NZS	Timber-framed buildings
AS/NZS 2908.2	Cellulose cement products - Flat sheets
AS/NZS 2588	Gypsum plasterboard
AS 3740	Waterproofing of domestic wet areas
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
NZS 4121	Design for access and mobility - Buildings and associated facilities
AS/NZS 4858	Wet area membranes
AS/NZS 2269.0.2012	Plywood – Structural – Part 0 Specifications
BRANZ	Good practice guide: Tiling

1.3 Manufacturer/Supplier documentation

Wet-seal is the supplier and manufacturer of the Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System. The documents related to this specification are collectively referred to as the Wet-seal technical literature and include:

- Scope of Works Enviro-coat IS 520 Internal Waterproofing
- BRANZ Appraisal No. 1123 [2020]
- Enviro-coat Internal IS 520 Safety Data Sheet
- Tile adhesive technical bulletins (check wet-seal.co.nz or email technical@wet-seal.com)
- Wet-seal Technical Bulletins
- Wet-seal Installation Manuals

Up to date Wet-seal Technical literature and recommendations are available through the supplier/manufacturer.

Contact details:

- Company: **Wet-seal NZ Ltd.**
- Web: wet-seal.co.nz
- Email: technical@wet-seal.com
- Phone: 0800 436 000



1.4 Qualifications

Wet-seal Independent Franchisees and their employees are the only approved Applicators of the Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System. Approved Applicators install in compliance with Wet-seal Technical literature.

All Residential Building Work (RBW) must be carried out, or supervised by, an LBP. They must work within the scope of their licence class.

1.5 Producer statements

Approved Applicators will provide producer statements – PS3's at time of installation for code compliance where required.

1.6 Warranty

Wet-seal NZ Ltd. Material and Installation Warranty – are provided according to the warranty terms and conditions – 15 years' product & 7 Year's Installation Warranty.

1.7 Substitution

Substitution is not permitted to any specified Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System, or associated components or products with an alternative product.

1.8 Quality Assurance

Maintain the quality necessary to assure that all work is performed in accordance with this specification and the qualifying requirements of Wet-seal to ensure that all work is of the highest standard.

1.9 Tests

Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System is tested to and complies with AS/NZS 4858 Wet Area Membranes.

2 Enviro-coat Waterproofing System Materials

The Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System as appraised by BRANZ is comprised of the following:

2.1 Waterproofing Membrane

Wet-seal Enviro-coat IS 520 is a one component, elastic, water-based, co-polymer waterproofing membrane. Wet-seal Enviro-coat IS 520 is fibre reinforced, liquid applied and designed for internal applications. Wet-seal Enviro-coat IS 520 is coloured jade green and supplied in 18 kg pails.

2.2 Reinforcing fabric

Wet-seal Enviro-fabric is a high strength reinforcement fabric that provides added durability and structural stability. Wet-seal Enviro-fabric is used and installed in all critical areas, according to Wet-seal Technical Literature by approved Applicators.



2.3 Primers

Wet-seal system primers are selected according to substrate type and condition and used in compliance with Wet-seal Technical literature.

Enviro-prime EP 20+: is a ready to use water-based primer for use on porous and dry substrates. It is coloured violet and supplied in 15 L containers.

Wet-seal Top-coat 300: is a two-component water-based epoxy primer for green (7 day old hardened), or damp concrete, or timber substrates. It is aqua green in colour and supplied as part A and B in 10 L containers.

Wet-seal Epoxy-MVP: is a two-component water-based epoxy primer for green (7 day old hardened), or damp concrete, or timber substrates. It is light green in colour and supplied as part A and B in 10 L containers.

2.4 Sealants and Tapes

Wet-seal approved high performance MS polymer, moisture cure, construction adhesive sealants are used and applied in accordance with the manufacturer's instructions and the Wet-seal Technical Literature.

Wet-seal approved foam tapes are used in accordance with the Wet-seal Technical literature.

2.5 Delivery, storage and handling

Wet-seal approved applicators provide the Enviro-coat Waterproofing System and will handle all Wet-seal products and components according to the relevant Technical Literature and in accordance with WorkSafe NZ Guidelines and Codes of practice.

3 Pre-Install Checks

3.1 Preliminary works

Ensure that the substrate is in a suitable condition prior to installation and is in compliance with [NZBC E3/AS1](#) and AS 3740 for the relevant substrate and Wet-seal requirements. Ensure that all preliminary works are completed to the specification provided on quotes, technical drawings, and site plans, etc. Approved Applicators must not commence work until all necessary preliminary work has been completed by other trades and to the required standard.

3.2 Falls

Interior falls must be in accordance with BRANZ Good Practice Guide – Tiling clause 6.5 Falls in Floors, unless other-wise specified to ensure that there is no ponding of water on the surface. Falls must be corrected, if necessary, before installation of the Enviro-coat Waterproofing System. Falls must be built into the substrate with membrane applied over the top. Falls are not to be created on top of the membrane. All falls must slope to a floor waste.

Table 1 Required falls as per BRANZ Good Practice Guide – Tiling clause 6.5 Falls in Floors

Fall (minimum)	Site
1:50	Unenclosed shower bases (to NZBC E3/AS1, 3.3.5)
1:60	Enclosed shower bases
1:50	Shower bases for people with disabilities (to NZS 4121, 10.5.11.3 (b))

3.3 Substrate requirements

3.3.1 Preliminary substrate check

Prior to any Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System installation, on all approved substrates, all necessary checks of substrate condition in accordance with Wet-seal Technical literature, all drawings, specifications and plans and manufacturer's requirements must occur.

Substrate temperature must be between 5 °C and 35 °C for installation of the Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System.

Substrates must be structurally sound and dimensionally stable, clean, dry, free from any dust, dirt, debris, oils, or any other contaminants likely to damage the membrane or interfere with adhesion to substrate or performance. The surface must be smooth and free from any projections or sharp materials. Substrates must be free of voids or depressions, and have the minimum falls required.

Ensure sheet materials are screw fixed to specifications and screw heads are flush. Ensure that any surface damage is appropriately treated and that substrates are installed as per the manufacturer's requirements. Check the layout, correct fixings and thicknesses are as per the manufacturer's requirements.

Ensure all movement control joints are in the correct location and are appropriately treated. Check that all joints are flush, and substrates are even. Check that all apertures, openings, edges and expansion and movement control joints are completed as detailed in the plans and drawings.

3.3.2 Concrete Slabs

Concrete slab substrates must have a smooth steel trowel finish. The surface must be smooth and free from laitance, dust, debris, depressions, and protrusions. Any voids must be filled prior to Enviro-coat Waterproofing System application. All curing compounds and formwork release agents must be removed.

New concrete must be at least 7 days old and hardened, before application of Enviro-coat primers and Enviro-coat IS 520 Waterproofing Membrane. When new hardened concrete is between 7 and 28 days old it must first be treated with Enviro-coat epoxy primers as per Wet-seal Technical Literature. Old concrete must be thoroughly clean, washed and allowed to dry.

For 28-day old concrete where not using Wet-seal epoxy primers the moisture content of the concrete must be measured using a hydrometer and readings must be 75% relative humidity (rh) or less. If readings are higher than 75% rh, the substrate must be allowed to dry until readings are compliant with Wet-seal Technical Literature.



3.3.3 Fibre Cement Compressed Sheet Floors

Ensure that fibre cement compressed sheet is wet area grade, and suitable for internal wet areas and complies with AS/NZS 2908.2. Ensure that the fibre cement sheet is correctly installed as per manufacturer's requirements. Refer to sheet manufacturer's details for correct fixing, thicknesses and sheet layout.

3.3.4 Fibre Cement Sheet Wet Area Tile Underlay

Fibre cement sheet tile underlay must be manufactured to AS/NZS 2908.2, and be suitable for internal wet areas. The tile underlay must be installed as per the manufacturer's requirements.

3.3.5 Concrete/Masonry Walls

Concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZ Building code, NZS 4229 and NZS 4230. Old or soiled block work must be thoroughly cleaned and allowed to dry.

3.3.6 Plasterboard

Plasterboard must be wet area grade and suitable for internal wet areas and must be manufactured to AS/NZS 2588 and installed to manufacturer's requirements.

3.3.7 Plywood floors

Plywood sheet material must comply with AS/NZS 2269, and be a minimum of 17 mm thick, minimum CD structural grade, with the sanded C face upwards. Plywood must be hazard classification of H3.2 with CCA treatment. Timber framing support must comply with NZS 3604. Supporting framing must be installed so that the substrate maximum span is in accordance with the manufacturer's requirements. All edges of the sheet should be fully supported.

Plywood sheets must be fixed with 10-gauge x 50 mm stainless steel countersunk screws, at 150 mm centers on edges and 200 mm in the body of the sheet. Fixings must be to manufacturer's specifications.

Plywood moisture readings must be taken, and waterproofing must not occur if moisture content is greater than 20% relative humidity.

LOSP treated plywood must not be used

3.3.8 Strandfloor® H3.1

The installation of Strandfloor® must be to the manufacturer's requirements and in accordance with BRANZ Appraisal 677 - Strandfloor H3.1®. The Strandfloor® H3.1 must be installed with no greater than 450 mm unless otherwise specified by the manufacturer.



4 Waterproofing System Installation

4.1 Installation Compliance

The Wet-seal Approved Applicator will provide a complete waterproofing system. The Wet-seal Approved Applicator will install the Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System using the required Wet-seal Enviro-coat Internal IS 520 Waterproofing Membrane System materials, primers and components, in accordance with the stringent Wet-seal Installation requirements, following design guidance from AS 3740, BRANZ Good Practice Guide – Tiling, and flooring and wallboard manufacturer's specifications, and the Wet-seal Technical Literature to provide a professionally waterproof install.

4.2 Completion

The Wet-seal Approved Applicator will complete the professional installation of the Wet-seal Enviro-coat IS 520 Internal Waterproofing Membrane System and will ensure the site is left in a clean and tidy state. The Wet-seal Approved Applicator will provide an Installation Warranty Certificate upon completion and all other required documentation, in a timely manner.

4.3 Protection and duty of care

Adequate drying and curing time must be allowed before tiling. The Wet-seal Enviro-coat IS 520 Waterproofing Membrane System is tile ready after 48 hours at 25 °C and 50% relative humidity. Allow longer dry times if temperatures are lower or humidity higher. After installation the wet waterproofing membrane must be protected from any pedestrian traffic until it is dry. Once dry, physical damage and rain wetting must be avoided by use of suitable temporary protection covers until tiled finishes are complete. Such requirements should be discussed before commencement of waterproofing works. The dry membrane is not trafficable or weatherproof and must be protected appropriately. Further information regarding the Customer's duty of care can be found in Wet-seal's Terms and Conditions for Internal Waterproofing.

4.4 Flood testing

If a flood test is required, conduct a flood test of the installed waterproofing membrane prior to tiling. Conduct flood test no **less than 7 days after installation**. Carry out any additional works as a result of the flood testing.

4.5 Tiled Surfaces

Tile adhesives used over Wet-seal Enviro-coat IS 520 Waterproofing Membrane System must meet the requirements of AS 4992.2 and be carried out in accordance with AS 3958.1 and BRANZ Good Tiling Practice.

DRAINLAYER

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General section applicable to any works of this section.

2. EXTENT OF WORK:

Work in this section of the Contract comprises all surface and foul water drainage up to above ground level to connect to Plumber's work. Include all pipes and specials, fittings, construction of manholes, all gully traps and connections for terminal vents, soil and waste pipes. The Drainlayer shall confer with the Plumber and shall arrange with the Contractor before the foundations are laid to fix the exact position of all connections of wastes and drains.

3. STANDARD OF WORK:

The whole of this work shall be carried out by experienced tradesmen to the satisfaction of the local Council's Drainage Inspector. It shall conform to N.Z.B.C. G1-G4 G10-G15, G13 AS2 and E1. Drainlayer to obtain all permits, service all notice and pay all fees required and arrange for all tests.

4. MATERIALS:

All materials shall be the best of their respective kinds. All UPVC pipes shall be of first quality and of even wall thickness and have inspection plates as required. General drains shall be 100mm diameter first class UPVC with rubber ring joints.

5. CONNECTION TO EXISTING DRAINAGE:

The Drainlayer is responsible for verifying the position and depth of the connection and commence laying his drains from this point.

6. DRAIN TRENCHES:

The excavation of trenches for drains shall be accurately made with base clean and true to grade so that no unnecessary filling is required. Adequate width shall be allowed in accordance with depth of drain to enable laying and jointing to be properly carried out. Trenches shall be kept firm and dry and shall be opened only in lengths that can be protected, utilises and refilled within a reasonable time.

7. LAYING OF DRAINS:

All drains are to be laid on 100mm surrounded to mid-point with approved non-cohesive 1410 crushed metal maximum 20mm diameter as per NZBC - G13. The pipes are to be laid to straight lines and even grades with socket against fall in all cases.

8. FITTINGS:

The plan shows the layout of the system. Additional fittings that are normally required such as inspection points and inspection bends, etc that may be required but are not specifically shown must be allowed for by the Drainlayer to comply with normal practice under the regulations.

9. JOINTING AND BEDDING OF PIPES:

The pipes are to be jointed with rubber sealing rings in a proper manner and each and every junction or change of direction is to have removable cover plates for inspection.

10. **FALL IN DRAINS:**

The whole of the soil and stormwater drains are to be laid to a regular and even fall.

11. **GULLY TRAPS:**

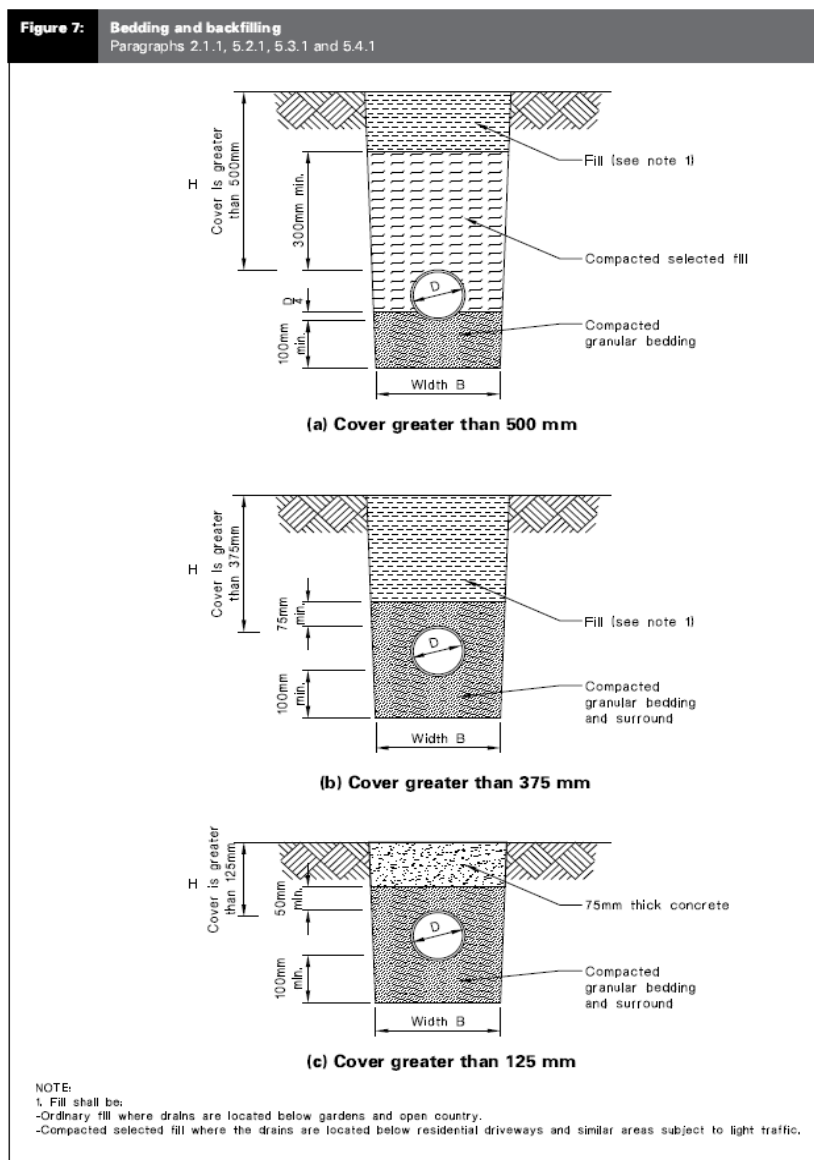
Supply all gully traps and securely bed and build up with 5:1 concrete surround 100mm above finished ground levels. All gully traps are to be fitted with gratings above the wastes discharging into it.

12. **SEWER AND STORMWATER CONNECTIONS:**

Arrange for the Council to connect drain to sewer and stormwater where provided and Drainlayer to pay all charges in connection therewith. At time of full water test inspection, provide an accurate as laid drainage plan to Council officer.

13. **COMPLETION:**

Properly backfill all trenches, consolidate as filling proceeds and leave area in a tidy state.



ELECTRICIAN

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General section applicable to any works of this section.

2. FEES:

Builder to obtain all necessary permits for this trade and to pay all fees and charges.

3. SCOPE OF WORK:

Carry out the whole of the electrical installation in strict accordance with The NZ Wiring Rules (AS/NZS 3000:2018), NZECP and Electrical Safety Regulations 2010.

4. MATERIALS AND WORKMANSHIP:

All materials used under this contract shall be of approved British or New Zealand Standard Specification. Allow for all materials necessary to complete the contract whether specified or not. All work shall be carried out by a Registered Electrician in accordance with regulations and best trade practice and in a manner which will cause minimum inconvenience to other workmen and the work as a whole. All cutting and drilling for the electrical installation is to be done by the electrical contractor. When cutting or drill timber only remove the minimum required for the cables.

5. CO-OPERATION:

Co-operate with the Builder and other sub-contractors in all phases of work. Give ample notice to enable the Builder to arrange the necessary void, chase data etc.

6. COMPLETION AND CONNECTION OF POWER:

Leave work complete and arrange for all inspections and tests and for the connection of power to the works. It is the responsibility of the Electrical Contractor to ensure that no delay is occasioned to the job once the Contract is completed.

7. POWER BOARD SUPPLY:

Arrange with the Power Board, allow for the connection of an underground, or overhead, supply to the residence.

8. METER BOX:

Provide and install recessed meter box where shown on plan. Confer with Carpenter for trimming same.

9. MAIN SWITCHBOARD:

Provide and install in recess main switchboard complete with all necessary control and auxiliary equipment.

10. WATER HEATER:

Allow for the permanent connection of the water heater to the electrical system. Install 3 K/W element and thermostat to the hot water cylinder provided by the Plumber, or such system as specified by the client. Refer clause 3 of this section.

11. POWER POINTS:

All wall plugs shall be 230v. 10 amp. 3pin flush type. Generally install plugs 300mm above floor or 225mm above bench top. Points to washer/dryer space and refrigerator 1200mm from floor. The exact position of all power points shall be determined on the job by the Client.

12. LIGHTS:

Interior lights shall be as specified by the client.

Supply and wire up according to plans.

13. LIGHT SWITCHES:

Light switches shall be as specified by the client.

14. LIGHT POINTS:

Allow for installing the number of outlets as shown on plan.

15. POWER POINTS:

Allow for installing the number of outlets as shown on plan.

WEISSTM

Technical Data Sheet

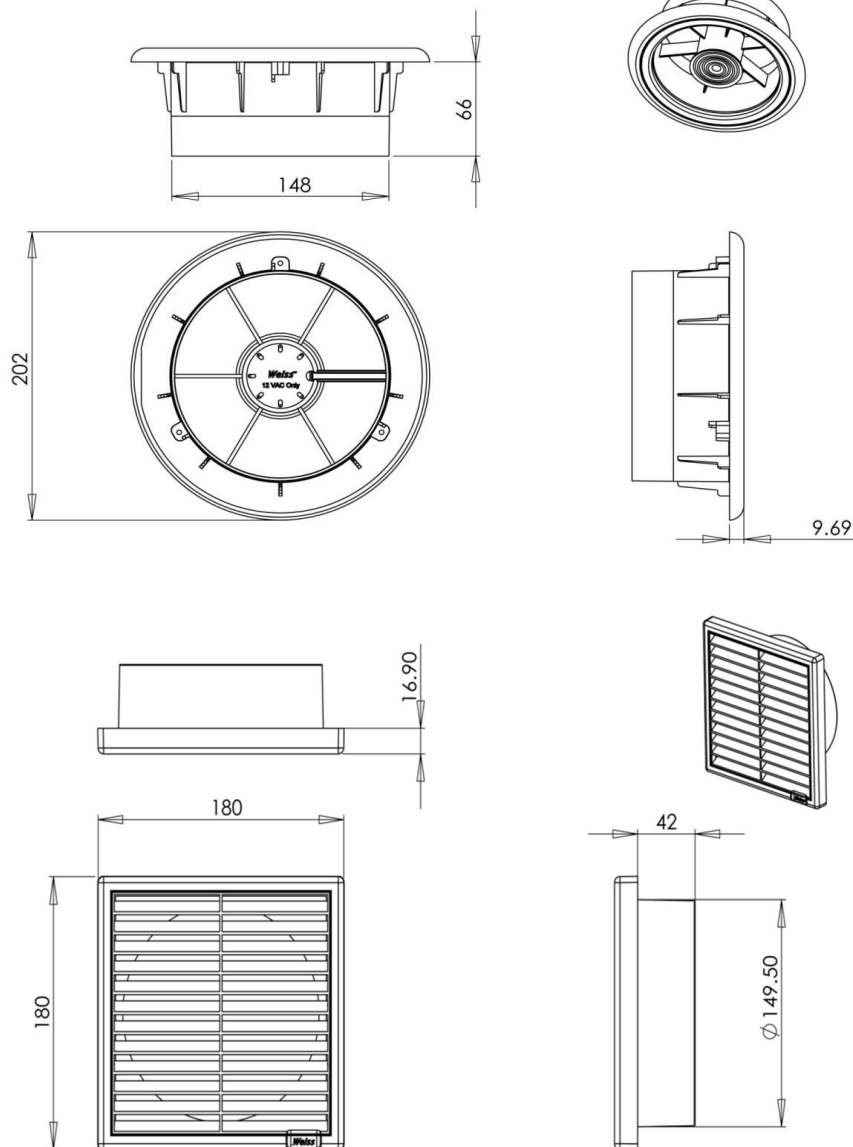
FV130

Shower Fan Unit

150mm ducting

Dimensions

Cut-out size for inlet fascia	170mm
Cut out size for outlet vent	158mm



Specifications

Weight	2kg
Colour of front fascia	White
Housing material	ABS

Approval

AS/NZS 603350.2.80:2004 Amdt 1
AS/NZS 60335.1.2011 incl Amdt.1

Features

- Easy to install
- 6 metres of 150mm ducting supplied
- Unique 'no fuss' all in one unit
- Allows moisture to be removed to the outside of your home
- All parts are included
- 3 year extended warranty

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

Technical Data Sheet

Product Use

The FV130 is used for the extraction of mist and steam

Typical applications:

- Bathrooms
- Toilets
- Laundries

Environmental Conditions

Operation	to IEC 721-3-3
Climatic conditions	class 3K5
Temperature	0...+50°C
Humidity	<95% r.h.

Standards

Test standards	AS/NZS 603350.2.80: 2004 Amdts 1 and 1:2011 Amdt.1 5773
Test Report no EMC Compliance	This is a Level One product with an C frame motor that has a very low risk of causing EMC Interference

General

Free Air Fan Performance	362m³/ hr 100.6L/sec
Installed decibel rating	45DB

Ordering

When ordering please give name and type,	
Reference	FV130
Barcode	942000490093-8

Technical Data

Power Supply	230 VAC
Power consumption	max. 0.4 Amps
Supply Line fusing	max. 10A
For solid wires	2 x 1.5mm²
Motor	230-240VAC 50Hz 0.4 Amp
Motor insulation class	B1
Total motor wattage	40 Watts
Motor protection	Thermally protected
Total product wattage	40 watts

4710EW EARTHWOOL® GLASSWOOL INSULATION

1 GENERAL

This section relates to **Earthwool® glasswool** thermal and acoustic insulation systems including installation.

It includes:

Earthwool® glasswool insulation

- Earthwool® glasswool insulation: Underfloor Rolls with wind wash barrier
- Earthwool® glasswool insulation: Underfloor Quilted Batts with wind wash barrier
- Earthwool® glasswool insulation: External Wall Batts
- Earthwool® glasswool insulation: Internal Wall Batts
- Earthwool® glasswool insulation: Ceiling Batts
- Earthwool® glasswool insulation: Roof blankets

1.1 RELATED WORK

Refer to ~ for ~

Refer to 4161 UNDERLAYS, FOIL AND DPC for wall underlay and roofing underlay.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

~ ~

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-C/AS2	Protection from fire
NZBC H1/AS1	Energy efficiency
NZBC H1/VM1	Energy efficiency
AS/NZS 3000	Electrical installations (Australian/New Zealand Wiring Rules)
AS/NZS 4859.1:2002	Materials for the thermal insulation of buildings - General criteria and technical provisions
AS/NZS 5110	Recessed Luminaire Barriers
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance
NZS 4214	Methods of determining the total thermal resistance of parts of buildings
NZS 4218	Thermal insulation - Housing and small buildings
NZS 4220	Code of Practice for energy conservation in non-residential buildings
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings

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.

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

BRANZ Appraisal 648 - Earthwool® glasswool Insulation	
CodeMark	GM-CM30095-RevA1 Refer to conditions and limitations listed in the CodeMark. Refer to CODEMARK CERTIFICATE for a list of Product datasheets and installation instructions
GreenTag	KNI-001-v2-2016

Manufacturer/supplier contact details

Company:	Knauf Insulation New Zealand
Web:	www.knaufinsulation.co.nz
Email (Technical):	tech.nz@knaufinsulation.com
Email (Sales):	sales.nz@knaufinsulation.com
Telephone:	0800 KNAUFI (562 834)

Warranties

1.5 WARRANTY

Provide a warranty for:

50 years: For unfaced Earthwool® glasswool insulation materials
15 years: For Earthwool® glasswool insulation underfloor

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ -years For installation of insulation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS - GENERAL

Refer to 1270 CONSTRUCTION for requirements relating to experience, skill, and qualifications.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

Performance - thermal insulation

1.9 R-VALUE RATING

Refer to SELECTIONS for location, type, R-Value, and thickness.

Performance - acoustic insulation

1.10 SOUND RATING REQUIREMENTS

Provide sound rated systems as detailed in SELECTIONS.

Performance - Fire properties

1.11 FIRE PROPERTIES

Earthwool® glasswool insulation is non-combustible to test criteria under the 30's Needle Flame Test to [AS/NZS 60695.11.5](#).

Compliance

1.12 CODEMARK CERTIFICATE

Earthwool® glasswool meets the requirements of the NZBC when used in accordance with the conditions and limitations of its Certificate of Conformity. Refer to MANUFACTURER/SUPPLIER DOCUMENTS for CodeMark certificate.

The following Earthwool® glasswool Product Datasheets and Installation Instructions are listed in the CodeMark conditions and limitations:

- Acoustic:	Product datasheet ref: KINZ0914116DS, January 2017
- Ceiling batts:	Product datasheet ref: KINZ1213029DS, April 2017
- Ceiling Roll:	Product datasheet ref: KINZ0914115DS, January 2017
- Underfloor Roll:	Product datasheet ref: KINZ0616380DS, June 2016
- Wall:	Product datasheet ref: KINZ00914114DS, January 2017
- Multi-Use roll:	Product datasheet ref: KINZ0616396DS, June 2017
- Quilted underfloor batt:	Product datasheets ref KINZ0317511DS, August 2017
- Ceiling batt:	Installation instructions, ref: KINZ1017631MIS
- Ceiling Rolls:	Installation instructions, ref: KINZ1017632MIS
- Quilted Underfloor batt:	Installation instructions, ref: KINZ0817602MIS
- Underfloor Roll:	Installation instructions, ref: KINZ1017636MIS
- Wall batts:	Installation instructions, ref: KINZ1017633MIS

2 PRODUCTS

Materials - Underfloor Thermal Insulation

2.1 EARTHWOOL® GLASSWOOL INSULATION: QUILTED UNDERFLOOR BATTS WITH WIND-WASH BARRIER

Quilted Underfloor is a rectangular batt to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass and with ECOSE® Technology, the underfloor batt is completely wrapped in a breathable plastic film, providing a wind-wash barrier. Refer to SELECTIONS for options.

2.2 EARTHWOOL® GLASSWOOL INSULATION: UNDERFLOOR ROLLS WITH WIND-WASH BARRIER

Faced Underfloor is an insulation roll to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass, and with ECOSE® Technology, the insulation roll is faced with a black glass wind-wash barrier. Refer to SELECTIONS for options.

Materials - External Wall Thermal Insulation

2.3 EARTHWOOL® GLASSWOOL INSULATION: WALL BATTS

A rectangular batt to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass and with ECOSE® Technology, it is suitable for thermal applications. Refer to SELECTIONS for options.

Materials - Internal Wall Acoustic Insulation

2.4 EARTHWOOL® GLASSWOOL INSULATION: WALL BATTS

A rectangular batt to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass and with ECOSE® Technology, it is suitable for acoustic applications. Refer to SELECTIONS for options.

Materials - Mid-Floor Thermal and Acoustic Insulation

2.5 EARTHWOOL® GLASSWOOL INSULATION: MID-FLOOR (BATTS OR ROLLS)

A rectangular batt, or roll, to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass and with ECOSE® Technology. Refer to SELECTIONS for options.

Materials - Ceiling Thermal Insulation

2.6 EARTHWOOL® GLASSWOOL INSULATION: CEILING BATTS

A rectangular batt to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass and with ECOSE® Technology, it is suitable for thermal and acoustic applications. Refer to SELECTIONS for options.

- 2.7 EARTHWOOL® GLASSWOOL INSULATION: CEILING ROLLS
An insulation roll to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass and with ECOSE® Technology, it is suitable for thermal and acoustic applications. Refer to SELECTIONS for options.
- 2.8 EARTHWOOL® GLASSWOOL INSULATION: ROOF BLANKET
A rectangular batt to [NZBC H1/AS1](#), [AS/NZS 4859.1:2002](#). Made using recycled glass and with ECOSE® Technology, it is suitable for thermal and acoustic applications. Refer to SELECTIONS for options.

Components

- 2.9 TAPES:
Polypropylene or similar strapping stapled across framing to retain insulation in wall and ceiling applications.

Accessories - General

- 2.10 WIRE NETTING
Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting used to support the insulation.
- 2.11 REFLECTIVE FOIL
Refer to 4161 UNDERLAYS, FOIL AND DPC for reflective foil.
- 2.12 VAPOUR BARRIER
Refer to 4161 UNDERLAYS, FOIL AND DPC for vapour barrier.

3 EXECUTION

Conditions

- 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS
Refer to 1270 CONSTRUCTION for requirements relating to delivery. Storage and handling of products. Do not use damaged or wet insulation material.
- 3.2 HAZARD & RISK MANAGEMENT
To [Health and Safety at Work Act 2015](#) and take all safety precautions necessary to reduce potential hazards and risks. Refer also to [NZS 4246](#), Appendix B. - Health and Safety.
- 3.3 ROUTINE MATTERS
Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements. Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.
- The building envelope must be maintained to a weathertight condition to ensure the insulation remains dry. Cavities must be clean and dry before fitting insulation.

- 3.4 PRE-INSTALLATION REQUIREMENTS
Check work previously carried out and confirm it is of the required standard for this part of the work.

Moisture content:	~% maximum for framing
Location and framing:	are free from moisture, that the cavities are not interconnected.
Insulation re-loft	Allow to re-loft/relax to specified thickness.
Discard	Damaged or wet insulation
Underlays	Ensure roof and wall underlays are installed, dry, clean, undamaged and free of debris before being covered with insulation
Vapour Barriers	Ensure vapour barrier forms one homogeneous sheet

Installation

- 3.5 INSTALLATION - GENERAL
Lay, install, fit and fix to [NZBC H1/AS1](#): Energy efficiency, 2.0 Building thermal envelope, and to manufacturer requirements. Install in housing to [NZS 4218](#) and [NZS 4246](#). Do not cover vents. Allow a clear gap around metal flues as recommended by the fireplace manufacturer. Refer to manufacturer installation instructions and [NZS 4246](#) for further details.

3.6 RECESSED LIGHT FITTING CLEARANCES - RESIDENTIAL

Residential recessed light fittings to [AS/NZS 3000](#), 4.5.2.3.5;

- Existing fittings or retrofit situations, fittings maybe unmarked
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F & IC-4

Refer to clause INSULATION CLEARANCES GENERALLY for clearances.

3.7 RECESSED LIGHT FITTING CLEARANCES - NON-RESIDENTIAL

Non-residential recessed light fittings to [AS/NZS 3000](#), 4.5.2.3.5;

- Existing fittings or retrofit situations, fittings maybe unmarked
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F, IC-4, NON-IC or Do-not Cover

Refer to clause INSULATION CLEARANCES GENERALLY for clearances

3.8 INSULATION CLEARANCES FROM HEAT SOURCES - GENERAL

Insulation may need to have a gap to some mechanical and electrical services and equipment, including ducts and chimneys. The gaps should be to the [NZS 4246](#) based tables below or to the equipment manufacturer requirements if they require larger gaps. Smaller gaps to manufacturer requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings). Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:

- The requirements of [NZS 4246](#).
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to [AS/NZS 60695.11.5](#) and/or is non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).

INSULATION CLEARANCES FROM RECESSED LIGHT FITTINGS

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm(increase if over 100W)	NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Secure insulation.
Recessed, CA 80, CA 90 or CA 135	Abut fittings	Do NOT cover the fittings
Recessed, IC, IC-F or IC-4	Abut & cover fittings	Ensure insulation complies
Recessed, marked Do-Not-Cover	Manufacturers clearances	Do not cover the fittings
Independent control gear	Place on top of insulation and 50mm from fitting	If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc. Maintain clearance by placing guard around control gear, refer to NZS 4246 figure 15.
Surface fittings not exposed to insulation	Nil	Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Secure insulation.

FOR MINIMUM INSULATION CLEARANCES TO INBUILT RECESSED HOT APPLIANCES - REFER TO [NZS 4246](#)

INSULATION CLEARANCES FROM EXTRACTS, VENTS, PIPES & ROOF UNDERLAY

Application	Minimum insulation clearance	Comments
Ducted fan motors	50mm	Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Passive vents (still in use)	200mm	To prevent debris falling through. Clearance may be able to be reduced, with more cohesive insulation, like some of the rigid plastic types or providing a fixed barrier around the vent.
Plumbing penetrations through floors	100mm	Keep gap between pipe penetration and floor insulation in case of leaks.
Roofing material/underlay	25mm	From underside of roofing or flexible roofing underlay, to prevent wicking.

Installation - Underfloor insulation

3.9 QUILTED UNDERFLOOR BATTS

Friction fit insulation batt between floor joists and butt joints tightly to ensure there are no gaps. Staple into the joists at 200mm intervals on both sides of the joist. For pole houses increase the staples to 100mm centres and tape the joints as required.
Ensure the heavier duty grey film is stapled 65mm below the floor, facing down, and that it is pulled tight to provide smooth consistent surface. Follow the manufacturer installation instructions and refer to [NZS 4246](#) for further guidance on the installation of underfloor insulation.

3.10 UNDERFLOOR ROLLS

Staple insulation between floor joists and butt joints tightly to ensure there are no gaps. Staple into the joists at 200mm intervals on both sides. Ensure the facing is 75mm below the floor, facing down, and that it is pulled tight so that there are no bulges in accordance with the installation instructions. Refer to [NZS 4246](#) for installation guidelines and Earthwool® glasswool insulation underfloor Installation Instructions.

Installation - Wall Framing

3.11 TIMBER FRAMING

Friction fit wall batt between framing members and linings. Cut on site to fill cavity and provide a close even fit. When cutting to fill a void, oversize by up to 10mm to ensure a tight fit. Ensure there is a friction fit on all faces of the insulation. If cavity depth is greater than the insulation nominal thickness, fix or strap the product to secure in accordance with installation instructions. Cut into smaller pieces for smaller spaces and around penetrations to achieve efficient thermal performance. Do not fold, tuck or compress the insulation. Refer to [NZS 4246](#) for installation guidelines and Earthwool® glasswool insulation Product Data sheets listed in the CodeMark, for detailed installation instructions.

3.12 STEEL FRAMING

Friction fit wall batt inside the steel studs and cut on site to fit nog spacing. Fill cavity and provide a close even fit. When cutting to fill a void, oversize by up to 10mm to ensure a tight fit. Do not fold, tuck or compress the insulation. Cut to smaller pieces for smaller spaces and around penetrations to achieve efficient thermal performance.

Installation - Mid-floor insulation

3.13 MID-FLOOR FRAMING

Friction fit insulation between framing members and linings. Cut on site to fill cavity and provide a close even fit. When cutting to fill a void, oversize by up to 10mm to ensure a tight fit. Ensure there is a friction fit on all faces of the insulation. If cavity depth is greater than the insulation nominal thickness, fix or strap the product to ensure the insulation is installed hard against the flooring or the ceiling lining. Cut into smaller pieces for smaller spaces and around penetrations to achieve efficient thermal performance. Refer to [NZS 4246](#) for installation guidelines.

Installation - Ceilings/Skillion Roofs/Membrane Roofs and Below Decks.

- 3.14 SINGLE LAYER BATTS - BETWEEN CEILING FRAMING
Friction fit insulation between framing members. Cut across the roll to fit nogs and small spaces around penetrations. Leave no gaps and maintain full thickness of insulation over the whole of the installation. Leave gap around metal flues to the manufacturer requirements.
- 3.15 SINGLE LAYER ROLLS - OVER CEILING FRAMING
Loose lay over ceiling framing and between truss chords. Fit securely around all penetrations, leave clearances where required. Cut ceiling roll as required.
- 3.16 DOUBLE LAYERED INSULATION - SINGLE LAYER BATTS WITH SINGLE LAYER ROLLS
Friction fit first layer of ceiling insulation roll parallel to and between ceiling framing members. Run a second layer of insulation roll at 90° to and over the first layer over framing members. Use a sharp craft knife to cut to required size to fit nogs and small spaces around penetrations. Leave no gaps and maintain full thickness of the insulation over the whole of the installation. Leave gap around metal flues to the manufacturer requirements.
- 3.17 CEILING INSULATION EDGE DETAIL
Where perimeter of ceiling space is too low to allow full depth of insulation plus the 25mm air gap to the underlay, provide reduced perimeter insulation to [NZS 4246.6.2](#) and maintain the 25mm gap.
- 3.18 BETWEEN RAFTERS (SKILLION ROOF) - INSULATION CLEARANCES
Friction fit insulation between joists/rafters. Use a sharp craft knife to cut to required size or around penetrations if required. Maintain a minimum clearance of 25mm between the insulation and the roofing underlay, to [NZS 4246](#) clause 6.2.10, except where a solid timber (or plywood) substrate is used under the roof cladding.
- 3.19 BELOW MEMBRANE ROOFS AND DECKS - INSULATION CLEARANCES
Friction fit insulation between joists/rafters. Use a sharp craft knife to cut to required size or around penetrations if required. Maintain a minimum clearance of 20mm between the underside of the substrate (plywood etc) and any insulation to [NZBC E2/AS1](#) clause 8.5.2

Installation - acoustic insulation

- 3.20 ACOUSTIC INSULATION - BATTS AND ROLLS
Friction fit batt, or roll, in place to completely fill the whole of the cavities, after the wall lining is fixed to one side of the partition. Slightly oversize to retain friction fit. Keep clean and undamaged until closed in. Close in as soon as possible after fixing.

Completion & Commissioning

- 3.21 COMPLETION MATTERS
Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.
Earthwool® glasswool insulation packaging is recyclable.

4 SELECTIONS

For further details on selections go to www.knaufinsulation.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

Underfloor - Thermal Insulation

- 4.1 EARTHWOOL® GLASSWOOL INSULATION: QUILTED UNDERFLOOR BATTS WITH WIND-WASH BARRIER

Location:	~
Brand:	Earthwool® glasswool insulation
R-value:	R 1.5
Thickness:	70 mm
Size:	470 x 2700

- 4.2 EARTHWOOL® GLASSWOOL INSULATION: UNDERFLOOR ROLLS WITH WIND-WASH BARRIER

Location:	~
Brand:	Earthwool® glasswool insulation
R-value:	R 1.8
Thickness:	75 mm
Size:	~

External Wall - Thermal Insulation

4.3 EARTHWOOL® GLASSWOOL INSULATION: EXTERNAL WALL BATTS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Thickness: ~ mm
 Size: ~

Internal Walls - Acoustic Insulation

4.4 EARTHWOOL® GLASSWOOL INSULATION BATTS - FOR TIMBER FRAMED INTERNAL WALLS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Density: ~
 Thickness: ~ mm
 Size: ~

4.5 EARTHWOOL® GLASSWOOL INSULATION ROLLS - FOR STEEL FRAMED INTERNAL WALLS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Density: ~
 Thickness: ~ mm
 Size: ~

Mid-Floor - Thermal and Acoustic Insulation

4.6 EARTHWOOL® GLASSWOOL INSULATION: MID-FLOOR BATTS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Density: ~
 Insulation category / type: ~
 Thickness: ~ mm
 Size: ~

4.7 EARTHWOOL® GLASSWOOL INSULATION: MID-FLOOR ROLLS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Density: ~
 Insulation category / type: ~
 Thickness: ~ mm
 Size: ~

Ceiling - Thermal Insulation

4.8 EARTHWOOL® GLASSWOOL INSULATION: CEILING BATTS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Thickness: ~ mm
 Size: ~

4.9 EARTHWOOL® GLASSWOOL INSULATION: CEILING ROLLS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Thickness: ~ mm
 Size: ~

4.10 EARTHWOOL® GLASSWOOL INSULATION: ROOF BLANKET

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Thickness: ~ mm
 Size: ~

Roof - Thermal Insulation

4.11 EARTHWOOL® GLASSWOOL INSULATION: SKILLION ROOF

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Thickness: ~ mm
 Size: ~

4.12 EARTHWOOL® GLASSWOOL INSULATION: MEMBRANE ROOF AND/OR BELOW DECKS

Location: ~
 Brand: Earthwool® glasswool insulation
 R-value: R ~
 Thickness: ~ mm
 Size: ~

WHERE TO USE GIB® WET AREA LININGS

In order to prolong the life expectancy of the space it is highly desirable to include wet area linings in situations where there is an increased risk of water or moisture damage. Applications include walls and ceilings in bath and shower rooms, and walls in laundries, toilets and kitchens.

BENEFITS

- Water resistant and durable linings help protect against water damage
- Proven substrate for paint, wallpaper, waterproofing membranes, tiles, sheet vinyl and rigid sheet shower linings
- Suitable for both residential and non-residential applications
- Dimensionally stable and an excellent substrate for ceramic tiles
- Conventional jointing methods
- Easy to cut and form openings
- Contains glass fibres and other additives to increase strength and fire resistance
- May be used in GIB® Bracing, GIB® Fire Rated and GIB Noise Control® Systems (see Compliance with the NZ Building Code, Clauses B1, C3 and G6). Consult the appropriate GIB® literature for installation details

HANDLING AND STORAGE

- GIB® plasterboard must be stored under cover, stacked flat and clear of the floor with sufficient support to avoid sagging
- GIB® plasterboard must be handled as a finishing material

LIMITATIONS

- GIB® wet area linings must not be used for bracing purposes in shower cubicles or above baths. For more information refer to page 9 of this manual
- Do not use GIB® wet area linings where exposed for extended periods to humidity levels above 90% RH, such as in group shower or steam rooms, or where exposed to moisture and chlorine rich environments such as in indoor swimming pools
- GIB® wet area linings used in a bathroom or other high humidity environment must not be directly applied to solid plaster (gypsum or cement), wood-based sheet linings or similar materials, masonry or concrete, without strapping or steel furring channels
- GIB® wet area linings must not be installed over a vapour barrier or a wall acting as a vapour barrier
- Cracked or damaged sheets must never be used
- GIB Aqualine® or GIB Toughline® Aqua must not be used in external applications
- GIB® plasterboard must not be exposed to temperatures in excess of 52°C for prolonged periods. Heat-generating devices may include halogen lighting, cooking elements, radiant heating, solid fuel exhausts and fire surrounds. Consult the appliance manufacturer for installation details

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications **APPROVED** in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chris

Table 1: GIB® Wet Area linings sheet dimensions and weights

Product	Sheet face colour	Thickness (mm)	Sheet width (mm)	Edge Type	Sheet length (mm)						Max. Weight (kg/m²)
					2400	2450	2700	3000	3600	4800	
GIB Aqualine®	Green	10	1200	TE/TE							8.0
			1200	TE/SE							
			1350	TE/SE							
		13	1200	TE/TE							11.0
GIB Toughline® Aqua	Mauve	13	1200	TE/TE							11.4
GIB Weatherline®	Purple	10	1200	SE/SE							9.0
		13	1200	SE/SE							11.5

BOARD SUBSTITUTION OPTIONS

Acceptable GIB Aqualine® alternatives	
10mm GIB Aqualine® can be replaced with:	10mm GIB Weatherline® 13mm GIB Toughline® Aqua
13mm GIB Aqualine® can be replaced with:	13mm GIB Weatherline® 13mm GIB Toughline® Aqua

GIB® Wet Area System construction details in this manual refer to the use of GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® sheets may also be used in place of GIB Aqualine®.

FLEXIBLE SHEET VINYL – SHOWERS AND OTHER WET AREAS

- GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® are suitable substrates for flexible vinyl wall finishes in wet areas of residential, commercial or institutional buildings
- Framing requirements and installation procedures are presented in this literature, except that the lining gap at the floor is no more than 5mm when a pencil cove detail is used
- The installation of galvanised steel reinforcing angles behind internal lining corners is recommended for sheet vinyl applications in showers or shower over bath situations
- The lining must be jointed and stopped to a paint quality finish (Level 4) – trowel marks can telegraph even through a commercial grade 2mm vinyl
- A commercial grade vinyl is recommended in commercial or institutional bathrooms and showers
- In areas directly exposed to liquid water, all joints in flexible sheet vinyl must be heat welded
- Installation of flexible vinyl must be carried out strictly in accordance with the specifications provided by the suppliers/ manufacturers of the vinyl

RIGID SHEET SHOWER LININGS

- The wall surface must be free of dust before installation of the lining
- Avoid lining joints as much as possible and where necessary flush with plaster to achieve a level surface
- Do not pre-seal or paint areas which are to be covered by the rigid shower linings
- The suppliers of thin (usually 2-3mm) and rigid acrylic shower linings commonly recommend direct adhesive fixing to wall linings using solvent-based adhesives
- Care must be taken to ensure that rooms are adequately ventilated
- Water temperature changes will cause movement of the thin acrylic sheet, which in turn will stress the adhesive and wall lining substrate
- Consult the supplier of the shower lining for full installation details
- Suppliers of rigid sheet acrylic shower linings recommend a minimum of 24 hours for the adhesive to cure fully prior to the shower being put into service

WATERPROOF MEMBRANE SYSTEMS AND TILING

- A waterproof membrane system must be applied to lining materials used as a substrate for ceramic tiles in a shower or shower over bath situation
- The wall surface in a shower or shower over bath situation is not complete and ready for tiling until coated with a waterproof membrane system over the lining and once penetrations for shower mixers, taps and associated fittings are sealed
- The installation of galvanised steel reinforcing angles behind internal lining corners is required for tiled wall applications in showers or shower over bath situations
- In-situ waterproofing membrane materials manufactured to AS/NZS 4858:2004 “Wet Area Membranes” are recommended and must be applied to manufacturer’s recommendations. Typically, these types of membrane systems are not suitable for paint and wallpaper finishes
- Waterproof membrane systems must be fully cured and dry prior to application of tiling adhesives
- Preformed sheet membranes are also available and may be more suitable where curing times or specialist skills are an issue
- The details shown in this manual are generic in nature. For accurate detailing, follow the specifications provided by the supplier of the proprietary waterproof membrane system

For further information on tiling consult the BRANZ Good Practice Guide – Tiling.

PENETRATIONS AND SEALANTS

As leaks and water ingress typically occur at junctions between building elements and at penetrations, it is essential that particular attention is given to these details at the time of installation. Lack of attention to detail can result in water damage that could remain undetected for a long time.

- Ensure that all cut-outs for pipe penetrations are made neatly, and slightly oversize, with a hole saw. These penetrations should be of a diameter no more than 12mm greater than that of the pipe
- Shower mixer and tap penetrations should be sealed with an appropriate flange system to prevent the passage of moisture into the wall cavity. Refer to New Zealand Building Code Clause E3 Internal Moisture November 2020 for examples of acceptable options
- Sealants should be of a mould inhibiting type and be paintable. Neutral cure silicones will generally meet these requirements
- Surfaces should be dry and free from dust before application, a minimum of a 4mm joint width provided and the depth should not exceed the width
- Apply a bead of sealant to the full depth of the lining in the following locations:
 - Around all tap/pipe bodies
 - The gap between the bath rim and the bottom edge of the wet area lining
 - Between the upstand of preformed shower bases and the bottom edge of the lining
 - Where an impervious junction is required at the floor/wall line, carefully seal the gap between the bottom edge of the board and the finished floor. Leave a 5-10mm gap at the bottom of the wall lining for this purpose, ensuring the gap is free from dirt and dust
- Do not locate shower heads or taps on fire rated or intertenancy walls. Should this be unavoidable always use tested and approved proprietary penetration seals

RENOVATIONS

Bathrooms, kitchens and laundries are the most renovated rooms in the house, partly due to fashion considerations and partly because of damage sustained by ingress of water and moisture.

When renovating these rooms it is often easier and more cost-effective to remove the existing linings and replace them. This allows for a new start in the room and offers sound substrates for new surfaces such as tiling and painting, where otherwise flaking paint or damaged plasterboard may compromise good and sound finish or practice. At the very least re-lining will:

- Allow for inspection of framing where damage may have occurred and provide the opportunity to repair such damage
- Allow plumbing and electrics to be checked and altered or replaced where required
- Provide the opportunity to install thermal and acoustic insulation, water-resistant linings, and propriety plumbing penetration flange systems where appropriate
- Make the job easier

MAINTENANCE

Lack of maintenance is frequently the cause of premature and often expensive failure of components and building elements within wet areas.

It is important to regularly inspect and repair any potential problem before it becomes expensive to reinstate. Good maintenance should include:

- Ongoing ventilation. At the very least, good passive ventilation (e.g. window vents); but good active ventilation (e.g. extraction fans) of an appropriate size for the room is recommended
- Impervious coatings and surfaces should be checked for wear and damage and maintained and re-coated before ingress of water to the substrate occurs
- Regular cleaning with appropriate cleaners so that build-up of matter, such as mould, is well controlled
- Sealants at junctions and penetrations should be checked for adhesion on a regular basis and replaced where adhesion failure to substrates occurs
- Where pipe leaks have become evident, however small, they should be repaired promptly and any area around such leaks dried out completely before any other repairs are carried out

Compliance with the NZ Building Code

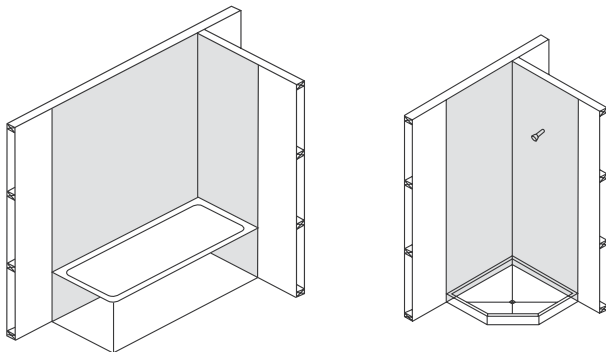
STRUCTURE – CLAUSE B1

The design and material specification for steel and timber framing used in GIB® Wet Area systems must be in accordance with the performance requirements of NZ Building Code Clause B1 (Structure).

Bracing elements are required to have a durability of 50 years. GIB® bracing elements are not to be located in shower cubicles or behind baths because of durability requirements, the likelihood of renovation, and practical issues associated with fixing bracing elements to perimeter framing members, such as at bath and shower tray locations.

Otherwise, GIB® Bracing Systems can be used in water-splash areas, provided these are maintained impervious for the life of the building.

GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® can be used in place of GIB® Standard plasterboard in GIB® bracing elements. They can also be used in place of GIB Braceline® in GIB® bracing elements 900mm or longer, provided the perimeter of the element is fixed with GIB® Grabber 32mm x 6g screws at 100mm centres, using the GIB Braceline® corner fixing pattern. Refer to the GIB® Bracing System literature.



No bracing in the shaded areas.

DURABILITY – CLAUSE B2

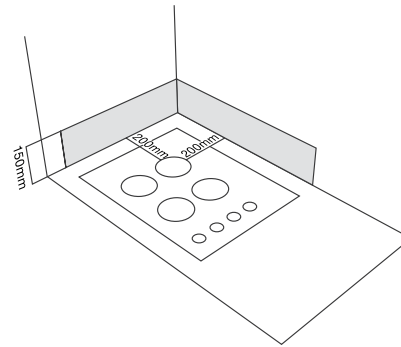
When installed and maintained in accordance with this literature, GIB® Wet Area systems tiled or vinyl covered have a serviceable life of at least 15 years. They comply with the requirements of NZ Building Code Clause B2 (Durability) for use in wet areas directly exposed to liquid water, e.g. showers, showers over baths and splash-backs.

When used as a general wet area lining and maintained under normal dry internal conditions, GIB® Wet Area Systems have a serviceable life of at least 50 years and comply with NZ Building Code Clause B2 (Durability) for use within toilets, kitchens, bathrooms and laundries not directly exposed to liquid water.

FIRE AFFECTING AREAS BEYOND THE SOURCE – CLAUSE C3

GIB® Fire Rated Systems provide passive fire protection in accordance with the requirements of NZ Building Code Clause C3. When GIB Aqualine® or GIB Toughline® Aqua is substituted into fire rated systems in place of the equivalent thickness GIB Fyrelite®, the Fire Resistance Rating (FRR) of that system will be maintained.

The protection of combustible surfaces surrounding gas cooking appliances is covered by the latest version of AS/NZS 5601.1.



As a guide the following options are acceptable for wall surfaces within 200mm of the periphery of a gas element to a height of 150mm above the element for the full dimension (width and depth) of the cooktop surface area:

- 5mm tiles on GIB® plasterboard
- 5mm toughened glass on GIB® plasterboard
- or any system that can be demonstrated to meet the specific requirements of AS/NZS 5601.1

GIB® plasterboard products must not be exposed to temperatures in excess of 52°C for sustained periods. Check with the appliance manufacturer that this requirement will be met. It would be unusual for surfaces outside 200mm to exceed 52°C for sustained periods.

INTERNAL MOISTURE – CLAUSE E3

The New Zealand Building Code Clauses that relate to wall surfaces are;

E3.3.4 - Wall surfaces adjacent to sanitary fixtures or sanitary appliances must be impervious and easily cleaned.

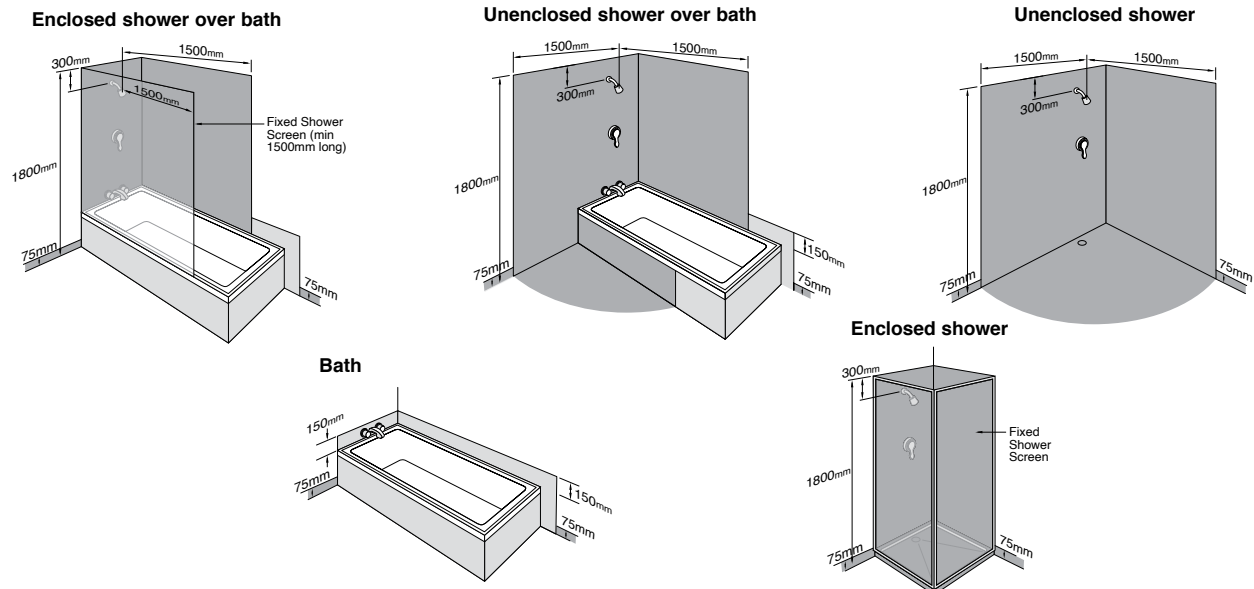
E3.3.5 - Surfaces of the building elements likely to be splashed or become contaminated in the course of the intended use of the building, must be impervious and easily cleaned.

E3.3.6 - Surfaces of building elements likely to be splashed must be constructed in a way that prevents water splash from penetrating behind linings or into concealed spaces.

New Zealand Building Code Acceptable Solution E3/AS2 substantially refers to the Waterproof Membrane Association Incorporated (WMAI) Code of Practice for Internal Wet Area Membrane Systems (IWAM), August 2020.

The IWAM Code of Practice refers to wet area membranes and over-surfaces that are easy to clean and suggests an extent as outlined below for a typical bathroom application. For further details refer to the IWAM Code of Practice which also lists suitable rigid sheet materials and tiling membranes.

Shaded areas in the diagrams below represent the minimum extent of wall surfaces requiring impervious sheet materials or waterproof membrane systems prior to tiling.



HAZARDOUS BUILDING MATERIALS – CLAUSE F2

At no stage during its serviceable life does GIB Aqualine® constitute a health hazard. It therefore meets the provisions of NZ Building Code Clause F2 (Hazardous Building Materials). Dust resulting from the sanding of stopping compounds may be a respiratory irritant and the use of a suitable facemask is recommended.

VENTILATION – CLAUSE G4

NZ Building Code Clause G4 (Ventilation) requires buildings to have a means of collecting or otherwise removing steam generated from laundering, utensil washing, bathing or showering. To prolong the life of interior linings and surface finishes and to minimise the risk of moisture related problems such as condensation and mould growth, adequate heating, thermal insulation and mechanical ventilation must be provided in kitchens, bathrooms and laundries.

AIRBORNE AND IMPACT SOUND – CLAUSE G6

GIB® Noise Control Systems can be used to provide ratings for Sound Transmission Class (STC) and Impact Insulation Class (IIC) in accordance with the requirements of NZ Building Code Clause G6 (Airborne and Impact Sound). When GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline® is substituted into GIB® Noise Control systems in place of the equivalent thickness GIB® Standard plasterboard or GIB Fyrelite®, the STC and IIC rating of that system will be maintained. When GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline® is substituted in place of the equivalent thickness GIB Noiseline®, a small performance loss may occur. For further information refer to the GIB Noise Control® Systems literature or contact the GIB® Helpline 0800 100 442.

TIMBER WALL FRAMING

Framing dimensions must comply with the requirements of NZS 3604:2011.

- The moisture content of timber framing shall be 18% or less at the time of lining
- Studs shall be spaced at 600mm centres maximum for both 10mm and 13mm GIB® plasterboard
- Nogs to be evenly spaced with a maximum spacing of 1350mm. Alternatively, nogs may be staggered 150mm maximum either side of a horizontal joint line
- Nogs are not required behind horizontal joints except in shower situations or specific fire or noise control systems

FASTENERS

- Minimum 32mm x 6g GIB® Grabber® High Thread screws.

FASTENER CENTRES

- 300mm centres to top and bottom plates and to perimeter studs
- Single fasteners to each stud where the horizontal joint crosses the studs

- Place fasteners 12mm from sheet edges and 18mm from sheet ends
- Daubs of GIBFix® adhesive at 300mm centres to intermediate studs
- Do not place adhesive at sheet edges or under fasteners. Sheet edges at door or window openings can be adhesive fixed unless forming part of the perimeter of a bracing element

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

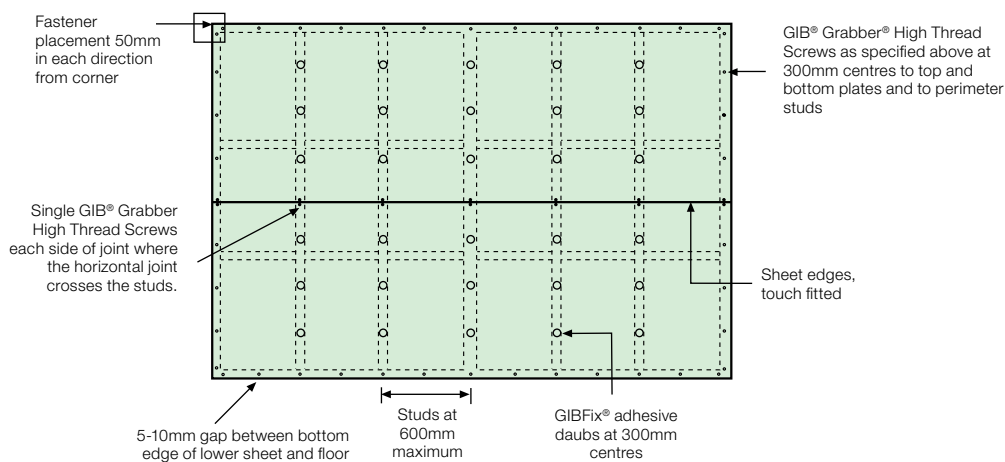
LINING

- Use minimum 10mm GIB® plasterboard
- Install the sheets leaving a 5-10mm gap at the floor line to allow for movement of the framing members and to allow for cleaning dirt and rubbish before sealing
- Sheets to be touch fitted.

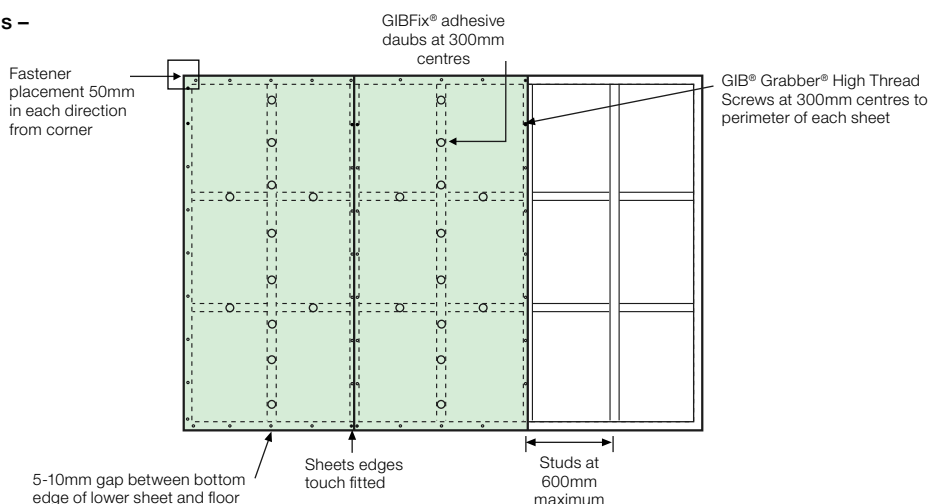
JOINTING

- Jointing shall be carried out in accordance with the instructions in the GIB® Site Guide.

Fastening the Linings – Horizontal Fixing Only



Fastening the Linings – Vertical Fixing Only



STEEL WALL FRAMING

The minimum sheet thickness for fixing on light gauge 0.55mm base metal thickness (BMT) steel framing is 13mm GIB® plasterboard. For bracing, noise control or fire rating applications consult the relevant GIB® technical publication.

Steel frame for residential construction is in accordance with NZBC B1/AS1 9.1 NASH Standard Part 2 Light Steel Framed Buildings, or by specific design. 10mm GIB plasterboard is commonly used on minimum 0.75mm BMT residential steel framing.

FASTENERS

- Minimum 25mm x 6g GIB® Grabber® Self Tapping Screws.

FASTENER CENTRES

- 300mm centres to top and bottom channels and to end studs
- Single screws to each stud where the horizontal joint crosses the studs
- Place fasteners 12mm from sheet edges and 18mm from sheet ends

- Daubs of GIBFix® All-Bond adhesive or screws at 300mm centres to intermediate studs
- Do not place adhesive at sheet edges or under fasteners.
- Sheet edges at door or window openings can be adhesive fixed.

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

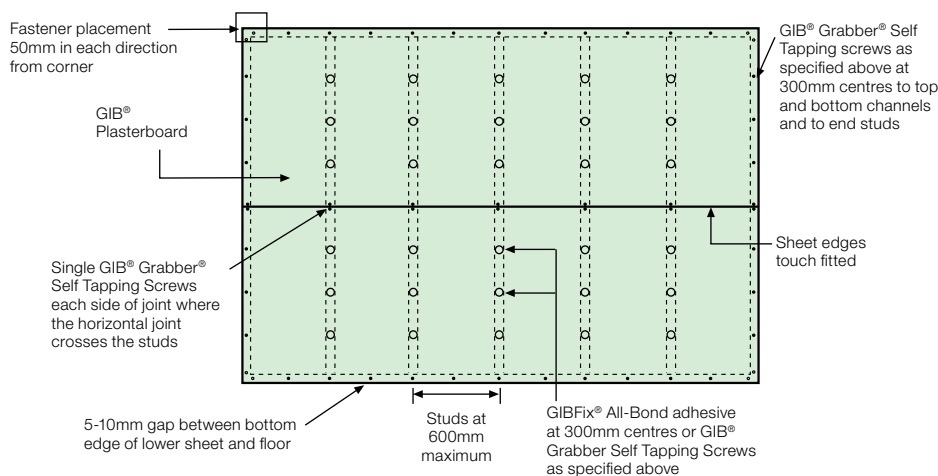
LINING

- Lay the sheets, leaving a 5-10mm gap at the floor line.
Note: If friction fitted steel studs have been used, sheets must be fitted hard to the floor. Ensure floor is cured and dry
- Sheets to be touch fitted.

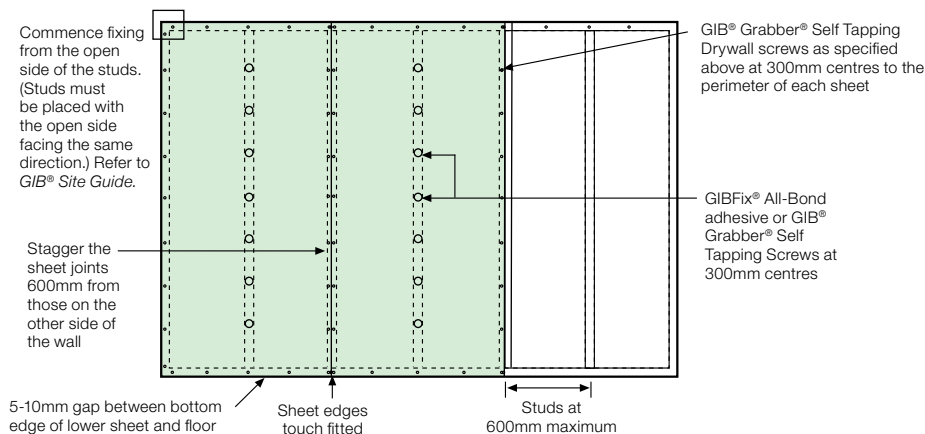
JOINTING

- Jointing shall be carried out in accordance with the instructions in the GIB® Site Guide

Fastening the Linings – Horizontal Fixing Only



Fastening the Linings – Vertical Fixing Only



TIMBER WALL FRAMING

Framing dimensions and spacing must be appropriate for the tile weight and comply with the requirements of NZS 3604:2011 Timber Framed Buildings, or relevant specific design Standard.

NOGS

For impact protection in shower cubicles or shower over bath situations it is important that all sheet joints are made on solid framing. This may require vertical fixing or the installation of additional nogs. Also provide nogs:

- Adjacent to each pipe penetration and behind sink and tub flashings
- Between all studs above bath flanges and preformed shower bases

CORNER REINFORCING

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum
- 32 x 32 x 0.55mm NZ18 or 45 x 45 x 0.55mm GIBFix® Angle. Angles need to be temporarily held in place until secured by the lining fixings.

FASTENERS

- Minimum 32mm x 6g GIB® Grabber® High Thread Screws

FASTENER CENTRES

- 150mm centres to perimeter of wall and all intermediate studs
- Adhesive is not to be used in place of mechanical fasteners
- Place fasteners 12mm from sheet edges and 18mm from sheet ends

- Single fasteners to each stud where the horizontal joint crosses the studs
- Where relevant, fastener lengths must comply with the requirements of GIB® Fire Rated Systems or GIB® Noise Control Systems

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

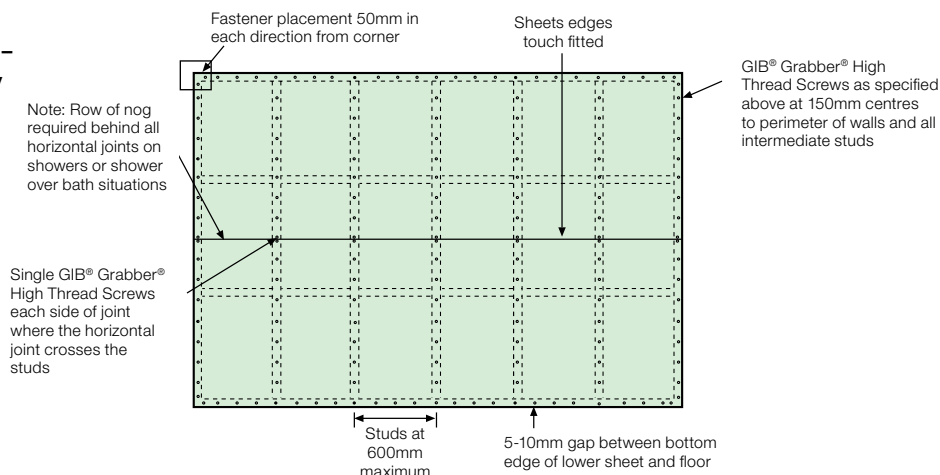
LINING AND TILE WEIGHTS

- Use minimum 10mm GIB® plasterboard
- For maximum permitted tile weights refer to pg 16 of this manual
- GIB® Wet Area linings may be fixed vertically or horizontally
- Sheets are touch fitted
- Provide a 5-10mm gap at the wall/floor junction and between the bottom edge of the lining and any bath rim or preformed shower base to allow for placement of sealant
- Do not tile on the resilient side of GIB Rail® or STWC Acoustic Clip (ST001) and channel noise control system
- GIB® Wet Area linings are suitable for tiling full height of walls, but if a wall is to be partially tiled (e.g. half high), only the area of wall under the tiles needs to be fixed as required for tiled areas. The remainder of the wall may be fixed as for non-tiled areas

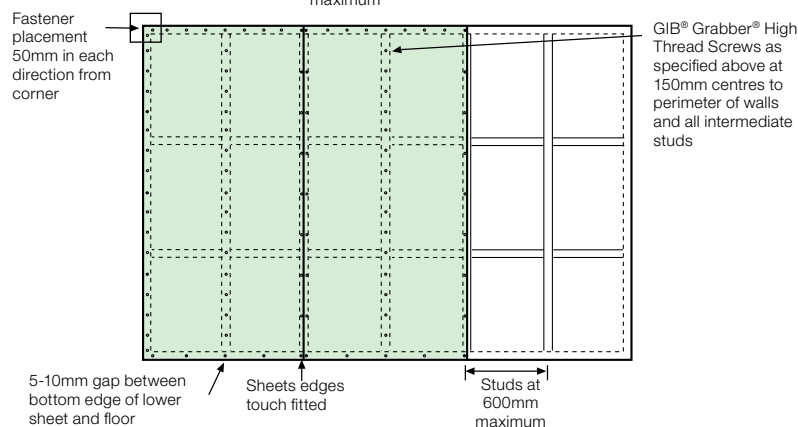
JOINTING

- Jointing shall be carried out in accordance with the instructions of the GIB® Site Guide

Fastening the Linings – Horizontal Fixing Only



Fastening the Linings – Vertical Fixing Only



STEEL WALL FRAMING

Framing dimensions and spacing must be appropriate for the tile weight and comply with the requirements of NASH Standard Part 2:2019 Light Steel Framed Buildings, or relevant specific design Standard.

- Linings are placed hard to floor, bedded into a sealant bead
- Steel framing for tiling to have a minimum base metal thickness (BMT) of 0.75mm

NOGS

For impact protection in shower cubicles or shower over bath situations it is important that all sheet joints are made on solid framing. This may require vertical fixing or the installation of additional nogs. Also provide nogs:

- Adjacent to each pipe penetration and behind sink and tub flashings
- Between all studs above bath flanges and preformed shower bases

CORNER REINFORCING

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum
- 32 x 32 x 0.55mm NZ18 or 45 x 45 x 0.55mm GIBFix® Angle. Angles need to be temporarily held in place until secured by the lining fixings

FASTENERS

- Minimum 32mm x 6g GIB® Grabber® Self Tapper screws

FASTENER CENTRES

- 150mm centres to perimeter of wall and all intermediate studs
- Adhesive is not to be used in place of mechanical fasteners
- Single screws to each stud where the horizontal joint crosses the studs
- Place fasteners 12mm from sheet edges and 18mm from sheet ends.

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

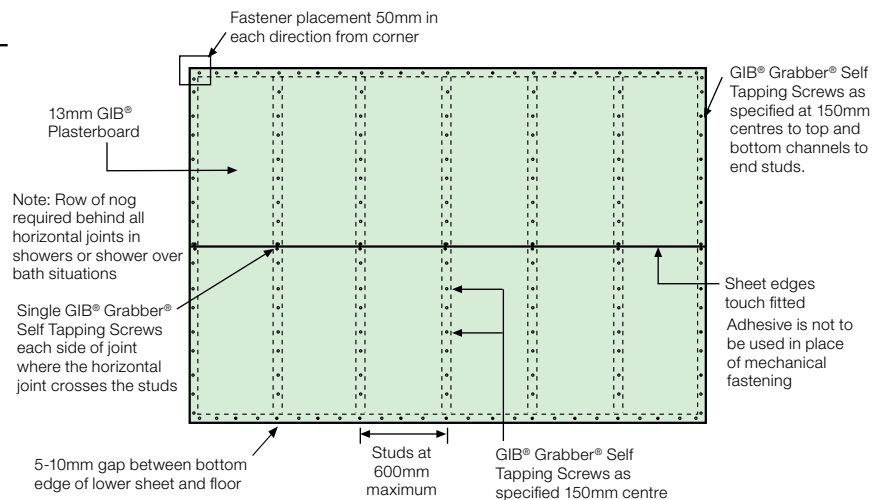
LINING AND TILE WEIGHTS

- Use minimum 13mm GIB® plasterboard
- For maximum permitted tile weights refer to pg 16 of this manual
- GIB® Wet Area linings may be fixed vertically or horizontally
- Sheets are touch fitted
- Provide a 5-10mm gap at the wall/floor junction and between the bottom edge of the lining and any bath rim or preformed shower base to allow for placement of sealant
- Do not tile on the resilient side of GIB Rail® or STWC Acoustic Clip (ST001) and channel noise control system
- GIB® Wet Area linings are suitable for tiling full height of walls, but if a wall is to be partially tiled (e.g. half high), only the area of wall under the tiles needs to be fixed as required for tiled areas. The remainder of the wall may be fixed as for non-tiled areas

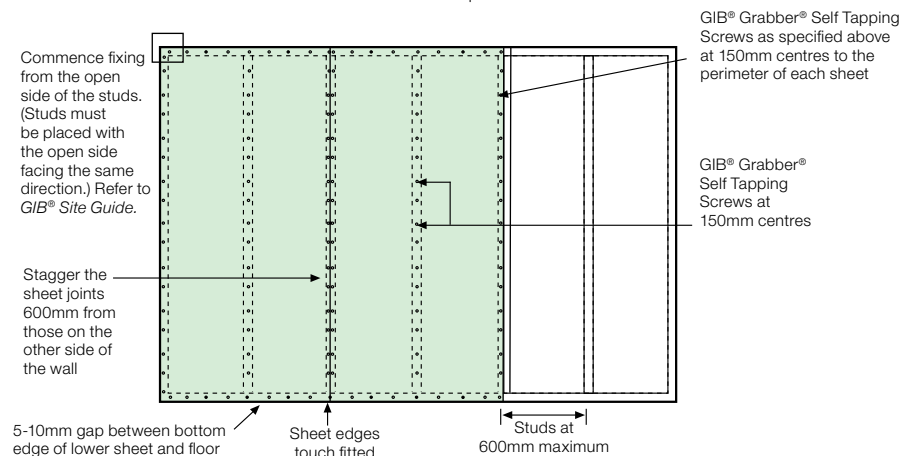
JOINTING

- Jointing shall be carried out in accordance with the instructions of the GIB® Site Guide

Fastening the Linings – Horizontal Fixing Only



Fastening the Linings – Vertical Fixing Only

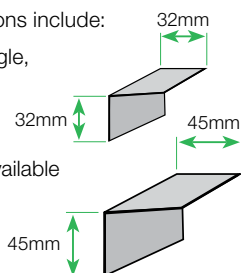


METAL ANGLES FOR TILED INTERNAL CORNERS

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum 32 x 32 x 0.55mm galvanised metal angle.

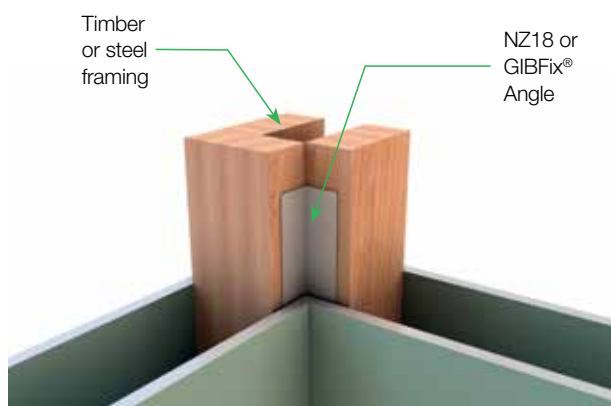
- Suitable GIB® metal angle options include:

- GIB® Rondo® NZ18 metal angle, available length: 3.0m



- GIBFix® Angle metal angle, available lengths: 2.4m and 2.7m

- Angles need to be temporarily held in place until secured by the lining fixings
- Minimum height of the metal angle is 1800mm



WATERPROOF MEMBRANE SYSTEMS

A waterproof membrane system must be applied to all lining materials used as a substrate for ceramic tiles in a shower or shower over a bath application, or any other tiled application exposed to frequent water splash.

For further information see p10.

TILES AND TILE WEIGHTS

In areas likely to be directly exposed to water, tiles may be ceramic, porcelain or stone must comply with the over-surface finish requirements of the IWAM Code of Practice and be bedded with a suitable tile adhesive on the waterproof membrane system. See page 10 for the minimum extent of wall surfaces requiring impervious sheet materials or waterproof membrane systems prior to tiling.

Smaller mosaic tiles are often lighter, but the integrity of grout joints might be more prone to impact, whilst heavier tiles are larger and have less and deeper grout and sealant joints. For more information also see AS 3958:2007 Ceramic tiles – Guide to the installation of ceramic tiles.

Table 2: Recommended maximum tile weights

Maximum Tile Weights for GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline®			
Stud Centre (maximum)	Fasteners Centre (maximum)	Lining Thickness	Tile Weight
600mm maximum	150mm maximum	10mm	26kg/m ²
		13mm	40kg/m ²

ADHESIVE AND GROUT WEIGHTS

The weight of adhesive and grout can vary depending on the type of tile and the installation process used. The maximum tile weights stated in table 2 are conservative and refer to the tile weight excluding grout and adhesive used. An additional 3kg/m² has been factored into tile adhesion testing on top of the above stated tile weights to account for adhesive and grout weight used during the installation of the tile.

CEILING FRAMING

Framing dimensions and spacing must comply with the requirements of NZS 3604:2011, NASH for steel or relevant NZ Standard.

For noise control or fire rating applications consult the relevant GIB® technical publication.

FASTENERS

- Steel battens – 25mm x 6g GIB® Grabber® Self Tapping screws
- Timber battens or Joists – 32mm x 6g GIB® Grabber® High Thread screws

ADHESIVES

- Steel battens - GIBFix® All-Bond
- Timber battens - GIBFix® All-Bond or GIBFix® One

FASTENERS CENTRES

- Single screws to the edges and centre of the sheets across each batten
- Single screw at 600mm maximum to the perimeter of the ceiling
- Screws to be 12mm from sheet edges
- Daubs of adhesive at 200mm centres between the screws
- Do not place adhesive at sheet edges or under fasteners, this may lead to screw pops

LINING

- The lining shall be fixed at right angles to the battens or joists
- Commence fixing from the centre of the sheets outwards.
- Sheets to be touch fitted
- Use long length sheets to minimise sheet end butt joints.
- Back-block sheet end butt joints
- See GIB® Site Guide for sheet edge backblocking requirements

BATTEN SPACINGS

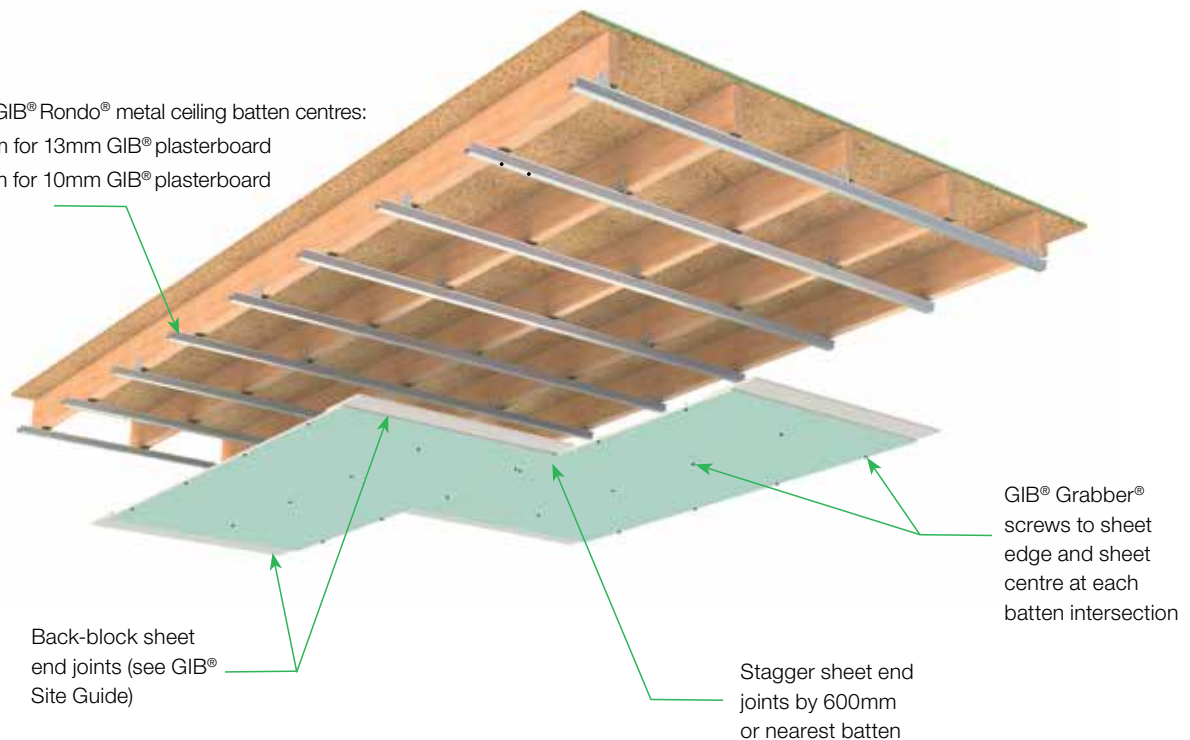
- 13mm GIB® plasterboard – 600mm centres maximum
- 10mm GIB® plasterboard – 450mm centres maximum

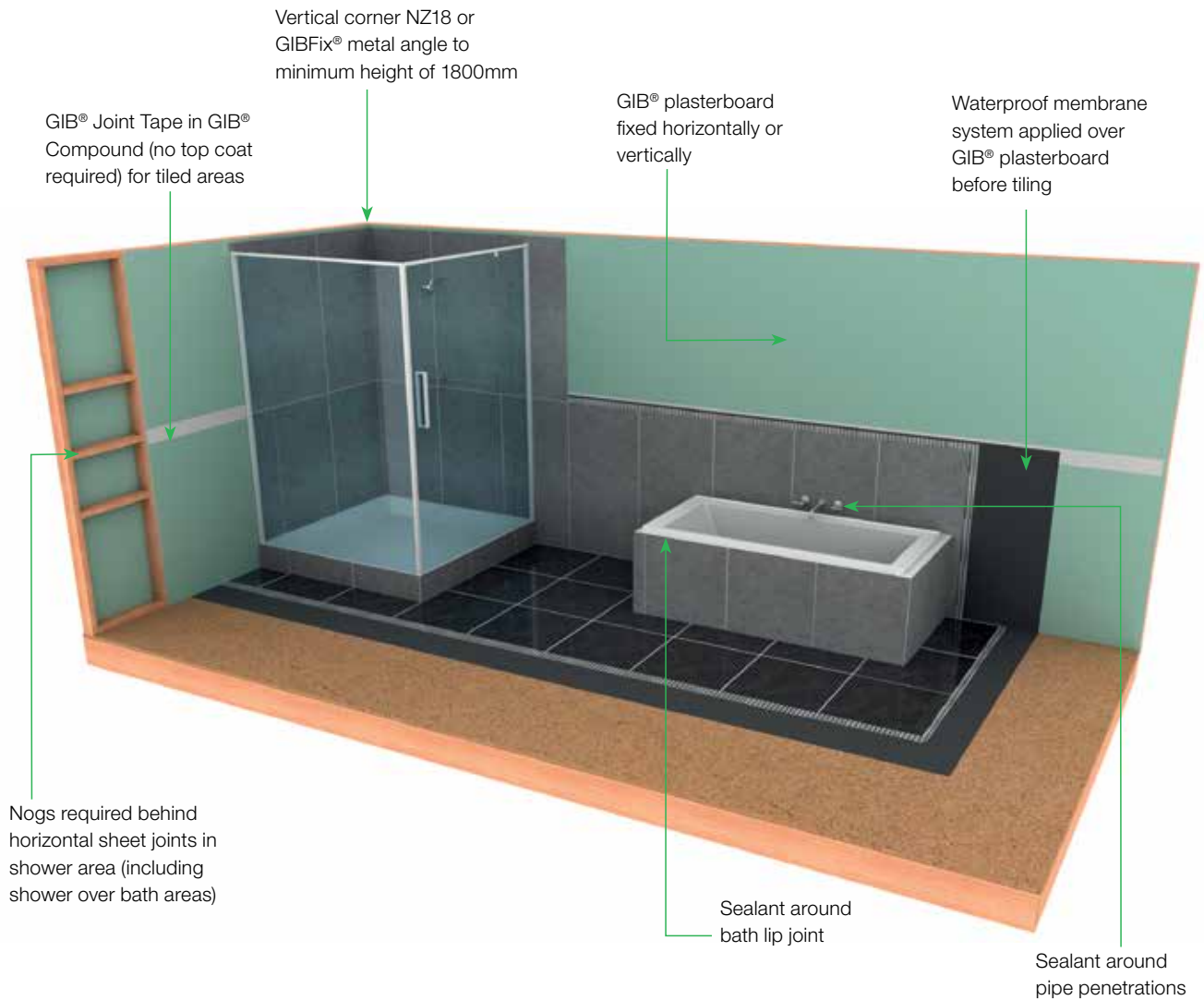
JOINTING

- All sheet joints must be paper tape reinforced and stopped in accordance with instructions in the GIB® Site Guide
- Do not fix tiles to GIB® plasterboard ceilings

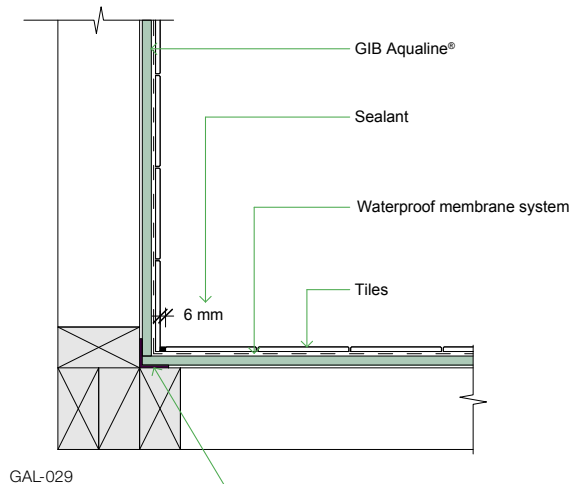
Maximum GIB® Rondo® metal ceiling batten centres:

- 600mm for 13mm GIB® plasterboard
- 450mm for 10mm GIB® plasterboard



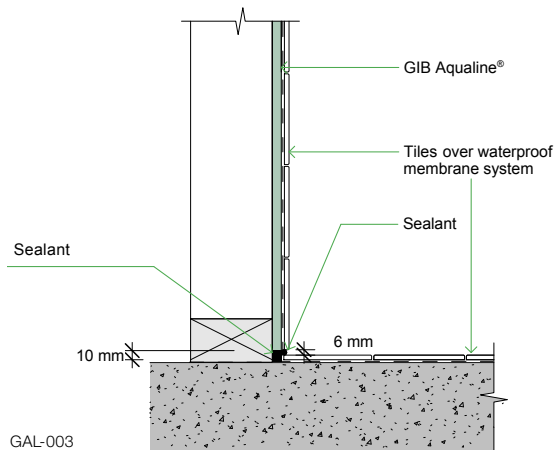


A: TILED INTERNAL CORNER

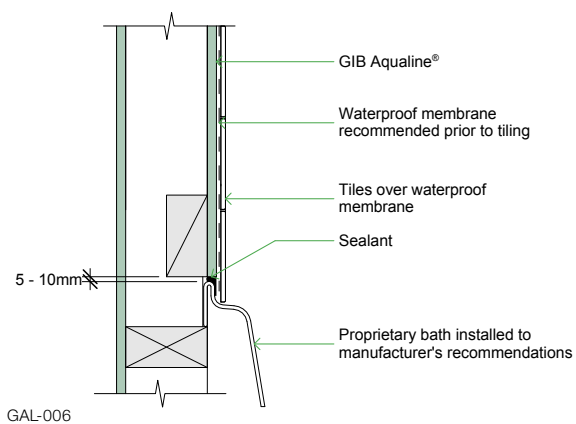


32 x 32 x 0.55mm vertical fixed galvanised steel angle NZ18 or GIBFix® Angle

B: CERAMIC FLOOR LINING JUNCTION



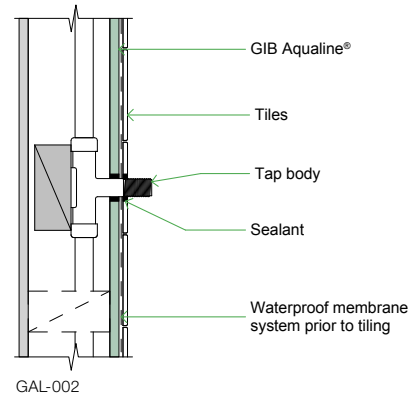
C: BATH LINING JUNCTION



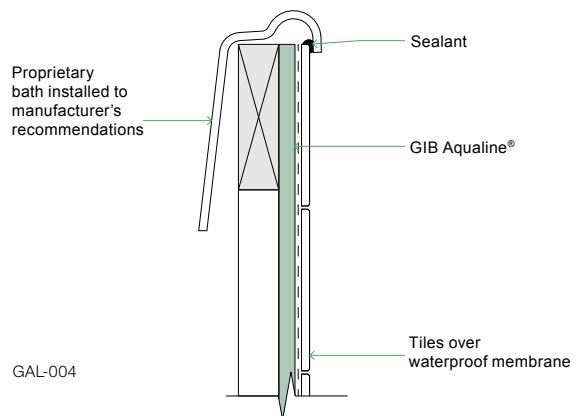
G: SHOWER MIXER PENETRATION IN WET WALL LININGS

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

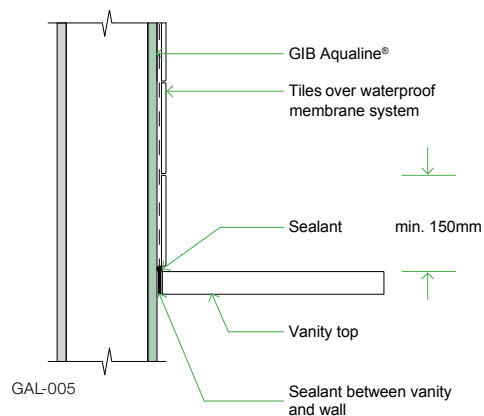
D: SEALING WET AREA PENETRATION



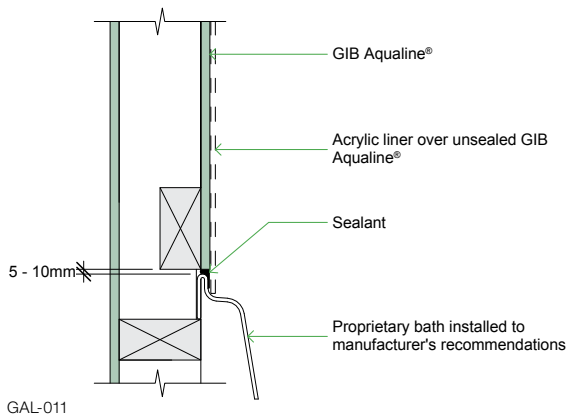
E: BATH CRADLE LINING DETAIL



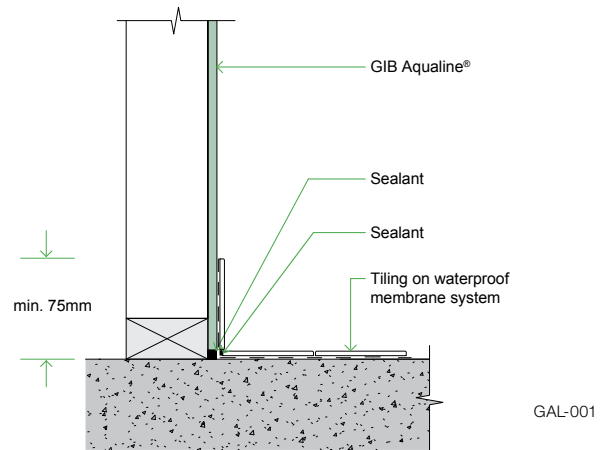
F: VANITY TOP LINING JUNCTION



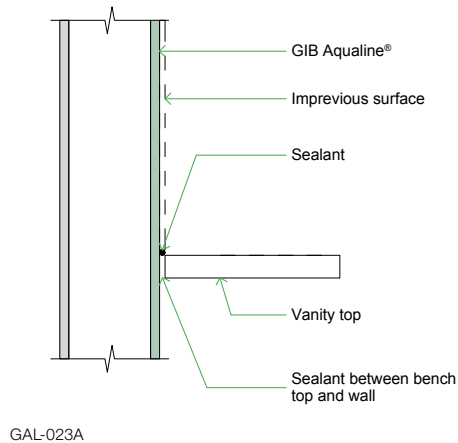
A: BATH LINING JUNCTION



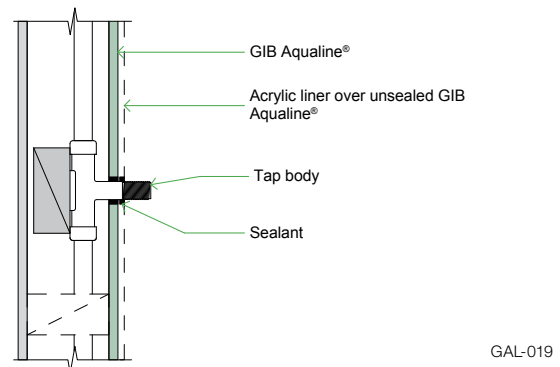
D: CERAMIC FLOOR SKIRTING LINING JUNCTION



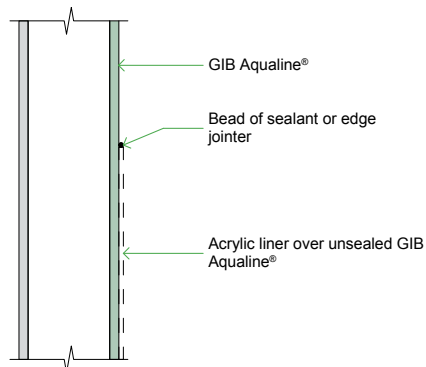
B: VANITY TOP LINING JUNCTION



E: SEALING SEMI WET AREA PENETRATION



C: UNSEALED PLASTERBOARD LINING

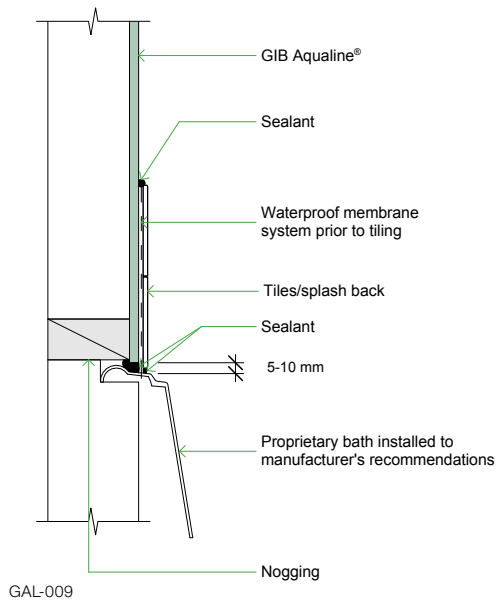


F: SHOWER MIXER PENETRATION IN WET WALL LININGS

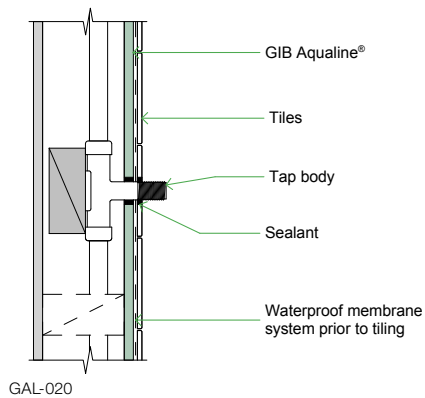
Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



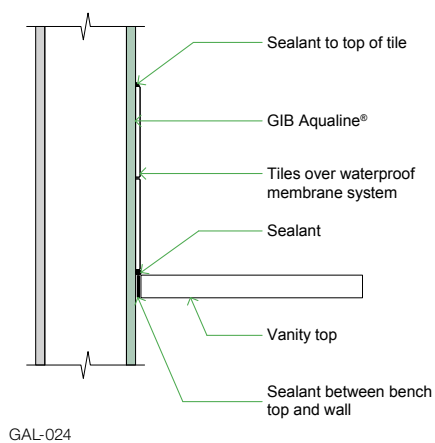
A: BATH LINING JUNCTION



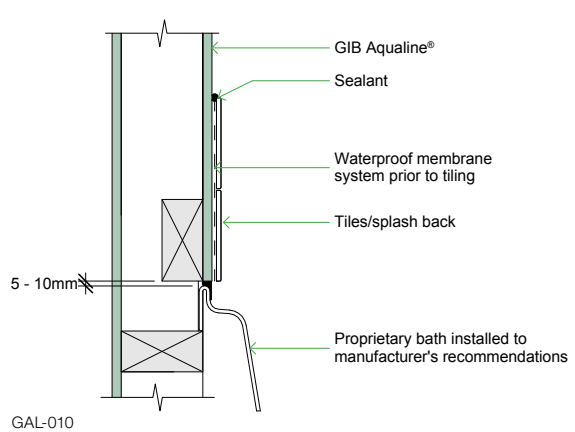
B: SEALING SEMI WET AREA PENETRATION



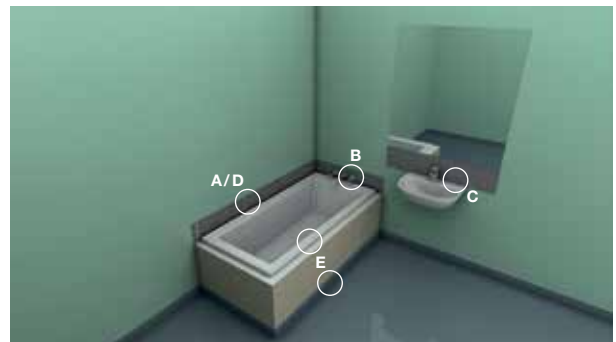
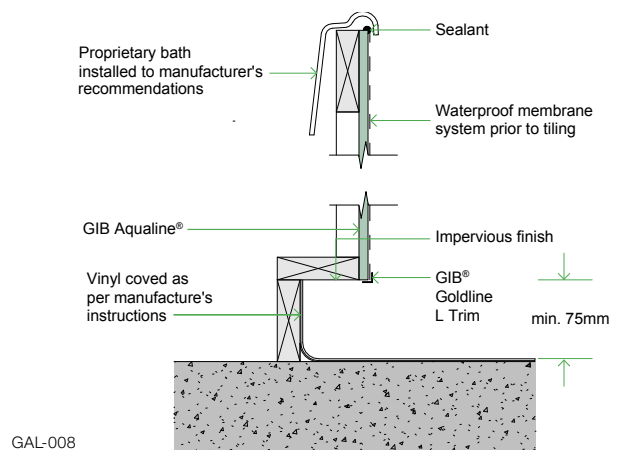
C: VANITY TOP LINING JUNCTION



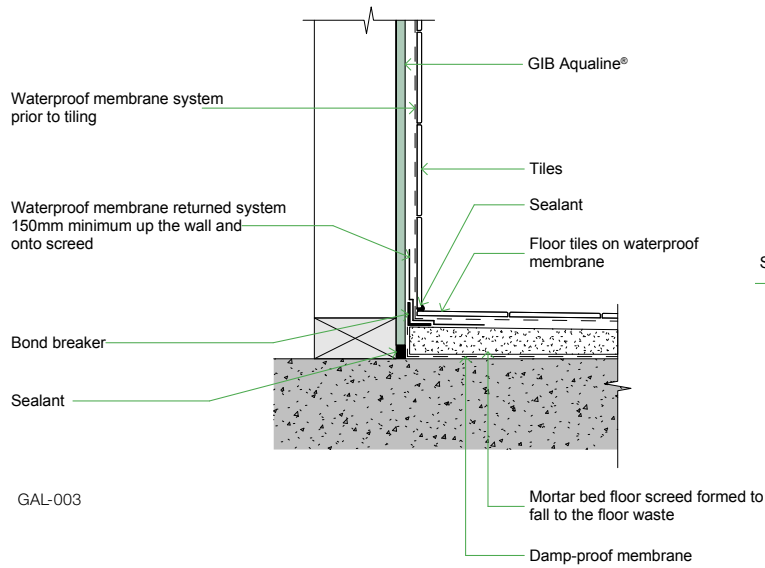
D: BATH LINING JUNCTION



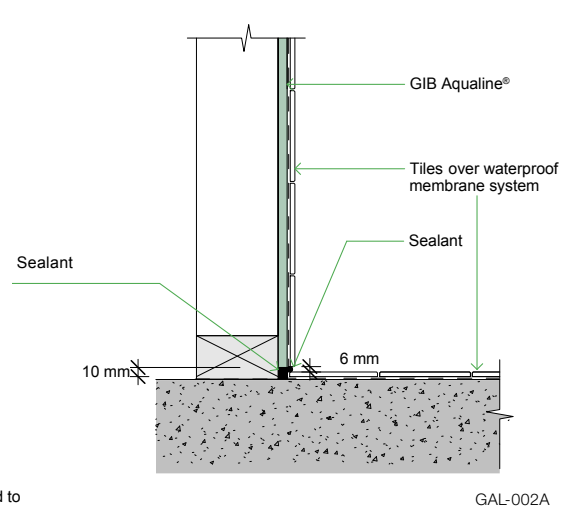
E: CRADLE VINYL LINING JUNCTION



A: MORTAR UNDER CERAMIC FLOOR LINING JUNCTION



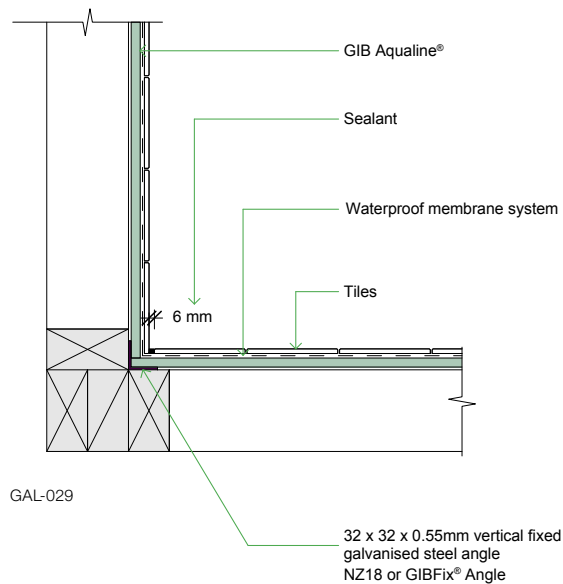
C: CERAMIC FLOOR LINING JUNCTION



PREFORMED SHOWER BASE JUNCTIONS

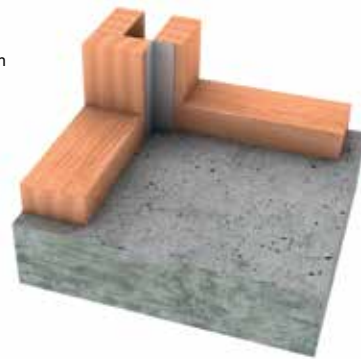
Refer to the shower base manufacturer for proprietary shower tray installation detailing including wet wall lining junction detailing.

B: TILED INTERNAL CORNER



D: TILED INTERNAL CORNER METAL ANGLE POSITION

Refer to page 16 of this publication for specification and installation guidance.

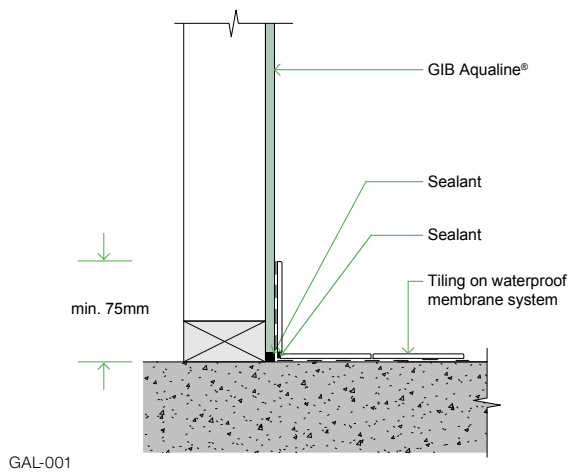


E: SHOWER MIXER PENETRATION IN WET WALL LININGS

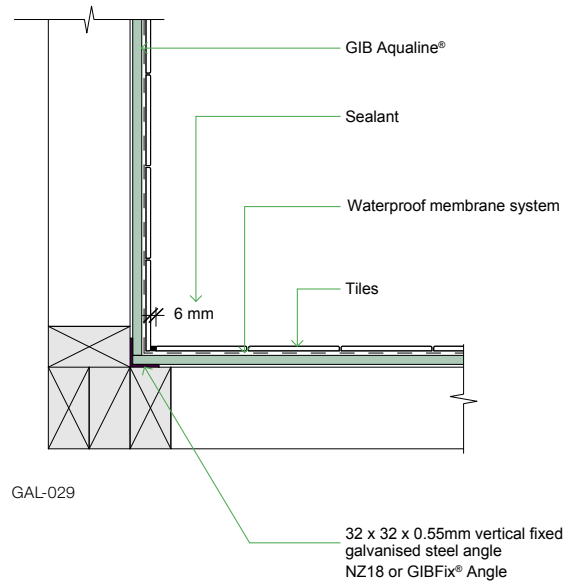
Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



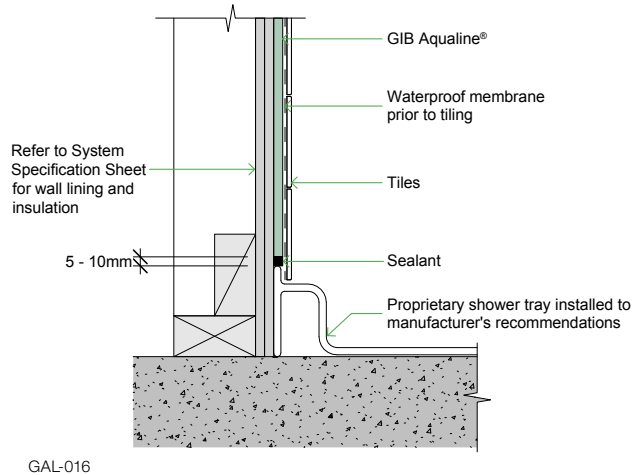
A: CERAMIC FLOOR SKIRTING LINING JUNCTION



C: TILED INTERNAL CORNER

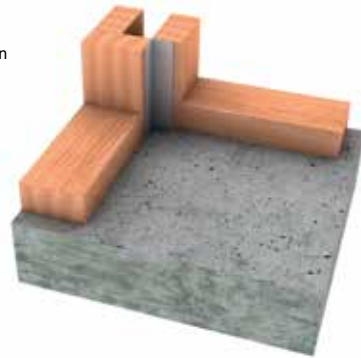


B: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



D: TILED INTERNAL CORNER METAL ANGLE POSITION

Refer to page 16 of this publication for specification and installation guidance.

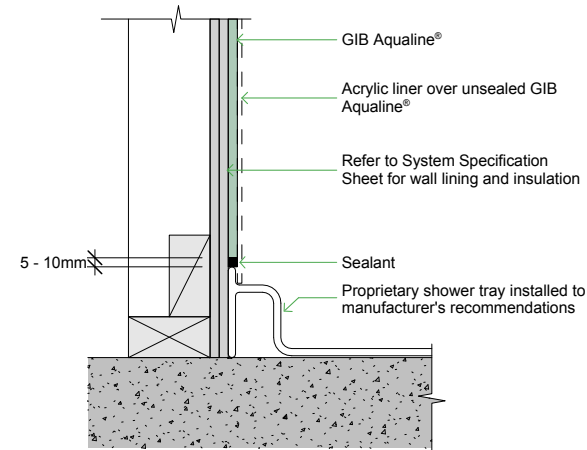


E: SHOWER MIXER PENETRATION IN WET WALL LININGS

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

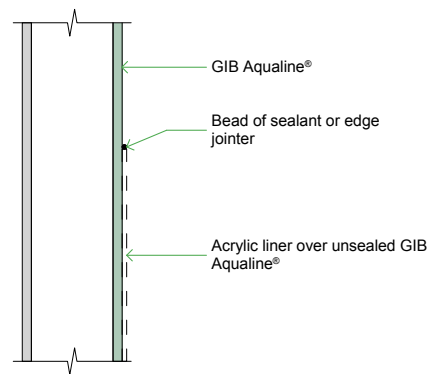


A: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



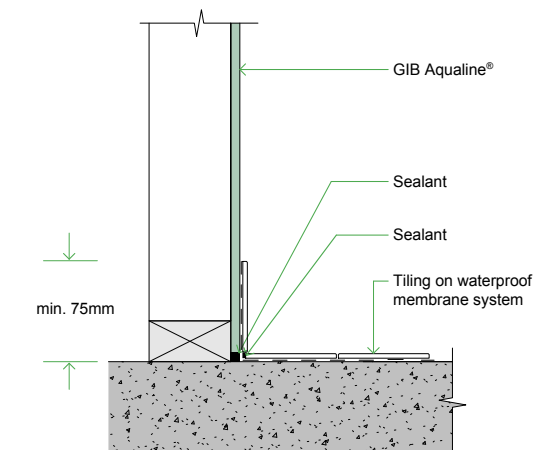
GAL-015

C: UNSEALED PLASTERBOARD LINING



GAL-028

B: CERAMIC FLOOR SKIRTING LINING JUNCTION



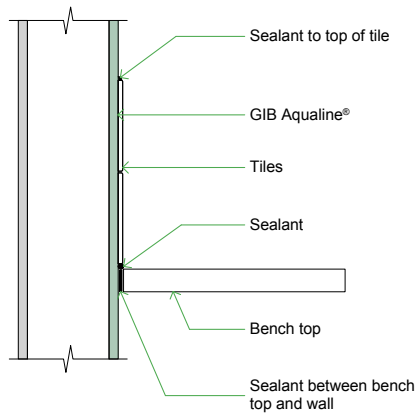
GAL-001

D: SHOWER MIXER PENETRATION IN WET WALL LININGS

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

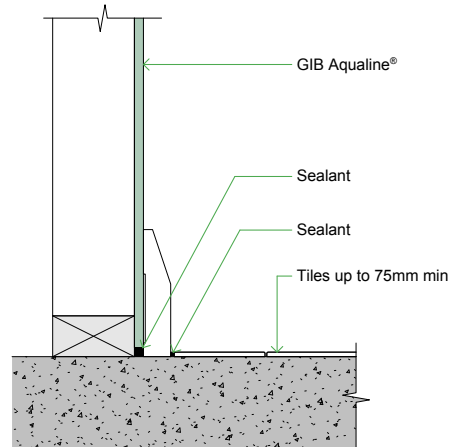


A: BENCH TOP LINING JUNCTION



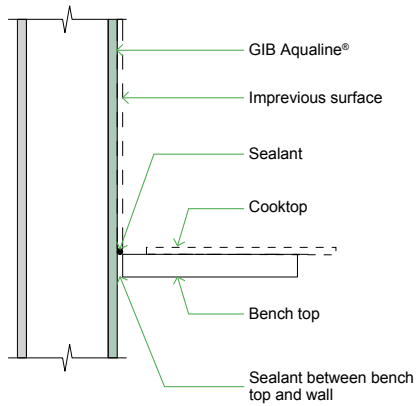
GAL-024

CERAMIC FLOOR SKIRTING LINING JUNCTION



GAL-001A

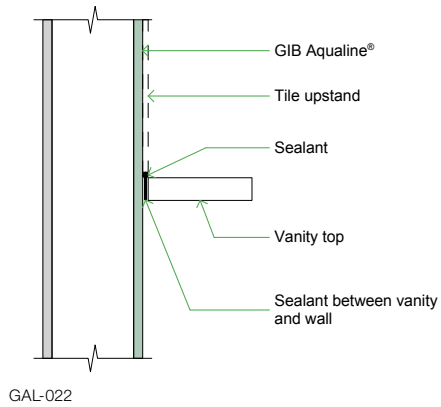
B: COOKTOP LINING JUNCTION



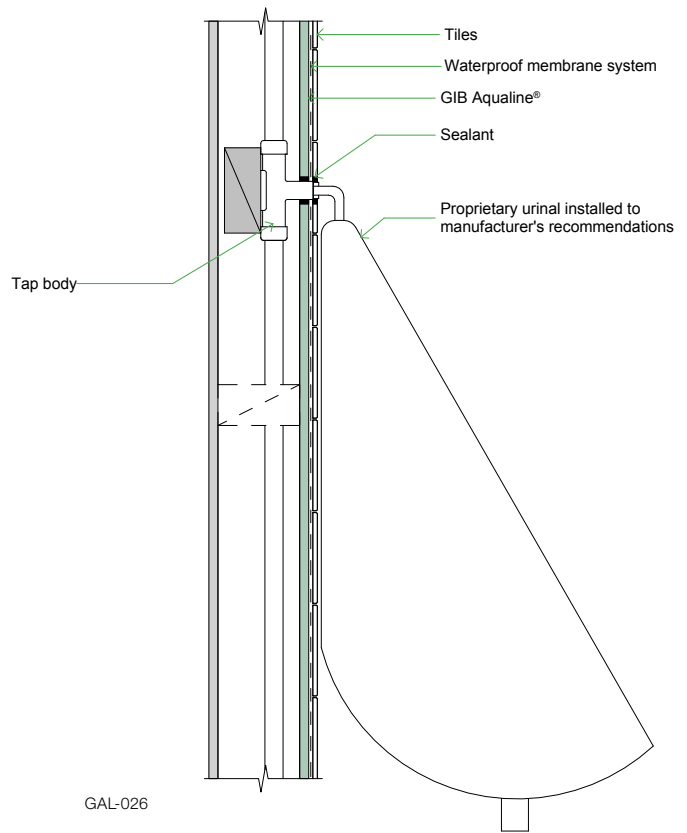
GAL-023B



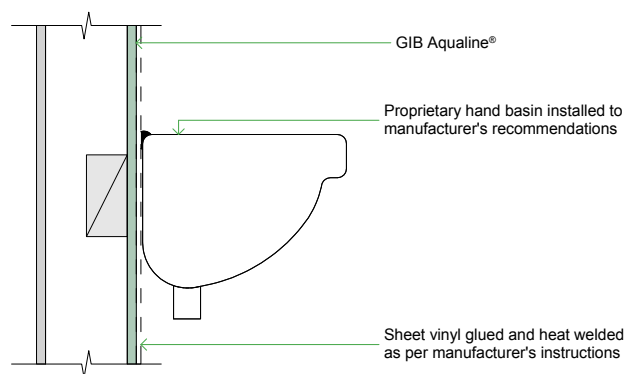
A: VANITY TOP LINING JUNCTION



B: SEALING WET AREA PENETRATION LINING JUNCTION



C: BASIN LINING JUNCTION



GAL-025

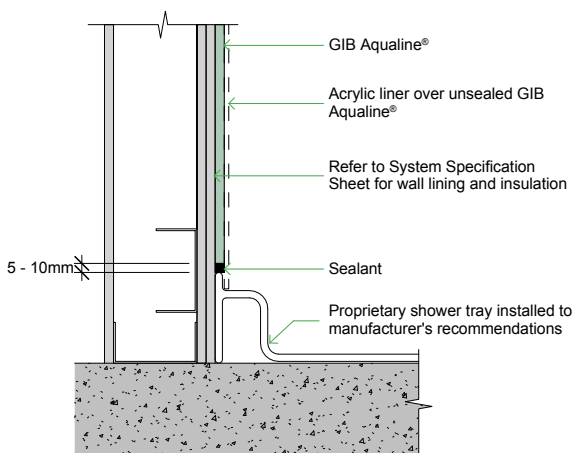
GIB Aqualine®

Vinyl covered as per manufacture's instructions

GAL-006A

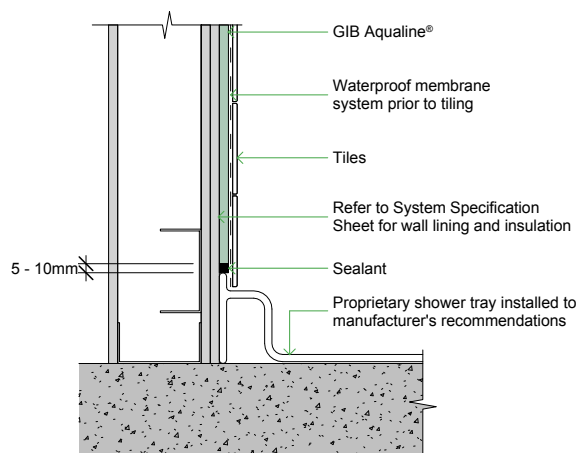


A: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



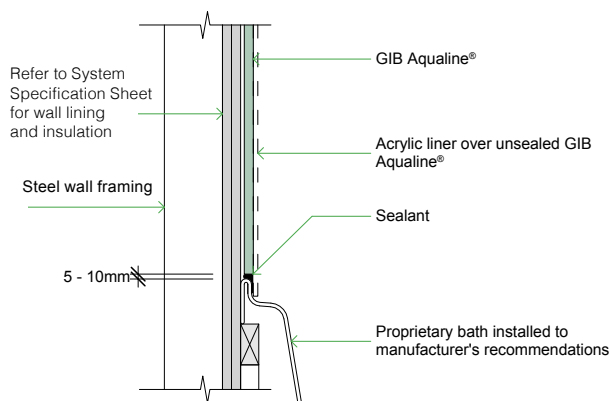
GAL-017

C: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



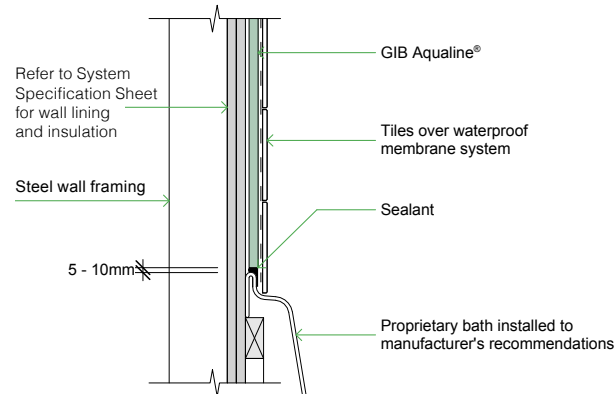
GAL-018

B: BATH DOUBLE LINING JUNCTION



GAL-013

D: BATH DOUBLE LINING JUNCTION



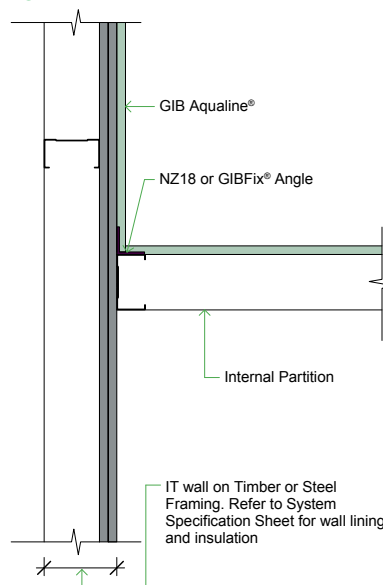
GAL-014

GIB® WET AREA SYSTEMS FIRE RESISTANCE AND NOISE CONTROL PERFORMANCE

Given recesses required for shower trays, bath upstands, etc., and the likelihood of renovations during the service life of the building, it is recommended that GIB® Wet Area linings in water splash areas are installed in addition to and over required fire and noise control systems in commercial or multi-residential applications.

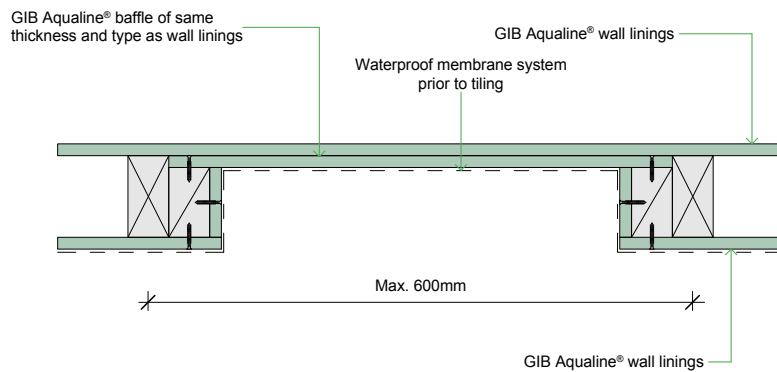
Do not tile on the resilient side of a GIB Rail® or Acoustic Resilient Mount (ST-001) and channel noise control system.

E: INTERTENANCY WALL AND WET AREA WALL JUNCTION

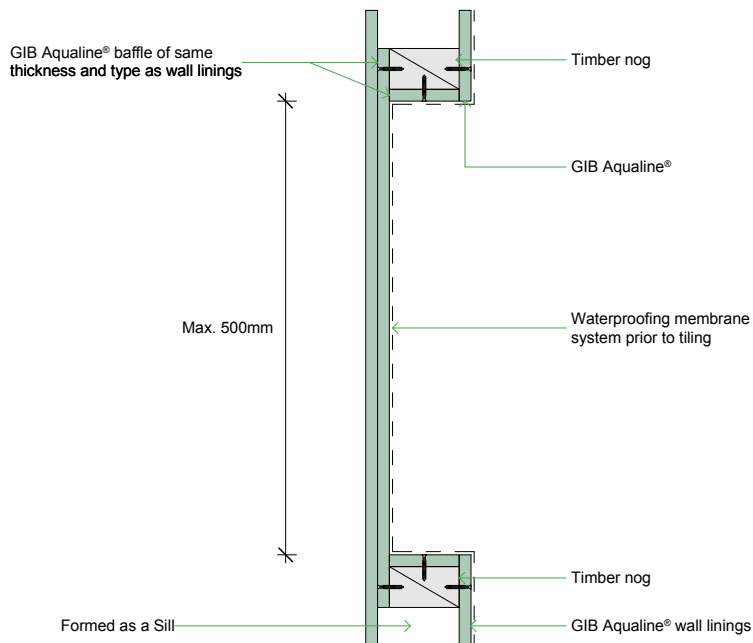


GAL-031C

TIMBER FRAME TILE RECESS

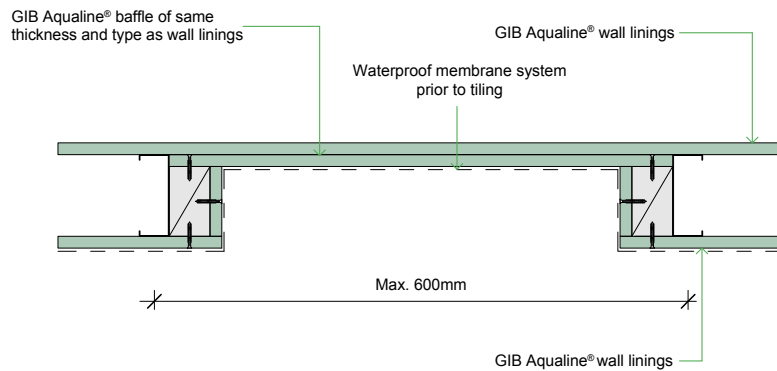


Larger recesses can be accommodated depending on specific framing layout provided 500mm is not exceeded in at least one direction.

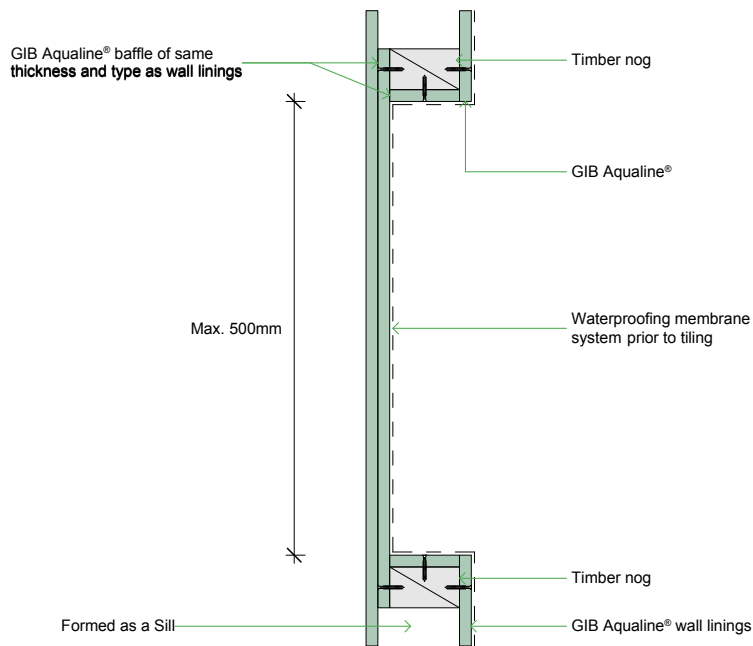


GAL-029B

STEEL FRAME TILE RECESS



Larger recesses can be accommodated depending on specific framing layout provided 500mm is not exceeded in at least one direction.



GAL-030

PLASTERER

1. PRELIMINARY AND GENERAL:

Read and note all clauses in the Preliminary and General section applicable to any works of this section.

2. WORK INCLUDED:

The supply and application of proprietary plaster board jointing and finishing compound and tape to wall or ceiling surfaces as specified. Finish is to be level 4.

3. MATERIALS AND WORKMANSHIP:

All plaster board and other products shall be fixed, strictly in accordance to AS/NZS2589:2017. The whole of the labour required for the erection, fixing taping and stopping shall be that of competent plaster board fixers. Admixtures, release agents and stopping materials shall not be of a deleterious nature nor used in quantities sufficient to impair the properties of the sheet when used with or without decoration.

4. FRAMING:

All noggings, trimmings, straightening and packing of studs or joists, necessary for the fixing of plaster board products shall be provided and completed by the Builder before the commencement of such work. Timber framing shall comply with NZSS 3631:1988 (framing grades) and shall be pre-dried to an equilibrium moisture content not exceeding 24%. The surface to which plaster board is fixed must be clean, straight and dry.

5. CEILING DIAPHRAGMS:

Fix all ceilings serving as structural ceiling diaphragms under terms of Section 13.5 NZS 3604:2011 (obtain methods of fixing and size limitations from manufacturer). Check that each wall under or connected to has bracing for a diaphragm.

6. PAINTING:

All plaster board sheets and other products shall be painted strictly in accordance with the specifications outlined below:

System	First Coat	Second Coat	Third Coat
No 2	Sealer	Acrylic	Acrylic

Allow overnight drying between coats.

N.B. The gib-stopper will not accept responsibility for the effect of glancing light on gibraltar board with a gloss paint finish.

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC230501 6/07/2023 Chrisk

PAINTER AND GLAZIER

1. PRELIMINARY AND GENERAL:

Note all clauses under Preliminary and General of this specification which shall apply to this section of the work.

2. MATERIALS:

Generally, all materials shall be of New Zealand manufacture or approved brands. The paint selected for undercoat and topcoats shall be of the same brand.

3. WORKMANSHIP:

All work shall be carried out in accordance with best trade practice. Surfaces shall be clean and properly prepared before coating and work shall be in accordance with Code of Practice NZS 2311:2017 "Painting of Building".

4. COLOUR SCHEME:

The Client will select from standard colour charts, the colours they require. The Contractor is to allow for picking of any other reasonable colour change required.

5. STOPPING:

After priming, all nail holes or joints are to be stopped and cleaned off before undercoating for painted work and for varnished work. Holes etc are to be stopped with matching putty after first coat of sealer.

6. PAINTING OF EXTERNAL WOODWORK:

After priming, all external woodwork and adjacent metal work such as flashings, spouting and downpipes are to be given one good coat of undercoat followed by finished coat of high gloss paint. Priming coat before painting shall be well brushed in and all faces shall be covered, ends of laps and tops and sides of sashes, doors etc.

7. PAINTING OF INTERIOR SURFACES:

Refer to plan or separate instructions to accompany this Specification. Wallboard and ceilings as required to be given one coat of sealer and finished with two coats of approved paint finishing flat or semi-gloss as required. Where full gloss is required ie kitchen, bathroom, ensuite, laundry and toilet finishing coat shall be full gloss water borne enamel.

8. VARNISHING:

Where varnishing is required such as doors, architraves and skirtings give one coat of approved PVA sealer followed by two coats of clear varnish finishing egg-shell gloss and lightly sanding between coats.

9. COMPLETION:

The Painter is to do all that is required of their trade to leave the work complete. All areas must be left clean including all glass at completion.

SURFACE FINISHES TO WET AREAS

	Ceiling	Walls	Floor
Kitchen	1 coat of sealer 2 coats of water-based enamel paint	1 coat of sealer 2 coats of water-based enamel paint Where applicable over gas hobb impervious surface over wall up to extractor fan	Selected vinyl sealed at corners and to wall junctions with paintable silicon sealant
Bathroom	1 coat of sealer 2 coats of water-based enamel paint	1 coat of sealer 2 coats of water-based enamel paint Splash back over bath two rows of 150mm white tiles	Selected vinyl sealed at corners and to wall junctions with paintable silicon sealant
Toilet	1 coat of sealer 2 coats of water-based enamel paint	1 coat of sealer 2 coats of water-based enamel paint	Selected vinyl sealed at corners and to wall junctions with paintable silicon sealant
Ensuite	1 coat of sealer 2 coats of water-based enamel paint	1 coat of sealer 2 coats of water-based enamel paint	Selected vinyl sealed at corners and to wall junctions with paintable silicon sealant
Laundry	1 coat of sealer 2 coats of water-based enamel paint	1 coat of sealer 2 coats of water-based enamel paint	Selected vinyl sealed at corners and to wall junctions with paintable silicon sealant

NOTE: top of vanity, kitchen and laundry bench and acrylic shower liner to be sealed with paintable silicon sealant.

Sealer: Resene Sureseal Pigmented Sealer or similar.

Waterbased Enamel Paint: Resene Spacecote Low Sheen Kitchen and Bathroom Waterborne Enamel or similar.

Some Recommended Ongoing Maintenance

The Main Contractor recommends that the Principal or any other subsequent Owner(s) of the building carry out the following maintenance on the building:

- The roof and wall claddings will be kept clean as per manufacturer's instructions for roof and wall claddings including butyl rubber.
- The rainwater gutters and overflows will be kept clean from dirt and spider web build up.
- All vegetation will be kept clear from the building.
- Ground clearances will be maintained as per the building code. If unsure the Principal should contact the Council for further information surrounding ground level heights. In the case of wooden floors built on piles the soil and garden levels should be kept clear from foundation board shielding.
- When landscaping and/or installing driveways, the Principal will consult the Council for the correct ground clearances and storm water drainage disposal.
- Brick & stone weep holes should be kept unblocked
- Plaster clad vermin ventilation strips should be kept clear of vegetation and dirt.
- Moisture should not be allowed to sit on internal surfaces for any length of time, including hardwood floors, lino & tiles. Mould should be treated.
- Exterior timber and other painted surfaces should be re-stained or painted when the natural timber starts to appear through the paint or when it becomes faded or cracked.
- Exterior and interior silicone joints should be maintained and resealed if UV deterioration or gaps become evident.
- Exterior plastered surfaces should be kept clean and maintained including re painting when faded. Hebel, Rockote or Celcrete or similar maintenance schedules should be downloaded and followed.
- Insulation should be kept clear of light fittings.
- No heavy storage items should be loaded onto ceiling trusses that are not designed to accept additional loads.
- Fires and chimneys should be cleaned on a regular basis according to the manufacturer's instructions. Fire bricks should be replaced according to the manufacturer's instructions. The principle and subsequent owners are advised to check the conditions on their home insurance after they take possession of the home for cleaning chimneys & flues.
- Extraction fans in bathrooms and kitchens should be used to expel steam and fumes.
- Fire alarms and smoke detectors should be checked according to the manufacturer's instructions. Batteries should be replaced regularly.
- Heavy snow fall and snow build up should be cleared from the roof as soon as possible. (The Main Contractor will not accept liability for damage during snow fall events.)
- Vegetation kept off batter boards to foundation piles.
- Any other item of maintenance that clearly needs cleaning or repairing for durability.