CODE COMPLIANCE CERTIFICATE

Section 95 Building Act 2004 [Form 7 – Building (forms) Regulations 2004]

Consent No(s): 250172

The Building			
Street address of building:	40 Anderson Park Drive, Waikanae	**Building name:**	N/A
Current, Lawfully established, use:	Detached Dwelling	**Location of building within site/block number:**	Proposed building located centrally. vehicle access from Right of way
		Intended life of the building if 50 years or less:	-
Level/unit number:	-	**Year first constructed:**	2025
Legal description of land where building is located:	Lots 39, 201 DP 592074		

The Owner			
Name of owner:	Timothy & Joanna Atkinson	**Street address /registered office:**	40 Anderson Park Drive, Waikanae
Contact person:	As above	**Phone numbers:**	
Mailing address:	Summer Co Trust 48 Anderson Park Drive Waikanae 5032	**Landline:**	-
		Mobile:	021401480
		Daytime:	-
Email address:	timothyatkinson@gmail.com	**After hours:**	-
Website:	N/A	**Facsimile number:**	-

First point of contact for communications with the Kapiti Coast District Council:

Agent
brandon.l@adarchitecture.nz

Building Work

Building Consent No(s):	250172	**Issued by:**	Kapiti Coast District Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that:

(a) the building work complies with the building consent

Michelle Salmon –
Building Inspections Team Leader
On behalf of **Kapiti Coast District Council** Date: 4/02/2026

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

AD Architecture Ltd
5 Kodex Place
Paraparaumu 5032

15 April 2025

Dear Building Consent Applicant / Building Owner

Approval of Building Consent – Detached Residential / Outbuilding: 250172

Location: 40 Anderson Park Drive, Waikanae
Legal Description: Lots 39, 201 DP 592074
Description: New 3 bedroom, 2 bathroom house with attached garage and open plan living, dining and kitchen.

I am pleased to inform you that the above building consent application has been approved. The building consent documents have been issued and are enclosed.

The building consent attached to this letter is consent under the Building Act 2004 to undertake building work in accordance with the plans and specifications that accompanied your application. Under section 49 of that Act, Council is satisfied that the provisions of the building code would be met if the proposed building work were completed in accordance with those plans and specifications. This consent does not affect any duty or responsibility under any other Act or permit any breach of any other Act.

This building consent does not give or imply any rights to transgress beyond your legal boundaries. Any work that is required beyond your legal boundaries can only be undertaken with the permission of the affected owner/s.

Before starting any work please read ALL the building consent documents carefully and in full so that you, as the owner, understand the conditions under which the consent has been issued.

Please note that this building consent includes restricted building work, the details of this are included in this letter.

Owner responsibilities

The owner is responsible for ensuring:

- building work starts within 12 months of the approval of the building consent and that work progresses at a reasonable pace.

175 Rimu Road, Paraparaumu 5032 | Private Bag 60 601, Paraparaumu 5254 | T: 04 296 4700 F: 04 296 4830 | www.kapiticoast.govt.nz

- written notice of every licensed building practitioner undertaking restricted building work is provided to Council before that work commences, and any changes are advised in writing

- the approved building consent documents are kept on site during construction and available for the District inspector at inspections

- all required inspections are completed and that a Code Compliance Certificate is obtained once the work has been completed. The list of supporting documentation required before issue of the Code Compliance Certificate and information on filling out the application form for code compliance certificate is attached. Failure to obtain a final inspection and a code compliance certificate may affect your insurance cover and could affect future re-sale of your property.
  Note: If you are the owner and your application was submitted through Simpli by an agent, please ensure you have been added as a collaborator so you can access the Simpli Code Compliance Certificate Application form.

- a Corridor Access Request is made and a Works Access permit is obtained before undertaking work in the legal road/road reserve, including installing a vehicle access crossing from the public road into your property. The process to be followed and the forms can be found on the Council website under Council Services/Roads or Council Services/Frequently asked questions/Access & Transport.

- before any excavations are undertaken a "Before U Dig" inquiry is made to check for locations of any underground services.

- no work with noisy equipment is to be carried out before 7.30 a.m. or after 6 p.m. Monday to Saturday. During the week there may be workers on site from 6.30 a.m. quietly preparing for work. Work with noisy equipment is not permitted on Sundays and public holidays.

- all loose materials that are capable of being carried by the wind are either secured or removed from the site. All activities must be carried out in a manner that keeps to a minimum the dust nuisance to adjacent properties.

- no damage occurs to public property, for example footpaths, water meters or retaining structures. Should damage occur you will be required to pay for any repairs.

- obtaining an amendment to the building consent for any changes to the approved building consent, prior to that work being undertaken.

- meeting the requirements of any easements, consent notices, covenants, and like listings registered on the title.

- the development contributions invoiced, if any, must be paid before a code compliance certificate can be issued.

- all maintenance recommended by the manufacturers is carried out at the required intervals.

General requirements

Note: Your attention is drawn to the notes contained in the ‘Addendum to the Consent’ and guidance documents referred to.

The following information is relevant to this building consent:

1. The Building Inspector is to be given 24 hours' notice before carrying out the inspections on the attached list. To arrange for inspections by the District Inspector, please contact the building inspectorate on 04 296 4700 between the hours of 8.00am and 4.30pm.
2. You are responsible for the safety of visitors to the work site including those undertaking building inspections. You must provide safe access to parts of the construction necessary for inspection. Ladder access must be securely founded and tied. Scaffold access and roof edge protection is generally required.
3. If required inspections, including those by designers of specifically designed elements, are not undertaken you may experience difficulty in obtaining a Code Compliance Certificate for the project. We suggest that at the time of the first inspection you discuss the inspection requirements with the inspecting officer.
4. This building consent will lapse and be of no effect if the building work concerned has not been commenced within 12 calendar months after the date of issue, or within such further period as the territorial authority allows.
5. The contractor is to leave the site clear of all demolition materials and in a tidy state.
6. Easements, consent notices, covenants, and like listings registered on the title are the responsibility of the applicant.
7. Note and comply with endorsements on approved plans.

Restricted Building Work

The following building work associated with this building consent is restricted building work [Section 7 and 402(1)(n) of the Building Act 2004 and Building (Definition of Restricted Building Work) Order 2011]:

Description of restricted building work including design work that is restricted building work
Primary structure
Foundations and subfloor framing
Walls
Roof
Columns and beams
Bracing
Other
External moisture management systems
Damp proofing
Roof cladding or roof cladding system
Ventilation system (for example subfloor or cavity)
Wall cladding or wall cladding system
Waterproofing
Other

Please note that the design work and restricted building work must be supervised or carried out by a licensed building practitioner who is licensed to carry out or supervise that kind of building work.

You or your agent will need to provide their details to the Council in writing prior to commencement of the building work. If after the restricted building work commences the named licensed building practitioner(s) ceases to be engaged to carry out or supervise the restricted building work under the building consent, this must also be advised in writing as must also the details of any other licensed building practitioner(s) subsequently engaged to carry out or supervise the restricted building work (Section 87 of the Building Act 2004). A form “Advice of licensed building practitioner(s)” is enclosed for you to use to advise the Council of licensed building practitioner details.

Please also note that it is an offence to engage another person to carry out or supervise restricted building work who is not a licensed building practitioner (Section 86 of the Building Act 2004).

Other reference material

- Guide for completing an application for code compliance, https://www.kapiticoast.govt.nz/your-council/planning/building/code-compliance-certificate/
- A guide to the inspection process https://www.kapiticoast.govt.nz/your-council/planning/building/building-services-inspections/

If you have any questions regarding your building consent or your responsibilities, please contact Kapiti Coast District Council on 04 296 4700 or toll free on 0800 486 486.

Building Consent

[Form 5, Building (Forms) Regulations 2004]

250172

Section 51, Building Act 2004

The building

Street address of building:	40 Anderson Park Drive, Waikanae
Legal description of land where building is located:	Lots 39, 201 DP 592074
Valuation number:	1494126659
Building name:	
Location of building within site/ block number:	
Level/unit number:	

The owner

Name of owner:	Timothy & Joanna Atkinson
Contact person:	Tim Atkinson
Mailing address:	48 Anderson Park Drive, Waikanae 5036
Street address/registered office:	-
Phone numbers:	
Landline: -	*Mobile:* 021401480
After hours: -	*Fax number:* -
Email address:	timothyatkinson@gmail.com
Website:	-

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

Full Name: AD Architecture Ltd

Mailing Address: 5 Kodex Place, Paraparaumu 5032

Phones:: 0226435826

Email: brandon.l@adarchitecture.nz

Building work

The following building work is authorised by this building consent:

New 3 bedroom, 2 bathroom house with attached garage and open plan living, dining and kitchen.

Detached dwellings

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.

Conditions of building consent

This building consent is subject to the following conditions:

1. Refer to the list of inspections required. Under section 90 of the Building Act 2004 agents authorised by the Council (acting as a Building Consent Authority) 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 that building site; and
   c. any building.

Compliance schedule

A compliance schedule is not required for the building.

Attachments

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

- List of required inspections and supporting documentation required
- Building Consent Addendum
- Plans and specifications
- Advice of licensed building practitioners

Note: The cover letter and all attachments to this building consent should be read fully to ensure you understand all conditions of this consent.



Signature

Building Officer

Position

On behalf of: KAPITI COAST DISTRICT COUNCIL

Date: 15/04/25

Relevant Information

Issued in accordance with Building Consent No. 250172

1. All work is to be undertaken in accordance with a section 221 consent notice imposed under the Resource Management Act. Resource Consents relevant to this property are listed.
2. Council`s manifold/meter box, base, and lid, are to be protected/re-instated to original specification. The cost to reinstate any damage to Council`s assets will be paid for by the owner/contractor.
3. Both hot and cold water pipes are to be tested to 1500kPa pressure.
4. Any external cladding system must be completed before a pre-lining inspection for the affected wall can take place.
5. The owner/builder is responsible for clearly defining the site boundary lines and pegs. This may require a survey. NOTE: established fences are not necessarily on the boundary.
6. Plan notes take precedence over general specifications.

Building Consent Addendum to 250172

Application	Building Consent No. 250172
AD Architecture Ltd 5 Kodex Place Paraparaumu 5032	

Project	
Description:	New (& prebuilt) House, Unit, Bach, Crib, Town House etc. Being Stage 1 of an intended 1 Stages New 3 bedroom, 2 bathroom house with attached garage and open plan living, dining and kitchen.
Intended Life:	Indefinite, but not less than 50 years
Intended Use:	Detached dwellings
Estimated Value:	$600,000
Location:	40 Anderson Park Drive, Waikanae
Legal Description:	Lots 39, 201 DP 592074
Valuation No:	1494126659

Builder:	Finton Paul Greggains - 164179 : 0279193505
Contractor:	Stuart Preston - 138744 : 045668004

Specific requirements

1. Names and registration numbers of the plumber and drainlayer are required before work commences.
2. A certifying plumber/drainlayer is to complete the attached producer statement forms and return to Council. Also provide a neat `as built` drainage plan showing sewer, stormwater and water.
3. Ground bearing must be reconfirmed on site following excavation but prior to placing of concrete and reinforcing.

KAPITI COAST DISTRICT COUNCIL

Consent No: 250172 Building Category: R2

Site Address: 40 Anderson Park Drive, Waikanae

Owner/Agent: AD Architecture Ltd

Inspections

The following inspections are required:

1 Foundation
1 Pre-Slab Building
1 Pre-Slab Plumbing
1 Drainage
1 Preline Building
1 Postline / Wet area Pre Application
1 Pre Wrap
1 Pre Clad
1 Wet Area membrane (Post-application)
1 Preline Plumbing
1 Final Inspection

11 Total Inspections

Residential Documentation

1 Application for CCC
1 Electrical safety certificate - Electrician
1 Electrical safety certificate - Inspector
1 Gas safety certificate
1 As-built drainage plan
1 Drainage (Form 126) for stormwater & private Sewer installation
1 Plumbing (Form 125) for pressure test and installation piped services
1 Construction review PS4 statement for structural engineering
1 Construction review PS4 statement for geo-technical engineering
1 Membrane applicator certificates - internal wet area
1 Timber framing and truss certification
1 Record of Work
1 Window manufacturers producer statement

APPROVED BY
BUILDING
mikemo
OFFICER
15/04/2025

WORKING DRAWINGS		
No.	**Sheet Name**	**Rev.**
A001	Building 3D	A
A003	Site Plan	B
A004	Floor Plan	A
A005	Elevations	A
A006	Elevations	A
A101	Drainage Plan	B
A102	Drainage & Water Schematic	B
A103	Foundation Plan	B
A104	Framing Plan	A
A105	Roof Plan	A
A106	Beam Schedule & Fixings	A
A107	Electrical Plan	A
A108	Lighting Plan	A
A109	Driveway Plan	B
A201	Building Section	A
A202	Building Section	A
A203	Building Section	A
A204	Building Section	A
A301	Foundation Details	A
A302	Roof Details	A
A303	Roof Details	A
A304	Roof Details	A
A305	Roof Details	A
A306	Roof & Cladding Details	A
A307	Cladding Details	A
A308	Cladding Details	A
A309	Window Details	A
A310	Window Details	A
A311	Window Details	A
A312	Window Details	A
A313	Door Details	A
A314	Garage Details	A
A315	Skylight Details	A
A316	Bathroom Details	A
A401	Exterior Joinery Schedule	A
A402	Exterior Joinery Schedule	A
A403	Interior Opening Schedule	A
A404	Risk Matrix	A
A405	H1 Calculations	A
A501	Interior Elevations	A
A502	Interior Elevations	A

BC250172
Further Information Received
15/04/2025

Proposed House

FOR

Tim Atkinson

AT

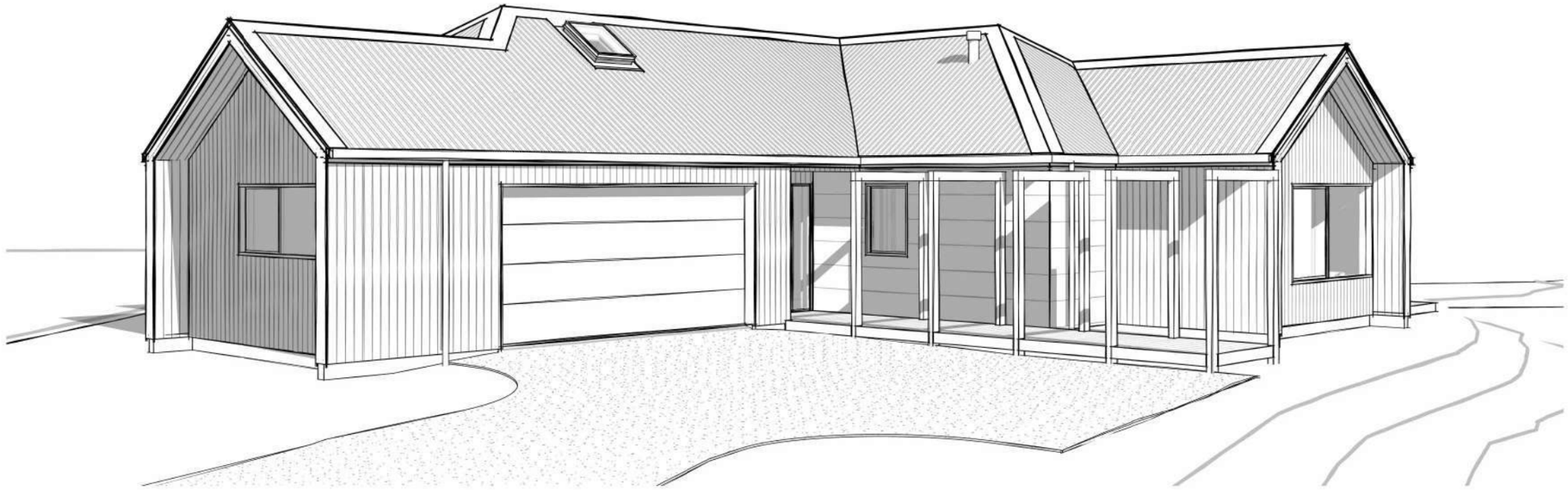
40 Anderson Park Drive
Waikanae

LICENSED BUILDING PRACTITIONER
www.dbh.govt.nz
BUILDING CONFIDENCE

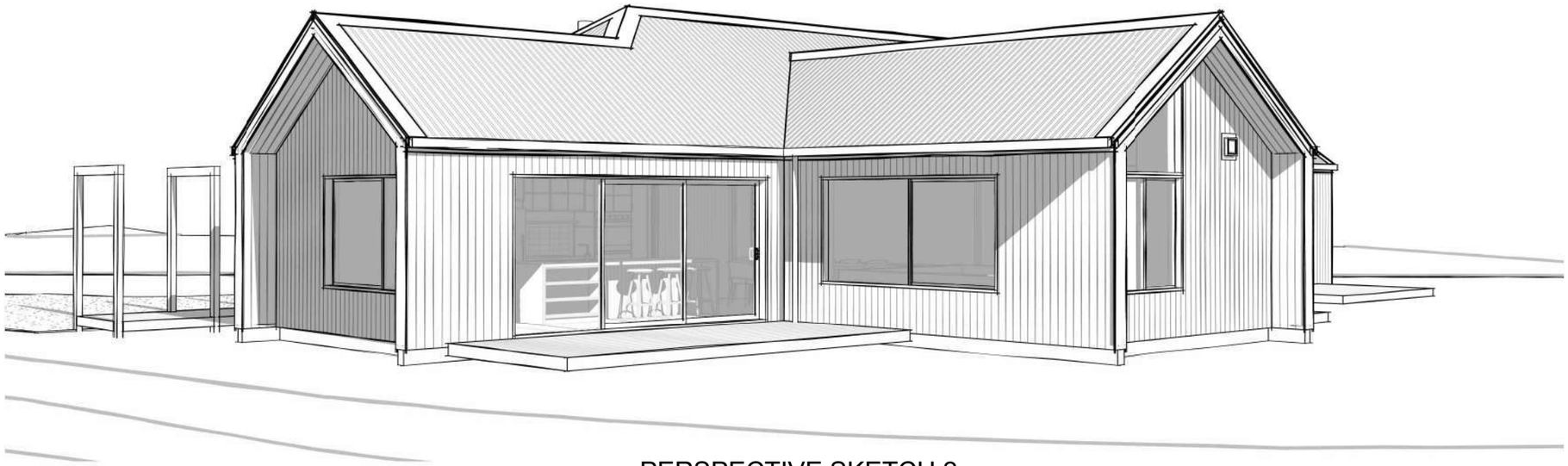
ADNZ Architectural Designers New Zealand
Professional Member

ADarchitecture
High Performance Design

BC250172
Received by
Kapiti Coast District Council
07/04/2025



PERSPECTIVE SKETCH 1



PERSPECTIVE SKETCH 2

Rev	Date	Description
A	01/04/25	Building Consent

ADarchitecture
High Performance Design
Email: info@adarchitecture.nz **Web:** adarchitecture.nz
Phone: (04) 298 5662
5 Kodex Place, Paraparaumu 5032

Proposed House

for Tim Atkinson
40 Anderson Park Drive
Waikanae

Consent

Building 3D

DO NOT SCALE DRAWING

Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A001	A

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General Construction Notes

• All work is to comply with the New Zealand Building Code, Territorial Authority requirements, NZ standards (in particular NZS 3604), manufacturers literature and endorsed building consent plans
• All references to codes and standards shall be taken to mean the latest version including amendments
• Documents may have been scanned and digitally reproduced and may not be to scale
• Contractor to provide site fencing, signage and scaffolding to comply with NZBC F5/AS1 and Worksafe NZ requirements
• Site fencing on boundaries accessible to the public are to be 2000mm high galvanized chain link mesh with 50x50 maximum grid size and posts at 2500crs maximum
• Site fencing on boundaries inaccessible to the public are to be 1000 high plastic safety mesh with warratah stakes at 1500crs with safety caps
• Formation of ground levels, floor levels and construction to be in accordance with the associated resource consent
• Install all materials in accordance with manufacturers specifications and instructions
• Slip resistance rating of trafficable surfaces to comply with NZBC D1
• This project contains elements designed by a structural engineer. The contractor is required to ensure the engineer inspects the work they have designed and provide the territorial authority with written evidence of the inspection
• Contractor must obtain territorial authority acceptance for any variations to plans and construction details

Building Environment Notes

• This construction site shall adhere to the REBRI (Resource Efficiency in the building and related industries) guidelines for construction - waste reduction
• Refer to legend opposite for site specific wind zone. Ensure correct fixings, tie downs, connectors, glazing, etc are used
• This site is in exposure zone B / C :
  - all treated timber pile connections and subfloor fixing connections within 600 from ground level or in exposed situations are to be type 304 S.S.
  - all treated timber pile connections and subfloor fixing connections more than 600 above ground level and in a sub-floor space vented less than 7000mm² are to be hot dip galvanized
  - all treated timber pile connections and subfloor fixing connections more than 600 above ground level and in a sub-floor space vented more than 7000mm² are to be type 304 S.S.
  - nail and screw fixings can be galvanized
  - all other structural fixings (except fabricated brackets) in sheltered locations to be hot dip galvanized, and in exposed situations to be type 304 S.S.
  - all fabricated brackets to be minimum 5mm mild steel and be hot dip galvanized
• All fixings (including nails and screws) in contact with timber treated with copper quaternary (ACQ) or copper azole (CuAz) preservative are to be type 304 S.S. in exposed or sheltered locations, and hot dipped galvanized in closed situations

Site Notes

• The contractor is responsible for clearly defining the site boundaries. In order to correctly set the building out, a registered surveyor may be required. Established fences are not necessarily on the site boundary
• The site is to have permeable surfaces that are not covered by buildings or paving of at least 30% of the site area
• The minimum clearance from floor slab to finished ground level to be:
- 100mm to paved areas and 150mm to non-paved areas for brick veneer
- 150mm to paved areas and 225mm to non-paved areas for other claddings

Foundation Notes

• Ground bearing must be reconfirmed on site following the excavation of foundation trenches and prior to pouring any concrete. Soft ground may be encountered, requiring specific design by a consulting structural engineer
• All foundations are to specific design by a consulting structural engineer
• Contractor to ensure that the foundation height will allow for required drainage falls to the sewer main
• Concrete floor slab to have control joints and shrinkage control joints formed in accordance with NZS3604 clause 7.5.8.6. provide a control joint around the perimeter of tiled areas.

Aluminium Joinery & Glazing Notes

• All habitable and service rooms are required to have opening windows equivalent to a minimum of 5% of their floor area, or an approved alternative ventilation system
• Opening windows projecting over access routes and decks to be protected to comply with NZBC D1, clause 1.5.4
• Provide sill support brackets to external windows and doors
• Aluminium joinery to be in accordance with NZS 4211
• All glazing is to comply with NZS 4223 parts 1,2,3
• Window manufacturer is to confirm all windows required to have safety glass
• Window manufacturer to supply all flashings and WANZ WIS components
• Fit restrictor stays to opening sashes to limit the opening to a maximum of 100mm wherever the sill height is less than 760mm and the difference in levels is 1000mm or greater. Refer to NZBC F4

Walls & Roof Framing Notes

• Timber treatment to comply with NZS 3602
• Trusses must be designed and supplied by a licensed pre-nail manufacturer. Provide a copy of the design and producer statement to the Territorial Authority
• Prefabricated walls must be designed and supplied by a licensed pre-nail manufacturer.
• Bottom plates to be fixed with approved bottom plate anchors installed in accordance with manufacturers specifications and NZS 3604
• Stud / top plate fixings to be in accordance with Bowmac StudLok specification
• Lintel hold downs to be in accordance with Lumberlok lintel fixing schedule unless specified by prenail manufacturer
• All fixings to be galvanized to prevent deterioration due to temporary exposure
• Where bolted connections are used, fit with 50x50x3mm square or 55øx3mm round washers to both sides
• Roof framing and fixing requirements to comply with NZS 3604 Section 10
• Do not support bottom chords of trusses at points other than those designated by the truss manufacturer

Cladding Notes

• Provide temporary work platforms and / or scaffolding in accordance with Worksafe NZ guidelines
• Where walls are not lined (e.g. gable ends and framed chimneys), a rigid sheathing or an air barrier wrap is to be installed to comply with NZBC E2/AS1 clause 9.1.4 prior to fixing cavity battens and cladding
• Return wall underlay into all framing openings and fit approved window flashing system to manufacturers specification.
• Fit flashings to comply with the window and cladding manufacturers specifications and details. Fit air seals to the inner edge of the joinery reveals
• A heavy duty wind barrier is required behind weatherboards in wind zones very high and above

Roofing Notes

• Provide temporary work plate forms, scaffolding, internal safety system and roof edge protection in accordance with Worksafe NZ guidelines
• Roof framing and fixing requirements to comply with NZS 3604 Section 10
• Roof cladding to be installed to manufacture specification and the requirements of NZBC E2, Section 8. Steel coating to be suitable for the corrosion zone. Site and project specific confirmation of the specified roofing required. Provide a copy of the manufacturers warranty to the territorial authority
• Ensure adequate cross flow ventilation is provided to roof space above thermal insulation to prevent condensation
• Provide a roof space passive ventilation system to prevent build up of roof space moisture
• Contractor to provide owner with suitable written details of a regular inspection and maintenance regime for all roof deck membranes and associated flashings

Exterior Deck & Stair Notes

• Deck surfaces to achieve a slip resistance rating to comply with NZS 3604 clause 7.4.4
• Decks at ground level built under NZBC Schedule 1 exemption.

Interior Notes

• "Wet area" showers to be fully waterproofed using an approved membrane installed in accordance with manufacturers specifications. Installation to be by registered specialist. Supply a copy of the materials warranty and installation instructions to the territorial authority
• Extent of bathroom waterproofing membrane / impervious lining to be :
  - 150mm minimum higher than any basin or vanity top
  - 150mm minimum higher than any bath edge
  - 1800mm minimum height above shower base upstand and finish no less than 300mm above shower rose
  - Full extent of wall tiling within shower area
  - Unenclosed shower walls to be 1500mm minimum horizontal distance from shower rose (1500mm plus the length of shower hose for a removable shower head)

Plumbing Notes

• All plumbing and drainage to be in accordance with AS / NZS 3500 part 2
• Contractor to confirm locations of existing laterals onsite
• Provide protection to all waste pipes and drains that run under of through foundation ground beams
• Provide drainage producer statement and as-built drainage plan to the territorial authority prior to CCC being issued
• Hot water supply pipes from water heater shall be thermally insulated in accordance with NZS 4305
• Fit a tempering valve to the hot water service
• Water pipes to be tested to 1500 KPa
• 2 x 45° bends are required at the base of soil stacks
• Branchs into vertical soil stack are to be fitted with 45°junctions (not strap bosses)
• Ensure that plumbing can run to the exterior without damaging structural members
• Drainage pipes to be tested and inspected prior to backfilling
• Provide seismic restraints to hot water cylinders
• All gas work to be in accordance with Plumbers, Gasfitters and Drainlayer act
• Position LPG bottles to comply AS/NZS 1596, section 6
• Provide gas certification after completion to the territorial authority prior to CCC being issued

Electrical Notes

• Install inter-connected smoke alarms to comply with NZBC, C/AS1 & NZS 4514:2021
• Recessed downlights (if used) are to be IC-F rated and installed to prevent transfer of moisture into ceiling space to comply with NZECP 54
• Extract fans for enclosed bathrooms and laundries are to provide extraction of 25 l/s minimum and Kitchen extract to provide 50l/s minimum in accordance with AS 1668.2
• Provide electrical certification after completion to the territorial authority prior to CCC being issued

Fire Notes

• Install gas fire following manufacturer specifications and details.
• Provide permanent external supply of combustion air to gas fires to comply with NZBC G4, section 2.1

BC250172
Received by
Kapiti Coast District Council
07/04/2025

Timber Treatment Schedule

Component	Treat
Below ground / set in concrete	H5
In contact with ground	H4
Exterior timber - coated	H3.1
Exterior timber - exposed	H3.2
Wall framing generally	H1.2
Bottom plates	H3.2
Flooring generally	NOT REQ.
Floor joist generally	H1.2
All roof framing and purlins	H1.2
Timber slat decking & framing	H3.2 / H4
Exposed balustrades	H3.2
Exterior stairs	H4
Cavity battens	H3.1
Cladding battens and trim	H3.1
Exterior timber joinery	H3.1

• All timber to comply with NZS 3602
• Treat cut ends and bore holes as required by NZS3602, NZS3460 and timber manufacturers specifications
• Timber species to be Radiata Pine unless noted otherwise
• All fixings in contact with timber treated with copper quaternary (ACQ) or copper azole (CuAz) preservatives are to be type 304 S.S. in exposed or sheltered locations, and hot dipped galvanized in closed situations

Site information

Wind Zone:	High (Eng Des.)
Exposure Zone:	C
To Sea (m):	1760-1800m
Earthquake Zone:	3
Climate Zone:	3
Snow Zone:	N1 (0 - 400m)
Soil Class:	Refer Eng.
Liquefaction Area:	High

Rev	Date	Description
A	01/04/25	Building Consent

ADarchitecture
High Performance Design
Email: info@adarchitecture.nz **Web:** adarchitecture.nz
Phone: (04) 298 5662
5 Kodex Place, Paraparaumu 5032

Proposed House

for Tim Atkinson
40 Anderson Park Drive
Waikanae

Consent

Construction Notes

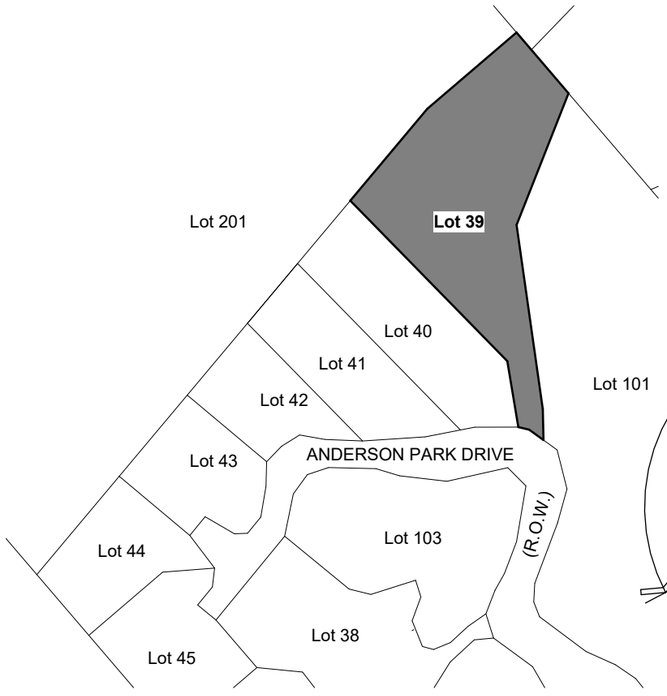
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Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A002	A

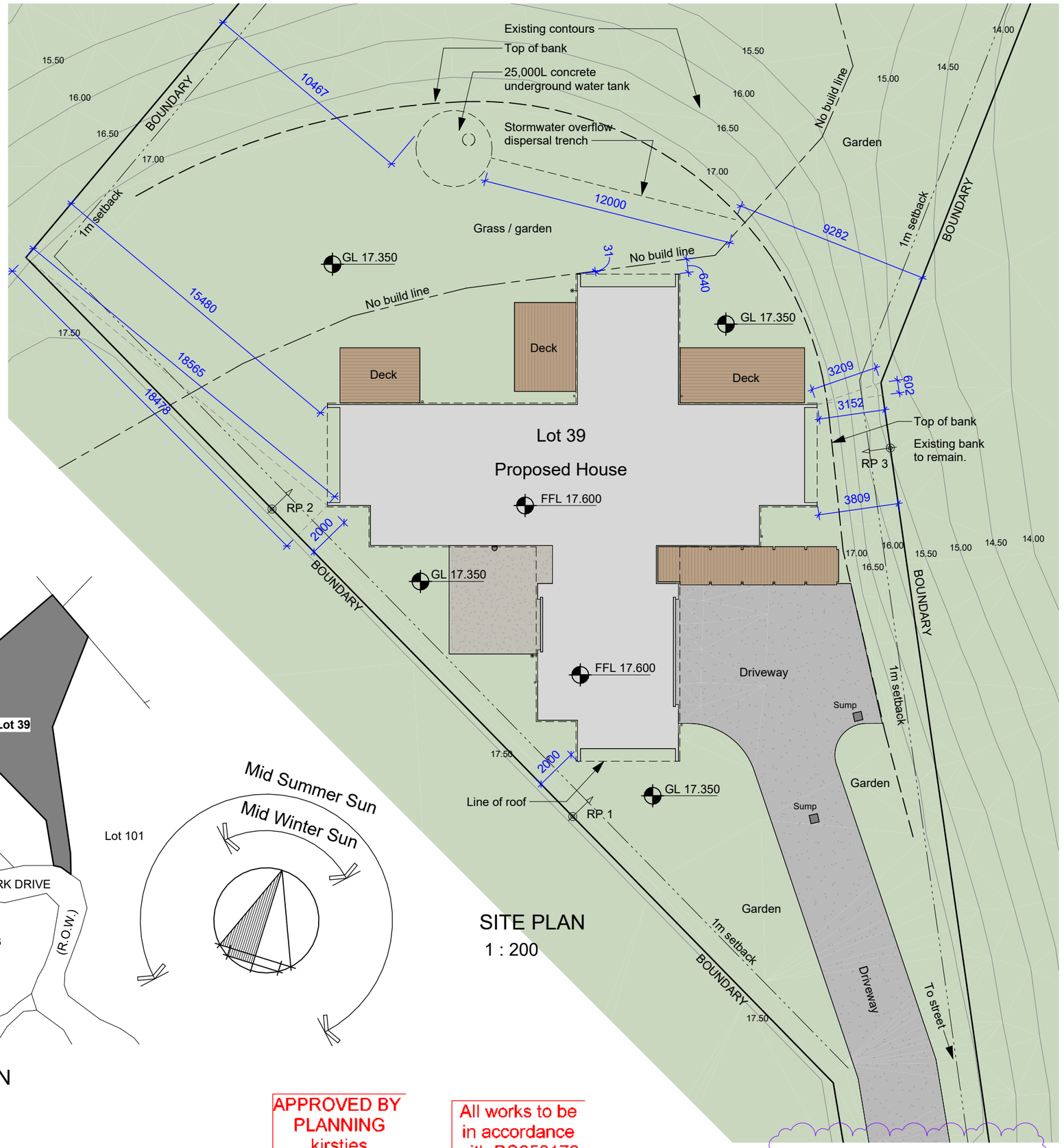
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APPROVED BY
BUILDING
mikemo
OFFICER
15/04/2025

BC250172
Further Information Received
15/04/2025



LOCATION PLAN



SITE PLAN
1 : 200

APPROVED BY
PLANNING
kirsties
15/04/2025

All works to be in accordance with BC250172

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Legal Description
LOT 39
DP 592074

Site Areas

Net Site Area	2243 m²	
Site Coverage	252m²	11%
Area of Outdoor Living	20 m²	
Area of Paving	218 m²	
Area of Permeable Surfaces	1773 m²	79%

Building Consent Authority
Kapiti Coast District Council

Planning Features
Planning: General Residential
Hazard:
Noise:
Other: SAL 19

Site information

Wind Zone:	High (Eng Des.)
Exposure Zone:	C
To Sea (m):	1760-1800m
Earthquake Zone:	3
Climate Zone:	3
Snow Zone:	N1 (0 - 400m)
Soil Class:	Refer Eng.
Liquefaction Area:	High

NOTES:
Refer to Geotech report for ground conditions

SAL19 = Special Amenity Landscape
(At street and neighbouring site/s)

No Build Zone at rear of site
(House located outside of zone)

Minimal Earthworks required <50m3
(House foundations and Driveway only)

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Waikanae

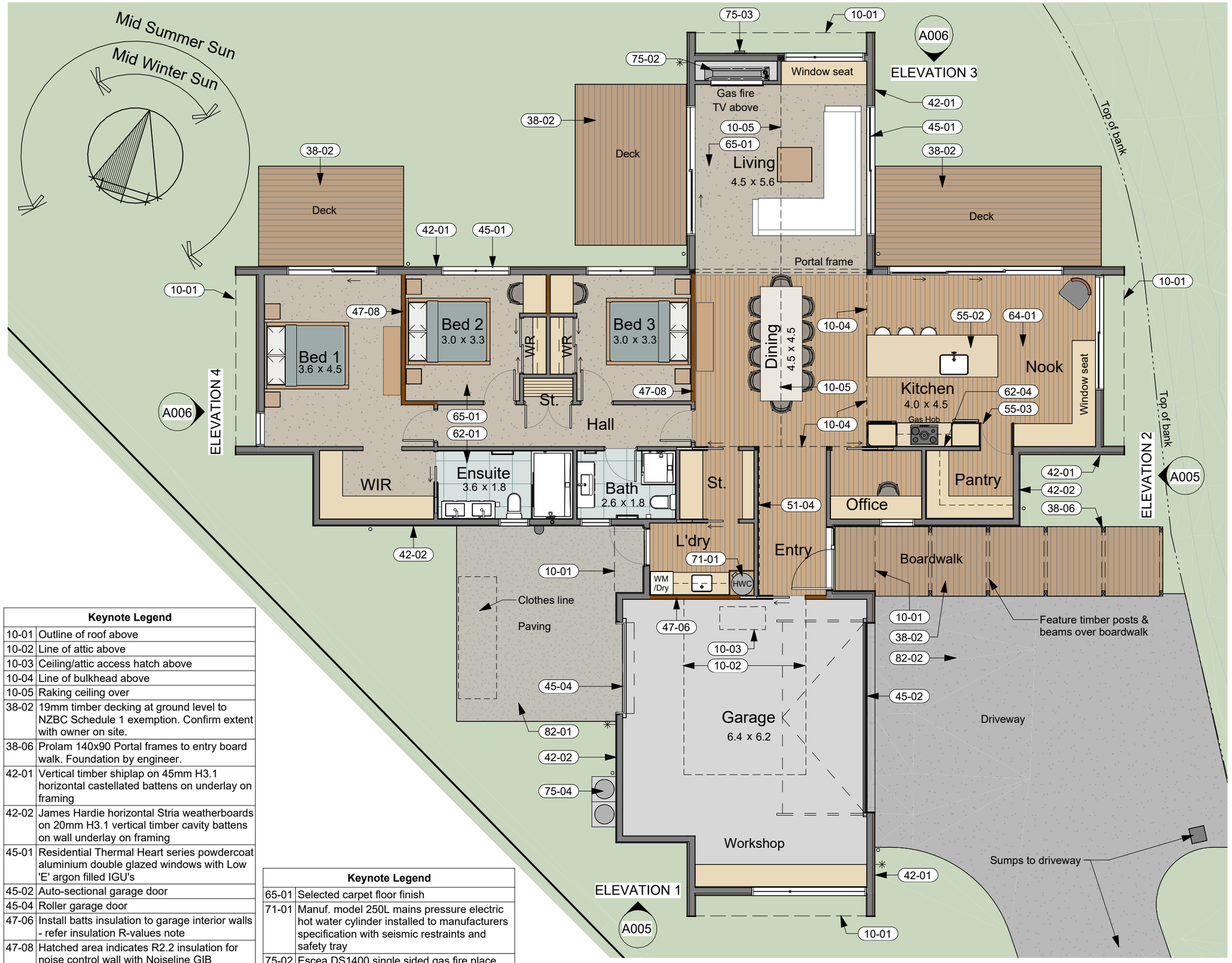
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Site Plan

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Job	Date	Sheet(A3)	Rev.
24058	14/04/2025	A003	B

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Keynote Legend	
10-01	Outline of roof above
10-02	Line of attic above
10-03	Ceiling/attic access hatch above
10-04	Line of bulkhead above
10-05	Raking ceiling over
38-02	19mm timber decking at ground level to NZBC Schedule 1 exemption. Confirm extent with owner on site.
38-06	Prolam 140x90 Portal frames to entry board walk. Foundation by engineer.
42-01	Vertical timber shiplap on 45mm H3.1 horizontal castellated battens on underlay on framing
42-02	James Hardie horizontal Stria weatherboards on 20mm H3.1 vertical timber cavity battens on wall underlay on framing
45-01	Residential Thermal Heart series powdercoat aluminium double glazed windows with Low 'E' argon filled IGU's
45-02	Auto-sectional garage door
45-04	Roller garage door
47-06	Install batts insulation to garage interior walls - refer insulation R-values note
47-08	Hatched area indicates R2.2 insulation for noise control wall with Noiseline GIB
51-04	Timber feature wall to entry - TBC
55-02	Kitchen Joinery unit
55-03	Pantry door incorporated in joinery.
62-01	Tile floor finish
62-04	Tiled splashback
64-01	Selected timber overlay flooring with 3 coats polyurethane finish

Keynote Legend	
65-01	Selected carpet floor finish
71-01	Manuf. model 250L mains pressure electric hot water cylinder installed to manufacturers specification with seismic restraints and safety tray
75-02	Escea DS1400 single sided gas fire place.
75-03	Flue to fire through wall
75-04	2x90kg LPG gas bottles to supply HOB & fire. Confirm size with supplier. Install seismic restraints as per supplier/manufacturer documentation.
82-01	Paving
82-02	Driveway paving

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FLOOR AREA TO FRAMING
Area 228 m²

FLOOR AREA TO CLADDING
Area 233 m²

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

General Notes
- Stud height generally 2455 unless noted otherwise on the plan
- Window head height to be 2200 high
- Ceiling linings to be 13mm GIB Standard on 70x35 timber battens (13mm Aqualine to bathrooms and ensuites)
- Wall linings to be generally 10mm GIB Standard fixed horizontally (10mm Aqualine to bathrooms and ensuites)
- Grooved MDF to pitched ceilings
- Install 9mm Villaboard wall linings to tiled shower areas
- Install Hardie Groove lining to selected bathroom. and ensuite walls
- Install 12mm Strandboard wall linings to garage
- Install GIB Rondo plastic smooth control joints to wall and ceilings at 9000crs where required
- Square stop scotia throughout
- 90x10mm bevel edge skirting throughout
- 30x10mm bevel edge architraves to windows and doors
- Install electric undertile heating mats to bathroom floors
- Allow for install (or future install) solar photovoltaic panel system to manuf specifications
- Install 250l. class 'A' electric HWC to manuf spec with seismic restraints and safety tray
- All floor finishes to comply with NZBC D1 for slip resistance
- All vent outlets ducted through walls are to have weatherproof grilles and rain deflectors installed
- All vent outlets ducted through soffits are to have weatherproof grilles installed

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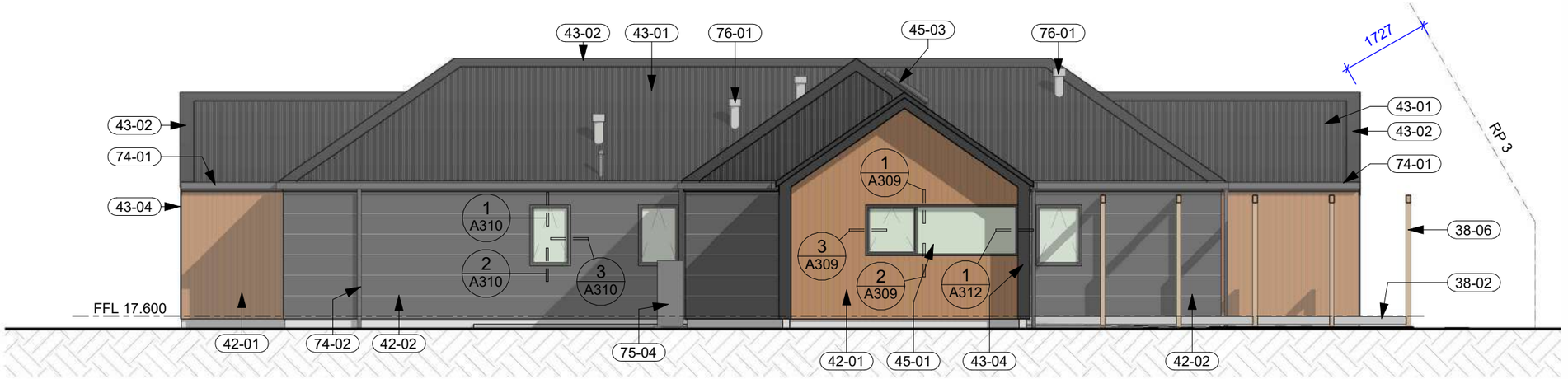
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Floor Plan

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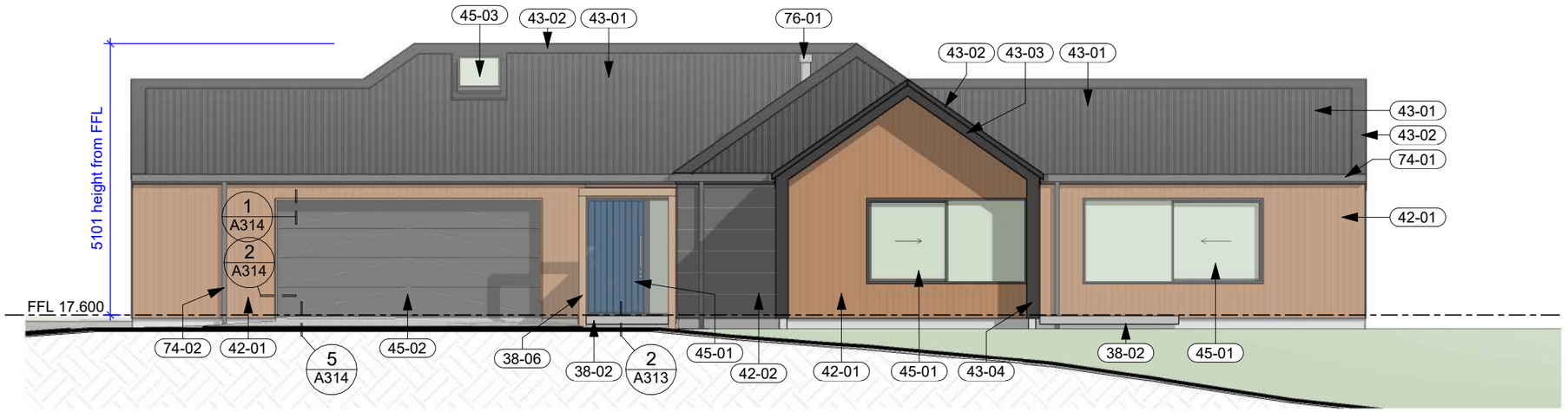
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ELEVATION 1

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ELEVATION 2

1 : 100

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Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

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38-06	Prolam 140x90 Portal frames to entry board walk. Foundation by engineer.
42-01	Vertical timber shiplap on 45mm H3.1 horizontal castellated battens on underlay on framing
42-02	James Hardie horizontal Stria weatherboards on 20mm H3.1 vertical timber cavity battens on wall underlay on framing
43-01	Roofing Industries Trimrib Colorcote MagnaFlow Plus roofing on roof underlay on roof framing
43-02	Colorcote MagnaFlow Plus flashings to match roofing finish
43-03	Metal fascia flashing over timber fascia
43-04	Metal fascia flashing over timber fascia to continue from barge down wing walls
45-01	Residential Thermal Heart series powdercoat aluminium double glazed windows with Low 'E' argon filled IGU's
45-02	Auto-sectional garage door
45-03	Velux skylight - refer exterior joinery schedule
74-01	Colorsteel 125 box gutter
74-02	80mmø Colorcote downpipe
75-04	2x90kg LPG gas bottles to supply HOB & fire. Confirm size with supplier. Install seismic restraints as per supplier/manufacturer documentation.
76-01	Extract ducting to bathrooms, laundry and kitchen through roof with Dektite flashing and weatherproof cowl

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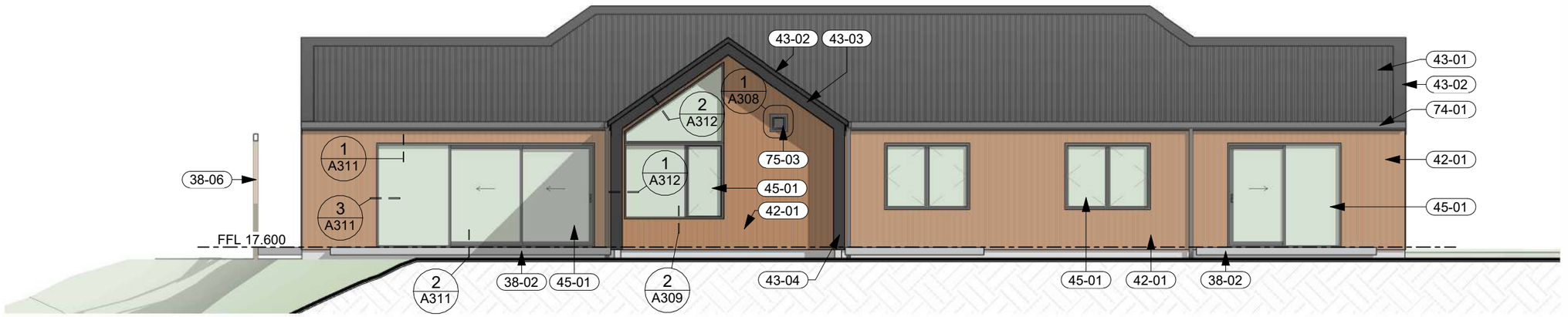
Elevations

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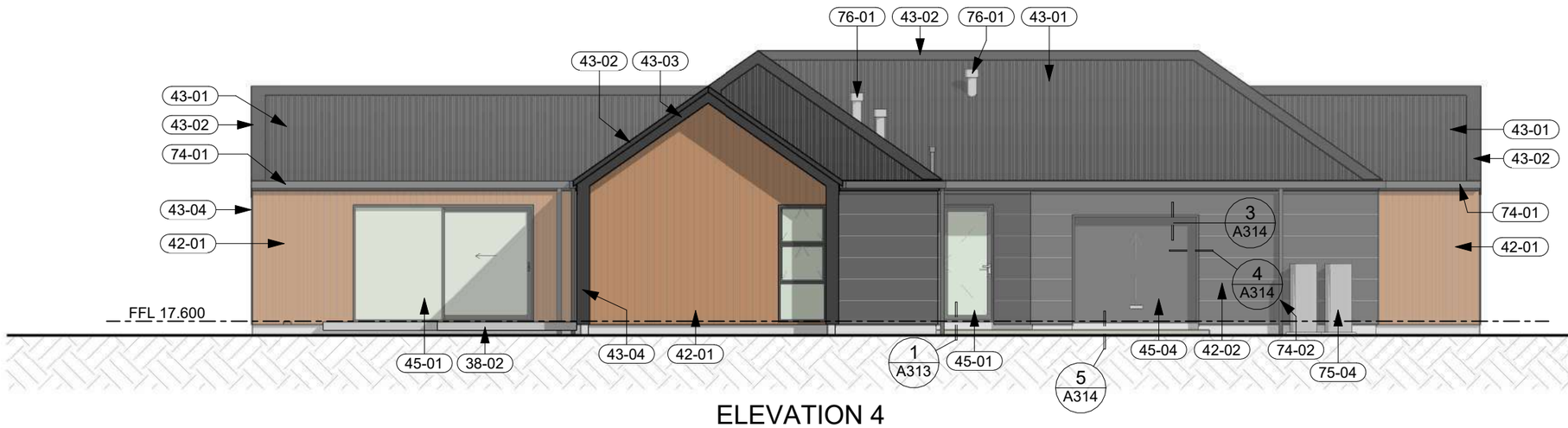
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ELEVATION 3
1 : 100



ELEVATION 4
1 : 100

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

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43-03	Metal fascia flashing over timber fascia
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75-04	2x90kg LPG gas bottles to supply HOB & fire. Confirm size with supplier. Install seismic restraints as per supplier/manufacturer documentation.
76-01	Extract ducting to bathrooms, laundry and kitchen through roof with Dektite flashing and weatherproof cowl

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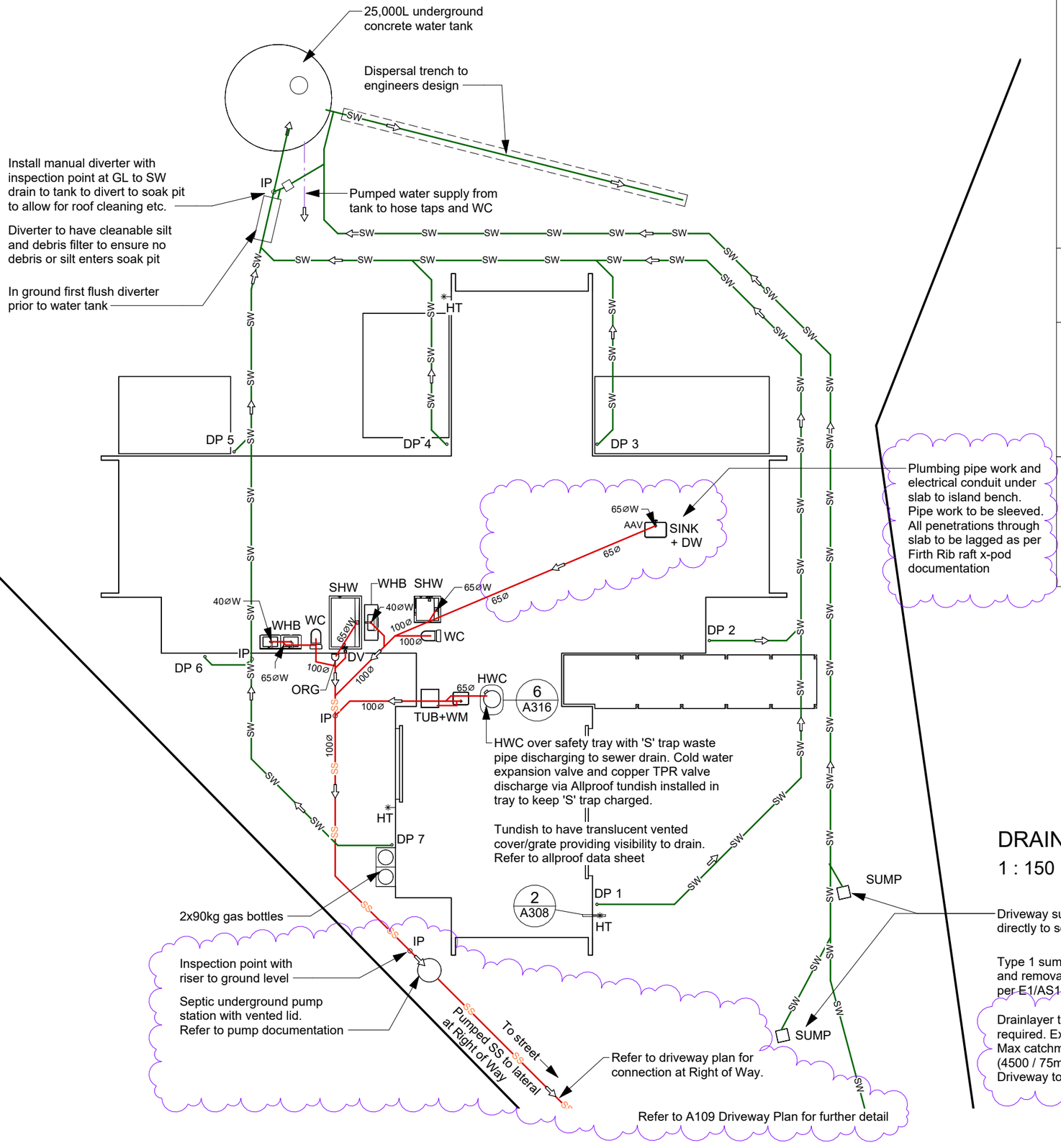
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DRAINAGE PLAN
1 : 150

Plumbing Legend

BATH	= Bath	= 4FU
BG	= Bathroom group	= 6FU
DW	= Dishwasher	= 3FU
SHW	= Shower	= 2FU
SINK	= Sink	= 3FU
TUB	= Laundry tub	= 5FU
WC	= Toilet	= 4FU
WHB	= Wash hand basin	= 1FU
WM	= Washing machine	= 5FU

DP	= Downpipe 80Ø
DV	= Drain vent 65Ø
HT	= Hose tap
IP	= Inspection point
AAV	= Air admittance valve
FWG	= Floor waste gully
HWC	= Hot water cylinder
ORG	= Overflow relief gully

Maximum number of fixture units for vented 100mmØ drain laid 1 in 60 = 165
Refer to table 4.3 AS/NZS 3500.2 for other gradient.

Minimum pipe gradients

65mmØ & less -	1 in 40
80mmØ & 100mmØ -	1 in 60
100Ø Stormwater drain -	1 in 120

Water supply - Nominal pipe sizes

- 20mmØ to shower (15mmØ if supply from separate pipe from HWC)
- 15mmØ to all others
- Hot water supply pipes to have a temperature limiting device to provide hot water at 55° maximum to sinks and tubs, and 50° maximum to basins, baths and showers

Drainage Pipe Key

- SS SS — 100mmØ Sanitary Sewer
- SW SW — 100mmØ Storm Water
- 100mmØ Perforated field drain wrapped in filter fabric

In ground first flush diverter prior to tanks
Roof area: 257m^2 (Plan Area)
Divert 0.5L per m^2 (Low level pollution)
= 128.5L to divert

Install leaf and debris gutter mesh to all gutters to reduce pollution level entering drains.

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Plumbing and Drainage Notes
- This plan has been designed in accordance with Branz Plumbing and Drainage Guide Section D AS/NZS 3500 part 2 for ground floor systems, single stack residential systems and Section F drainage requirements
- Refer also to drainage schematic
- Confirm positions of laterals and mains on site
- Provide 25,000L water storage tank with pump supply to WC cisterns and exterior hose taps - location to be confirmed by client
- Install water supply top up to water tank from town water main
- All pipes from water tank supply WC and exterior taps to be clearly identifiable and labeled as such (lilac colour)
- Install signs at exterior taps to show water not fit for drinking
- Provide seismic restraints hot water cylinders
- Hot water supply pipes from a hot water cylinder shall be thermally insulated in accordance with NZS 4305
- Install Isovalve access control valves to hot and cold water supplies at all basins, sinks, and tubs
- All tiled wet area showers to have aqautite wet wall caddy system installed to penetrations
- Make provision in internal linings to allow for convenient access to isolation valves or switches

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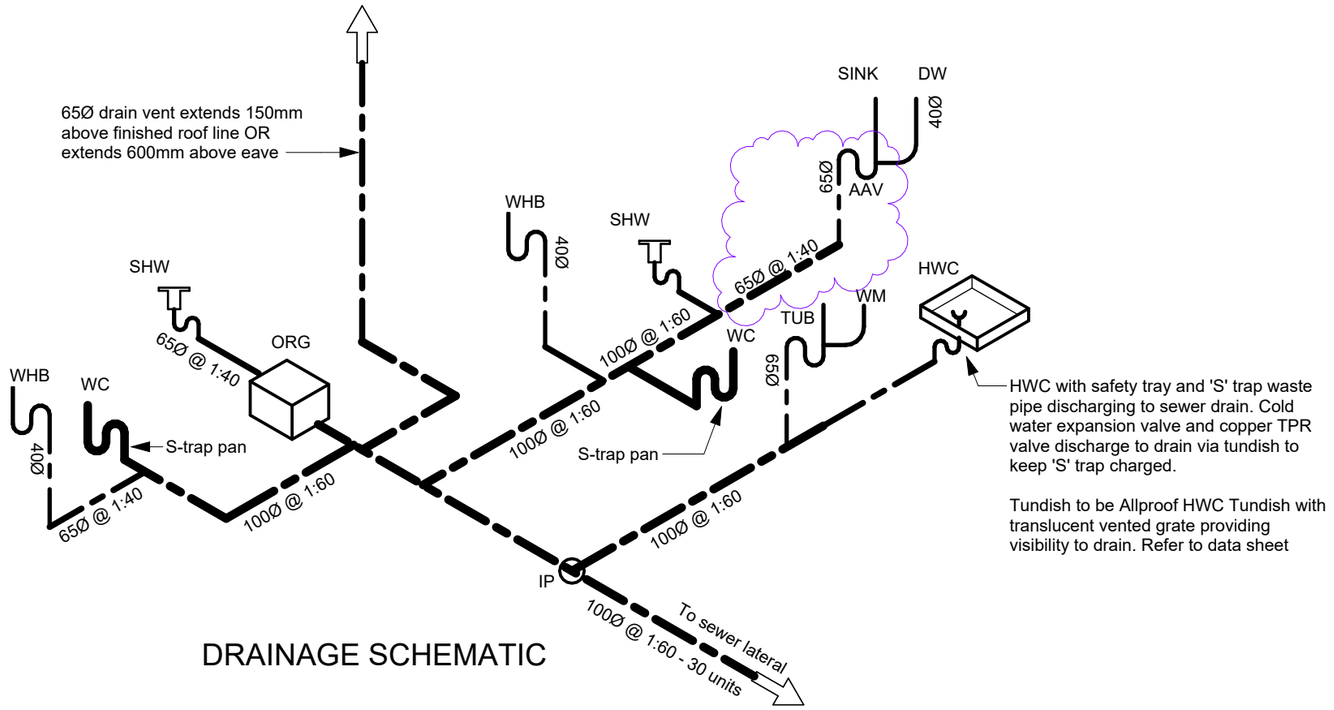
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Drainage Plan

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24058	14/04/2025	A101	B

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DRAINAGE SCHEMATIC

Plumbing Legend

BATH	= Bath	= 4FU
BG	= Bathroom group	= 6FU
DW	= Dishwasher	= 3FU
SHW	= Shower	= 2FU
SINK	= Sink	= 3FU
TUB	= Laundry tub	= 5FU
WC	= Toilet	= 4FU
WHB	= Wash hand basin	= 1FU
WM	= Washing machine	= 5FU

DP	= Downpipe 80Ø
DV	= Drain vent 65Ø
HT	= Hose tap
IP	= Inspection point
AAV	= Air admittance valve
FWG	= Floor waste gully
HWC	= Hot water cylinder
ORG	= Overflow relief gully

Maximum number of fixture units for vented 100mmØ drain laid 1 in 60 = 165
Refer to table 4.3 AS/NZS 3500.2 for other gradient.

Minimum pipe gradients

65mmØ & less -	1 in 40
80mmØ & 100mmØ -	1 in 60
100Ø Stormwater drain -	1 in 120

Water supply - Nominal pipe sizes

- 20mmØ to shower (15mmØ if supply from separate pipe from HWC)
- 15mmØ to all others
- Hot water supply pipes to have a temperature limiting device to provide hot water at 55° maximum to sinks and tubs, and 50° maximum to basins, baths and showers

Drainage Pipe Key

SS SS — 100mmØ Sanitary Sewer

SW SW — 100mmØ Storm Water

100mmØ Perforated field drain wrapped in filter fabric

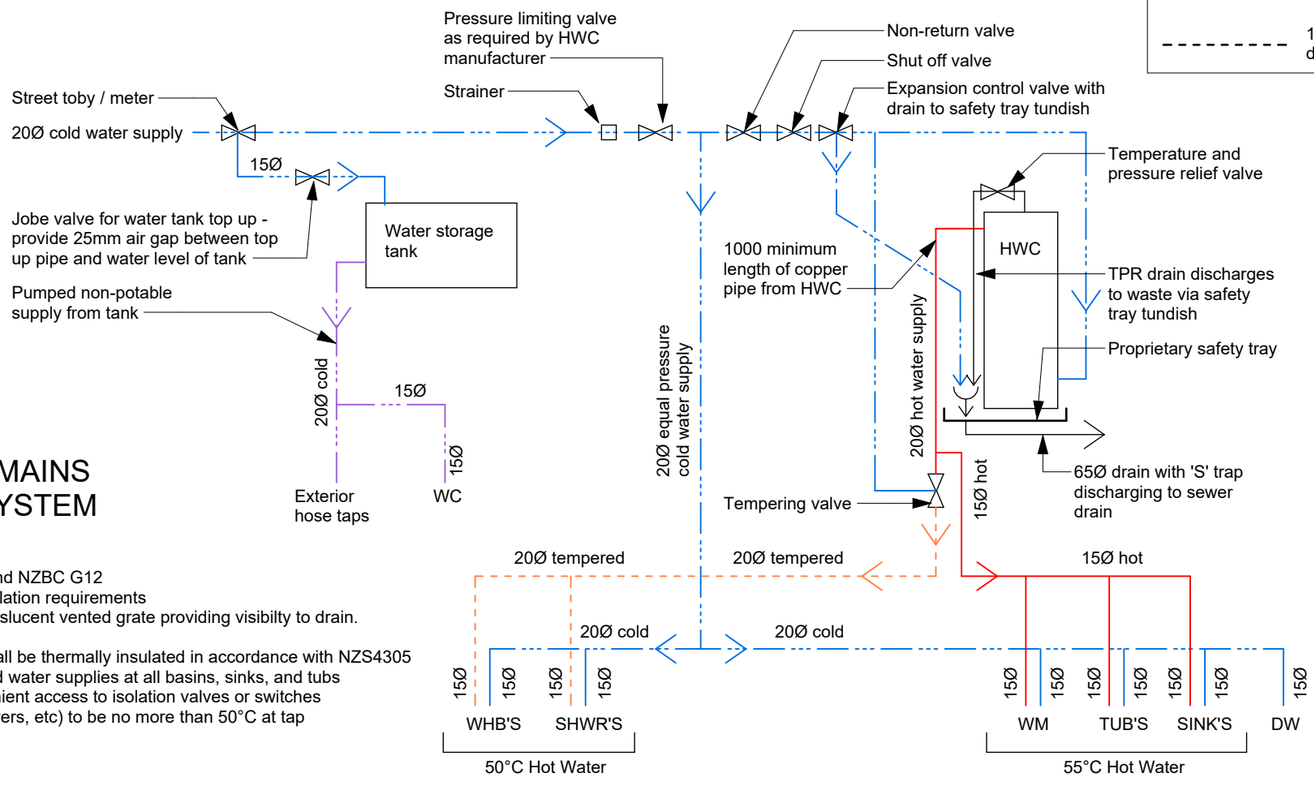
Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Plumbing and Drainage Notes

- This plan has been designed in accordance with Branz Plumbing and Drainage Guide Section D AS/NZS 3500 part 2 for ground floor systems, single stack residential systems and Section F drainage requirements
- Refer also to drainage schematic
- Confirm positions of laterals and mains on site
- Provide 25,000L water storage tank with pump supply to WC cisterns and exterior hose taps - location to be confirmed by client
- Install water supply top up to water tank from town water main
- All pipes from water tank supply WC and exterior taps to be clearly identifiable and labeled as such (lilac colour)
- Install signs at exterior taps to show water not fit for drinking
- Provide seismic restraints hot water cylinders
- Hot water supply pipes from a hot water cylinder shall be thermally insulated in accordance with NZS 4305
- Install Isovalve access control valves to hot and cold water supplies at all basins, sinks, and tubs
- All tiled wet area showers to have aqautite wet wall caddy system installed to penetrations
- Make provision in internal linings to allow for convenient access to isolation valves or switches

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WATER SCHEMATIC - HWC MAINS PRESSURE NON VENTED SYSTEM

Notes:
- All work to be in accordance with AS/NZS 3500.5 and NZBC G12
- Refer to manufacturer's specification for HWC installation requirements
- HWC Tundish to be Allproof HWC Tundish with translucent vented grate providing visibilty to drain.
- Provide seismic restraints hot water cylinders
- Hot water supply pipes from a hot water cylinder shall be thermally insulated in accordance with NZS4305
- Install Isovalve access control valves to hot and cold water supplies at all basins, sinks, and tubs
- Make provision in internal linings to allow for convenient access to isolation valves or switches
- Hot water used for Personal Hygiene (Basins, Showers, etc) to be no more than 50°C at tap

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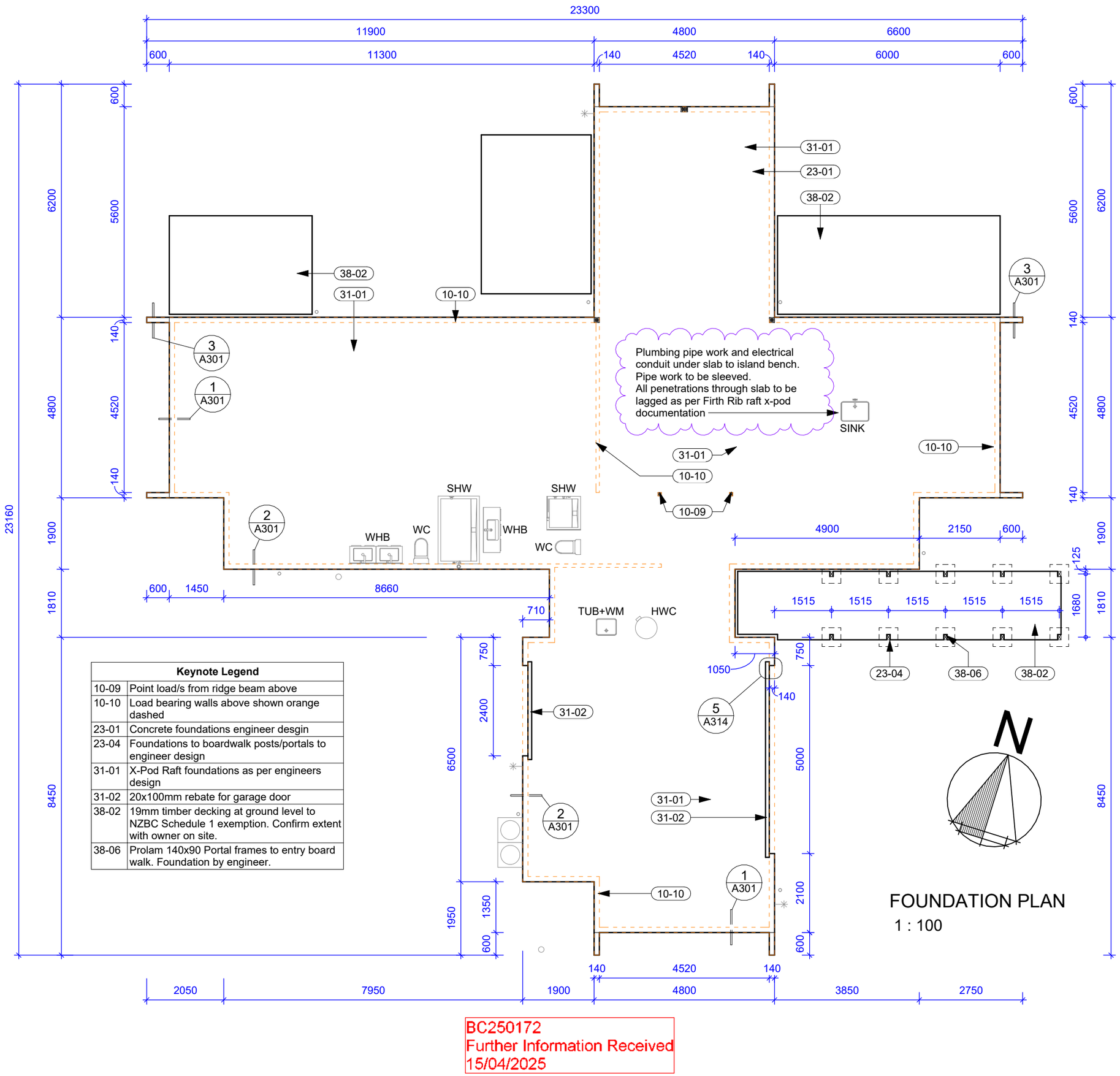
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Drainage & Water Schematic

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24058	14/04/2025	A102	B

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Keynote Legend	
10-09	Point load/s from ridge beam above
10-10	Load bearing walls above shown orange dashed
23-01	Concrete foundations engineer desgin
23-04	Foundations to boardwalk posts/portals to engineer design
31-01	X-Pod Raft foundations as per engineers design
31-02	20x100mm rebate for garage door
38-02	19mm timber decking at ground level to NZBC Schedule 1 exemption. Confirm extent with owner on site.
38-06	Prolam 140x90 Portal frames to entry board walk. Foundation by engineer.

FOUNDATION PLAN
1 : 100

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Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Foundation Notes
- All concrete to be 20MPa unless specified otherwise by engineer
- Reinforcing mesh to be grade 500E
- Min concrete cover to reinforcing:
  - 75mm against ground
  - 50mm against formwork
  - 30mm for slab mesh
- Concrete slab system and foundation details to engineers design
- Prior to pouring concrete consult all relevant contractors and install conduit suitable for water, gas, electricity and telecommunications services
- Seal all slab penetrations with DPM manufacturers approved tape
- Refer to engineers dwg for sawcut locations
- Confirm all window and door sill slab rebate sizes with window manufacturer
- This site is exposure zone C :
- All treated timber pile connections and subfloor fixings within 600mm from ground level or in exposed situations are to be type 304 S.S. (Deck structure)
- Nail and screw fixings can be galvanized
- All structural fixings (except fabricated brackets) in sheltered location to be hot dip galvanized, and exposed situations to be type 304 S.S.
- All fabricated brackets to be minimum 5mm mild steel and hot dip galvanized
- All fixings in contact with timber treated with copper quaternary (ACQ) or copper azole (CuAz) preservatives are to be type 304 S.S. in exposed or sheltered locations, and hot dipped galvanized in closed situations
- All timber joists spanning more that 2500mm to have solid blocking mid span
- All timber joist to have full depth blocking lateral support at each bearer line

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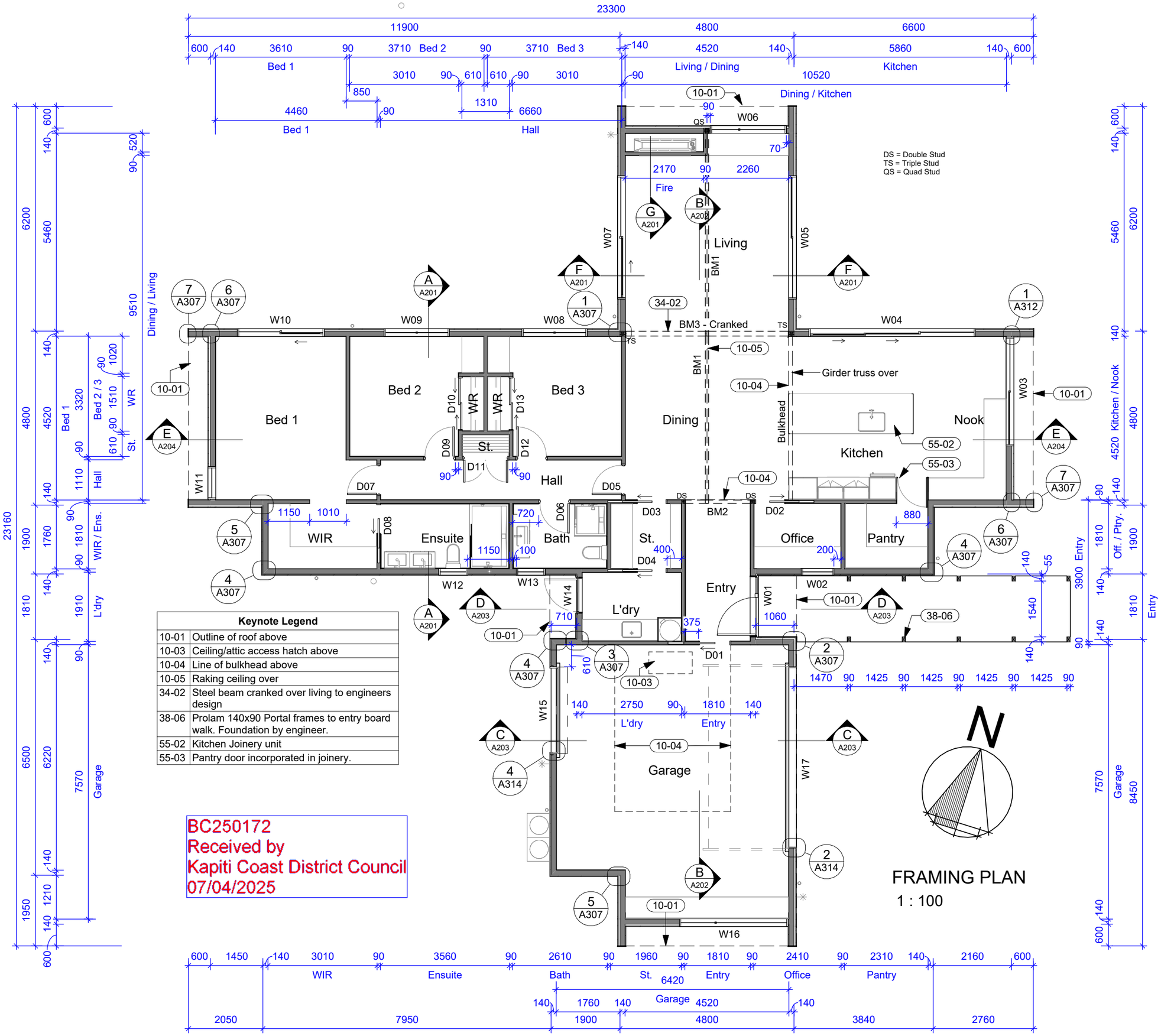
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Foundation Plan

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24058	14/04/2025	A103	B

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Keynote Legend	
10-01	Outline of roof above
10-03	Ceiling/attic access hatch above
10-04	Line of bulkhead above
10-05	Raking ceiling over
34-02	Steel beam cranked over living to engineers design
38-06	Prolam 140x90 Portal frames to entry board walk. Foundation by engineer.
55-02	Kitchen Joinery unit
55-03	Pantry door incorporated in joinery.

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Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Wall Framing Notes

- Wall framing to be in accordance with NZS 3604 Section 8
- Wall framing outside the scope of NZS 3604 to be in accordance with design by separate consultant
- Wall framing to be kiln dried SG8 minimum unless noted otherwise
- Top plates to be fixed to studs in accordance with Bowmac Studlok fixing specification
- Lintel fixings to be in accordance with Lumberlok lintel fixing schedule
- All window and door lintels are to prenail manufacturers design unless noted otherwise
- Window openings to be 20mm larger than window sizes (10mm tolerance each side)
- Exterior wall framing to be :
  - 140x45 at 400crs up to 3.6 high
  - 140x45 at 600crs up to 3.0 high
- Interior wall framing to be :
  - 90x45 at 600crs up to 3.0 high
- Dwangs to be 90x45 on edge to inside face on exterior walls
- Dwangs to generally be at 1350crs.
- Dwangs to garage to be at 800crs to suit strandboard lining.
- All timber framed walls with GIB linings are to have Gibfix framing system installed to manuf. spec.
- 50x25 vertical cavity battens to be structurally fixed to framing with power driven 64x2.8mm S.S. annular grooved nails at 300crs (250crs for extra high wind zone) staggered 12mm from centre line
- Exterior walls with vertical shiplap cladding are to have 70x45 horizontal castellated structural cavity battens at 480crs. max. to be fixed to framing with power driven 2/90x3.15mm S.S. annular grooved nail to each stud.
- All fixings in contact with timber treated with copper quaternary (ACQ) or copper azole (CuAz) preservatives are to be type 304 S.S. in exposed or sheltered locations, and hot dipped galvanized in closed situations
- Wall bracing to engineers design

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Framing Plan

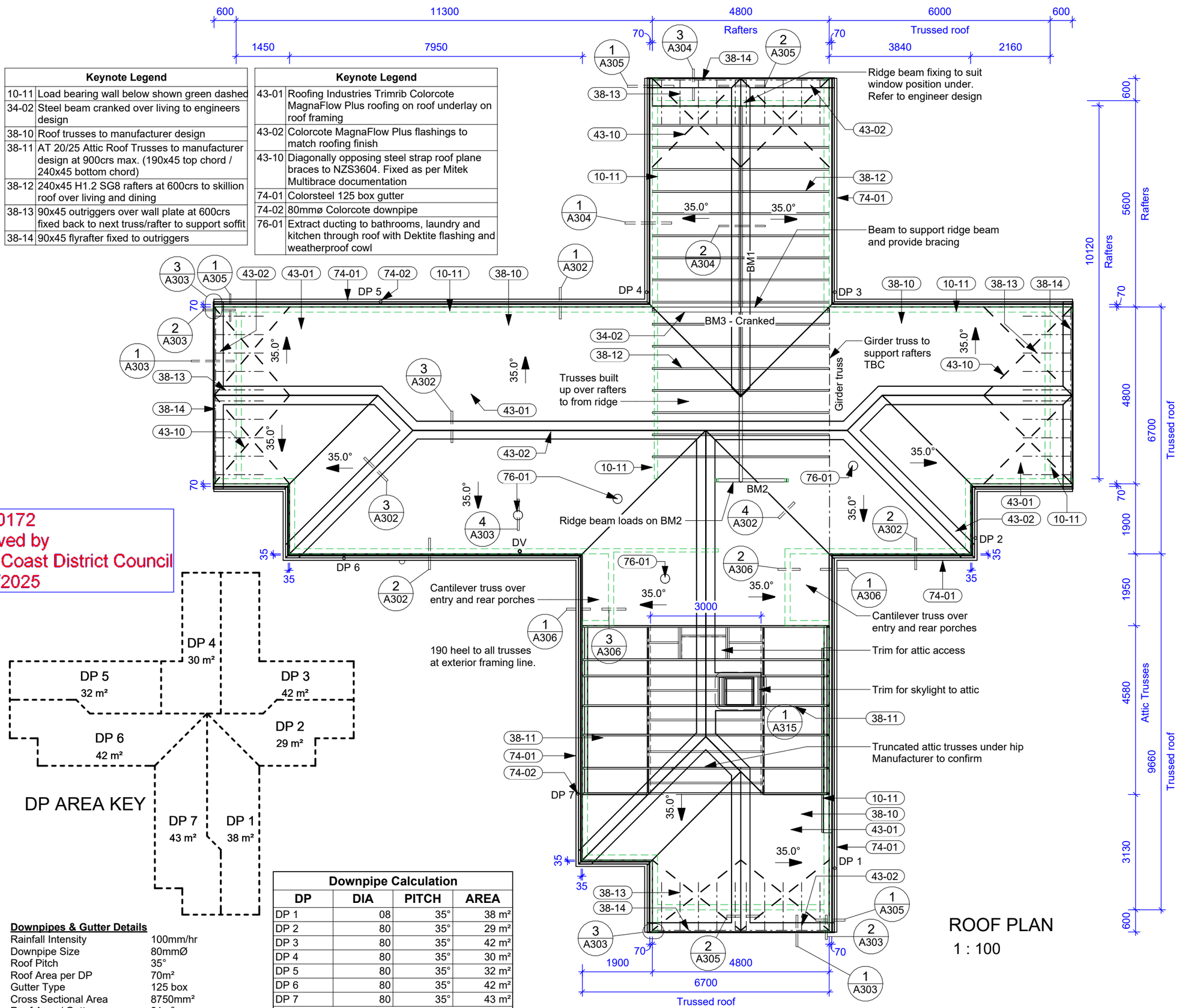
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24058	1/04/2025	A104	A

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Keynote Legend	
10-11	Load bearing wall below shown green dashed
34-02	Steel beam cranked over living to engineers design
38-10	Roof trusses to manufacturer design
38-11	AT 20/25 Attic Roof Trusses to manufacturer design at 900crs max. (190x45 top chord / 240x45 bottom chord)
38-12	240x45 H1.2 SG8 rafters at 600crs to skillion roof over living and dining
38-13	90x45 outriggers over wall plate at 600crs fixed back to next truss/rafter to support soffit
38-14	90x45 flyrafter fixed to outriggers

Keynote Legend	
43-01	Roofing Industries Trimrib Colorcote MagnaFlow Plus roofing on roof underlay on roof framing
43-02	Colorcote MagnaFlow Plus flashings to match roofing finish
43-10	Diagonally opposing steel strap roof plane braces to NZS3604. Fixed as per Mitek Multibrace documentation
74-01	Colorsteel 125 box gutter
74-02	80mmø Colorcote downpipe
76-01	Extract ducting to bathrooms, laundry and kitchen through roof with Dektite flashing and weatherproof cowl



ROOF PLAN
1 : 100

Downpipe Calculation			
DP	DIA	PITCH	AREA
DP 1	08	35°	38 m²
DP 2	80	35°	29 m²
DP 3	80	35°	42 m²
DP 4	80	35°	30 m²
DP 5	80	35°	32 m²
DP 6	80	35°	42 m²
DP 7	80	35°	43 m²
TOTAL DOWNPIPES REQUIRED: 7			257 m²

Downpipes & Gutter Details

Rainfall Intensity	100mm/hr
Downpipe Size	80mmØ
Roof Pitch	35°
Roof Area per DP	70m²
Gutter Type	125 box
Cross Sectional Area	8750mm²
Roof Area / Gutter	81m²

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Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Roof Notes
- Provide roof space passive ventilation system - refer to details
- Install eaves flashing to all eaves
- Refer also to details for flashing dimensions
- All soffit dimensions are for sloping soffits
- All roof framing to be SG8 minimum unless noted otherwise
- Roof purlins to be grade SG8 70x45 at 900 crs on their flat
- Roof purlin hold down fixings to be 1 No. 10g self drilling 80mm screw or other approved fixing 2.4kN connection
- Rafter / top plate connection to be 2 No. 90x3.15mm skew nails + 2 No. wire dogs or other approved 4.7kN connection
- Skillion rafter / top plate connection to be nail strap fixing each side of rafter with 8 No. 30x3.15 nails each strap (4 No. nails to top plate and 4 No. nails to rafter) or other approved 7kN connection - refer NZS 3604 figure 10.6
- Truss / top plate connections specified by truss manufacturer
- Roof areas shown are based on plan area as required by NZBC E1. Do not use for quantitiy take-off purposes
- All gutters to have leaf guard mesh installed

Site information

Wind Zone:	High (Eng Des.)
Exposure Zone:	C
To Sea (m):	1760-1800m
Earthquake Zone:	3
Climate Zone:	3
Snow Zone:	N1 (0 - 400m)
Soil Class:	Refer Eng.
Liquefaction Area:	High

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Proposed House

for Tim Atkinson
40 Anderson Park Drive
Waikanae

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Roof Plan

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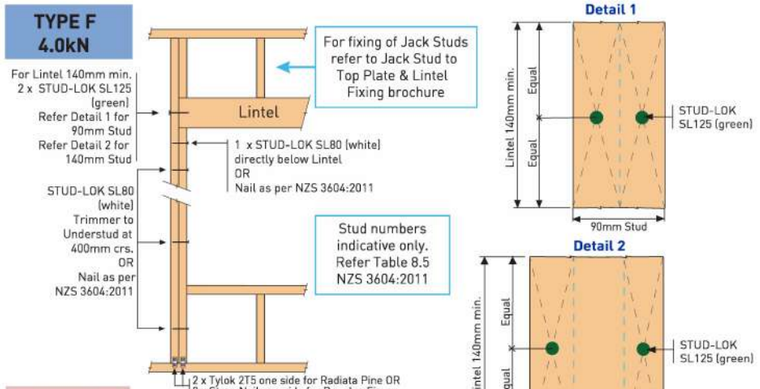
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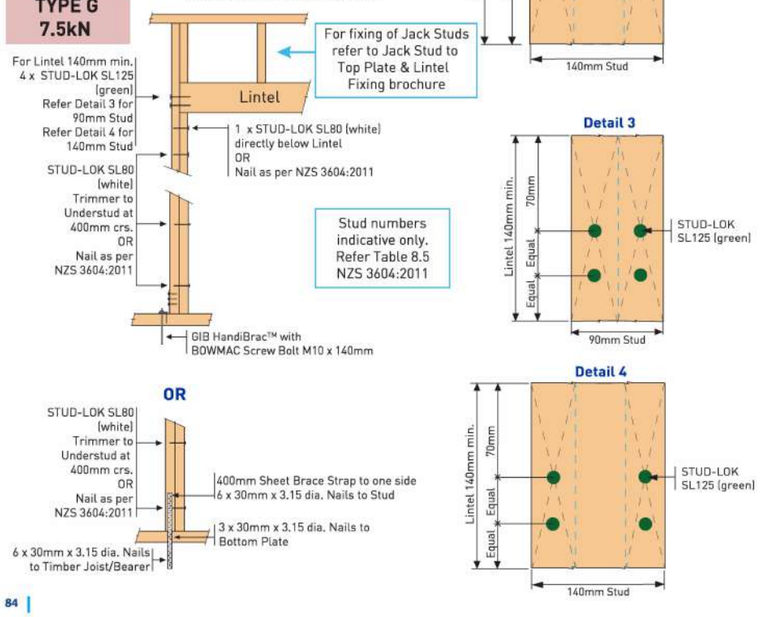
STUD-LOK LINTEL FIXING OPTIONS FOR ON-SITE

MiTek BOWMAC

TYPE F 4.0kN



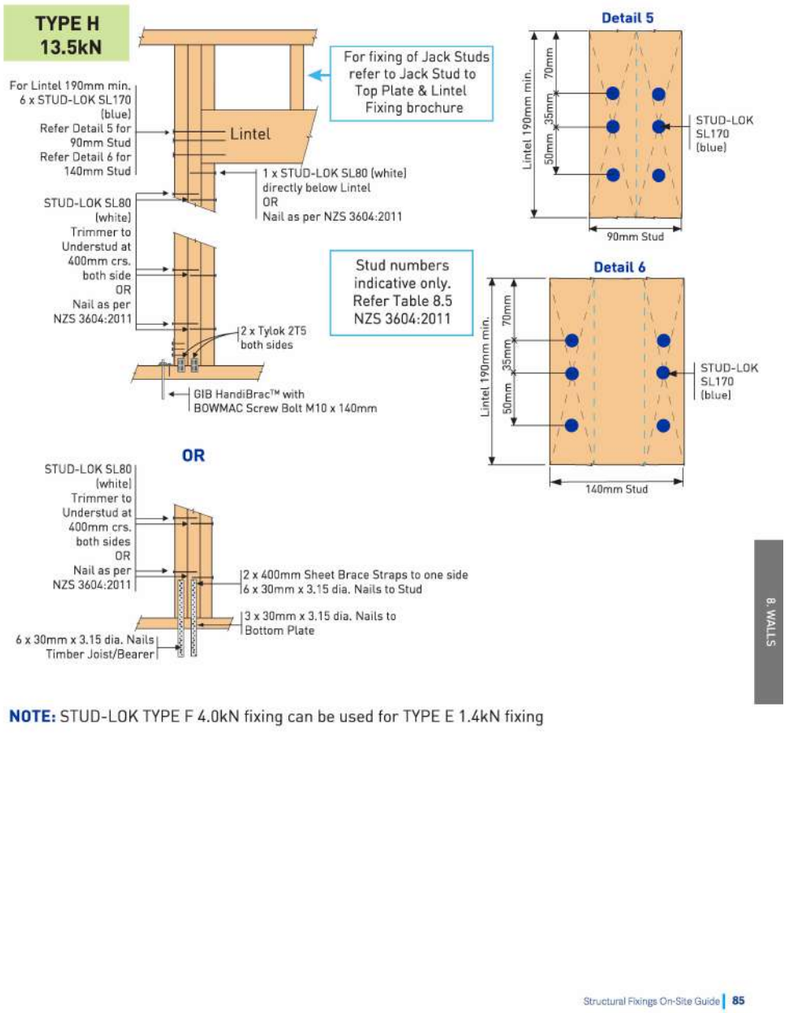
TYPE G 7.5kN



STUD-LOK LINTEL FIXING OPTIONS FOR ON-SITE

MiTek BOWMAC

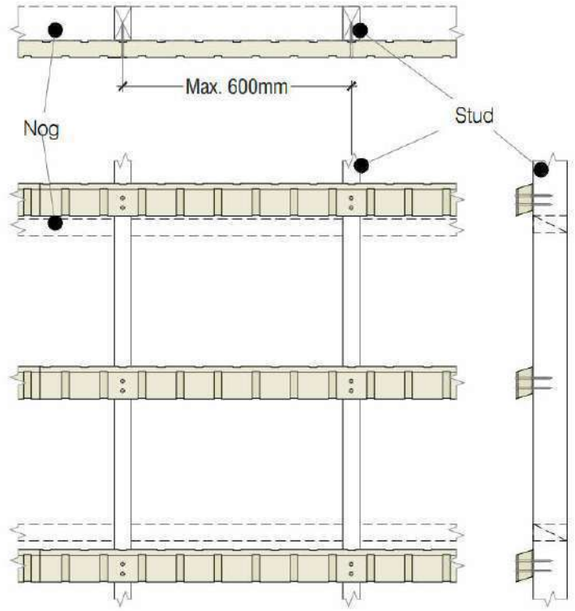
TYPE H 13.5kN



NOTE: STUD-LOK TYPE F 4.0kN fixing can be used for TYPE E 1.4kN fixing

H3. JSC-H 70x45mm Cavity Batten

Studs @ 600mm | CB @ 480mm max.
In this scenario Cavity Battens are not required to be supported by a nog



Beam Schedule

MARK	SIZE/TYPE	GRADE	TREATMENT	DESIGN	NOTES	FIXING
BM1	180UB-22.2			by Engineer	Ridge beam	by Engineer
BM2	2/190x45 Eng. Des.	SG8	H1.2	by Engineer	Supporting ridge beam end	by Engineer
BM3 - Cranked	200UB-22.3			by Engineer	Beam supporting ridge beam	by Engineer

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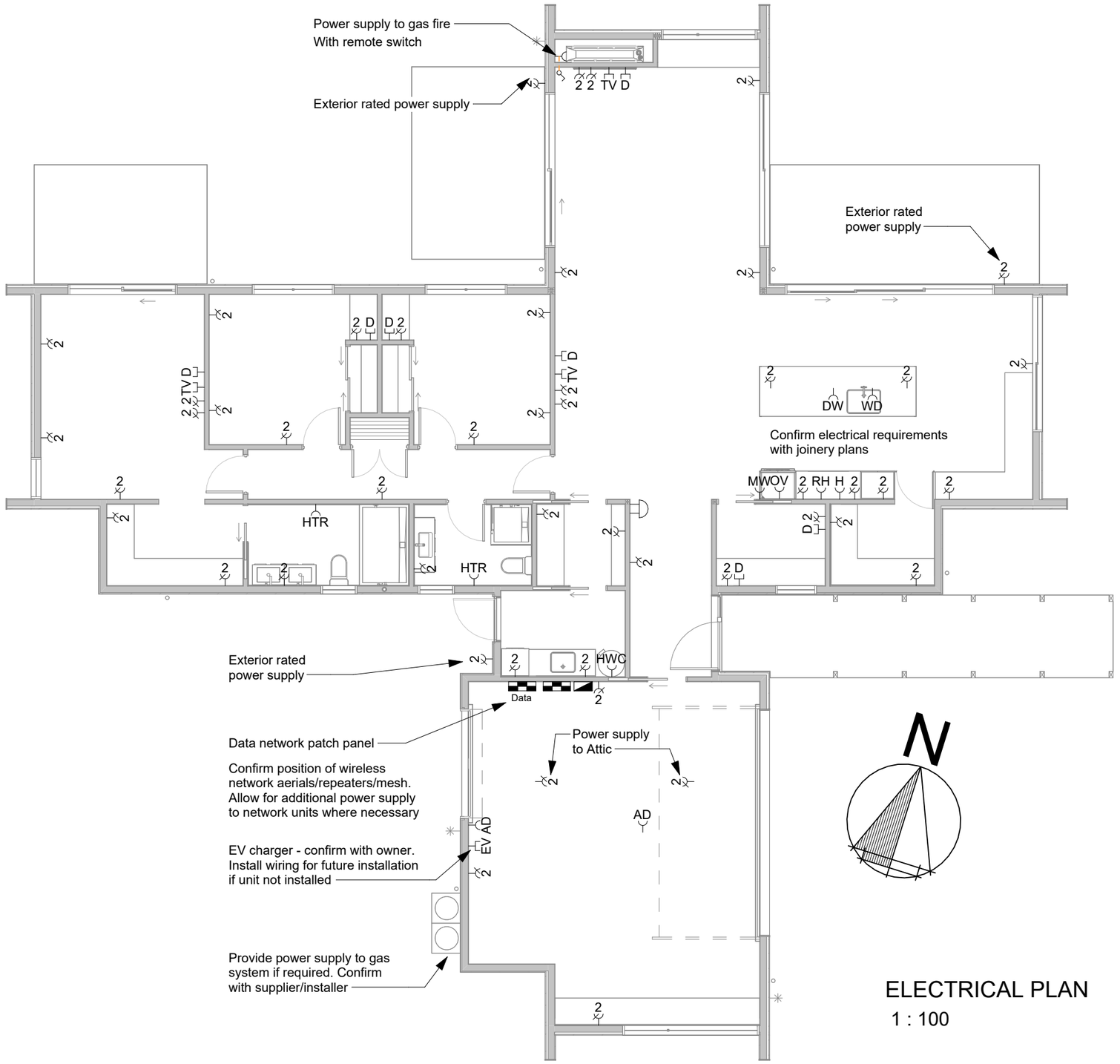
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Beam Schedule & Fixings

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24058	1/04/2025	A106	A



ELECTRICAL PLAN
1 : 100

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Lighting Legend

- (A) Recessed LED downlight (IC-F)
- (B) Surface mounted LED ceiling light
- (C) Suspended LED light
- (D) Interior ceiling mounted light
- (E) Interior wall mounted LED light
- (F) Interior suspended light
- (G) Interior recessed wall light
- (H) Exterior soffit mounted LED light
- (I) Exterior wall mounted LED light
- (J) Over mirror LED light
- (K) Batten holder light
- (L) Door switch operated light
- (M) Extract fan - vented to exterior
- (N) Wall mounted fan heater
- (P) PIR sensor
- (S) Inter-connected smoke detector / alarm
- LED strip light

- One way switch light
- Multiple switch light
- D Dimmer switch

Electrical Legend

- 2 Power point (2 = double)
- AD Auto garage door opener
- HTR Heated towel rail
- DW Dishwasher
- RH Rangehood
- OV Oven
- MW Microwave
- H Hob
- WD Waste disposal
- HWC Hot Water Cylinder
- TV TV outlet
- U USB charging outlet
- D Data outlet
- EV Electric vehicle charging point
- Hardwired door bell with button at front door

- Main switchboard
- Distribution Board
- Meter panel (smart meter)

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Electrical Notes
- All socket and switch gear to be as selected by owner
- TV wiring to be suitable for Sky digital, Vodafone cable TV and freeview HD
- Phone line wiring to be suitable for internet fibre and ultra high speed connections
- All power circuits to have RCD at switchboard
- Meter panel to be a smart meter
- Allow for security system to be installed to manuf design and spec
- Install under tile electric heating mats to all bathroom floors
- Extract fans for enclosed bathrooms and laundries are to provide extraction of 25 l/s minimum in accordance with AS 1668.2
- Extract fan for kitchen is to provide extraction of 50 l/s minimum in accordance with AS 1668.2
- All vent outlets ducted through walls are to have weatherproof grilles and rain deflectors installed
- All vent outlets ducted through soffits are to have weatherproof grilles installed
- All ducting to be rigid pipe (no flexi ducting to be installed)
- All switches to be aligned with door handles 1050mm above floor level
- All power points and socket outlets to be at a consistent height of 300mm minimum above floor level 500mm minimum from wall internal corners
- Allow for electrical requirements for solar photovoltaic system - refer to manufacturer's spec
- Allow for electrical requirements to pump at water storage tank

- Inter-connected smoke alarms/detectors to be installed as per C/AS1 and NZS 4514:2021

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Waikanae

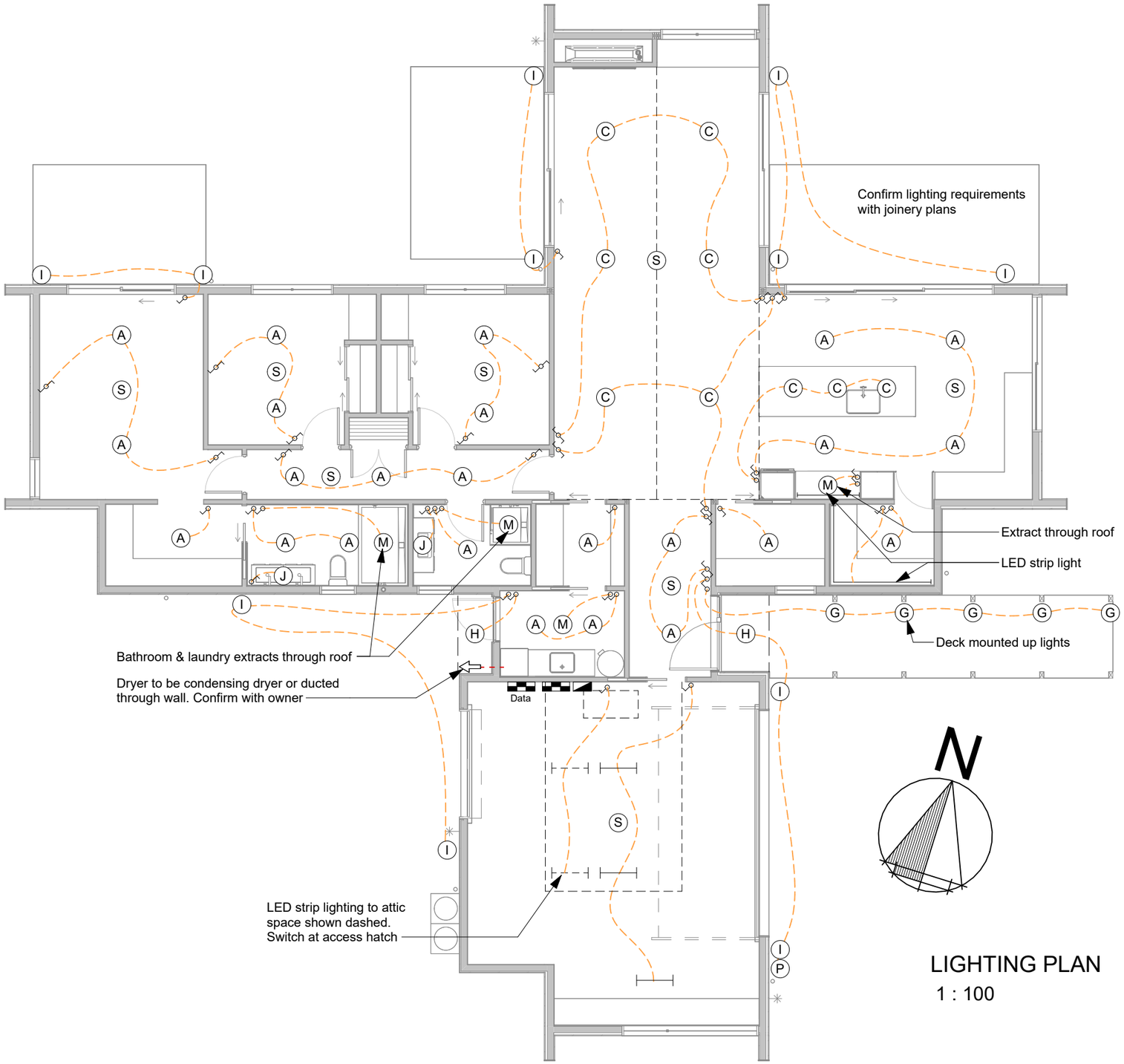
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Electrical Plan

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LIGHTING PLAN
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Lighting Legend

- (A) Recessed LED downlight (IC-F)
- (B) Surface mounted LED ceiling light
- (C) Suspended LED light
- (D) Interior ceiling mounted light
- (E) Interior wall mounted LED light
- (F) Interior suspended light
- (G) Interior recessed wall light
- (H) Exterior soffit mounted LED light
- (I) Exterior wall mounted LED light
- (J) Over mirror LED light
- (K) Batten holder light
- (L) Door switch operated light
- (M) Extract fan - vented to exterior
- (N) Wall mounted fan heater
- (P) PIR sensor
- (S) Inter-connected smoke detector / alarm
- LED strip light

- One way switch light
- Multiple switch light
- (D) Dimmer switch

Electrical Legend

- 2 — Power point (2 = double)
- AD — Auto garage door opener
- HTR — Heated towel rail
- DW — Dishwasher
- RH — Rangehood
- OV — Oven
- MW — Microwave
- H — Hob
- WD — Waste disposal
- HWC — Hot Water Cylinder
- TV — TV outlet
- U — USB charging outlet
- D — Data outlet
- EV — Electric vehicle charging point
- Hardwired door bell with button at front door

- Main switchboard
- Distribution Board
- Meter panel (smart meter)

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Electrical Notes
- All socket and switch gear to be as selected by owner
- TV wiring to be suitable for Sky digital, Vodafone cable TV and freeview HD
- Phone line wiring to be suitable for internet fibre and ultra high speed connections
- All power circuits to have RCD at switchboard
- Meter panel to be a smart meter
- Allow for security system to be installed to manuf design and spec
- Install under tile electric heating mats to all bathroom floors
- Extract fans for enclosed bathrooms and laundries are to provide extraction of 25 l/s minimum in accordance with AS 1668.2
- Extract fan for kitchen is to provide extraction of 50 l/s minimum in accordance with AS 1668.2
- All vent outlets ducted through walls are to have weatherproof grilles and rain deflectors installed
- All vent outlets ducted through soffits are to have weatherproof grilles installed
- All ducting to be rigid pipe (no flexi ducting to be installed)
- All switches to be aligned with door handles 1050mm above floor level
- All power points and socket outlets to be at a consistent height of 300mm minimum above floor level 500mm minimum from wall internal corners
- Allow for electrical requirements for solar photovoltaic system - refer to manufacturer's spec
- Allow for electrical requirements to pump at water storage tank

- Inter-connected smoke alarms/detectors to be installed as per C/AS1 and NZS 4514:2021

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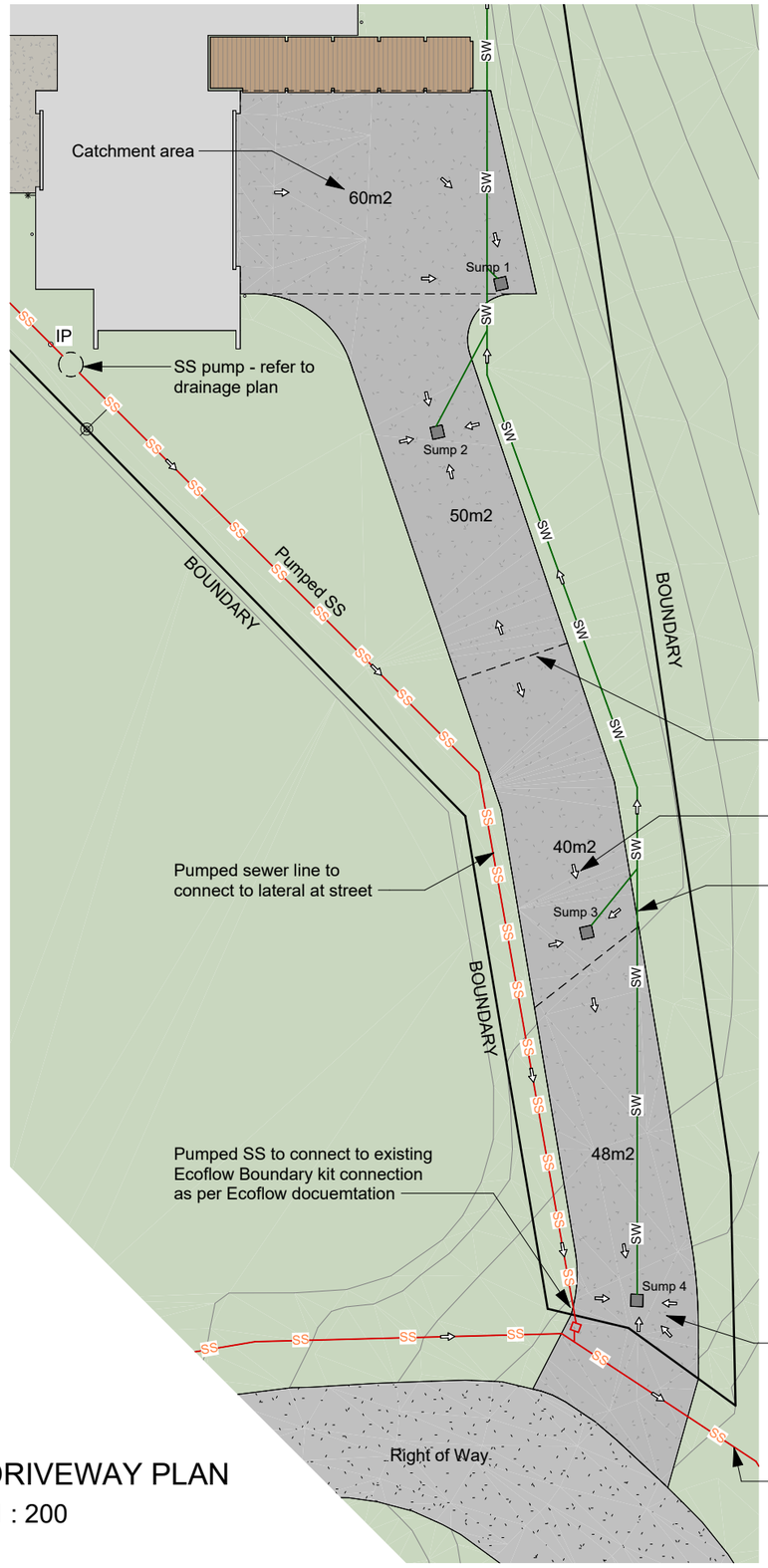
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Lighting Plan

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DRIVEWAY PLAN
1 : 200

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Further Information Received
15/04/2025

Dashed lines indicate boundary of catchment area

Arrows show direction of fall

Sumps to drain directly to soak pit/trench. Drainlayer to confirm soak pit/trench depth required with engineer to suit lowest sump

Refer to site and drainage plans

All sumps to be Type 1 sump with integral silt trap and removable or hinged lid as per E1/AS1.

Drainlayer to confirm positions and number of sumps required. Expected 4 sumps required.
Max catchment area of 60m2 per sump
(4500 / 75mm/hr Rainfall Intensity (E1/AS1 appendix A))
Driveway to be formed with falls to sumps.

Driveway to be formed with falls to sumps to ensure no runoff over boundary lines

Existing SS main in Right of way

Right to connect to right of way sewer main granted by Easement

Plumbing Legend

BATH	= Bath	= 4FU
BG	= Bathroom group	= 6FU
DW	= Dishwasher	= 3FU
SHW	= Shower	= 2FU
SINK	= Sink	= 3FU
TUB	= Laundry tub	= 5FU
WC	= Toilet	= 4FU
WHB	= Wash hand basin	= 1FU
WM	= Washing machine	= 5FU

DP	= Downpipe 80Ø
DV	= Drain vent 65Ø
HT	= Hose tap
IP	= Inspection point
AAV	= Air admittance valve
FWG	= Floor waste gully
HWC	= Hot water cylinder
ORG	= Overflow relief gully

Maximum number of fixture units for vented 100mmØ drain laid 1 in 60 = 165
Refer to table 4.3 AS/NZS 3500.2 for other gradient.

Minimum pipe gradients

65mmØ & less -	1 in 40
80mmØ & 100mmØ -	1 in 60
100Ø Stormwater drain -	1 in 120

Water supply - Nominal pipe sizes

- 20mmØ to shower (15mmØ if supply from separate pipe from HWC)
- 15mmØ to all others
- Hot water supply pipes to have a temperature limiting device to provide hot water at 55° maximum to sinks and tubs, and 50° maximum to basins, baths and showers

Drainage Pipe Key

SS SS — 100mmØ Sanitary Sewer

SW SW — 100mmØ Storm Water

- - - - - - - - - 100mmØ Perforated field drain wrapped in filter fabric

Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Plumbing and Drainage Notes

- This plan has been designed in accordance with Branz Plumbing and Drainage Guide Section D AS/NZS 3500 part 2 for ground floor systems, single stack residential systems and Section F drainage requirements
- Refer also to drainage schematic
- Confirm positions of laterals and mains on site
- Provide 25,000L water storage tank with pump supply to WC cisterns and exterior hose taps - location to be confirmed by client
- Install water supply top up to water tank from town water main
- All pipes from water tank supply WC and exterior taps to be clearly identifiable and labeled as such (lilac colour)
- Install signs at exterior taps to show water not fit for drinking
- Provide seismic restraints hot water cylinders
- Hot water supply pipes from a hot water cylinder shall be thermally insulated in accordance with NZS 4305
- Install Isovalve access control valves to hot and cold water supplies at all basins, sinks, and tubs
- All tiled wet area showers to have aqautite wet wall caddy system installed to penetrations
- Make provision in internal linings to allow for convenient access to isolation valves or switches

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B	14/04/25	RFI

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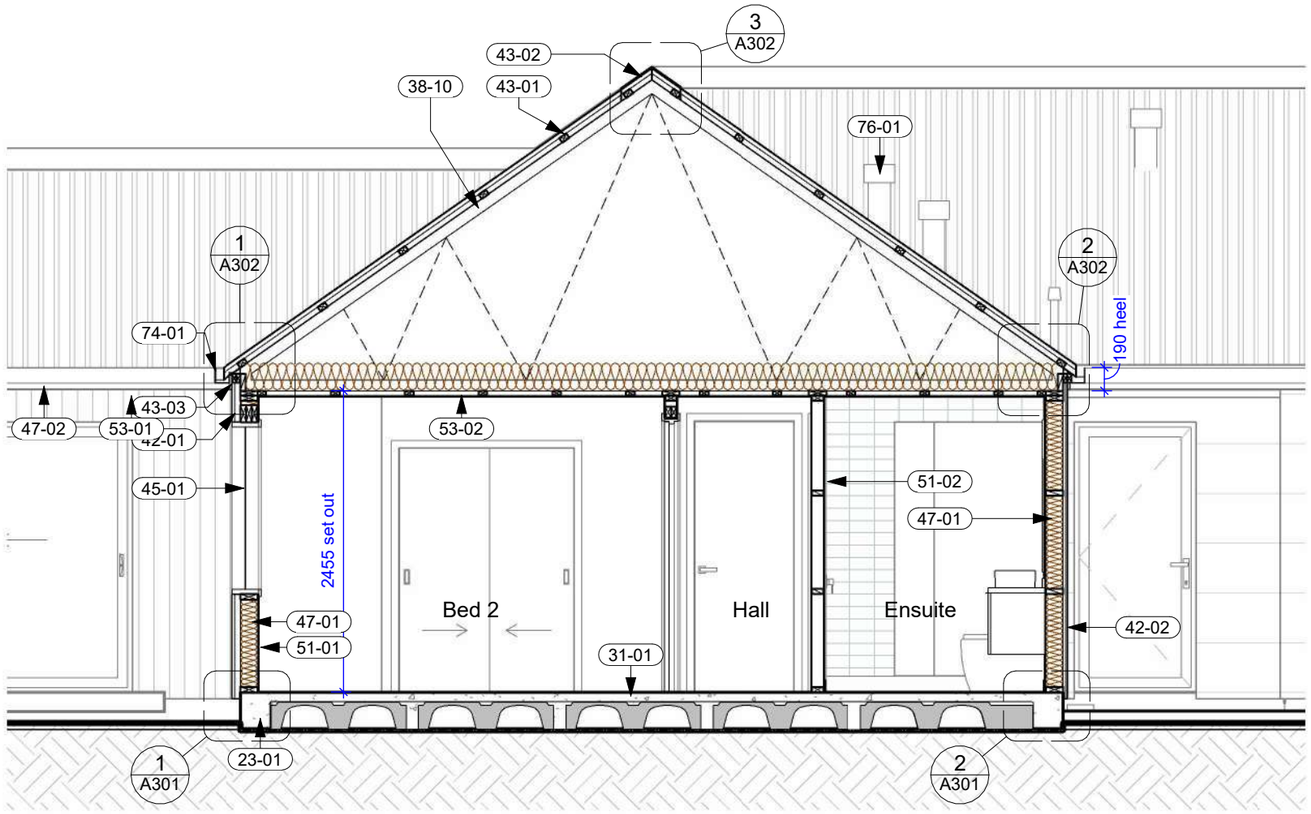
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Driveway Plan

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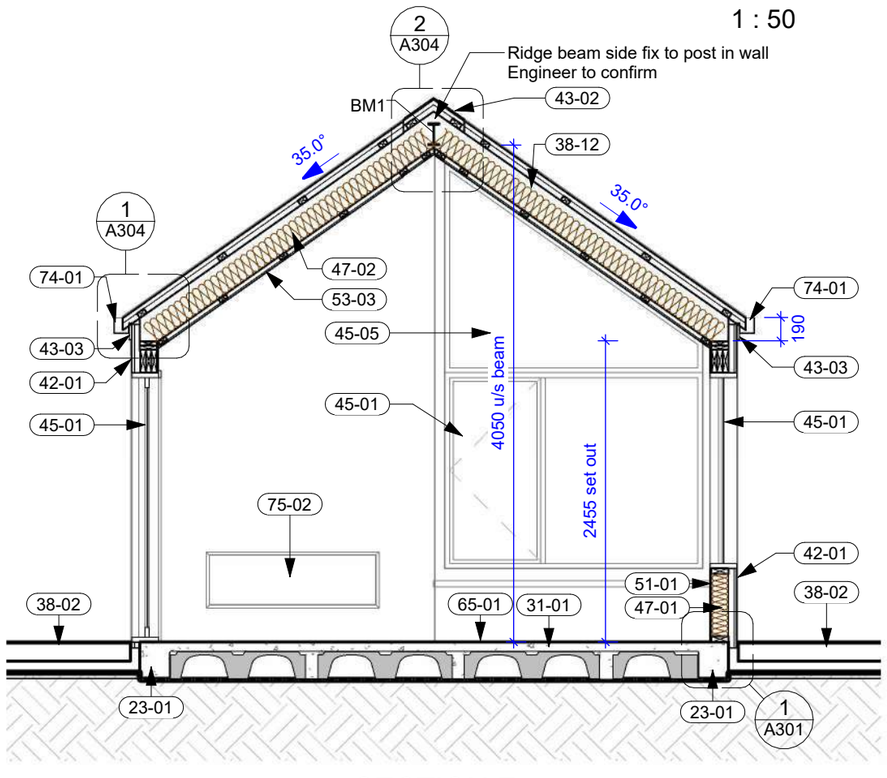
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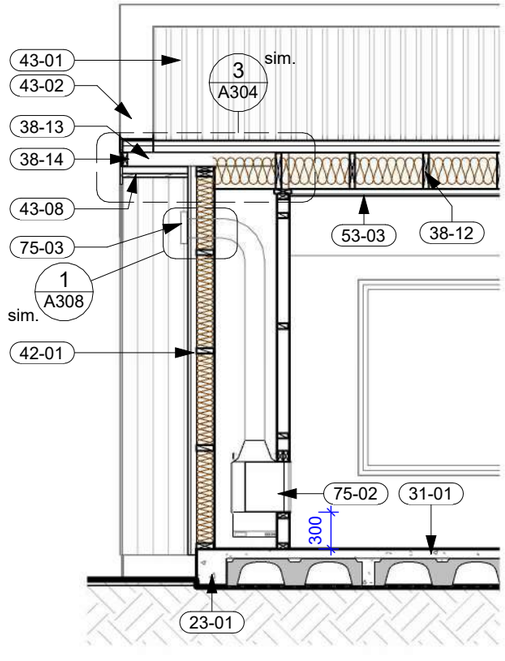
SECTION A

1 : 50



SECTION F

1 : 50



SECTION G

1 : 50

Keynote Legend	
23-01	Concrete foundations engineer desgin
31-01	X-Pod Raft foundations as per engineers design
38-02	19mm timber decking at ground level to NZBC Schedule 1 exemption. Confirm extent with owner on site.
38-10	Roof trusses to manufacturer design
38-12	240x45 H1.2 SG8 rafters at 600crs to skillion roof over living and dining
38-13	90x45 outriggers over wall plate at 600crs fixed back to next truss/rafter to support soffit
38-14	90x45 flyrafter fixed to outriggers
42-01	Vertical timber shiplap on 45mm H3.1 horizontal castellated battens on underlay on framing
42-02	James Hardie horizontal Stria weatherboards on 20mm H3.1 vertical timber cavity battens on wall underlay on framing
43-01	Roofing Industries Trimrib Colorcote MagnaFlow Plus roofing on roof underlay on roof framing
43-02	Colorcote MagnaFlow Plus flashings to match roofing finish
43-03	Metal fascia flashing over timber fascia
43-08	Timber shiplap to soffits to match cladding
45-01	Residential Thermal Heart series powdercoat aluminium double glazed windows with Low 'E' argon filled IGU's
45-05	Raking window to line with ceiling. Confirm dimensions on site
47-01	Wall insulation - refer insulation R-values note
47-02	Ceiling insulation - refer insulation R-values note
51-01	10mm GIB Standard wall lining
51-02	10mm GIB Aqualine wall lining
53-01	13mm Gib Standard to ceiling on 70x35 battens at 600crs
53-02	13mm Gib Aqualine to ceiling on 70x35 battens at 600crs
53-03	Grooved MDF feature raking ceiling to living and dining
65-01	Selected carpet floor finish
74-01	Colorsteel 125 box gutter
75-02	Escea DS1400 single sided gas fire place.
75-03	Flue to fire through wall
76-01	Extract ducting to bathrooms, laundry and kitchen through roof with Dektite flashing and weatherproof cowl

Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Insulation "R" Values

Exterior walls	R3.6
Garage interior walls	R2.4
Ceilings generally	R1.8 + R3.6
Skillion ceilings	R6 Skillion
Acoustic walls	R2.2

- Comply with NZBC H1 AS1 & NZS 4218
- Refer to specification for insulation types
- Refer also to H1 calculation sheet

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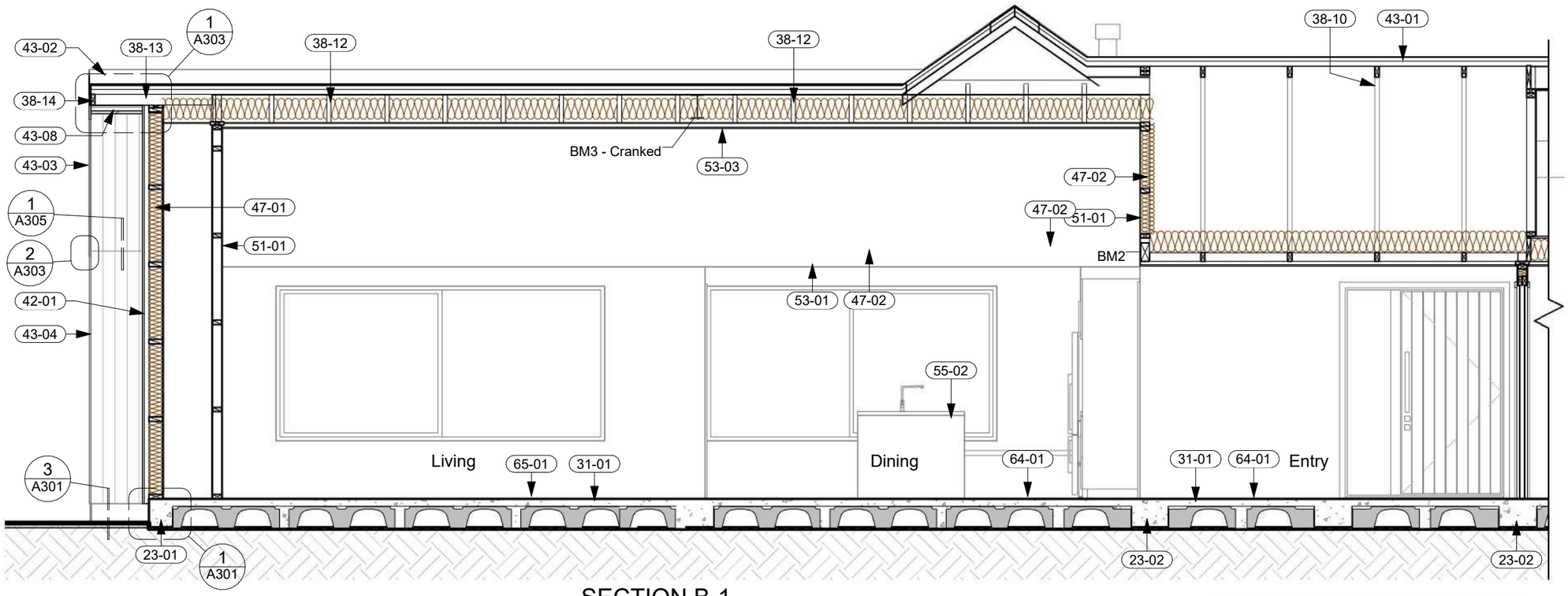
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Building Section

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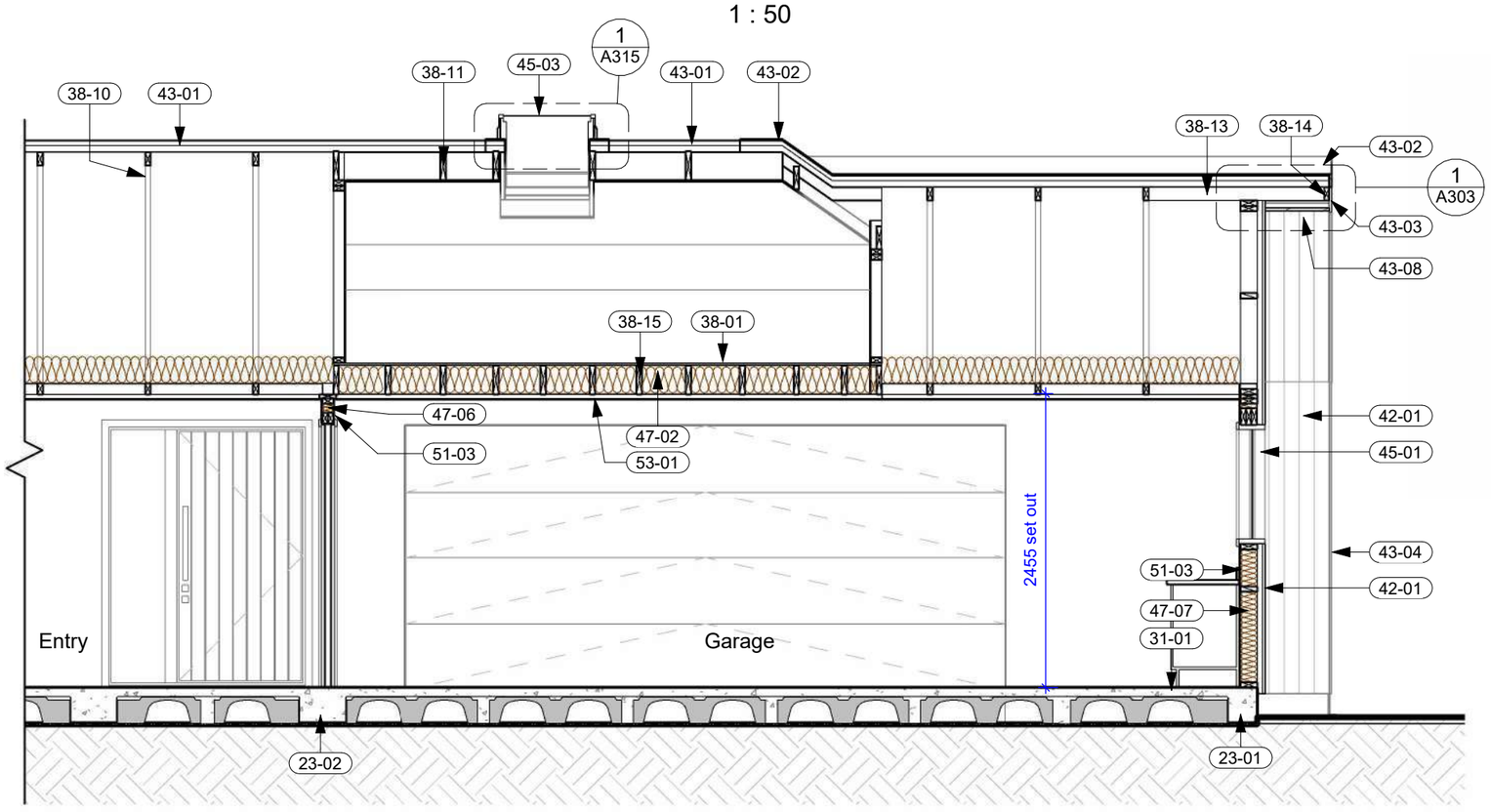
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SECTION B-1

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SECTION B-2

1 : 50

Keynote Legend	
23-01	Concrete foundations engineer desgin
23-02	Internal load bearing foundation to engineer design
31-01	X-Pod Raft foundations as per engineers design
38-01	20mm Strandfloor T&G edge flooring to attic screw fixed to floor joists - refer to roof plan
38-10	Roof trusses to manufacturer design
38-11	AT 20/25 Attic Roof Trusses to manufacturer design at 900crs max. (190x45 top chord / 240x45 bottom chord)
38-12	240x45 H1.2 SG8 rafters at 600crs to skillion roof over living and dining
38-13	90x45 outriggers over wall plate at 600crs fixed back to next truss/rafter to support soffit
38-14	90x45 flyrafter fixed to outriggers
38-15	240x45 intermediate attic joists and trimmers
42-01	Vertical timber shiplap on 45mm H3.1 horizontal castellated battens on underlay on framing
43-01	Roofing Industries Trimrib Colorcote MagnaFlow Plus roofing on roof underlay on roof framing
43-02	Colorcote MagnaFlow Plus flashings to match roofing finish
43-03	Metal fascia flashing over timber fascia
43-04	Metal fascia flashing over timber fascia to continue from barge down wing walls
43-08	Timber shiplap to soffits to match cladding
45-01	Residential Thermal Heart series powdercoat aluminium double glazed windows with Low 'E' argon filled IGU's
45-03	Velux skylight - refer exterior joinery schedule
47-01	Wall insulation - refer insulation R-values note
47-02	Ceiling insulation - refer insulation R-values note

Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Insulation "R" Values

Exterior walls	R3.6
Garage interior walls	R2.4
Ceilings generally	R1.8 + R3.6
Skillion ceilings	R6 Skillion
Acoustic walls	R2.2

- Comply with NZBC H1 AS1 & NZS 4218
- Refer to specification for insulation types
- Refer also to H1 calculation sheet

Keynote Legend	
47-06	Install batts insulation to garage interior walls - refer insulation R-values note
47-07	Garage exterior wall insulation - refer insulation R-values note
51-01	10mm GIB Standard wall lining
51-03	12mm Strandboard wall lining to garage walls
53-01	13mm Gib Standard to ceiling on 70x35 battens at 600crs
53-03	Grooved MDF feature raking ceiling to living and dining
55-02	Kitchen Joinery unit
64-01	Selected timber overlay flooring with 3 coats polyurethane finish
65-01	Selected carpet floor finish

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Proposed House

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40 Anderson Park Drive

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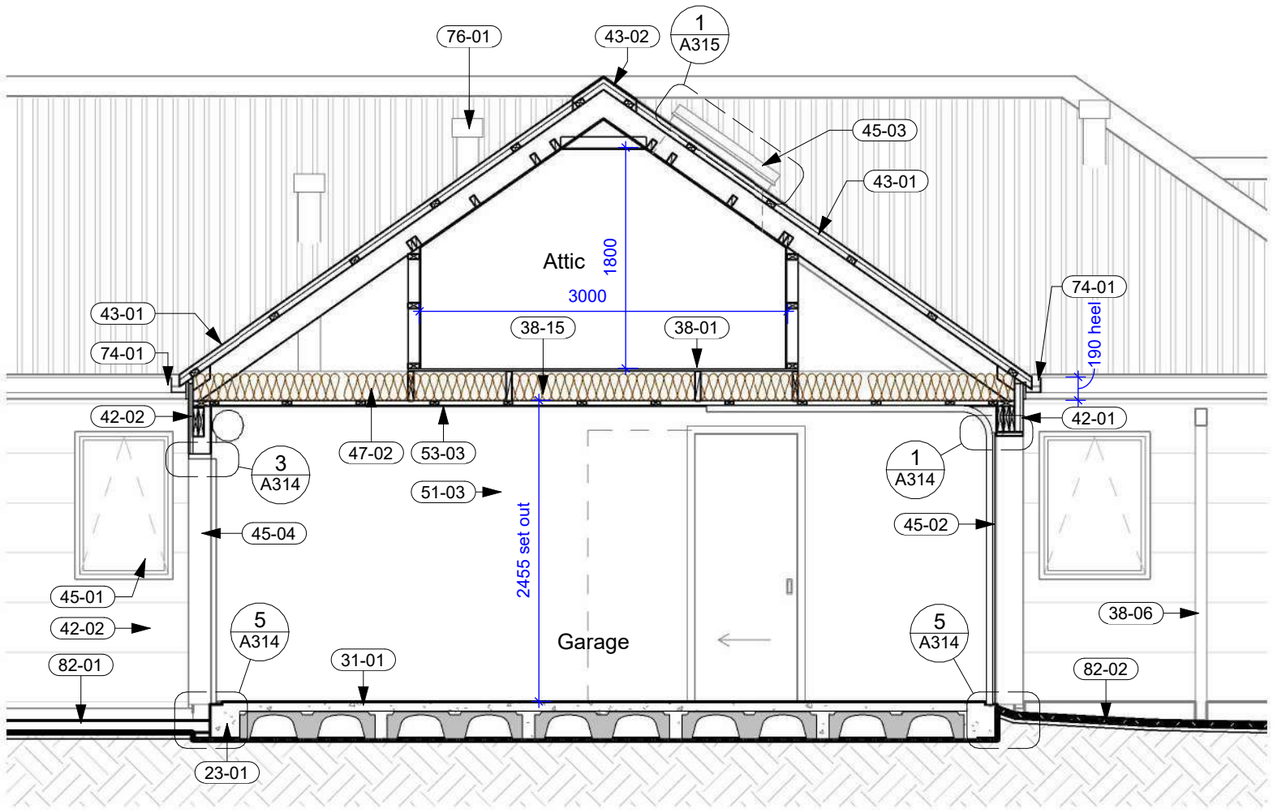
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Building Section

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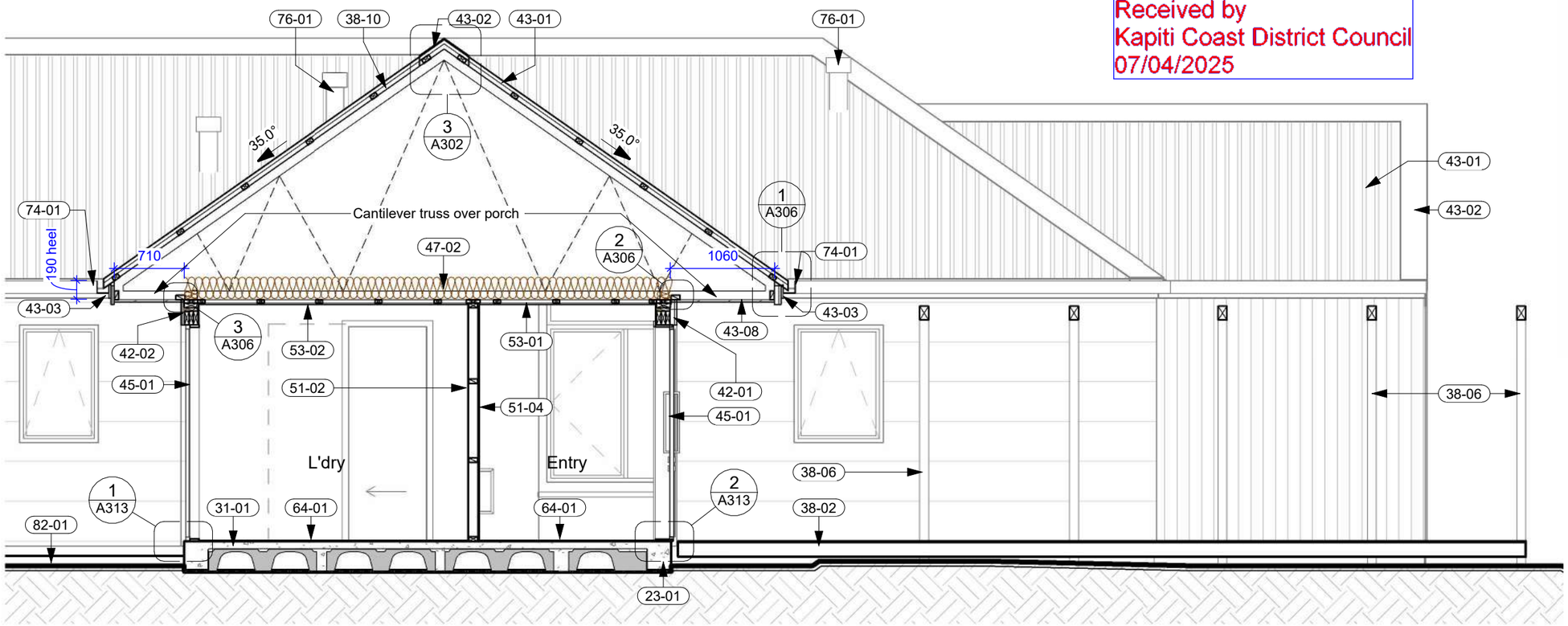
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SECTION C

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SECTION D

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Keynote Legend	
23-01	Concrete foundations engineer desgin
31-01	X-Pod Raft foundations as per engineers design
38-01	20mm Strandfloor T&G edge flooring to attic screw fixed to floor joists - refer to roof plan
38-02	19mm timber decking at ground level to NZBC Schedule 1 exemption. Confirm extent with owner on site.
38-06	Prolam 140x90 Portal frames to entry board walk. Foundation by engineer.
38-10	Roof trusses to manufacturer design
38-15	240x45 intermediate attic joists and trimmers
42-01	Vertical timber shiplap on 45mm H3.1 horizontal castellated battens on underlay on framing
42-02	James Hardie horizontal Stria weatherboards on 20mm H3.1 vertical timber cavity battens on wall underlay on framing
43-01	Roofing Industries Trimrib Colorcote MagnaFlow Plus roofing on roof underlay on roof framing
43-02	Colorcote MagnaFlow Plus flashings to match roofing finish
43-03	Metal fascia flashing over timber fascia
43-08	Timber shiplap to soffits to match cladding
45-01	Residential Thermal Heart series powdercoat aluminium double glazed windows with Low 'E' argon filled IGU's
45-02	Auto-sectional garage door
45-03	Velux skylight - refer exterior joinery schedule
45-04	Roller garage door

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Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Insulation "R" Values

Exterior walls	R3.6
Garage interior walls	R2.4
Ceilings generally	R1.8 + R3.6
Skillion ceilings	R6 Skillion
Acoustic walls	R2.2

- Comply with NZBC H1 AS1 & NZS 4218
- Refer to specification for insulation types
- Refer also to H1 calculation sheet

Keynote Legend	
47-02	Ceiling insulation - refer insulation R-values note
51-02	10mm GIB Aqualine wall lining
51-03	12mm Strandboard wall lining to garage walls
51-04	Timber feature wall to entry - TBC
53-01	13mm Gib Standard to ceiling on 70x35 battens at 600crs
53-02	13mm Gib Aqualine to ceiling on 70x35 battens at 600crs
53-03	Grooved MDF feature raking ceiling to living and dining
64-01	Selected timber overlay flooring with 3 coats polyurethane finish
74-01	Colorsteel 125 box gutter
76-01	Extract ducting to bathrooms, laundry and kitchen through roof with Dektite flashing and weatherproof cowl
82-01	Paving
82-02	Driveway paving

Rev	Date	Description
A	01/04/25	Building Consent

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Proposed House

for Tim Atkinson
40 Anderson Park Drive
Waikanae

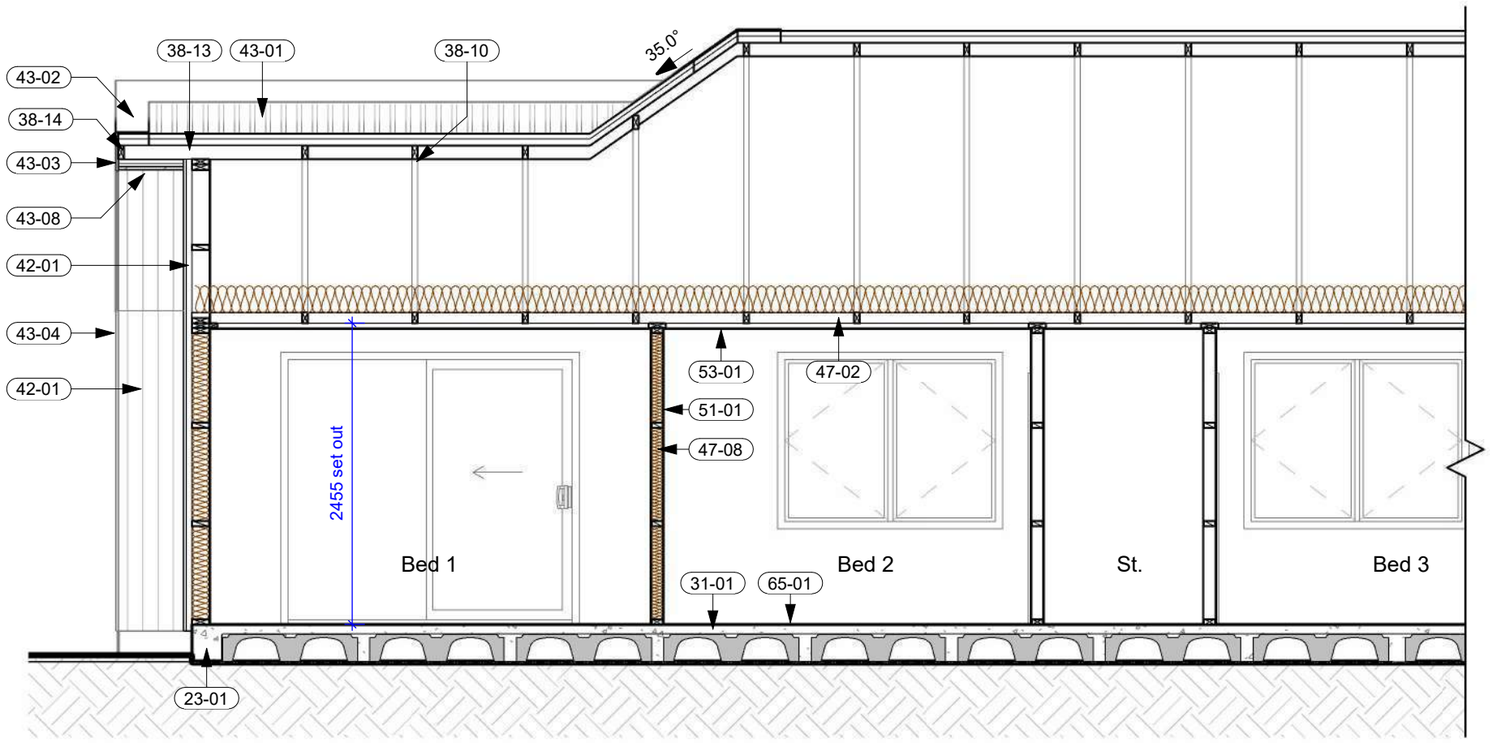
Consent

Building Section

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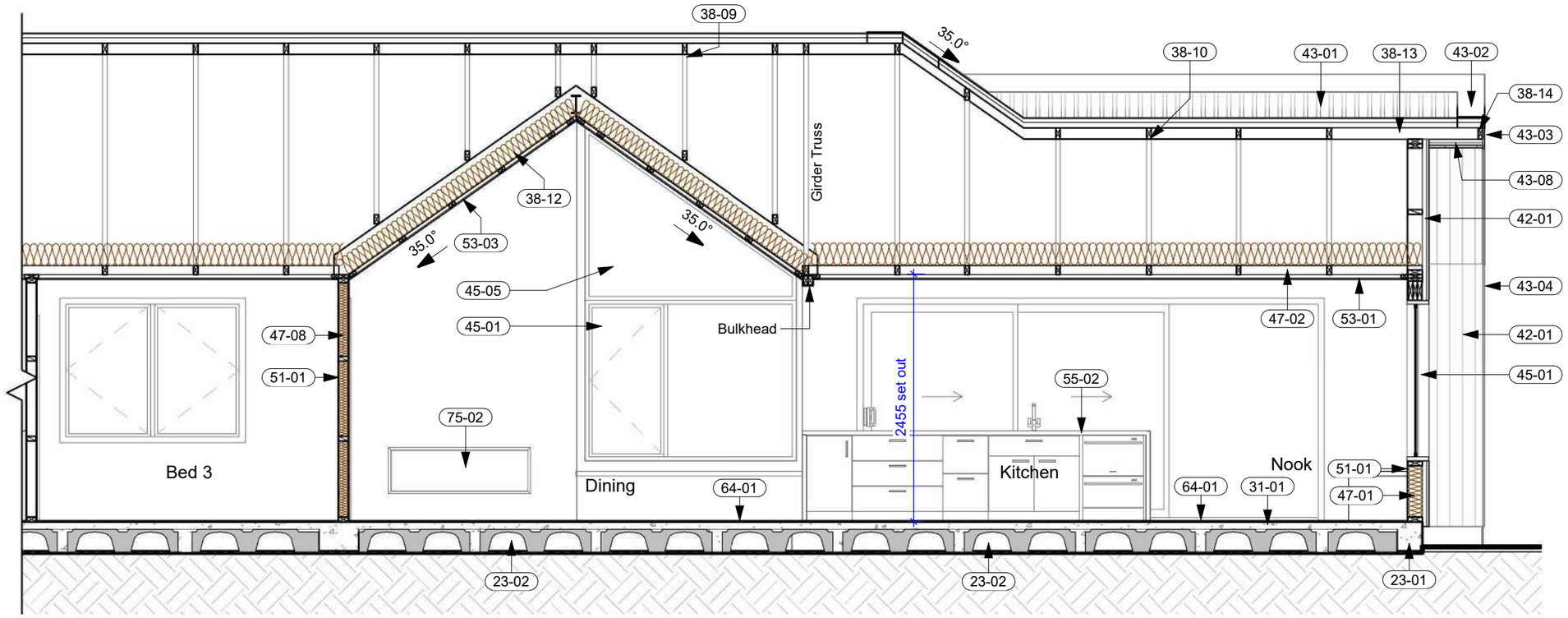
Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A203	A

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SECTION E-1

1 : 50



SECTION E-2

1 : 50

Keynote Legend	
23-01	Concrete foundations engineer desgin
23-02	Internal load bearing foundation to engineer design
31-01	X-Pod Raft foundations as per engineers design
38-09	Trusses to continue over rafters to form roof above.
38-10	Roof trusses to manufacturer design
38-12	240x45 H1.2 SG8 rafters at 600crs to skillion roof over living and dining
38-13	90x45 outriggers over wall plate at 600crs fixed back to next truss/rafter to support soffit
38-14	90x45 flyrafter fixed to outriggers
42-01	Vertical timber shiplap on 45mm H3.1 horizontal castellated battens on underlay on framing
43-01	Roofing Industries Trimrib Colorcote MagnaFlow Plus roofing on roof underlay on roof framing
43-02	Colorcote MagnaFlow Plus flashings to match roofing finish
43-03	Metal fascia flashing over timber fascia
43-04	Metal fascia flashing over timber fascia to continue from barge down wing walls
43-08	Timber shiplap to soffits to match cladding
45-01	Residential Thermal Heart series powdercoat aluminium double glazed windows with Low 'E' argon filled IGU's
45-05	Raking window to line with ceiling. Confirm dimensions on site
47-01	Wall insulation - refer insulation R-values note
47-02	Ceiling insulation - refer insulation R-values note
47-08	Hatched area indicates R2.2 insulation for noise control wall with Noiseline GIB

Construction Notes

- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Insulation "R" Values

Exterior walls	R3.6
Garage interior walls	R2.4
Ceilings generally	R1.8 + R3.6
Skillion ceilings	R6 Skillion
Acoustic walls	R2.2

- Comply with NZBC H1 AS1 & NZS 4218
- Refer to specification for insulation types
- Refer also to H1 calculation sheet

Keynote Legend	
51-01	10mm GIB Standard wall lining
53-01	13mm Gib Standard to ceiling on 70x35 battens at 600crs
53-03	Grooved MDF feature raking ceiling to living and dining
55-02	Kitchen Joinery unit
64-01	Selected timber overlay flooring with 3 coats polyurethane finish
65-01	Selected carpet floor finish
75-02	Escea DS1400 single sided gas fire place.

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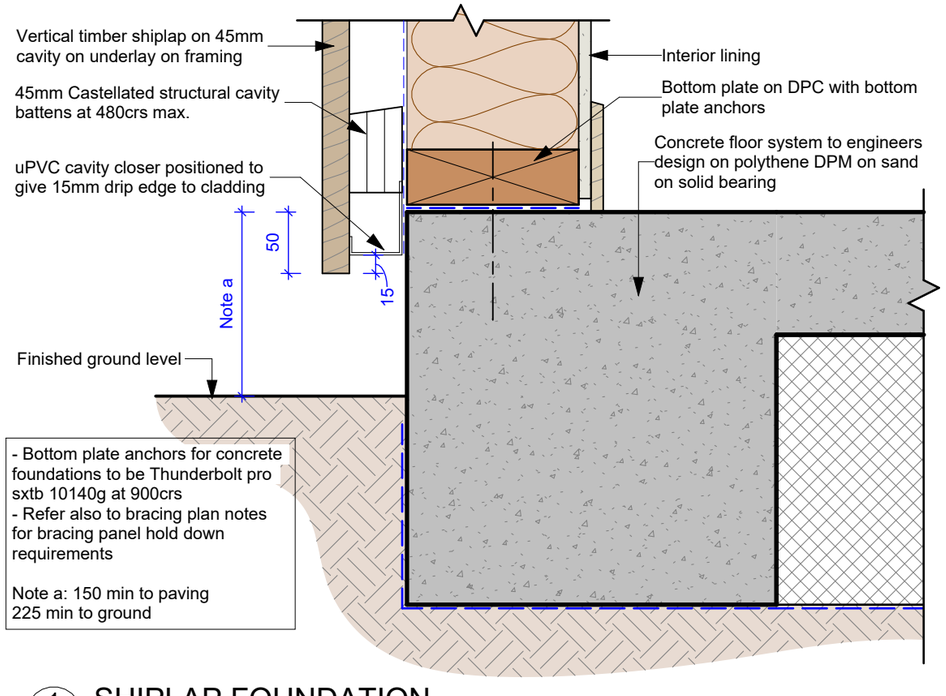
Consent

Building Section

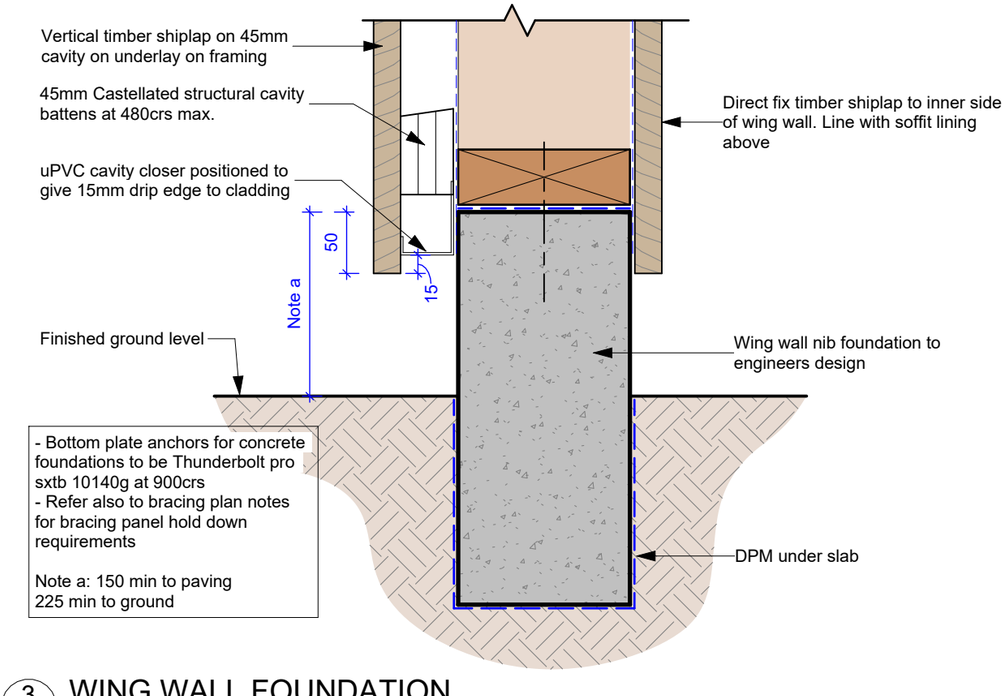
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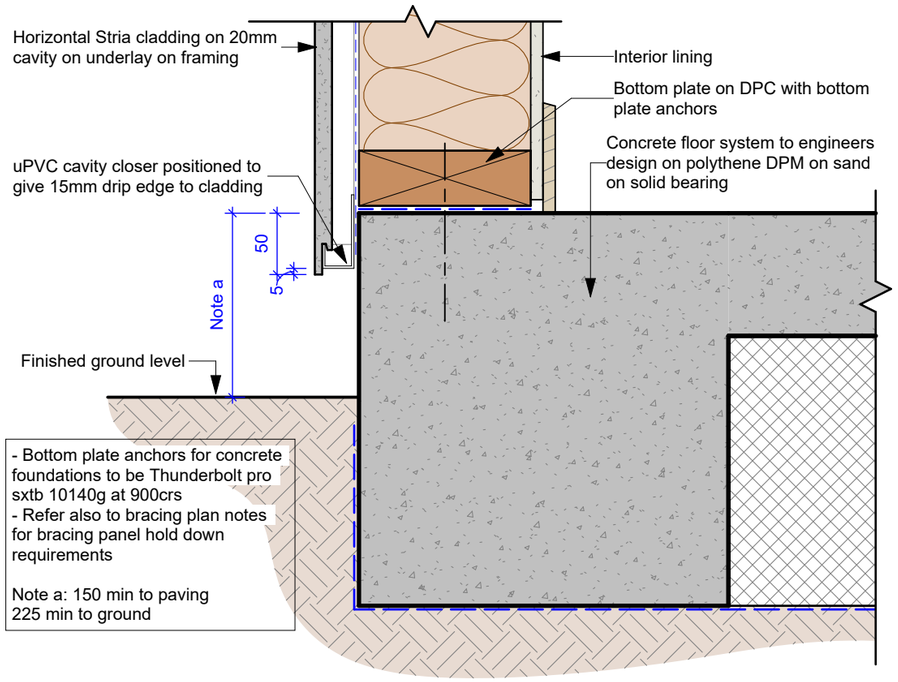
1 A103 SHIPLAP FOUNDATION
1 : 5



3 A103 WING WALL FOUNDATION
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
- Contractor must obtain territorial authority acceptance for variation to details



2 A103 STRIA FOUNDATION
1 : 5

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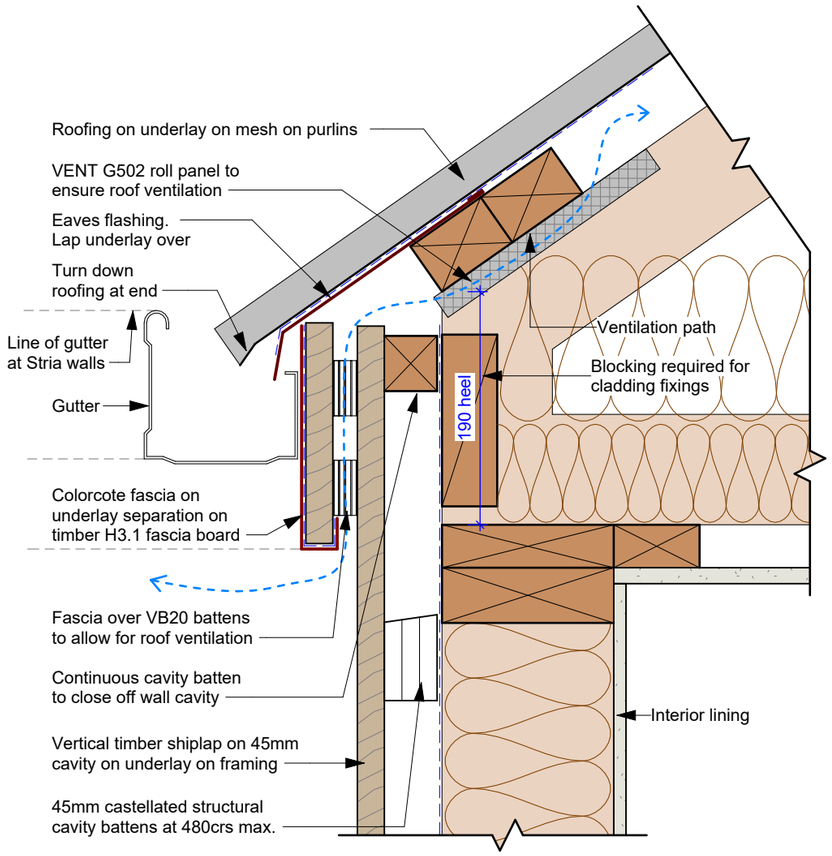
Consent

Foundation Details

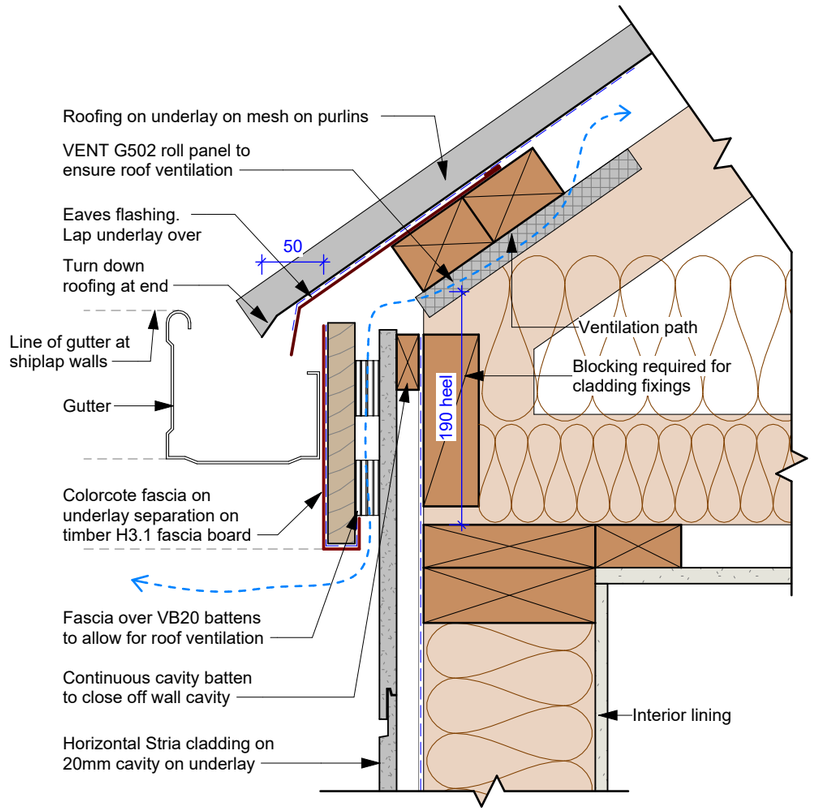
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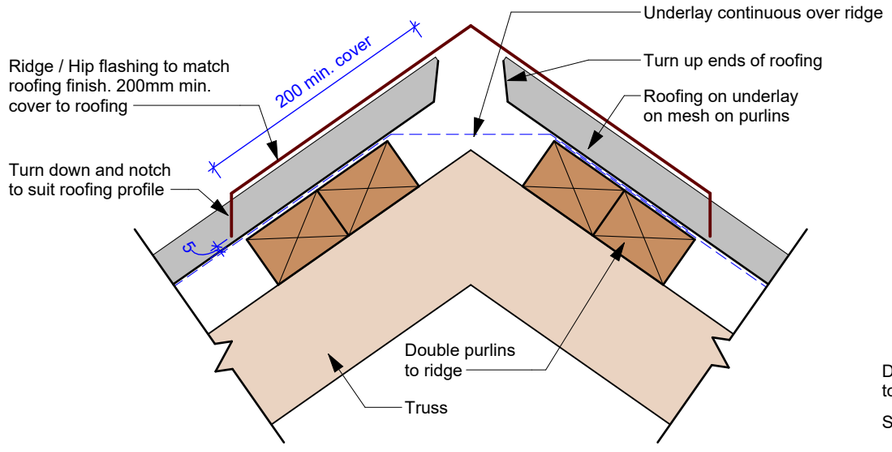
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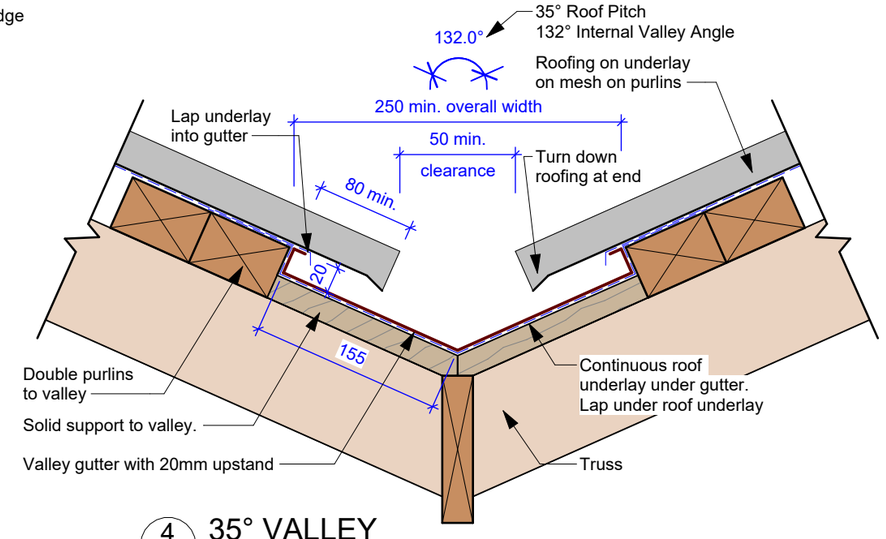
1 A105 35° GUTTER - SHIPLAP
1 : 5



2 A105 35° GUTTER - STRIA
1 : 5



3 A105 35° RIDGE / HIP
1 : 5



4 A105 35° VALLEY
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
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Detail Notes
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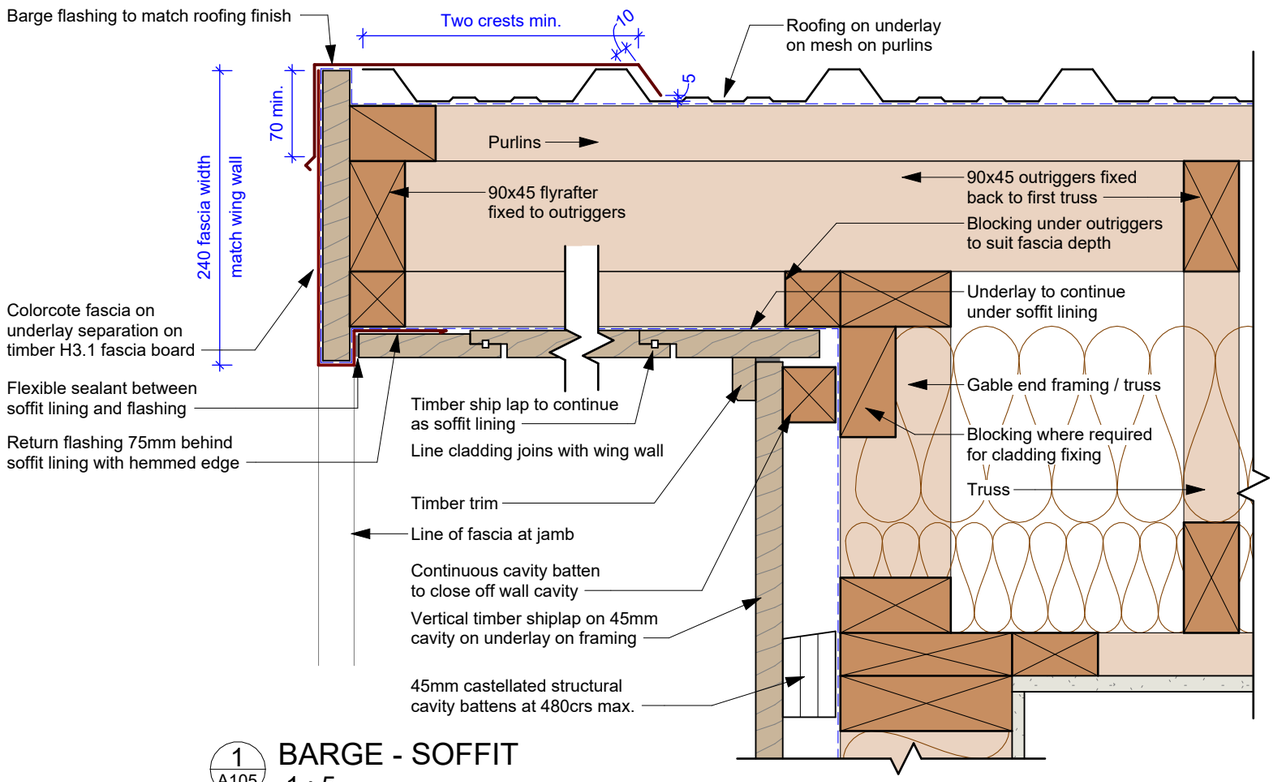
Consent

Roof Details

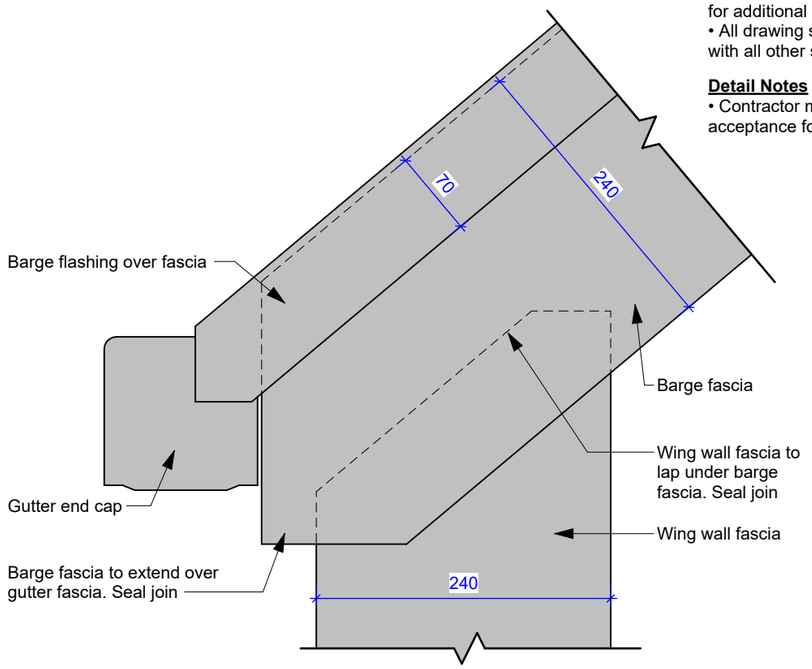
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24058	1/04/2025	A302	A

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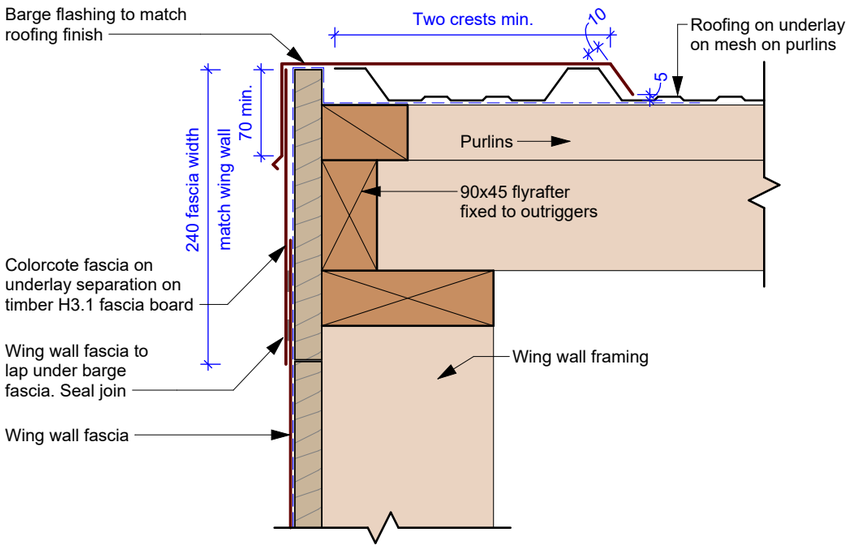
1 / A105 BARGE - SOFFIT
1 : 5



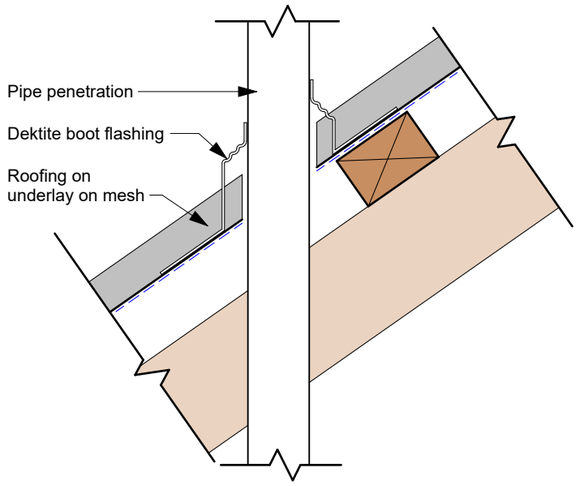
3 / A105 WING WALL TO BARGE FLASHINGS
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
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2 / A105 BARGE - WING WALL
1 : 5



4 / A105 ROOF PENETRATION
1 : 5

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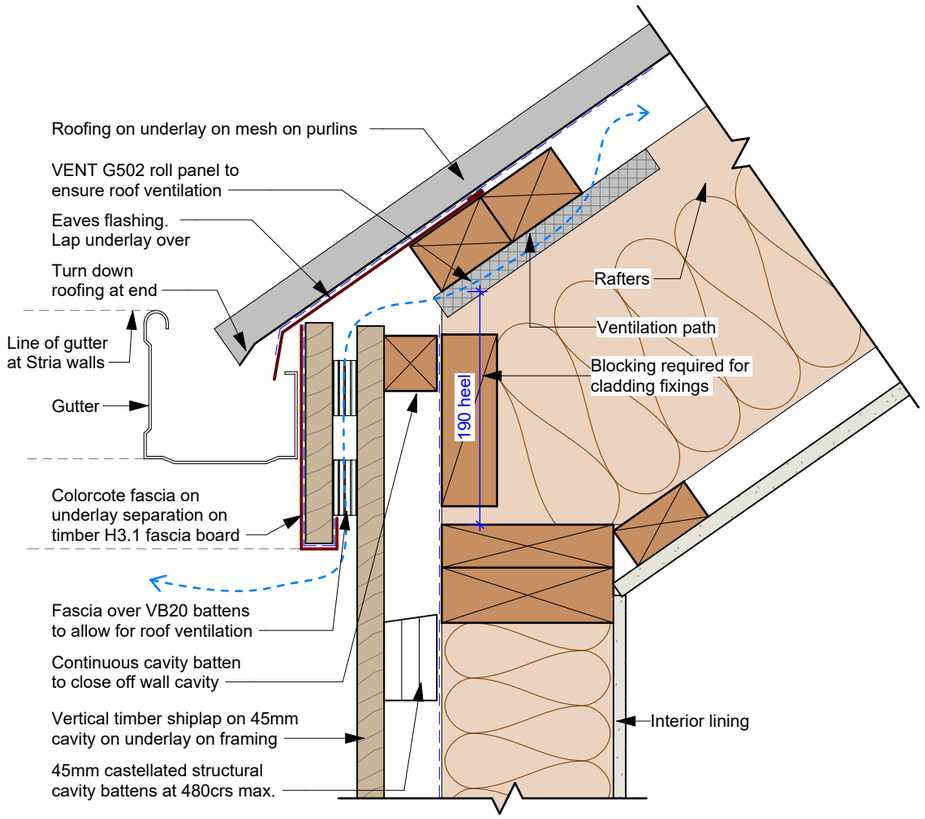
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Roof Details

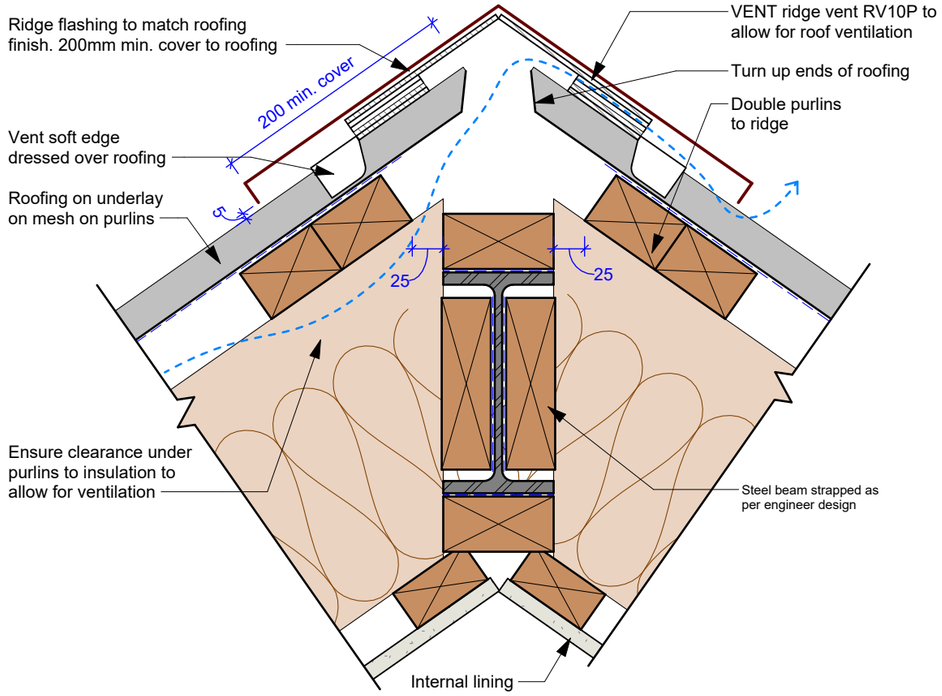
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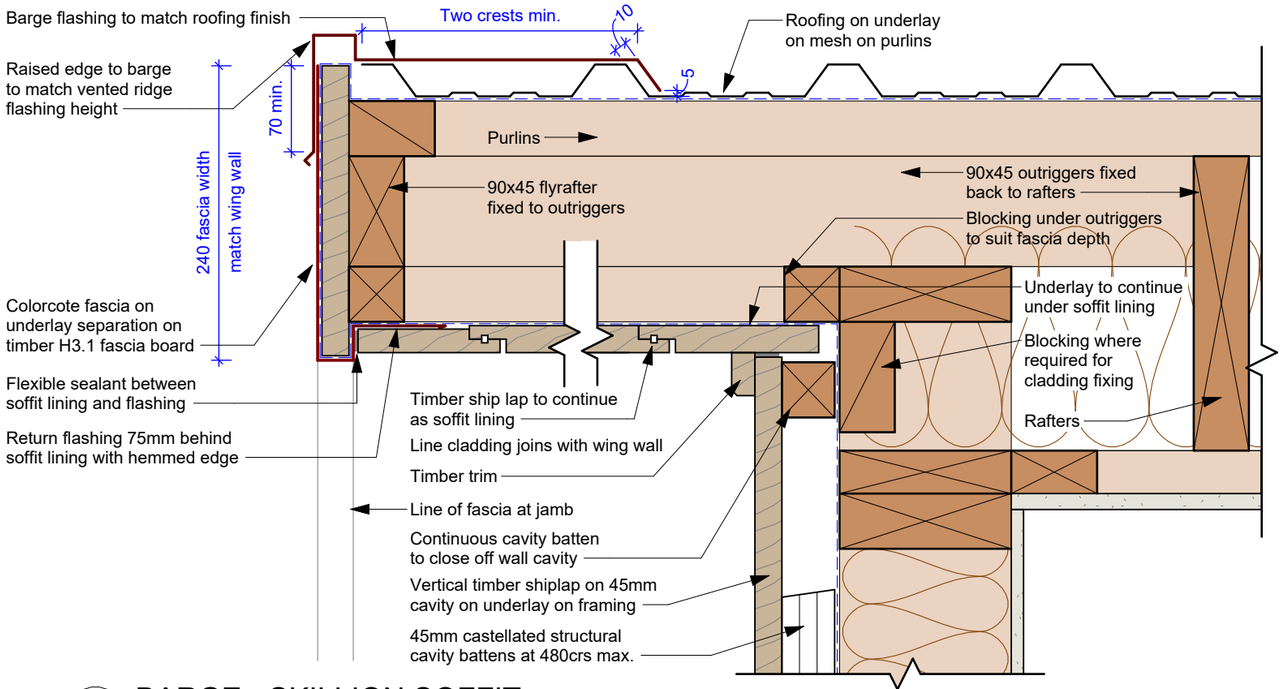
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1 / A105 35° GUTTER - SKILLION SHIPLAP
1 : 5



2 / A105 35° RIDGE - SKILLION
1 : 5



3 / A105 BARGE - SKILLION SOFFIT
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
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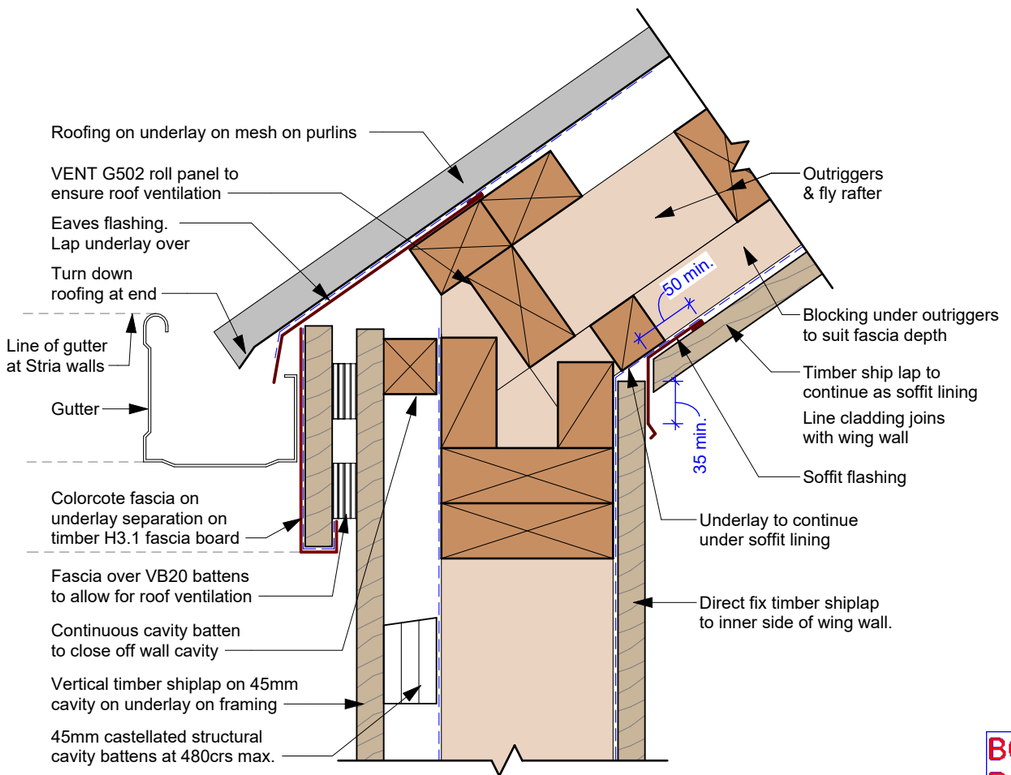
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Roof Details

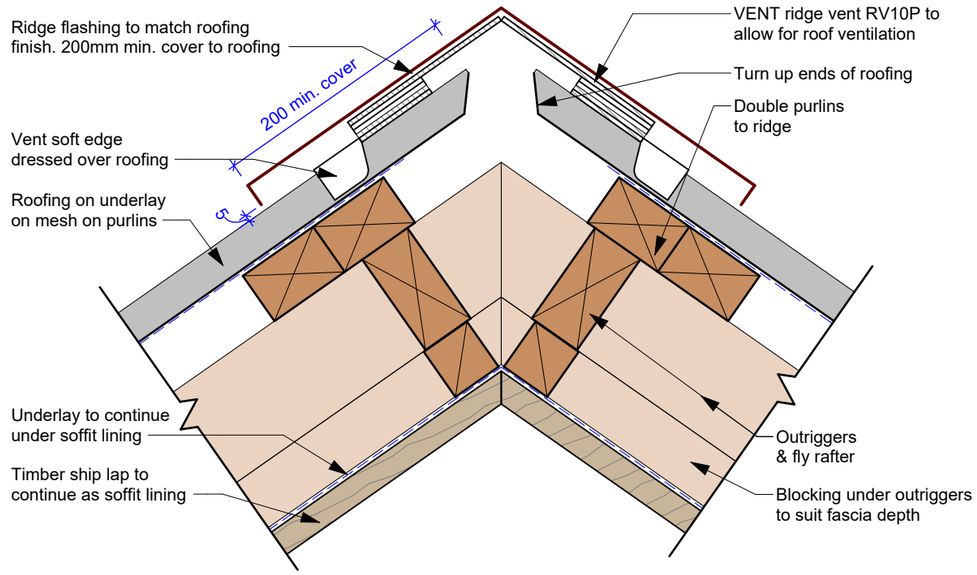
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24058	1/04/2025	A304	A

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1 A105 35° GUTTER - WING WALL
1 : 5



2 A105 35° RIDGE - SOFFIT
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
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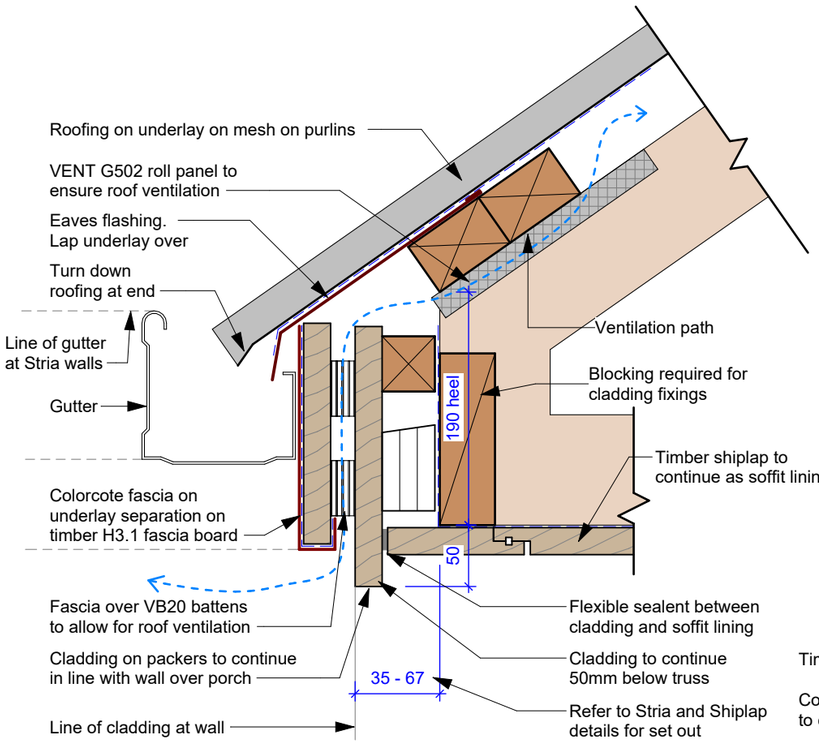
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Roof Details

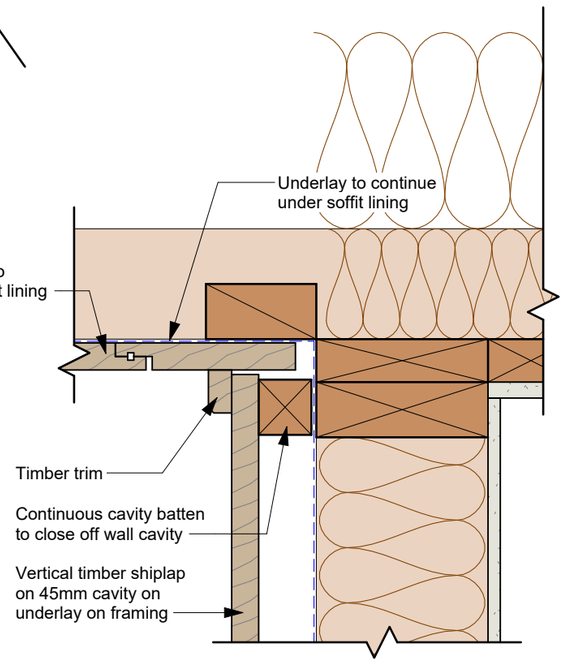
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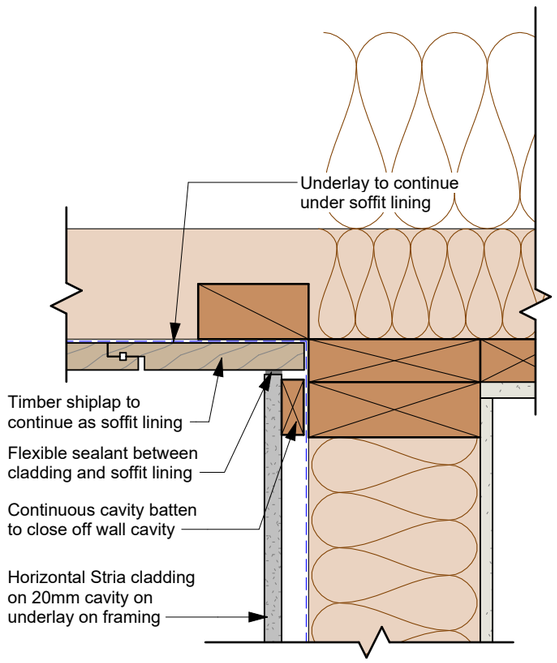
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1 A105 35° GUTTER - SOFFIT
1 : 5



2 A105 SHIPLAP TO SOFFIT
1 : 5



3 A105 STRIA TO SOFFIT
1 : 5

Construction Notes
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Detail Notes
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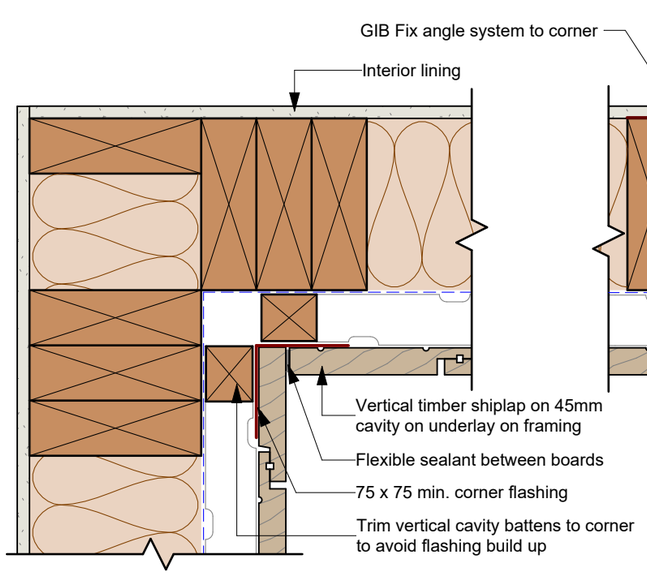
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Roof & Cladding Details

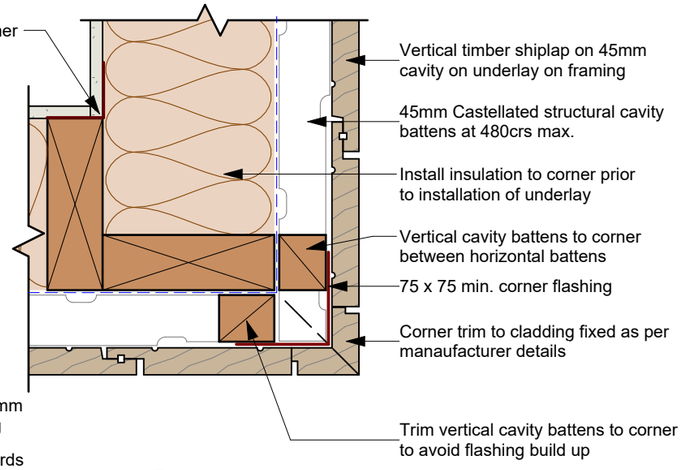
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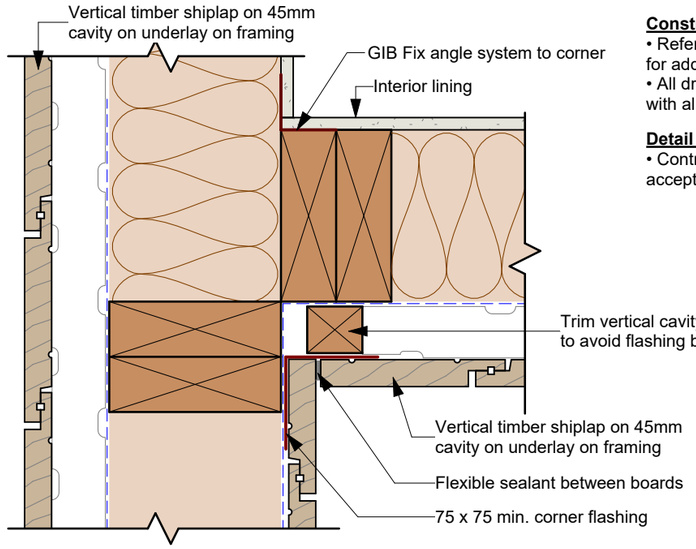
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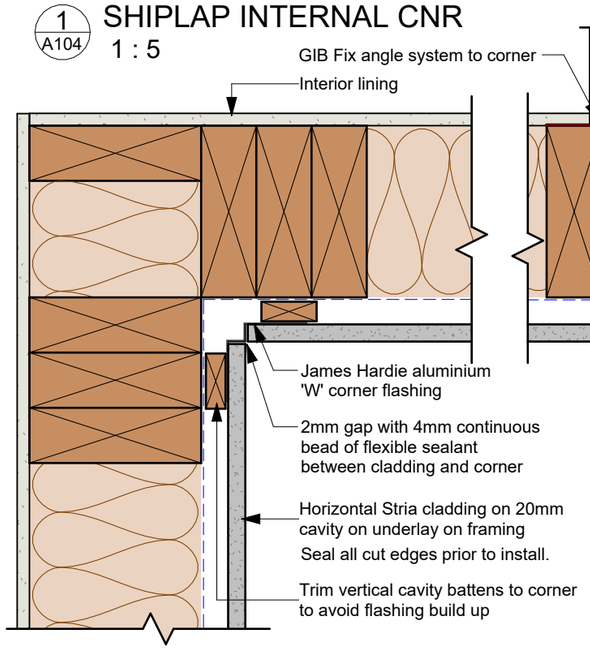
1 A104 SHIPLAP INTERNAL CNR
1 : 5



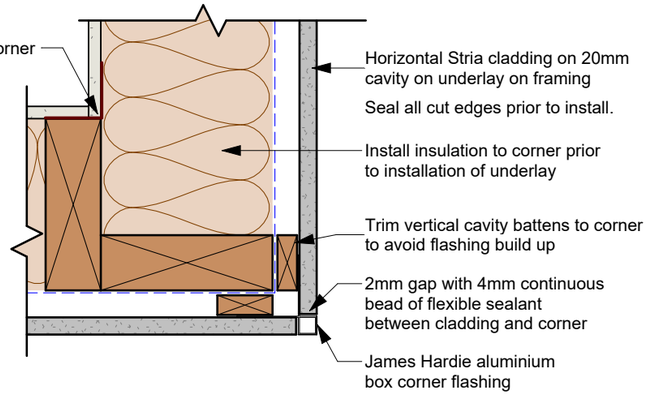
2 A104 SHIPLAP EXTERNAL CNR
1 : 5



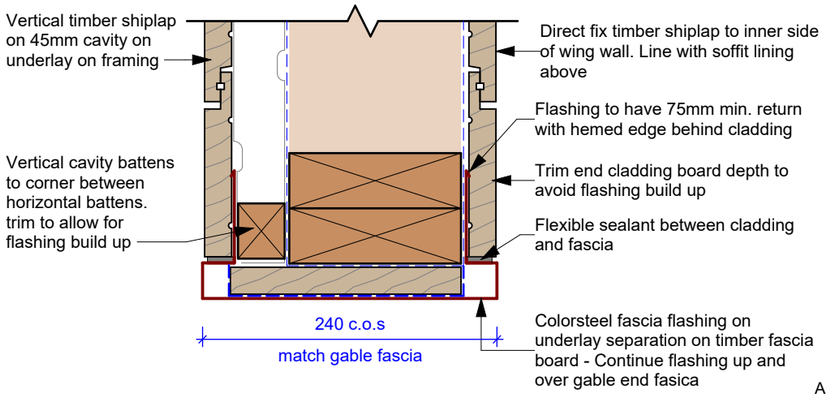
6 A104 WING WALL TO CORNER
1 : 5



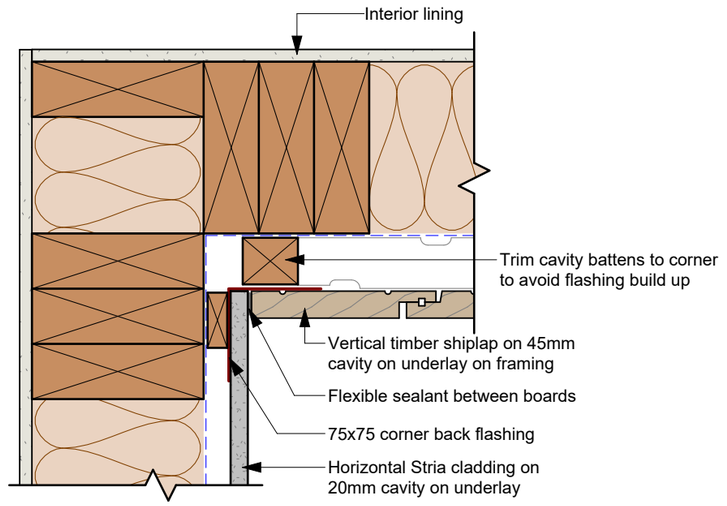
3 A104 STRIA INTERNAL CNR
1 : 5



4 A104 STRIA EXTERNAL CNR
1 : 5



7 A104 WING WALL END
1 : 5



5 A104 SHIPLAP TO STRIA INTERNAL CNR
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
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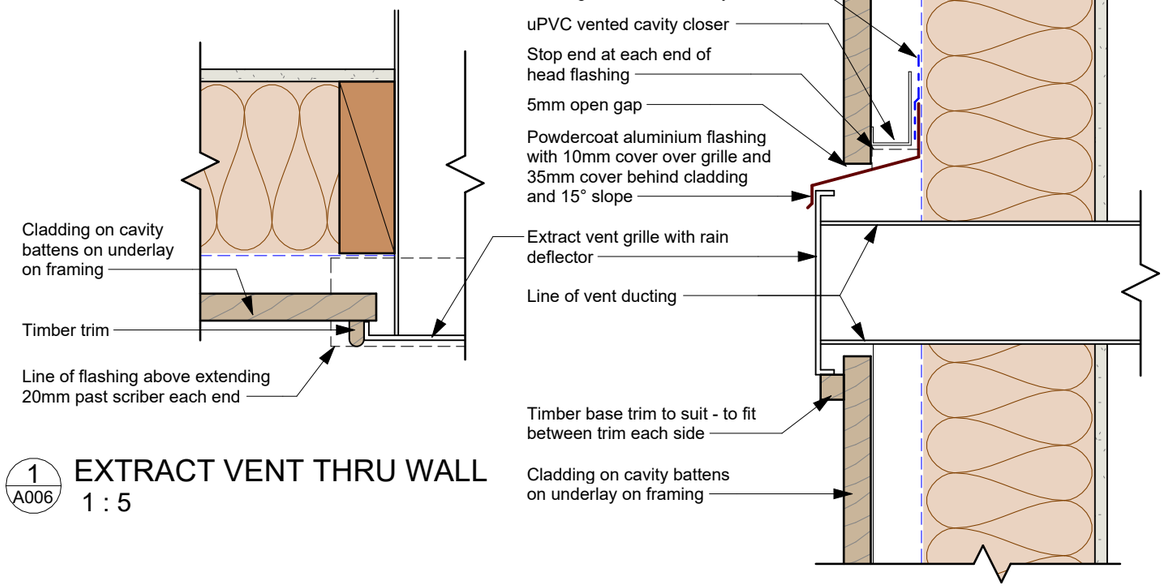
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Cladding Details

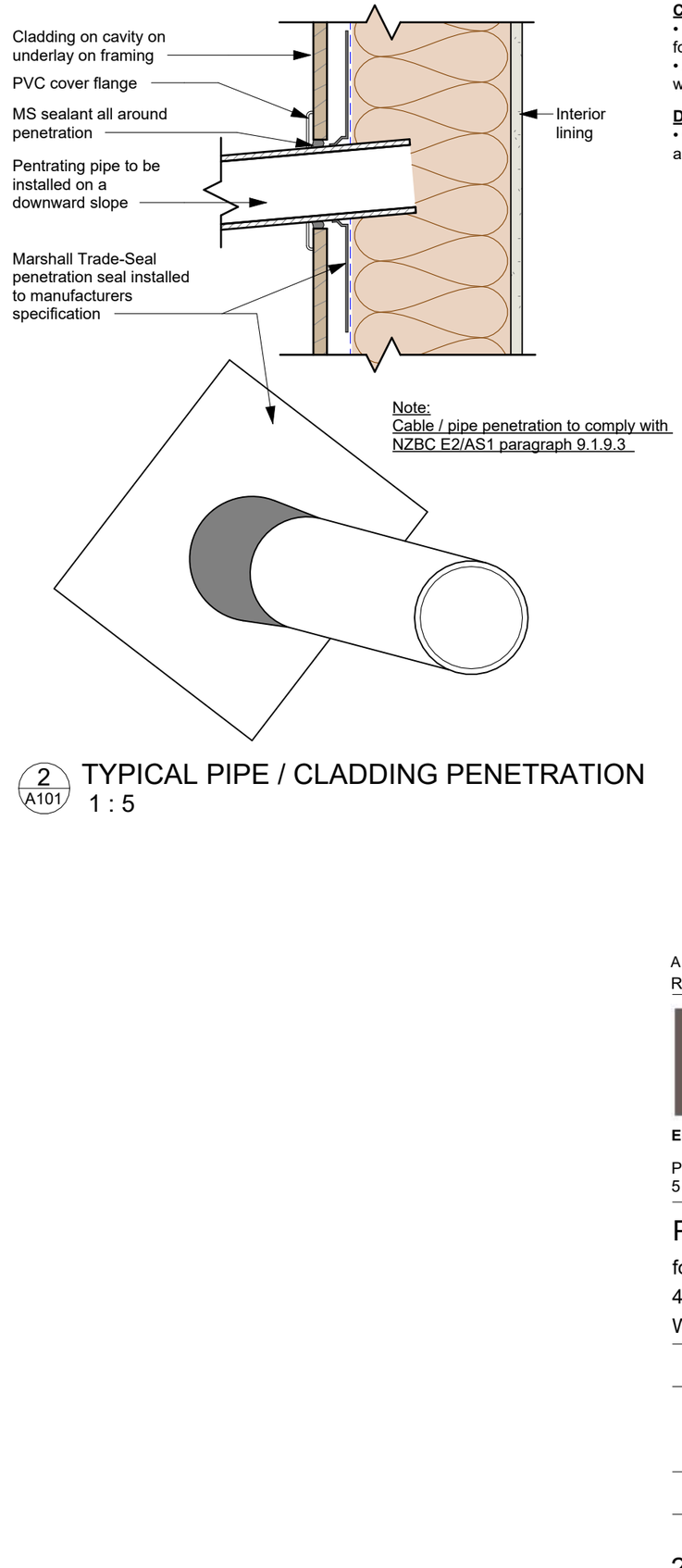
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24058	1/04/2025	A307	A

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1 / A006 EXTRACT VENT THRU WALL
1 : 5



2 / A101 TYPICAL PIPE / CLADDING PENETRATION
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
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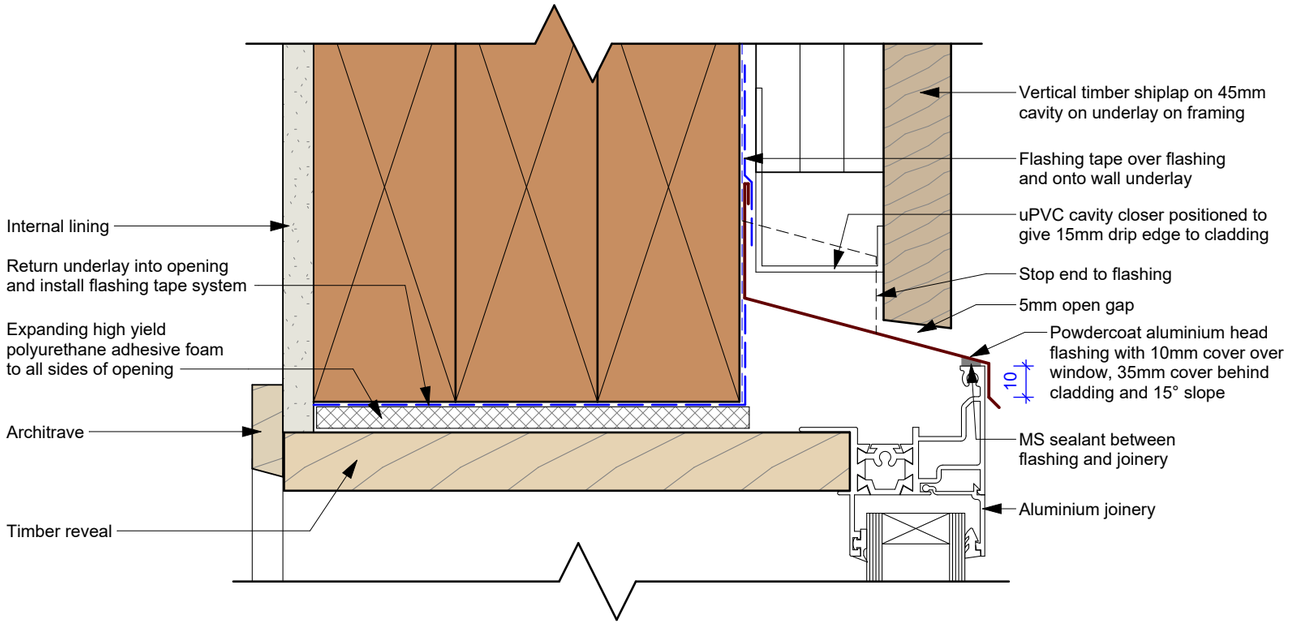
Consent

Cladding Details

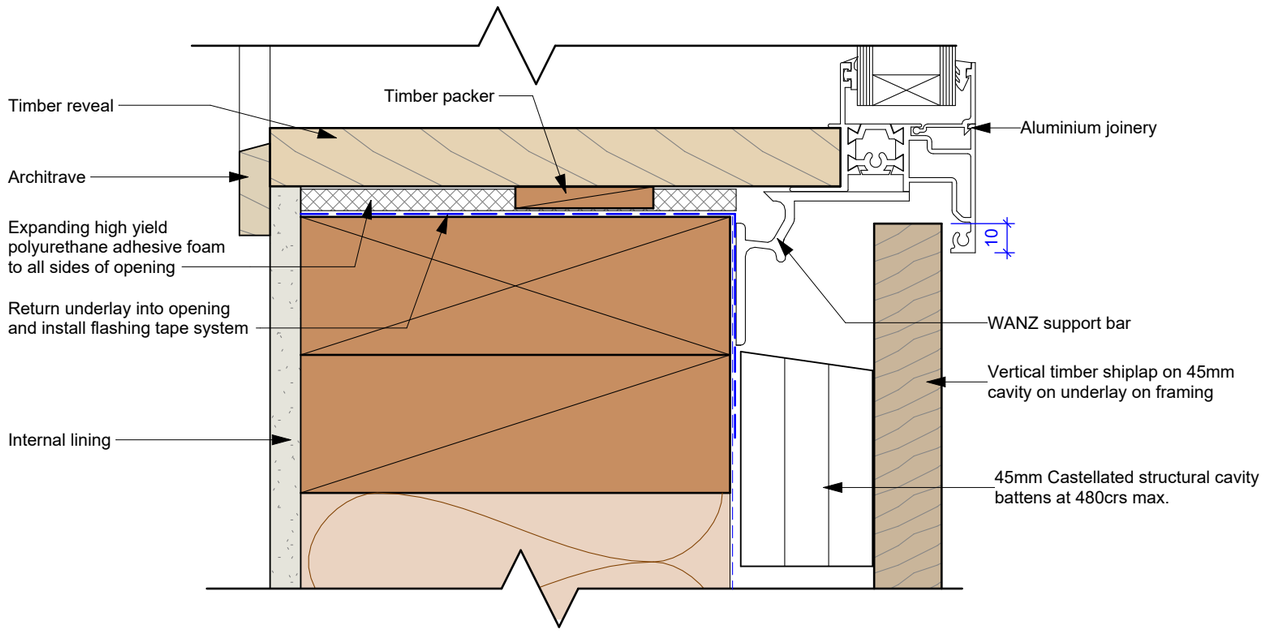
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Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A308	A

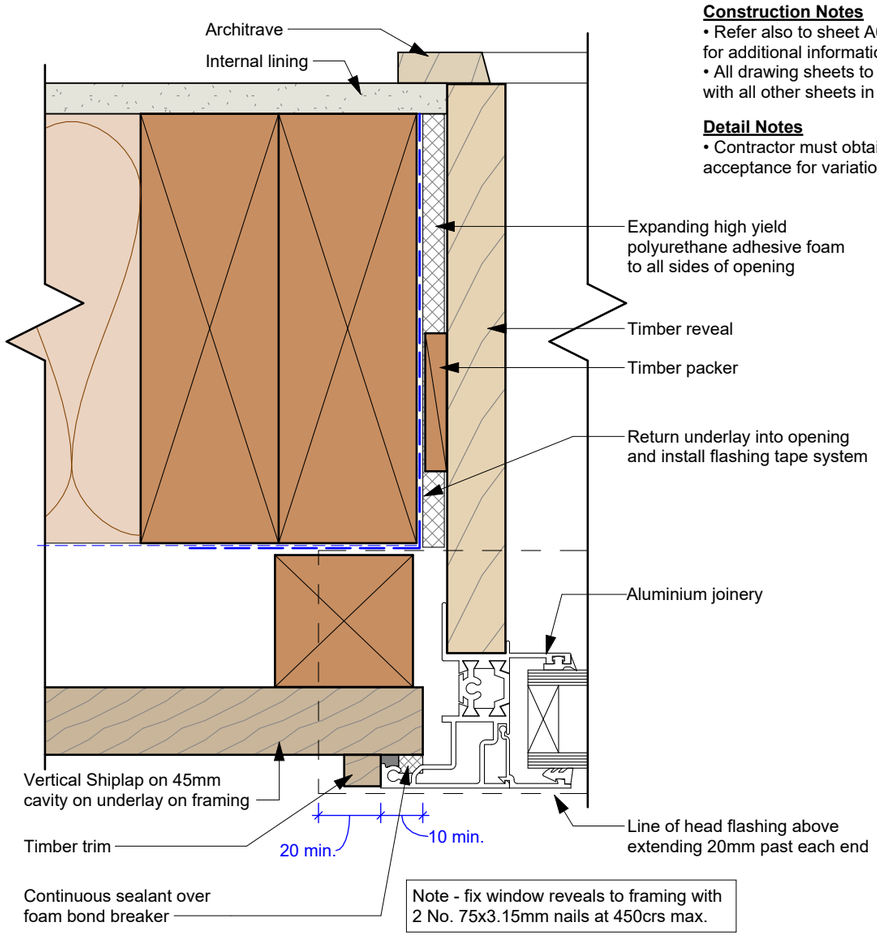
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1 / A005 SHIPLAP VERTICAL WINDOW HEAD
1 : 2



2 / A005 SHIPLAP VERTICAL WINDOW SILL
1 : 2



3 / A005 SHIPLAP VERTICAL WINDOW JAMB
1 : 2

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
- Contractor must obtain territorial authority acceptance for variation to details

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Received by
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07/04/2025

Rev	Date	Description
A	01/04/25	Building Consent

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High Performance Design
Email: info@adarchitecture.nz **Web:** adarchitecture.nz
Phone: (04) 298 5662
5 Kodex Place, Paraparaumu 5032

Proposed House

for Tim Atkinson
40 Anderson Park Drive
Waikanae

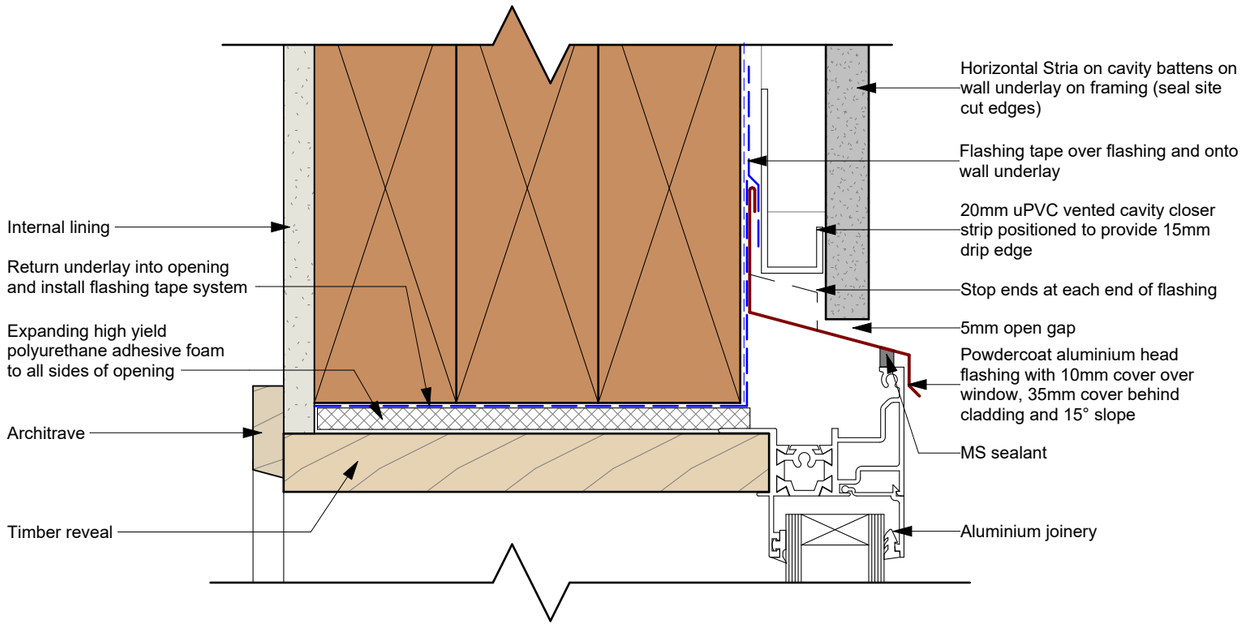
Consent

Window Details

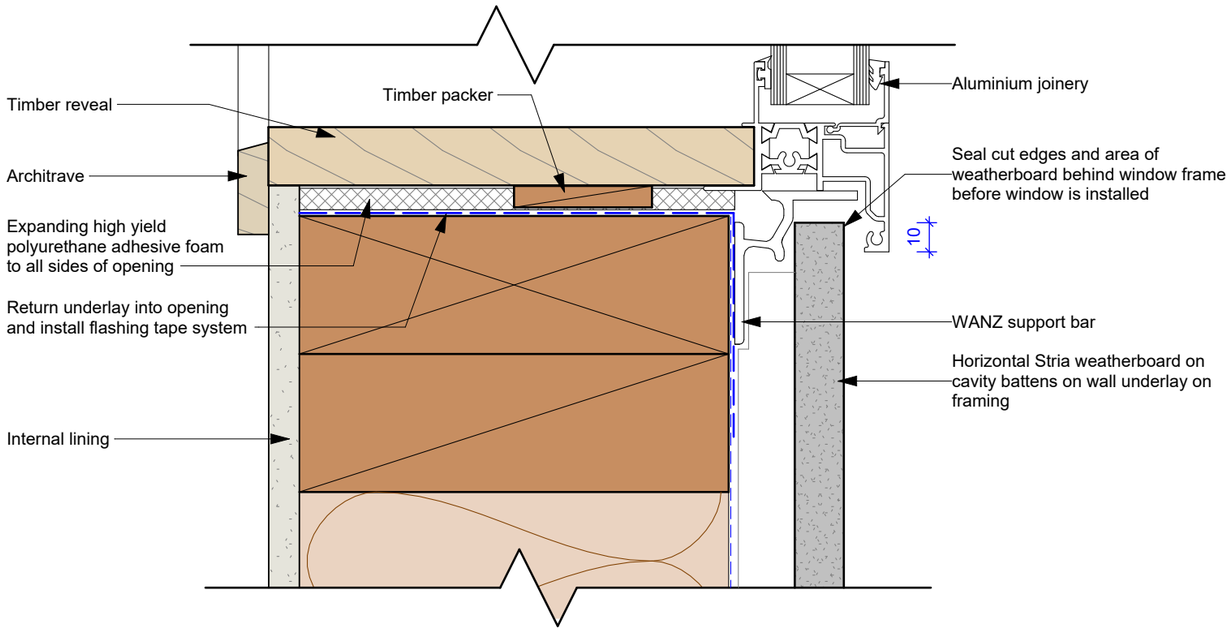
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Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A309	A

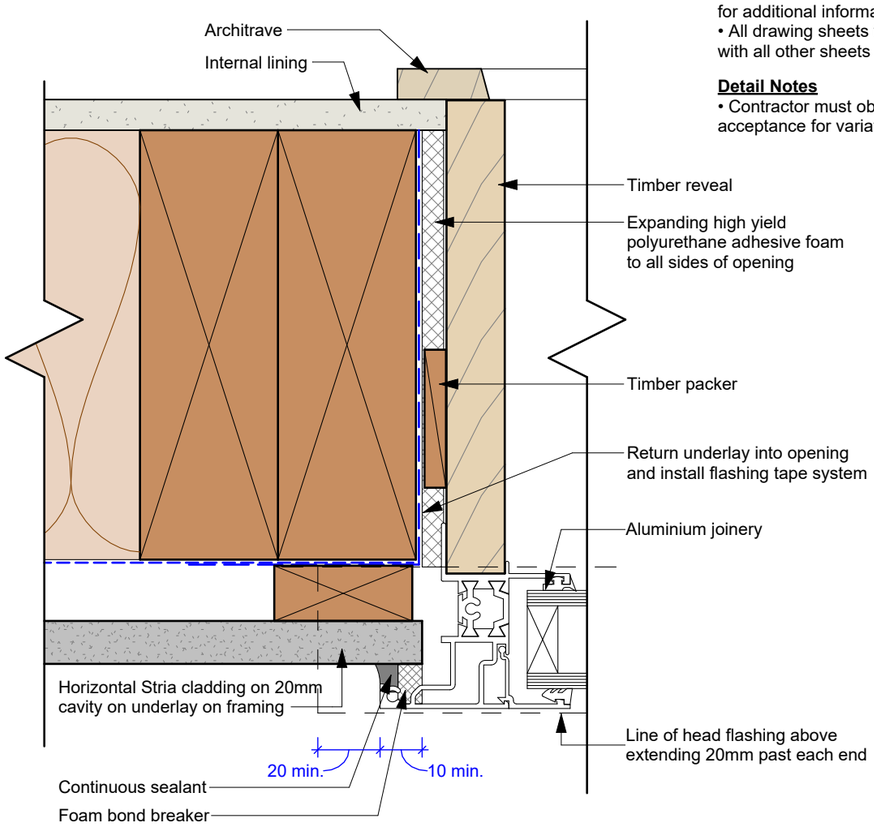
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1 A005 STRIA VERTICAL WINDOW HEAD
1 : 2



2 A005 STRIA VERTICAL WINDOW SILL
1 : 2



Note - fix window reveals to framing with 2 No. 75x3.15mm nails at 450crs max.

3 A005 STRIA VERTICAL WINDOW JAMB
1 : 2

Construction Notes
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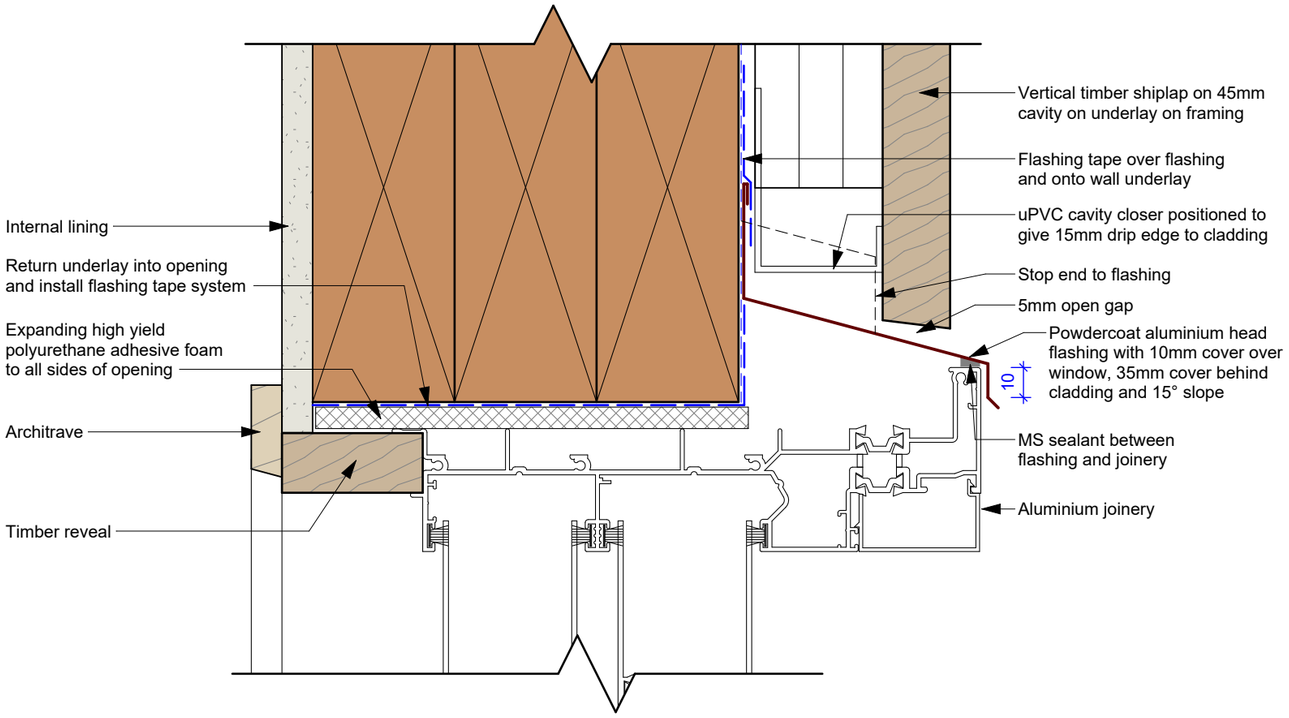
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Window Details

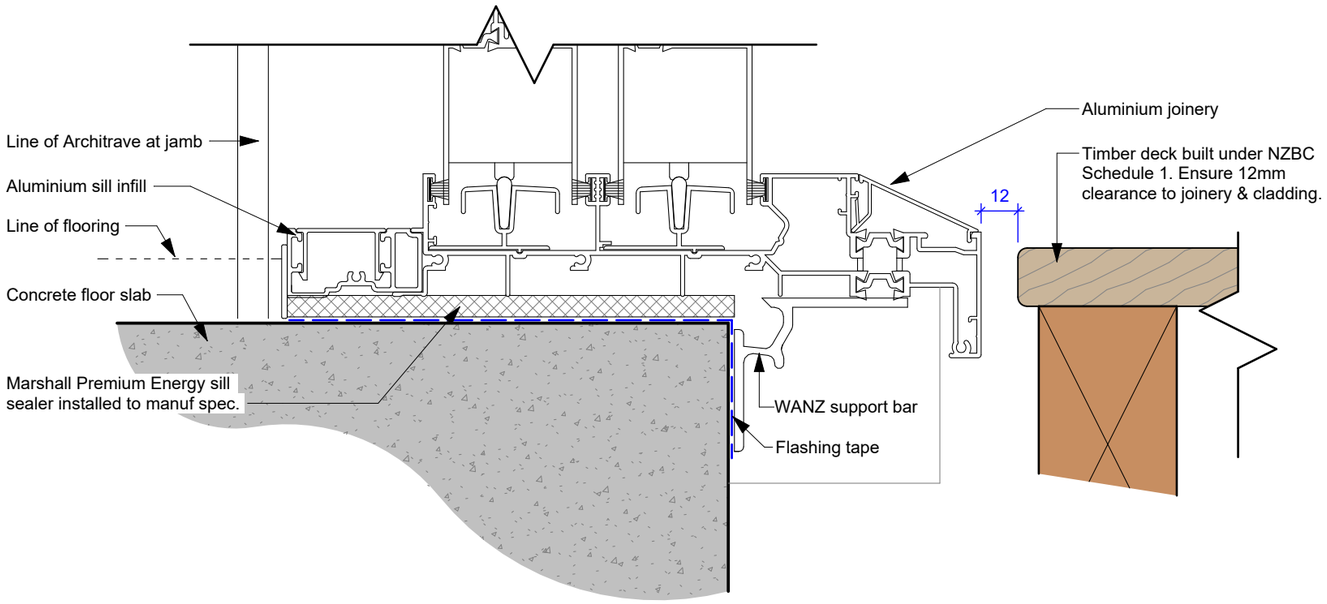
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Job	Date	Sheet(A3)	Rev.
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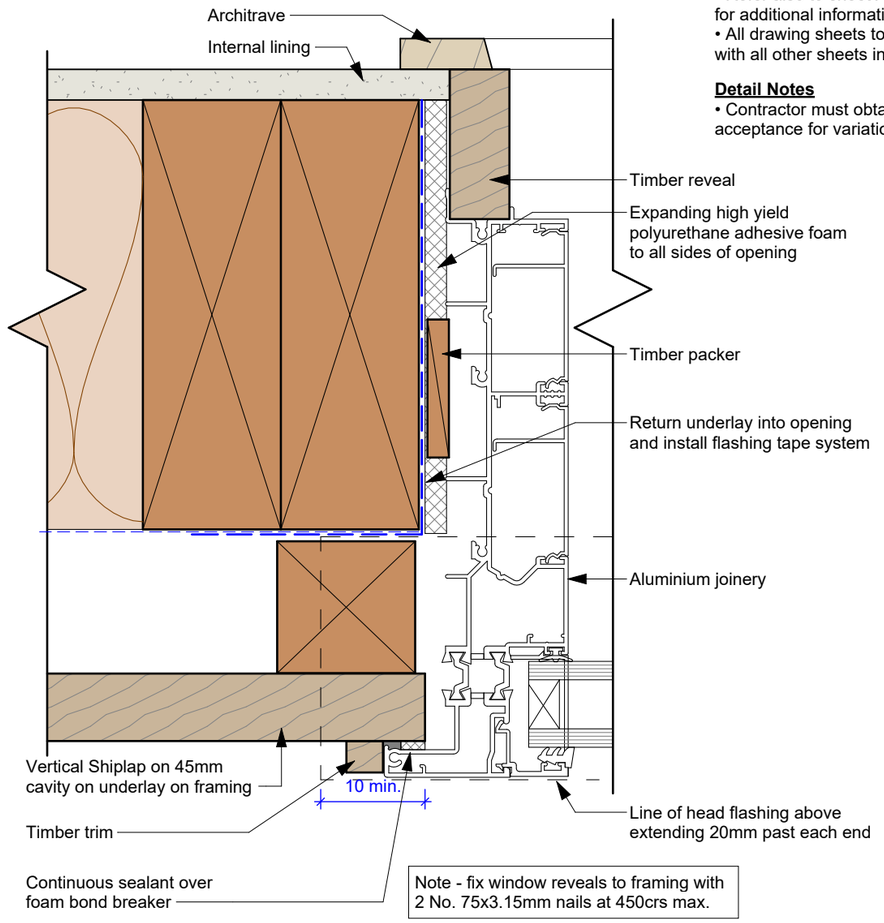
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1 A006 SHIPLAP VERTICAL STACKER HEAD
1 : 2



2 A006 SHIPLAP VERTICAL STACKER SILL
1 : 2



3 A006 SHIPLAP VERTICAL STACKER JAMB
1 : 2

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
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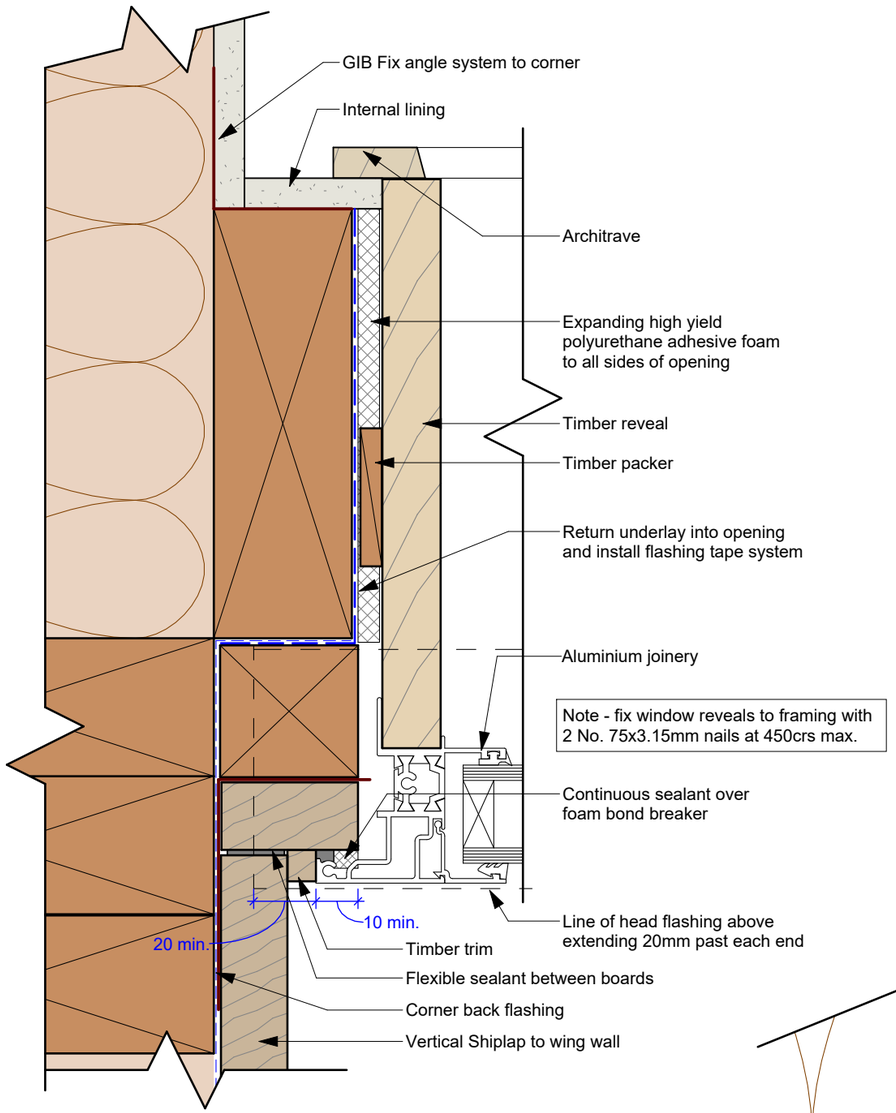
Consent

Window Details

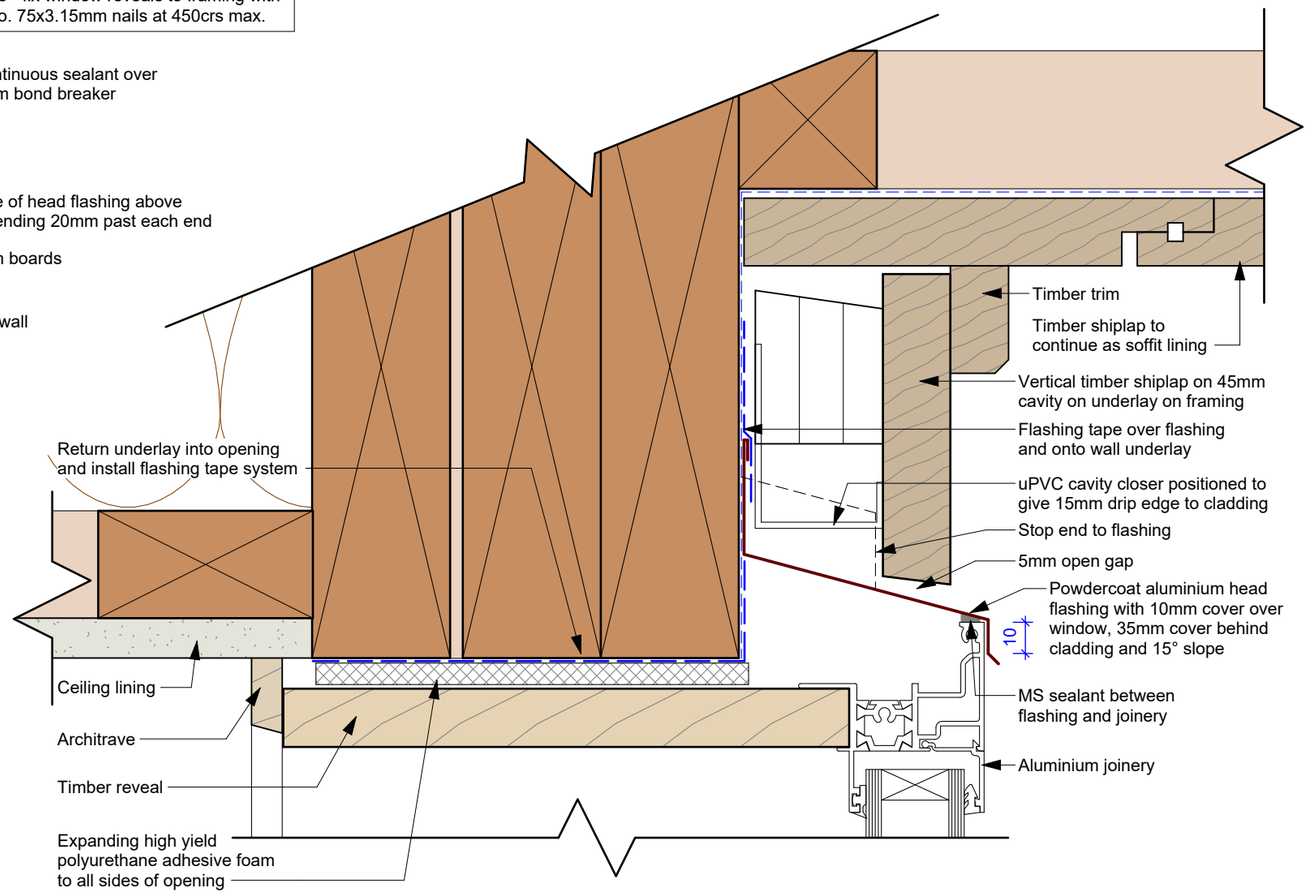
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Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A311	A

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1 / A005 INTERNAL CORNER WINDOW JAMB
1 : 2



2 / A006 SHIPLAP RAKING WINDOW HEAD
1 : 2

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Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
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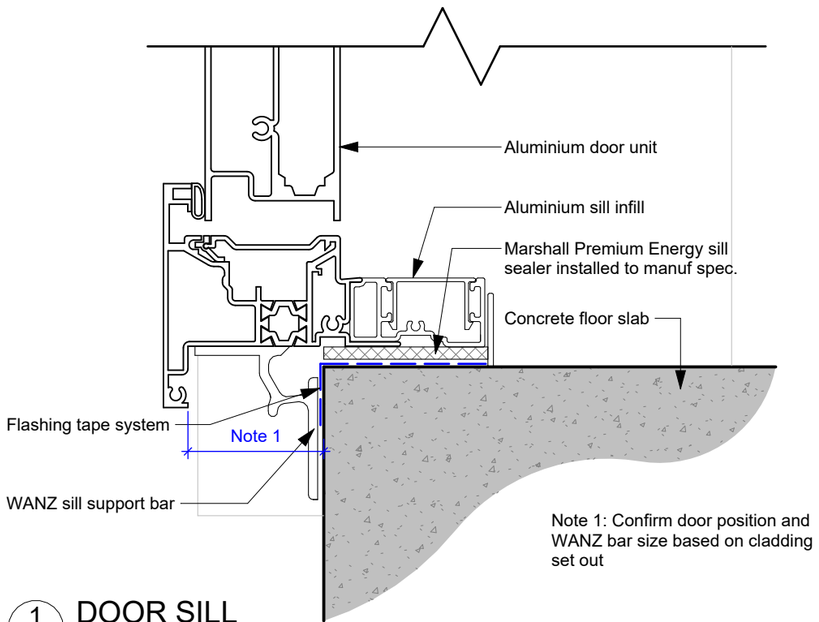
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Window Details

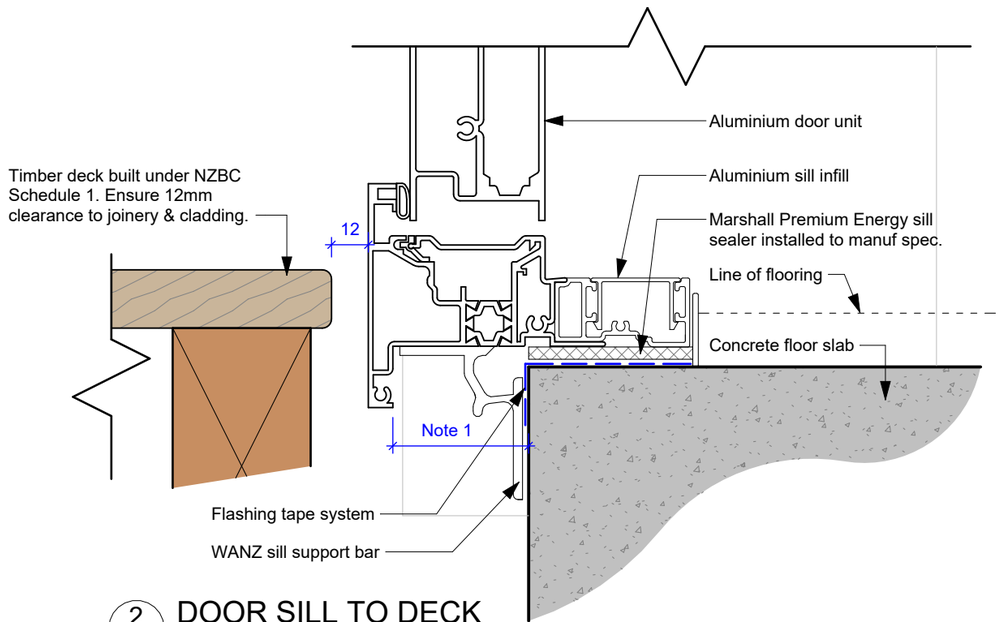
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Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A312	A

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1 A006 DOOR SILL
1 : 2



2 A005 DOOR SILL TO DECK
1 : 2

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Detail Notes
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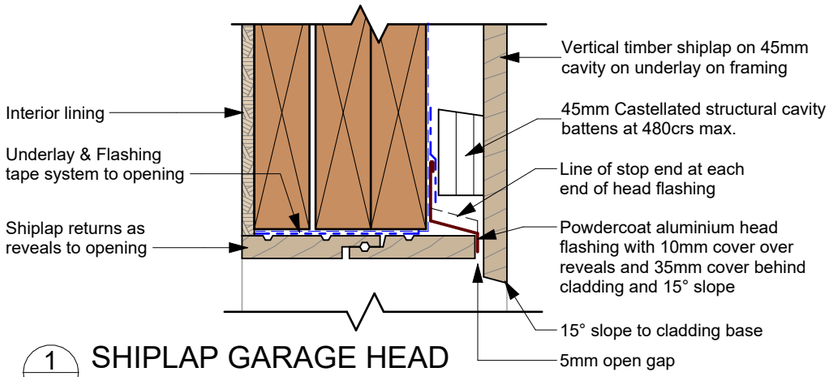
Consent

Door Details

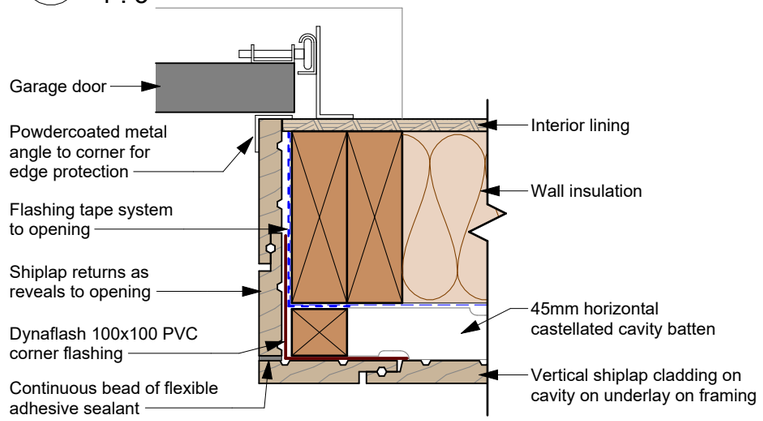
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Job	Date	Sheet(A3)	Rev.
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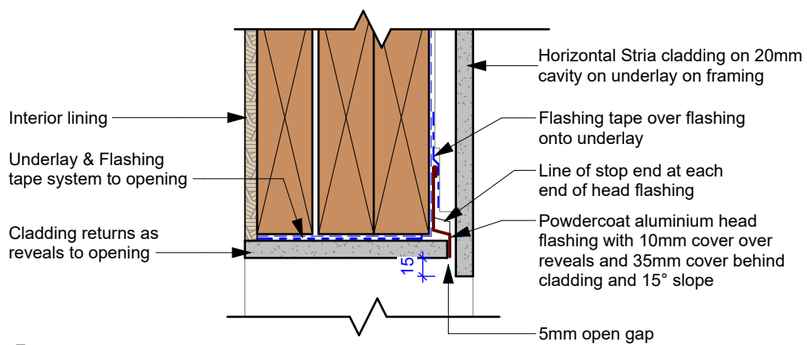
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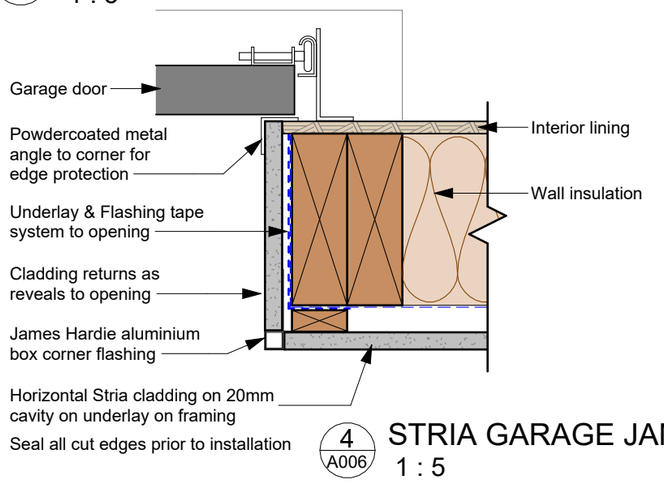
1 A005 SHIPLAP GARAGE HEAD
1 : 5



2 A005 SHIPLAP GARAGE JAMB
1 : 5



3 A006 STRIA GARAGE HEAD
1 : 5

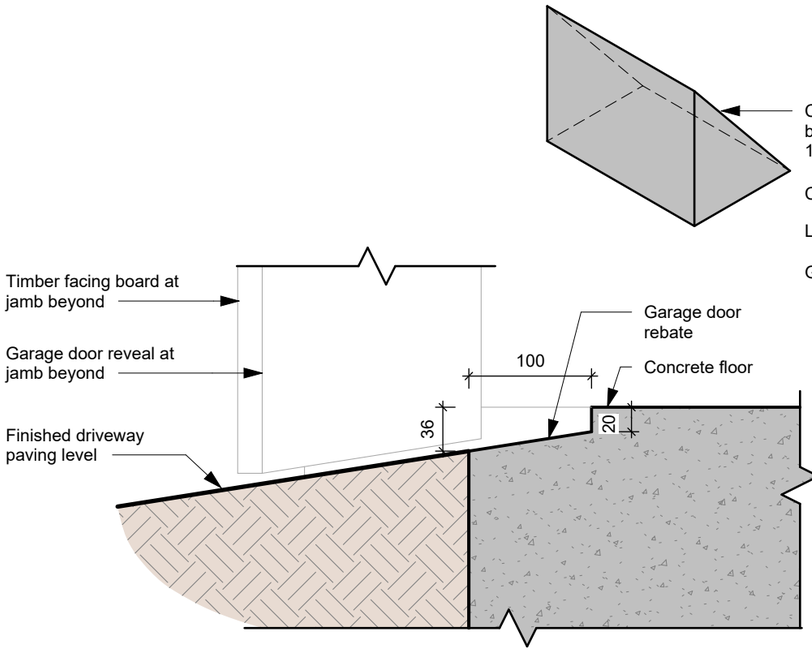


4 A006 STRIA GARAGE JAMB
1 : 5

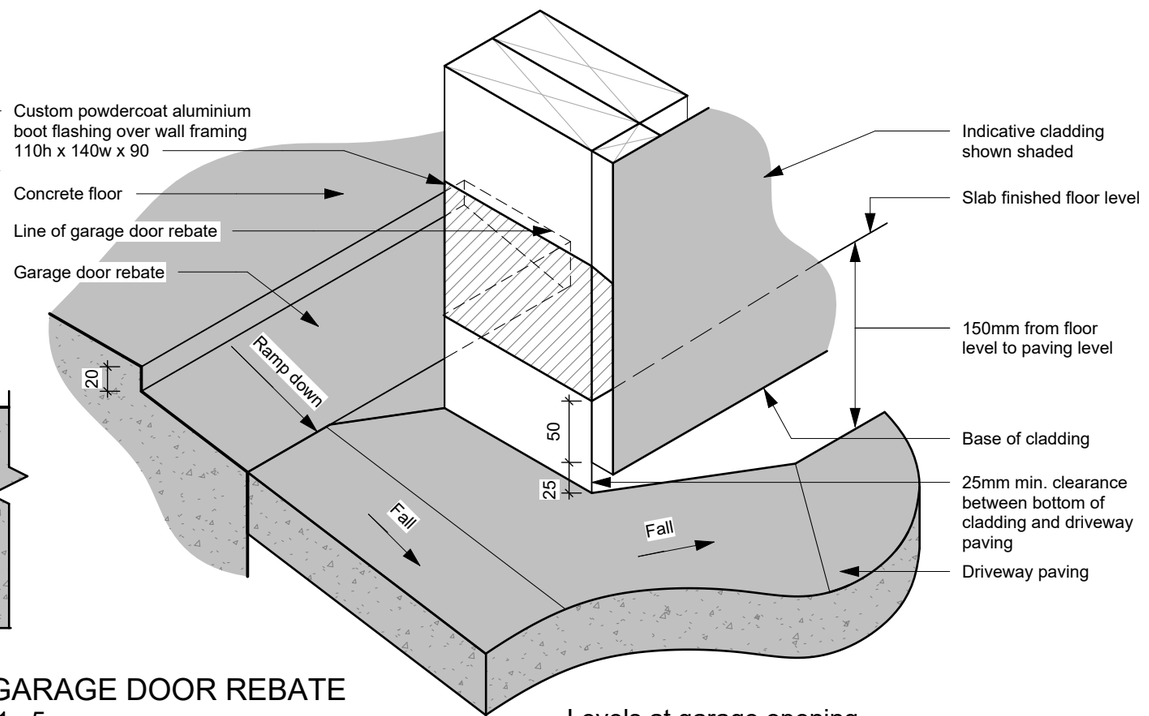
Construction Notes
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Detail Notes
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Garage door rebate



Levels at garage opening

5 A005 GARAGE DOOR REBATE
1 : 5

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Proposed House

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Waikanae

Consent

Garage Details

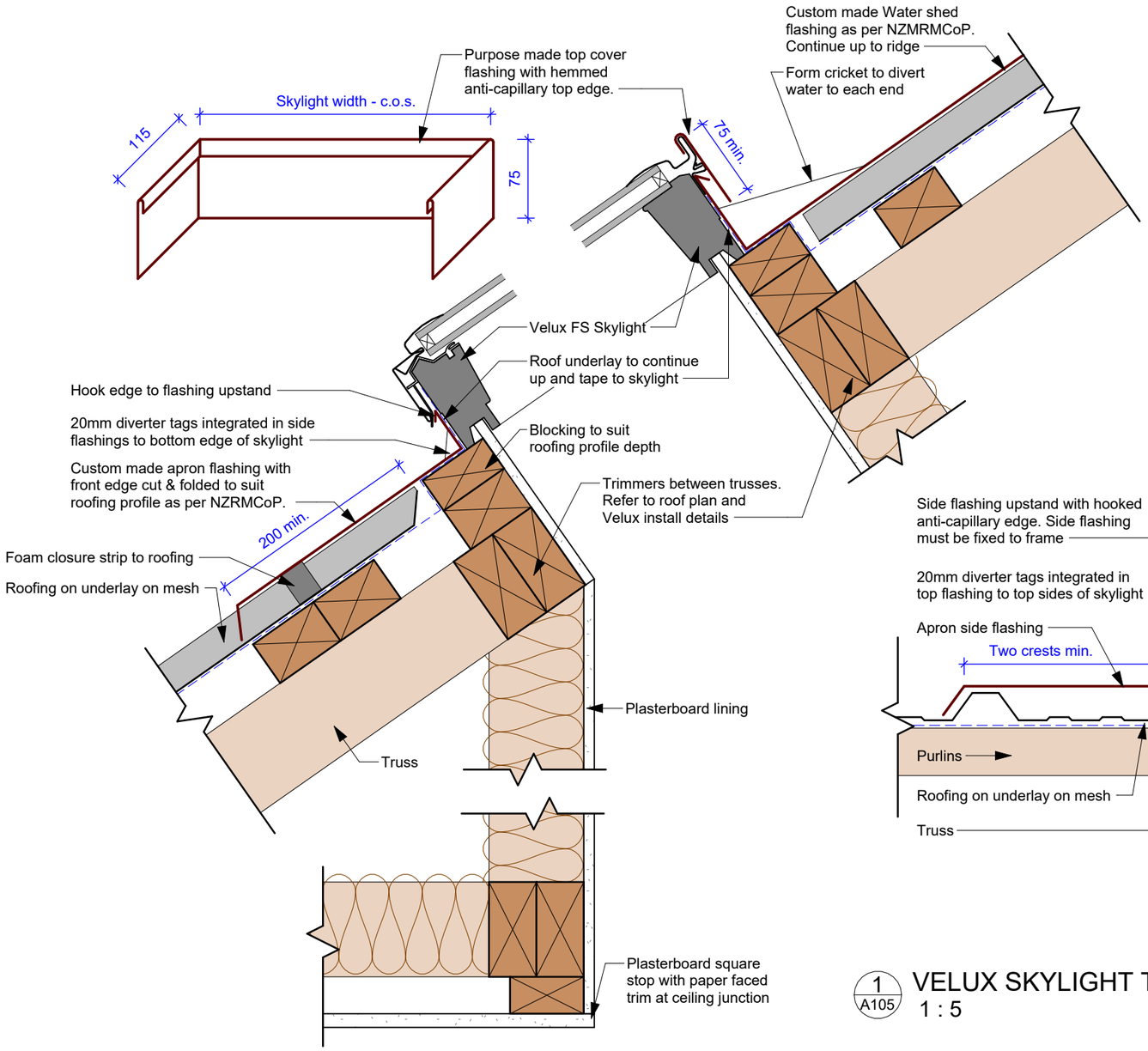
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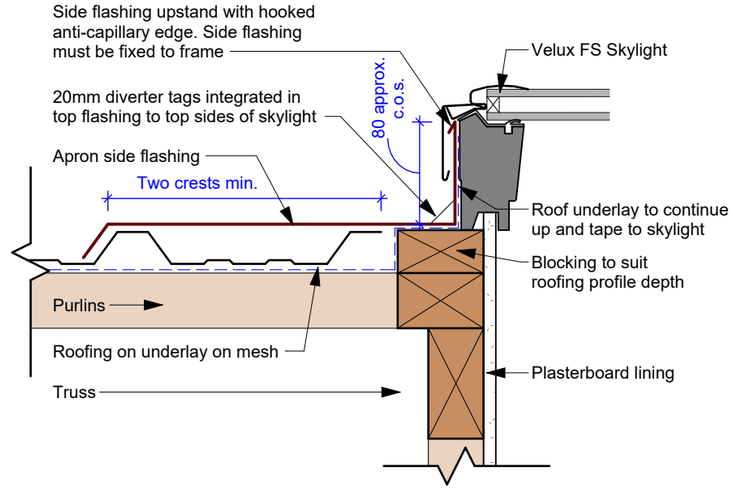
Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A314	A

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Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
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Detail Notes
- Contractor must obtain territorial authority acceptance for variation to details





1 / A105 VELUX SKYLIGHT TO ROOF
1 : 5

Watershed flashing

- Design must be as per Velux details and Branz appraisal.
- This detail applies to all metal roofs with pitch between 15° and 60°
- Design & manufacture must meet the minimum requirements set out in the NZ Metal Roof and Wall Cladding Code of Practice (NZMRCoP). And shall be manufactured and installed by a specialist flashing contractor.
- The flashing and installation must be guaranteed against weathertightness by the specialist flashing contractor.
- Insulation material meeting NZBC H1 is required in cavities of the internal light well.

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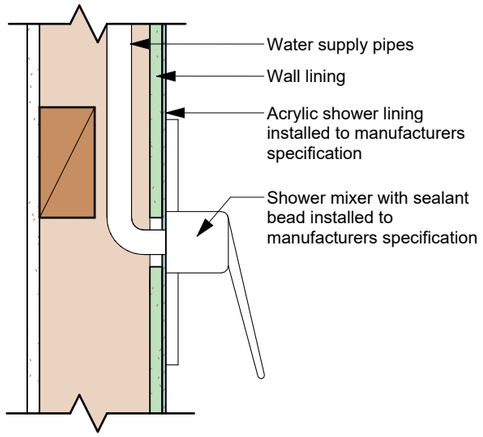
Consent

Skylight Details

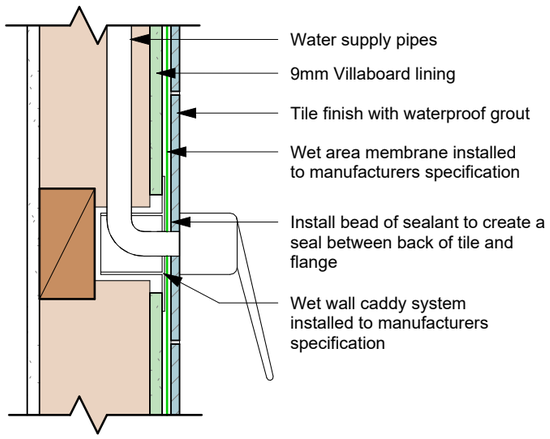
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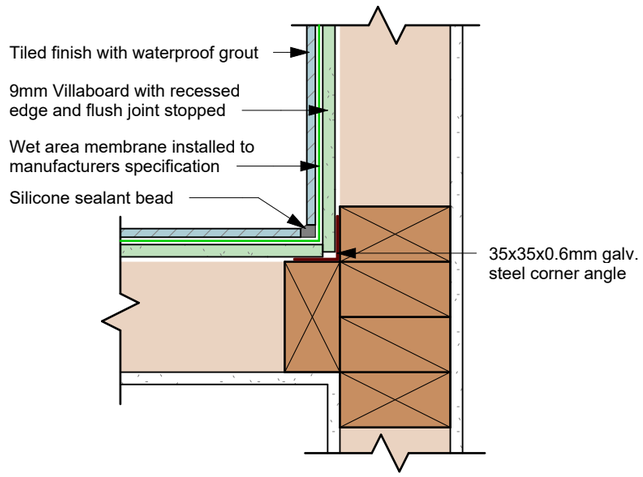
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1 ACRYLIC SHOWER PENETRATION
1 : 5



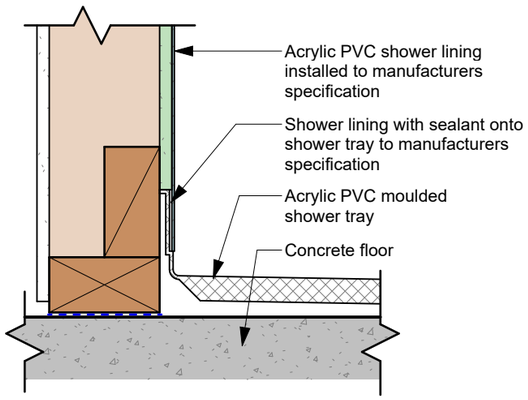
3 TILED SHOWER PENETRATION
1 : 5



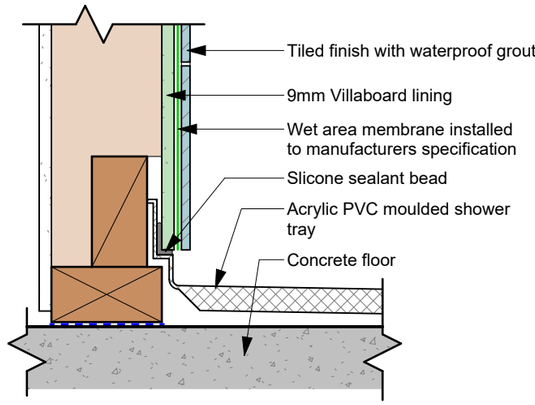
5 TILED SHOWER CORNER JUNCTION
1 : 5

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

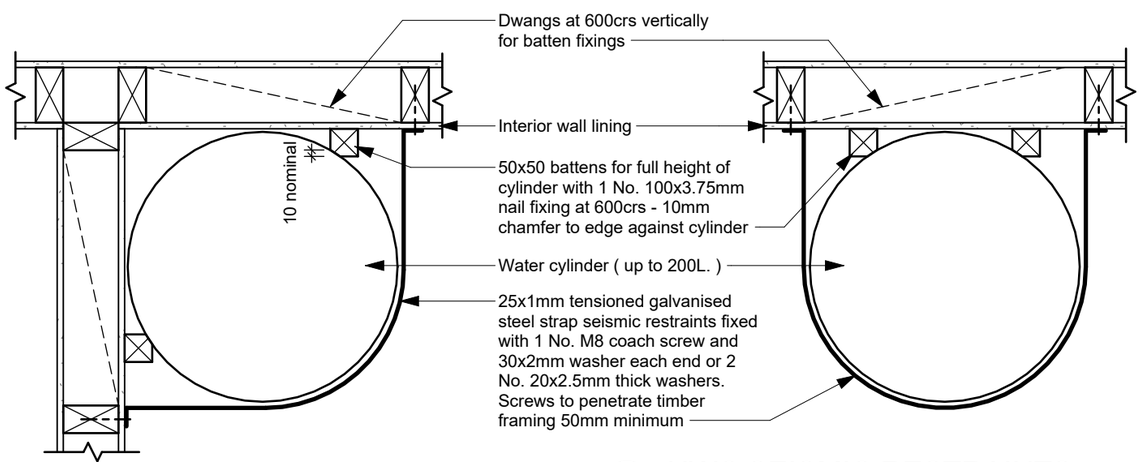
Detail Notes
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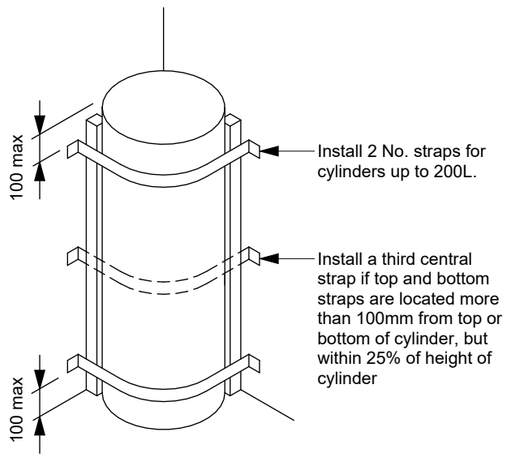
2 ACRYLIC SHOWER BASE
1 : 5



4 TILE SHOWER BASE
1 : 5



6 A101 HWC SEISMIC RESTRAINTS
1 : 10



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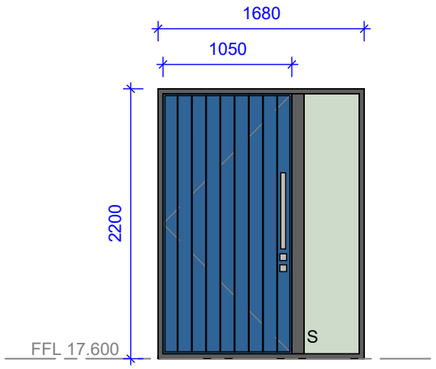
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Bathroom Details

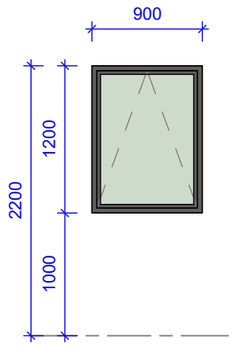
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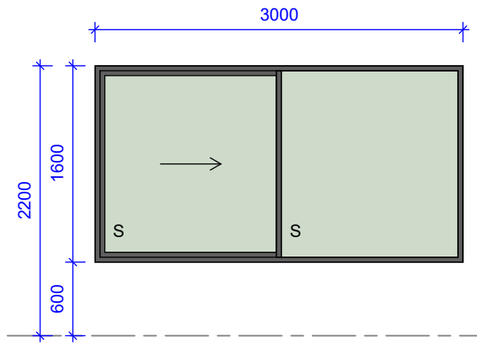
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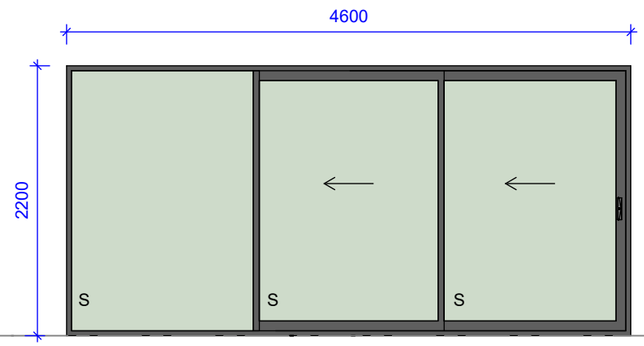
W01
Hinged Entry Door
ExDr 1680w x 2200h



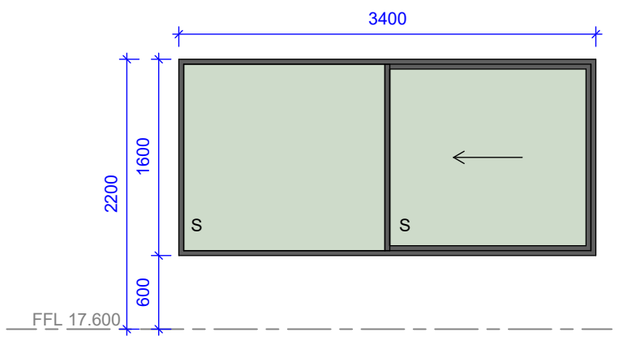
W02
Awning Window
AW1 900w x 1200h



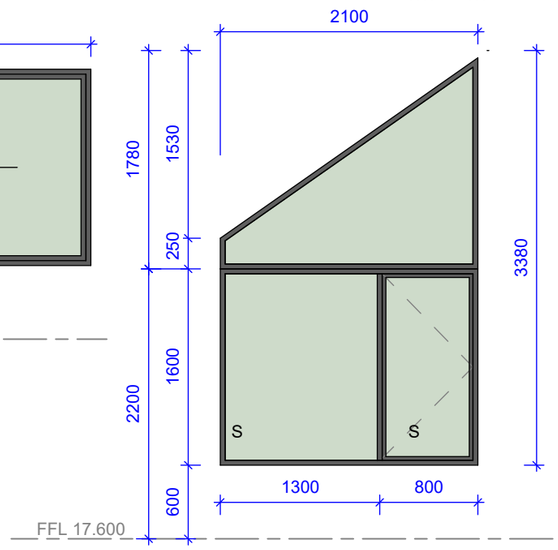
W03
Single Sliding Window
S1 3000w x 1600h



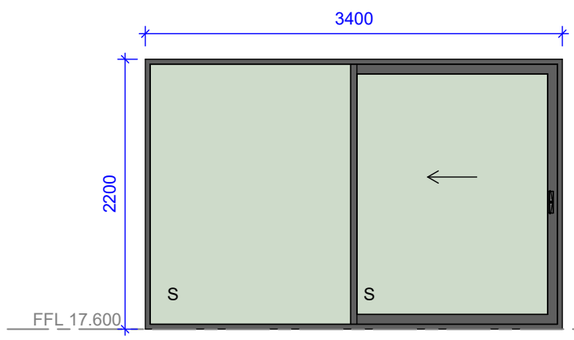
W04
Sliding Door
SS1 4600w x 2200h



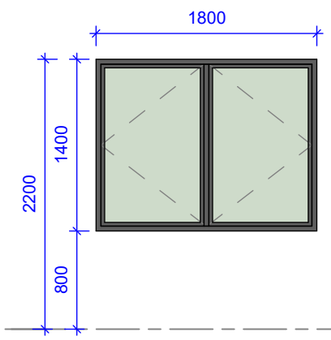
W05
Single Sliding Window
S1 3400w x 1600h



W06
Casement & Raking Window
AW11RK1 2100w x 3380h



W07
Sliding Door
S1 3400w x 2200h



W08
Casement Window
CW11 1800w x 1400h

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Aluminium Window & Doors
- Joinery shown as viewed from exterior
- Window dimensions denote size measured over window reveals
- Aluminium joiner to check opening sizes on site before manufacture
- Window manufacturer to supply flashings and WANZ WIS components
- Refer also to window details
- All windows to be APL Residential Thermal Heart suite double glazed joinery
- All glazing to be Low 'E' argon filled IGU's
- Window powdercoat finish to be Duralloy solid colour range
- All windows have architraves
- All opening sashes to have colour matched double tongue catches
- All window and door openings in exterior walls to have a window flashing system installed
- Allow also for glazed balustrade
- S - denotes safety glass required

Site information

Wind Zone:	High (Eng Des.)
Exposure Zone:	C
To Sea (m):	1760-1800m
Earthquake Zone:	3
Climate Zone:	3
Snow Zone:	N1 (0 - 400m)
Soil Class:	Refer Eng.
Liquefaction Area:	High

Exterior Joinery Schedule

WINDOW #	O/A WINDOW SIZE	JAMB LINER	HARDWARE	OPERATION	WINDOW FINISH	GLAZING	COMMENTS
W01	ExDr 1680w x 2200h	P/Q finger jointed pine	Colour matched	Hinged Entry Door	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W02	AW1 900w x 1200h	P/Q finger jointed pine	Colour matched	Awning Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W03	S1 3000w x 1600h	P/Q finger jointed pine	Colour matched	Single Sliding Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W04	SS1 4600w x 2200h	P/Q finger jointed pine	Colour matched	Sliding Door	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W05	S1 3400w x 1600h	P/Q finger jointed pine	Colour matched	Single Sliding Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W06	AW11RK1 2100w x 3380h	P/Q finger jointed pine	Colour matched	Casement & Raking Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W07	S1 3400w x 2200h	P/Q finger jointed pine	Colour matched	Sliding Door	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W08	CW11 1800w x 1400h	P/Q finger jointed pine	Colour matched	Casement Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	

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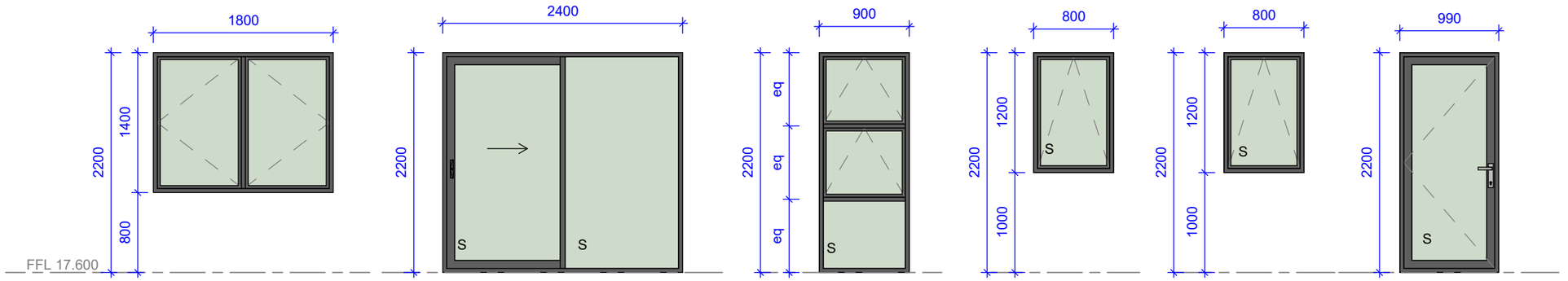
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Exterior Joinery Schedule

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W09
Casement Window
CW11 1800w x 1400h

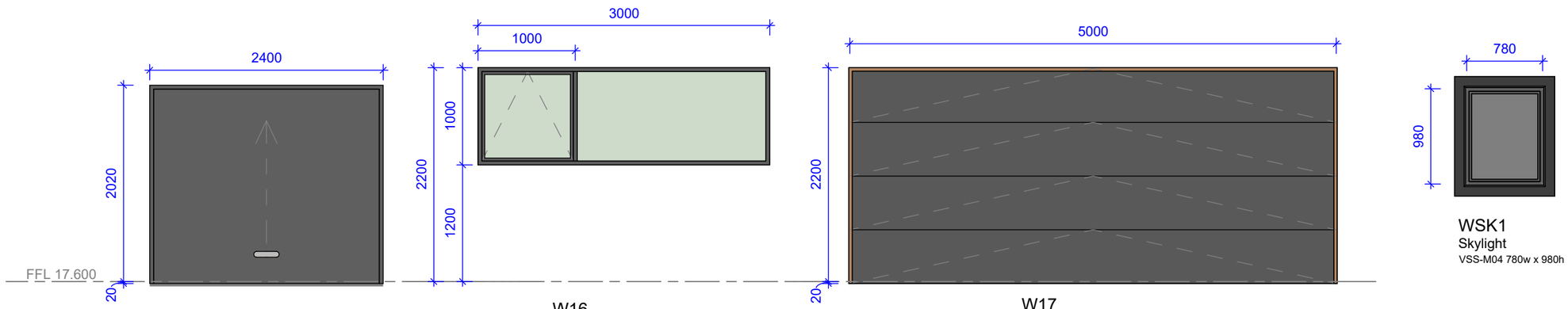
W10
Sliding Door
S1 2400w x 2200h

W11
Awning Window
AW3 900w x 2200h

W12
Awning Window
AW1 800w x 1200h

W13
Awning Window
AW1 800w x 1200h

W14
Single Hinged Door
ExDr 910w x 2200h



W15
Garage Roller Door
GarDr 2020h x 2400w

W16
Awning Window
AW11 3000w x 1000h

W17
Sectional Garage Door
GarDr 5000w x 2220h

WSK1
Skylight
VSS-M04 780w x 980h

Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

Aluminium Window & Doors
- Joinery shown as viewed from exterior
- Window dimensions denote size measured over window reveals
- Aluminium joiner to check opening sizes on site before manufacture
- Window manufacturer to supply flashings and WANZ WIS components
- Refer also to window details
- All windows to be APL Residential Thermal Heart suite double glazed joinery
- All glazing to be Low 'E' argon filled IGU's
- Window powdercoat finish to be Duralloy solid colour range
- All windows have architraves
- All opening sashes to have colour matched double tongue catches
- All window and door openings in exterior walls to have a window flashing system installed
- Allow also for glazed balustrade
- S - denotes safety glass required

Site information

Wind Zone:	High (Eng Des.)
Exposure Zone:	C
To Sea (m):	1760-1800m
Earthquake Zone:	3
Climate Zone:	3
Snow Zone:	N1 (0 - 400m)
Soil Class:	Refer Eng.
Liquefaction Area:	High

Exterior Joinery Schedule

WINDOW #	O/A WINDOW SIZE	JAMB LINER	HARDWARE	OPERATION	WINDOW FINISH	GLAZING	COMMENTS
W09	CW11 1800w x 1400h	P/Q finger jointed pine	Colour matched	Casement Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W10	S1 2400w x 2200h	P/Q finger jointed pine	Colour matched	Sliding Door	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W11	AW3 900w x 2200h	P/Q finger jointed pine	Colour matched	Awning Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W12	AW1 800w x 1200h	Aluminium reveals	Colour matched	Awning Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	Ensuite Window
W13	AW1 800w x 1200h	Aluminium reveals	Colour matched	Awning Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	Bathroom Window
W14	ExDr 910w x 2200h	P/Q finger jointed pine	Colour matched	Single Hinged Door	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W15	GarDr 2020h x 2400w	Cladding to reveals	Garage Roller Door	Garage Roller Door	Garage Roller Door	None	
W16	AW11 3000w x 1000h	P/Q finger jointed pine	Colour matched	Awning Window	Thermally broken aluminium	AGP Solux Ultra Low 'E' argon filled IGU's with thermal spacer	
W17	GarDr 5000w x 2220h	Cladding to reveals	Standard	Sectional Garage Door	Sectional Garage Door	None	
WSK1	VSS-M04 780w x 980h	Plasterboard lined	Velux	Skylight		Velux glazing	

Daylight and Ventilation Schedule

ROOM	FLOOR AREA	5% OF AREA	10% OF AREA	ASSOCIATED WINDOWS	VENTILATION AREA	DAYLIGHT AREA
Office	4.28 m²	0.21 m²	0.43 m²	W02	1.08 m²	1.08 m²
Nook	10.02 m²	0.50 m²	1 m²	W03	2.4 m²	4.8 m²
Living	43.80 m²	2.19 m²	4.38 m²	W05, W06, W07	10.74 m²	20.98 m²
Bed 3	10.57 m²	0.53 m²	1.06 m²	W08	2.5 m²	2.5 m²
Bed 2	10.57 m²	0.53 m²	1.06 m²	W09	2.5 m²	2.5 m²
Bed 1	17.08 m²	0.85 m²	1.71 m²	W10, W11	3.94 m²	7.26 m²

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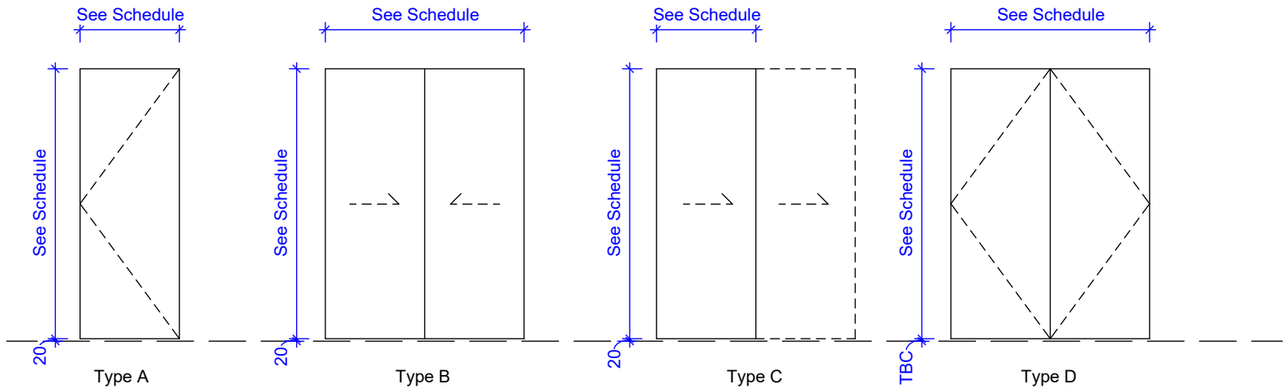
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Exterior Joinery Schedule
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Interior Door Notes

- Interior door and hardware to be as selected by client
- Refer to floor plans for door swing direction
- Refer to Interior Door Schedule for panel sizes & door details
- All door handles to be 1050mm above floor level or to match existing
- Allow for 20mm panel to flooring gap - confirm with manufacturer

Interior Door Schedule

DOOR #	TYPE	PANEL SIZE	LOCATION	OPERATION	FRAME MATERIAL	PANEL CONSTRUCTION	COMMENTS
D01	E	860w x 2200h	Garage	Single Cavity Slider	Timber Frame	Solid core Panel	Acoustic seal to door
D02	C	810w x 2200h	Office	Single Cavity Slider	Timber Frame	Ribcore Panel with steel frame insert	
D03	C	810w x 2200h	St.	Single Cavity Slider	Timber Frame	Ribcore Panel with steel frame insert	
D04	C	810w x 2200h	L'dry	Single Cavity Slider	Timber Frame	Ribcore Panel with steel frame insert	
D05	A	810w x 2200h	Hall	Hinged Swinging	Timber Frame	Ribcore Panel	
D06	A	810w x 2200h	Bath	Hinged Swinging	Timber Frame	Ribcore Panel	
D07	A	810w x 2200h	Bed 1	Hinged Swinging	Timber Frame	Ribcore Panel	
D08	C	810w x 2200h	Ensuite	Single Cavity Slider	Timber Frame	Ribcore Panel with steel frame insert	
D09	A	810w x 2200h	Bed 2	Hinged Swinging	Timber Frame	Ribcore Panel	
D10	B	1480w x 2200h	WR	Double Sliding	Timber Frame	MDF	Whisper Wardrobe slider
D11	D	2/610w x 2200h	St.	Double Door - Single Swing	Timber Frame	Ribcore Panel	
D12	A	810w x 2200h	Bed 3	Hinged Swinging	Timber Frame	Ribcore Panel	
D13	B	1480w x 2200h	WR	Double Sliding	Timber Frame	MDF	Whisper Wardrobe slider

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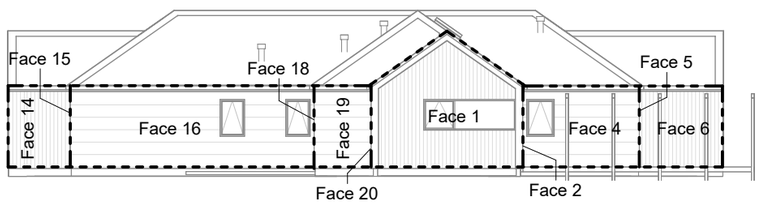
Interior Opening Schedule

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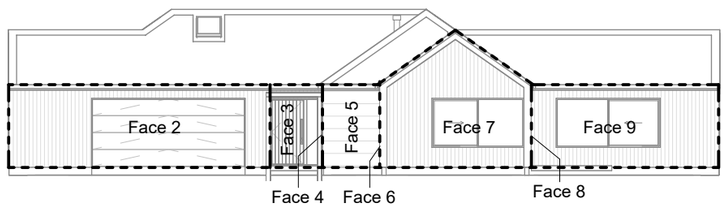
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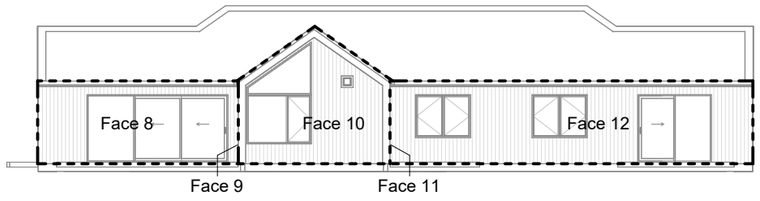
Construction Notes
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- All drawing sheets to be read in conjunction with all other sheets in the drawing set



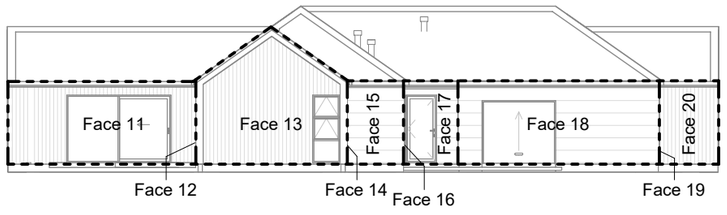
RISK ELEVATION 1



RISK ELEVATION 2



RISK ELEVATION 3



RISK ELEVATION 4

Risk Matrix

Name	Cladding	Wind Zone	Score	No. of Storeys	Score	Roof/Wall Junction	Score	Eaves Width	Score	Envelope Complexity	Score	Decks	Score	Total Score
Face 1	Cladding 1	High	1	Low	0	Low	0	Medium	1	Medium	1	Low	0	**3**
Face 2	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 3	Cladding 1	High	1	Low	0	Medium	1	Low	0	Medium	1	Low	0	**3**
Face 4	Cladding 2	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 5	Cladding 2	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 6	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 7	Cladding 1	High	1	Low	0	Low	0	Medium	1	Medium	1	Low	0	**3**
Face 8	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 9	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 10	Cladding 1	High	1	Low	0	Low	0	Medium	1	Medium	1	Low	0	**3**
Face 11	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 12	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 13	Cladding 1	High	1	Low	0	Low	0	Medium	1	Medium	1	Low	0	**3**
Face 14	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 15	Cladding 2	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 16	Cladding 2	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 17	Cladding 2	High	1	Low	0	Medium	1	Low	0	Medium	1	Low	0	**3**
Face 18	Cladding 2	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 19	Cladding 2	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**
Face 20	Cladding 1	High	1	Low	0	Medium	1	Very High	5	Medium	1	Low	0	**8**

Risk Matrix Descriptions

Risk matrix as per E2/AS1 Section 3

Cladding Types

Type	Description
Cladding 1	Vertical Shiplap on 45mm cavity on underlay on framing
Cladding 2	Horizontal Stria on 20mm cavity on underlay on framing

Wind Zone

Risk	Score	Description
Low	0	1. Low
Medium	0	2. Medium
High	1	3. High
Very High	2	4. Very high
Extra High	2	5. Extra High
SED	2	6. SED

Number of Storeys

Risk	Score	Description
Low	0	1. One Storey
Medium	1	2. Two Storeys in Part
High	2	3. Two Storeys
Very High	3	4. More than two storeys

Roof / Wall Junctions

Risk	Score	Description
Low	0	1. Fully protected
Medium	1	2. Partly exposed (no eaves)
High	3	3. Fully Exposed (Parapets, enclosed balustrades,etc)
Very High	5	4. Roof elements finishing within the boundaries formed by the exterior walls

Eave Width

Risk	Score	Description
Low	0	1. Greater than 600 single storey
Medium	1	2. 451-600 single storey, over 600 two storey
High	2	3. 101-450 single storey, 451-600 two storey, 600 or more above two storey
Very High	5	4. 0-100 single storey, 0-450 two storey, less than 600 above two

Envelope Complexity

Risk	Score	Description
Low	0	1. Simple, single cladding
Medium	1	2. Moderate complex. no more than 2 claddings
High	3	3. Complex, angluar, curved, multiple claddings
Very High	6	4. Complex, Unique junctions, multiple claddings

Decks

Risk	Score	Description
Low	0	1. No deck or at ground level
Medium	2	2. Covered in plan by roof or timber slat at first or second floor
High	4	3. Enclosed deck exposed in plan or cantilevered at first floor
Very High	6	4. Enclosed deck exposed or cantilevered at second or above

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Risk Matrix

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H1/AS1 Calculation Method

Climate Zone: Zone 3

Window to Wall Ratio: 27.13%

Wall Construction Type:

Heated Ceilings, Walls or Floors:

Heated elements to use H1/AS1 Table 2.1.2.2A
Non-heated to use Table 2.1.2.2B & 2.1.2.2C

Heat Loss (Pro.) total is less than **Heat Loss (Ref.)** and therefore compliant as per H1/AS1.

H1/AS1 Reference Building			
Type	Area	R-Value (Ref.)	Heat Loss (Ref.)
Total Floors (Slab on Ground)	226.0 m²	1.5	150.7
Total Floors (Non-slab on ground)	0.0 m²	2.5	0.0
Total Roof (incl. Skylights)	182.8 m²	6.6	27.7
Total Wall Area (incl. Windows)	203.6 m²		
- 70% Walls	142.5 m²	2	71.3
- 30% Windows	61.1 m²	0.46	132.8
	612.4 m²		**382.4**

H1/AS1 Proposed Building			
Type	Area	R-Value (Pro.)	Heat Loss (Pro.)
Floor 1	226.0 m²	1.30	173.9
Roof 1	129.0 m²	5.64	22.9
Roof 2	53.8 m²	5.62	9.6
Wall 1	87.7 m²	3.11	28.2
Wall 2	46.1 m²	3.08	15.0
Wall 3	9.4 m²	2.26	4.2
Wall 4	3.8 m²	2.26	1.7
Window 1	54.7 m²	0.50	109.4
Window 2	1.9 m²	0.26	7.3
	612.4 m²		372.0

Element Descriptions

Type	Description	R Value
Floor 1	Concrete Rib raft X-Pod slab to engineers design	1.3
Roof 1	Metal roofing on underlay | Truss | R1.8 + R3.6 Insul | 13 GIB	5.64
Roof 2	Metal roofing on underlay | 240 frame | R6 insul | 13 GIB	5.62
Wall 1	Timber shiplap | 45 cavity on underlay | 140 frame, R3.6 Insul. | 10 GIB	3.11
Wall 2	Stria | 20 cavity on underlay | 140 frame, R3.6 Insul. | 10 GIB	3.08
Wall 3	12 Strandboard | 90 frame, R2.8 Insul | 10 GIB (Garage)	2.26
Wall 4	Roof space | 90 frame, R2.8 Insul | 10 GIB	2.26
Window 1	Thermally broken aluminium, double glazed Solux E glass, Argon filled	0.5
Window 2	Cavity slider solid core door to garage	0.26

Refer to attached Design Navigator calculations in specifications for Construction R-Values

Concrete slab on ground R-value as per H1/AS1 Table F.1.2.2B

Type	Description	External Perimeter	Area	Frame Width (m)	Area Perimeter ratio	R-Value
Floor 1	Concrete Rib raft X-Pod slab to engineers design	92.2 m	226.0 m²	0.140	2.38	1.3

TABLE 2.1.2.2A: Minimum construction R-values for heated ceilings, walls or floors
Paragraph 2.1.2.2 a)

Building element	Construction R-values (m²·K/W)[1],[2],[3]					
	Climate zone 1	Climate zone 2	Climate zone 3	Climate zone 4	Climate zone 5	Climate zone 6
Heated ceiling[4],[5]	R6.6	R6.6	R6.6	R6.6	R6.6	R6.6
Heated wall[6]	R2.9	R2.9	R2.9	R2.9	R2.9	R2.9
Heated floor[7]	R2.5	R2.5	R2.5	R2.8	R3.0	R3.0

Notes:

(1) R_a/*R-value* < 0.1 and R_{ia} is the *thermal resistance* between the heated plane and the inside air.

(2) Floor coverings, for example carpet or cork, will reduce the efficiency of the *heated floor*.

(3) Climate zone boundaries are shown in Appendix C.

(4) In *roofs* with a *roof space*, where the insulation is installed over a horizontal ceiling, the *roof R-value* may be reduced to R3.3 for a distance of up to 500 mm from the outer edge of the ceiling perimeter where space restrictions do not allow full-thickness insulation to be installed.

H (5) For **housing** only, for *building consent* applications submitted before 1 May 2023, the minimum *construction R-value* for *heated ceilings* in all climate zones is permitted to be reduced to R3.5.

(6) For **housing** only, for *building consent* applications submitted before 1 May 2023, the minimum *construction R-value* for *heated walls* in all climate zones is permitted to be reduced to R2.6.

(7) For **housing** only, for *building consent* applications submitted before 1 May 2023, the minimum *construction R-value* for heated floors in all climate zones is permitted to be reduced to R1.9.

TABLE 2.1.2.2B: Minimum construction R-values for building elements that do not contain embedded heating systems
Paragraph 2.1.2.2 b)

Building element	Construction R-values (m²·K/W)[1]					
	Climate zone 1	Climate zone 2	Climate zone 3	Climate zone 4	Climate zone 5	Climate zone 6
Roof[2]	R6.6	R6.6	R6.6	R6.6	R6.6	R6.6
Wall	R2.0	R2.0	R2.0	R2.0	R2.0	R2.0
Floor						
Slab-on-ground floors	R1.5	R1.5	R1.5	R1.5	R1.6	R1.7
Floors other than *slab-on-ground*	R2.5	R2.5	R2.5	R2.8	R3.0	R3.0
Windows and doors[3]	R0.46[3]	R0.46[3]	R0.46	R0.46	R0.50	R0.50
Skylights	R0.46	R0.46	R0.54	R0.54	R0.62	R0.62

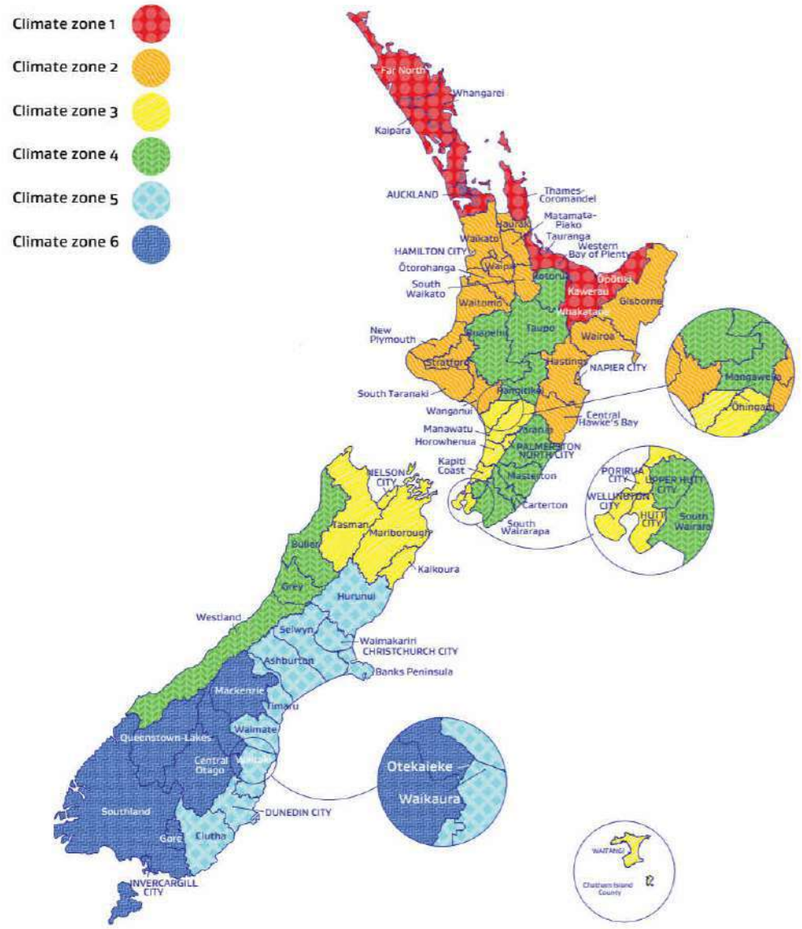
Notes:

(1) Climate zone boundaries are shown in Appendix C.

(2) In *roofs* with a *roof space*, where the insulation is installed over a horizontal ceiling, the *roof R-value* may be reduced to R3.3 for a distance of up to 500 mm from the outer edge of the ceiling perimeter where space restrictions do not allow the full-thickness of insulation to be installed.

(3) For *building consent* applications submitted before 2 November 2023, the minimum *construction R-values* for windows and doors in climate zones 1 and 2 are permitted to be reduced to R0.37 m²·K/W.

FIGURE C.1.1.2: Map of New Zealand climate zones
Paragraph C.1.1.2



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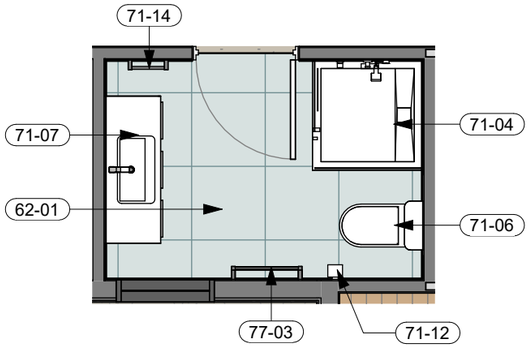
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H1 Calculations
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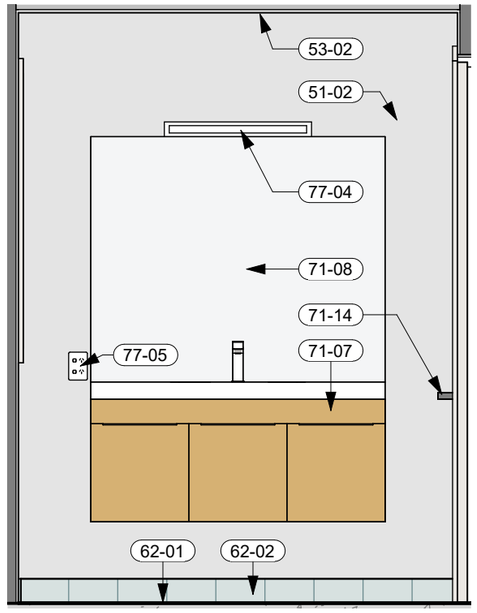
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Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set

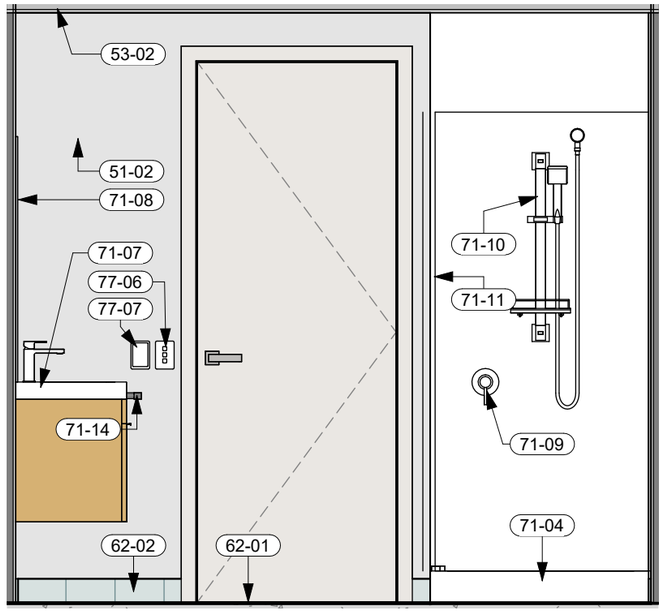


BATHROOM PLAN
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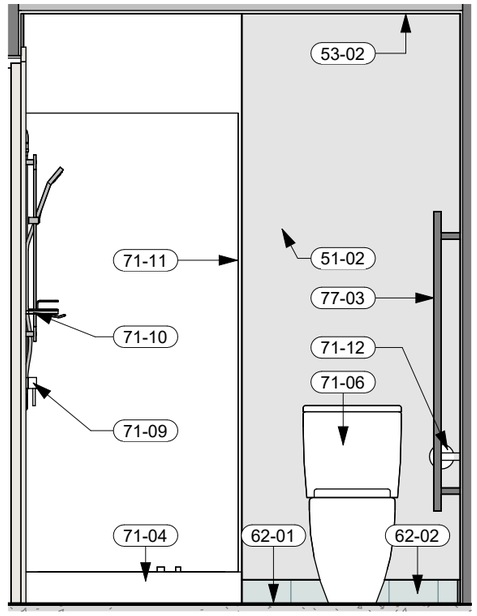
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51-02	10mm GIB Aqualine wall lining
53-02	13mm Gib Aqualine to ceiling on 70x35 battens at 600crs
62-01	Tile floor finish
62-02	100mm tiled skirting
71-04	1000x1000 acrylic shower base with tiled walls
71-06	WC suite
71-07	Wall hung vanity unit with basin mixer
71-08	Vanity width polished edge clear mirror sealed to vanity top with built in demister
71-09	Shower mixer
71-10	Shower head slide rail
71-11	Safety glass showerscreen
71-12	WC roll holder
71-14	Hand towel rail
77-03	Heated towel rail
77-04	Over mirror light
77-05	Power point outlet
77-06	Switches
77-07	Under tile heating thermostat



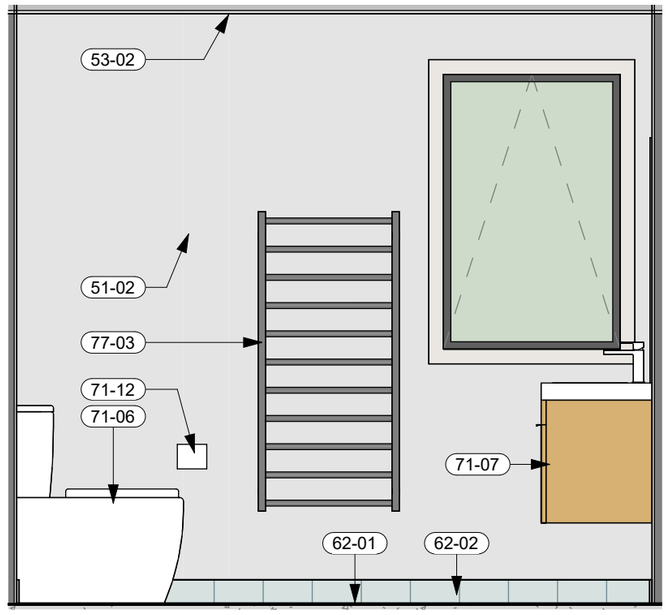
BATHROOM 1
1 : 25



BATHROOM 2
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BATHROOM 3
1 : 25



BATHROOM 4
1 : 25

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A	01/04/25	Building Consent

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Proposed House
for Tim Atkinson
40 Anderson Park Drive
Waikanae

Consent

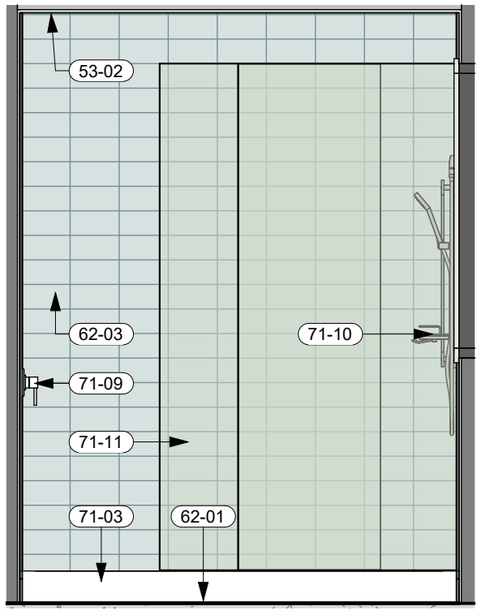
Interior Elevations

DO NOT SCALE DRAWING

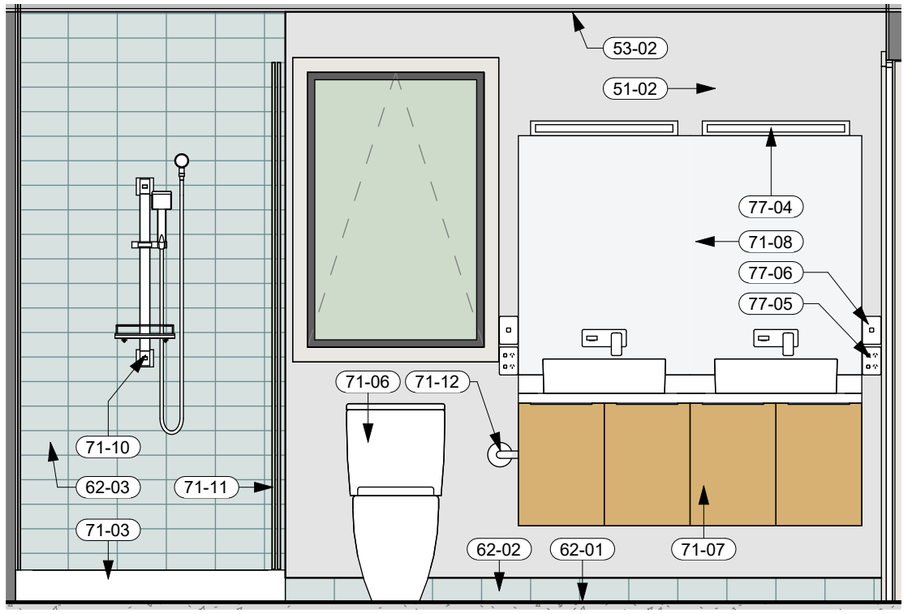
Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A501	A

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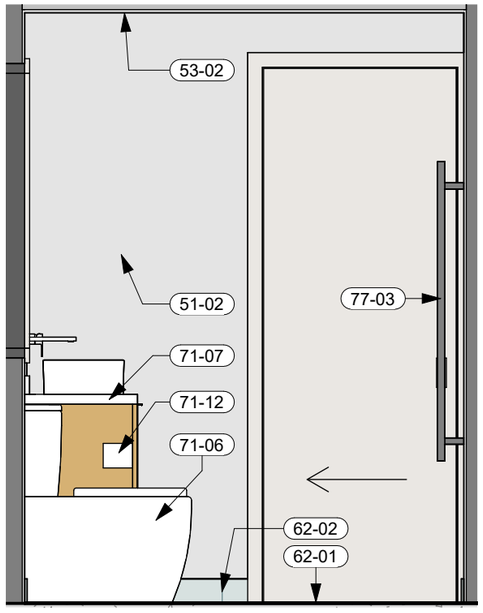
Construction Notes
- Refer also to sheet A002 - Construction Notes for additional information
- All drawing sheets to be read in conjunction with all other sheets in the drawing set



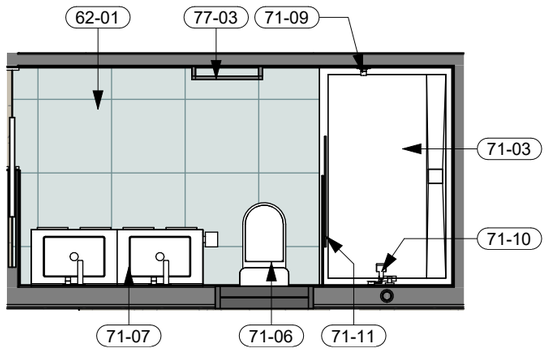
ENSUITE 1
1 : 25



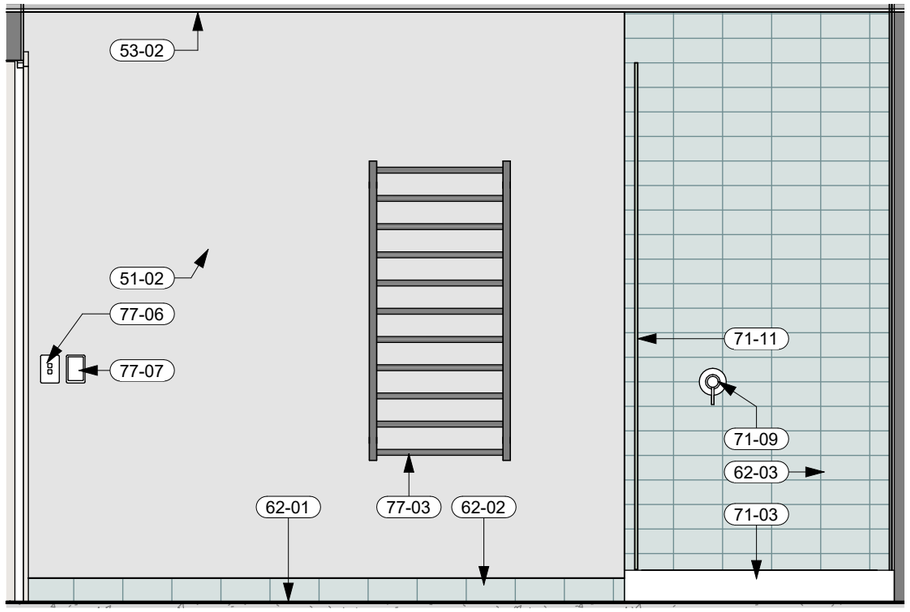
ENSUITE 2
1 : 25



ENSUITE 3
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ENSUITE PLAN
1 : 50



ENSUITE 4
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Keynote Legend	
51-02	10mm GIB Aqualine wall lining
53-02	13mm Gib Aqualine to ceiling on 70x35 battens at 600crs
62-01	Tile floor finish
62-02	100mm tiled skirting
62-03	Wall tiles on waterproof membrane on 9mm Villaboard to shower
71-03	Selected acrylic base shower with tiled walls
71-06	WC suite
71-07	Wall hung vanity unit with basin mixer
71-08	Vanity width polished edge clear mirror sealed to vanity top with built in demister

Keynote Legend	
71-09	Shower mixer
71-10	Shower head slide rail
71-11	Safety glass showerscreen
71-12	WC roll holder
77-03	Heated towel rail
77-04	Over mirror light
77-05	Power point outlet
77-06	Switches
77-07	Under tile heating thermostat

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Interior Elevations

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Job	Date	Sheet(A3)	Rev.
24058	1/04/2025	A502	A

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SPECIFICATION
of work to be done and materials to be used in carrying out the works shown on the accompanying drawings

New House - 40 Anderson Park Drive

Project Specification

40 Anderson Park Drive, Waikanae, New Zealand
Project Ref: 24058

Printed: 01 April 2025
Consent Issue 01/04/25



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masterspec

Specification built using Masterspec software
Project ID: 324271 - 394902

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1220 GENERAL REQUIREMENTS

1 GENERAL

1.1 THE WORKS

The works are as described in this specification and shown on the drawings.

1.2 PERSONNEL

Owner: The person defined as "owner" in the New Zealand Building Code.
Contractor: The person contracted by the owner to carry out the contract.

1.3 THE SITE

Confine access and work to the area of site indicated on the drawings.

1.4 SPECIFICATION SECTIONS

Sections are for reference and convenience only and do not constitute individual trade sections or work elements. Read all sections together and read this section with all other sections.

1.5 INTERPRETATIONS

Required:	Required by the documents, or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Approval:	Approval in writing.
Direction:	Direction in writing.
Notified:	Notified in writing.

1.6 ABBREVIATIONS

The following abbreviations are commonly used throughout the specification:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BCA	Building Consent Authority
BRANZ	Building Research Association of New Zealand
LBP	Licensed Building Practitioner
NZBC	New Zealand Building Code
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
NUO	Network Utility Operator
OSH	Occupational Safety and Health
RBW	Restricted Building Work
TA	Territorial Authority

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1.7 INCONSISTENCIES

If there are any inconsistencies, errors or omissions in or between documents, the contractor must seek direction in resolving it. Figured dimensions take precedence over scaled dimensions; drawings to a larger scale take precedence over drawings to a smaller scale and drawings take precedence over specification.

1.8 SUBSTITUTIONS

A substitution may be proposed where specified products are not available, or if substitute products are brought to the attention of and are considered by the owner as equivalent or superior to those specified. Except where a specified product is not available, the owner is not bound to accept any substitutions.
Notify proposed substitution of specified products. Include sufficient information to allow the owner to confirm that the substitution is equivalent or superior to that specified. Advise the owner whether an amendment will or may be required to the Building Consent and the expected costs of such amendment.

1.9 THE WORDS "PROVIDE" OR "FIX"

The words "provide" (or "supply") or "fix" if used separately mean "provide and fix" unless explicitly stated otherwise.

1.10 MANUFACTURERS AND SUPPLIERS

Manufacturers and suppliers requirements, instructions, specifications or details are those issued by them for their particular material, product or component and are the latest edition.

1.11 REFERENCED DOCUMENTS

Reference is made to various New Zealand Building Code (NZBC) acceptable solutions (AS) and verification methods (VM) for criteria and/or methods used to establish compliance with the Building Act 2004. Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS) and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise. Documents cited both directly and within other cited publications are part of this specification.

1.12 PRECEDENCE OF REFERENCED DOCUMENTS

This specification takes precedence in the event of it being at variance with and requiring a higher standard than, the cited documents. Resolution of any variance must be confirmed in writing and where Building Consent is affected, the change notified to the BCA for advice as to whether an amendment is required to the Building Consent Authority.

1.13 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004 to carry out any work not in accordance with the Building Consent. Refer the resolution of matters concerning compliance to the owner for a direction. Where Building Consent is affected refer any change to the BCA for advice as to whether an amendment is required to the Building Consent.

1.14 STATUTORY OBLIGATIONS

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

1.15 BUILDING CONSENT

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

1.16 INSPECTIONS

Do not proceed with work noted on the Building Consent for inspection until it has been inspected and passed by the BCA inspector.

1.17 KEY PERSONNEL

Provide names and contact detail of LBP's/ key personnel. Prior to Restricted Building Work being carried out, provide names, registrations numbers (where appropriate) and contact detail of LBP's that are required for RBW by the Building Consent Authority as part of the Building Consent.

Include the following as applicable:

- Person with the appropriate site license
- Carpenter
- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician
- Roofer
- External window manufacturer
- Waterproof membrane applicator

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1.18 PRODUCER STATEMENTS AND LBP DOCUMENTATION

When Records of Work or producer statements verifying construction are required, for the application for the Code Compliance Certificate, provide copies to both the BCA and the owner. Provide LBP documents and producer statements in the form required by the BCA.

1.19 CERTIFICATE OF COMPLIANCE

Provide Certificates of Compliance for electrical and gas work carried out.

1.20 CODE COMPLIANCE CERTIFICATE

Provide documentation that the Owner requires in order to obtain a Code Compliance Certificate for the consented work.

1.21 TRADE GUARANTEES AND WARRANTIES

Where specific trade guarantees/warranties are offered covering materials and/or execution of proprietary products or complete installations, or are required as a condition of Building Consent, provide guarantees/warranties to the owner.

1.22 SITE ACCOMMODATION

Provide, erect and maintain scaffolding, sheds, toilets, water, power and hoardings. Allow for cartage, craneage, plant hire and storage. Arrange for temporary works and services necessary for the completion of the works.

1.23 HEALTH AND SAFETY

Make the works safe and provide and maintain a safe working environment, to the requirements of the Health and Safety at Work Act 2015. Ensure that all those working on or visiting the site are aware of the rules governing site safety, are properly supervised and are not unnecessarily exposed to hazards and risks.

1.24 PROTECT THE WORKS

Protect parts of the work liable to damage until completion of the works. Take all precautions necessary to protect the works from damage by unauthorised entry or inclement weather. Brace and support all parts of the works against damage during construction.

1.25 STORAGE AND PROTECTION

Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers requirements.

1.26 ANTIQUITIES AND ITEMS OF VALUE AND INTEREST

Report immediately the finding of any fossils, antiquities, pre-1900 items, or objects of value. Ensure they remain undisturbed until approval is given for their removal.

1.27 MEANS OF COMMUNICATION

All directions and approvals in writing.

1.28 PROGRAMME

Provide a programme for the contract works, including the work of separate contractors being carried out concurrently with this contract. Form of programme: A dated bar chart, identifying the contract work's critical path and all key dates for the provision of labour, materials and elements. Supply a copy of the programme, and any updates to the owner.

1.29 WORKING HOURS

Work on site is restricted to between 0800 to 1800, Monday to Friday, excluding statutory holidays. Work outside these hours may be permitted, with prior approval in writing by the owner.

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1237 WARRANTIES

1 GENERAL

This general section refers to the requirements for warranties/guarantees, referred to within this specification and referred to within separate specifications/documents relating to this project. It includes:

- Warranties for parts of the work required by the principal in a required form
- Installer/applicator warranties for parts of the work in the installer's/applicator's standard form
- Manufacturer/supplier warranties provided with products, appliances and the like in the manufacturer's/supplier's standard form
- Guarantees provided by contractor in the contractor's standard form

These guarantees/warranties are in addition to any warranties, implied warranties, or guarantees that are required by the Building Act, the Building Regulations, or the building consent.

Warranties

1.1 PROVIDE WARRANTIES

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

- Conform to the WARRANTY AGREEMENT form included in the specification/conditions of contract.
- Commence warranties from the date of practical completion of the contract works (unless otherwise stated).
- Maintain their effectiveness for the times stated.
- Provide executed warranties prior to practical completion.

1.2 WARRANTIES - INSTALLER/APPLICATOR

Where installer/applicator warranties are offered covering execution and materials of proprietary products or complete installations, provide such warranties to the contract administrator. These warranties may be provided in lieu of the warranties that are otherwise required provided that these warranties are subject to similar conditions and periods.

Provide warranties in favour of the principal. The terms and conditions of such warranties in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

1.3 WARRANTIES - MANUFACTURER/SUPPLIER

Where warranties are offered covering materials, equipment, appliances or proprietary products, provide all such warranties to the contract administrator.

Provide warranties in favour of the principal. The terms and conditions of such warranties in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

Submission

1.4 REVIEW BY CONTRACTOR

Obtain the warranties from the installers, applicators, manufacturers and suppliers at the earliest possible date and review to ensure that they are correctly filled out and executed. Where warranties are executed as a deed, ensure that a duplicate copy is provided for execution by the owner/principal. Keep safe and secure until required for submission.

1.5 WARRANTIES - REQUIRED BY BUILDING CONSENT AUTHORITY

Obtain copies of warranties required as a condition of the building consent in the form required for submission to the BCA. Keep safe and secure until required at the time of the BCA final inspection and Code Compliance Certificate.

1.6 WARRANTIES - REQUIRED BY CONTRACT

Obtain copies of warranties listed in the contract documents. Provide all warranties at the same time. If the project has an operations and maintenance documentation provision, present the warranties with the operations and maintenance information. If no operations and maintenance documentation provision exists, present the warranties to the contract administrator in a loose-leaf binder with a contents index suitably labelled and including the project name and details. Provide a title on the binder edge "Warranties for (project name)"

2 SELECTIONS

Project warranties / guarantees

Guarantees - Contractor - Master Build Services Ltd

2.1 MASTER BUILD SERVICES LTD - 10 YEAR GUARANTEE

Provide a 10 Year Guarantee, include all costs of the building in the contract price. Complete the guarantee application form, obtaining all required signatures (registered master builder and owner/s). Send the completed form to Master Build Services for approval along with a copy of the building contract (include a full scope of work for any addition/alteration work), prior to any work commencing. Obtain written confirmation from Master Build Services and provide this to the owner along with the guarantee document. On completion of the building work complete the notice of practical completion form, obtain all required signatures (registered master builder and owner/s) and send the form to Master Build Services.

Weathertightness and watertightness warranty

2.2 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY

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

Provide this warranty in favour of the principal. The terms and conditions of this warranty in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

- Conform to the standard form WARRANTY AGREEMENT included in the contract documents.
- Commence the warranty from the date of Practical Completion.
- Maintain its effectiveness for the time stated.

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1239 OPERATION & MAINTENANCE

1 GENERAL

This general section relates to operation and maintenance (O&M) documentation referred to within this specification and referred to within separate specifications/documents relating to this project. This documentation is required by the principal so that they can operate and maintain the contract works.

Operation and maintenance documents

1.1 OPERATION AND MAINTENANCE INFORMATION - BUILDING ACT

Provide in writing the information and documentation prescribed by regulations made under the Building Act, to the owner/principal and the relevant territorial authority.

1.2 OPERATION AND MAINTENANCE INFORMATION

Provide operation and maintenance documentation necessary to operate and maintain the works. This documentation is to include:

- Contractors name and contact details.
- A complete list of subcontractors' names, addresses and telephone numbers noting which portions of the contract each provided.
- A complete list of equipment and appliances including serial numbers, manufacturers' names and sources of supply.
- Copies of all manufacturers' and suppliers' product literature containing maintenance requirements/instructions, for any products in the building work.
- Information for operation and maintenance as required by work sections.
- Operation and maintenance manuals as required by work sections.
- Maintenance contract proposals as required by work sections.
- Final as built documents.
- Originals of all warranties and guarantees properly executed.
- Other information listed or referred to in this general section.
- Operation and maintenance information required by other project documents.

1.3 MAINTENANCE REQUIREMENTS

Provide details of any maintenance requirements required by the Building Act. In addition provide maintenance requirements for items including:

- Details of suggested building washing programme.
- Details of suggested re-painting programme.
- Location of flushing points for sub soil drainage systems.
- Location of surface water filter systems requiring regular cleaning.
- Overflow relief gully location and means of keeping charged.

1.4 APPLIANCE MANUALS AND OPERATING INSTRUCTIONS

Provide appliance manuals and operating information for all appliances including details of all isolating valves and switches including:

- Water supply isolating valve.
- Location of isolating valves for appliances including dishwasher, clothes washer and fridge with and icemaker connection.
- Gas supply isolating valve.
- Electrical main switch and all sub boards.
- Location of isolating switches for electrical appliances including cooker and cook top, kitchen extract system, electric under floor heating.
- Fire and heating device operating instructions.

1.5 SELECTIONS INFORMATION

Provide details of actual selections used in the construction of the works including:

- Tapware type and supplier details.
- Sanitary ware including accessories type and supplier details.
- Light fitting type and supplier details.
- Door hardware type and supplier details.
- Carpet type and colour including underlay and the supplier details.
- Vinyl flooring type and colour including supplier details.
- Overlay timber floor type and supplier details.
- Tile type and supplier details.
- Fire supplier details.

- Aluminium joinery system and finish.
- Paint type and colours used.

Include brochures and other information included with the items supplied.

1.6 SELECTIONS INFORMATION - SUBSTITUTIONS

Provide details of any selections used in the construction of the works that are different from what was specified.

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Documentation format

1.7 O&M DOCUMENTATION FORMAT

Unless otherwise specified in a work section,

- Provide O&M drawings at scales appropriate to the detail to enable good legibility.
- Provide manufacturers documentation at the original scale.
- Provide written text generally in A4 format using a font not less than 10 point.

Submit O&M documentation in both hard copy and as electronic portable document format (PDF) files.

Submission and review

1.8 O&M DOCUMENTATION SUBMISSION & REVIEW

Unless otherwise specified in a work section, provide draft O&M documentation no later than the date of practical completion or the date on which the principal takes occupation of the works, whichever occurs first.

Submit O&M documentation to the named reviewer for review.

- Where no time is stated in a specific section, allow 10 working days for review by the reviewer. Where a large amount of documentation is involved more time will be necessary.
- Where no person is named in a specific section as the reviewer, submit the O&M documents to the contract administrator.
- Submit a proposed index system (as required for final documentation) to the contract administrator for review.

O&M review indicates only that the reviewer is satisfied that the documents are legible. The review is not a check of the accuracy of the documents, however the reviewer may comment on any aspect of the documentation and require the documents to be revised and resubmitted. Review of operation and maintenance documentation does not relieve the contractor of responsibility for the correctness of the documentation.

The reviewer may advise that:

- The O&M documentation has been reviewed and has been accepted without the need for further modification. The information can be included in the final documentation; or
- The O&M documentation has been reviewed and the information can be included in the final documentation subject to revision required by notes, annotations or comments provided; or
- The O&M documentation has been reviewed and is not acceptable, refer to notes, annotations or comments provided. Resubmit corrected/altered documentation for review.

Amalgamate the reviewed accepted and corrected O&M documentation into the final O&M documentation

Final documentation

1.9 SUBMISSION OF FINAL DOCUMENTATION

Prior to the end of the defects notification/liability period, provide complete O&M documentation in both hardcopy and electronic form.

1.10 FINAL O&M DOCUMENTATION - HARDCOPY

Provide the hard copy version of the O&M documentation in a loose-leaf binder with a contents index identifying operation and maintenance documents, requirements, manuals, operating instructions and selections. In addition include the project name, contractor's name and the date of practical completion on the index page.

Include indexed sections to identify all operation and maintenance manuals that are not contained within the binder. Provide a copy of the front cover or other identifying feature of the manual within the section with a note stating "this manual has been provided separately".

Provide a title on the binder edge "Operation and maintenance instructions for (project name)". If more than one binder is required identify each binder by number and ranking (e.g. Volume 2 of 3) and group information logically between the binders for ease of reference.

Provide operation and maintenance manuals clearly and neatly marked on the spine or front cover so as to identify the project name. Where operation and maintenance manuals are a collection of loose leaf documentation, provide documentation in a loose-leaf binder as described above.

1.11 FINAL O&M INFORMATION - ELECTRONIC COPY

Provide a copy of all hardcopy information in PDF format arranged in logical named folders. In addition provide DWG files of documentation if available.

1.12 REVIEW OF FINAL DOCUMENTATION

The contract administrator may review the final documentation and require alteration and resubmission.

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1270 CONSTRUCTION

1 GENERAL

This GENERAL section relates to common requirements for construction issues including:

- Quality control and assurance
- Noise and nuisance
- Set-out and tolerances
- Common execution requirements
- Qualifications
- Common product requirements
- Common requirements for samples and prototypes
- Common requirements for spare and maintenance products
- Cleaning during the works
- Removal of protection
- Completion requirements
- Commissioning
- Practical completion submission
- Defects period submissions
- Completion submissions

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Quality control and assurance

1.1 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finish.
- Dimensional accuracy of structural column locations (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content.

Where any material, quality or dimension falls outside specified or required tolerances, obtain written direction from the contract administrator. Where building consent approval is affected, confirm remedial action with the Building Consent Authority.

Provide all materials, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met by all project personnel.

1.2 NOTICE

Give notice to the contract administrator and any other nominated person of hold points and notification points.

1.3 NOTIFIABLE WORK

Lodge notice of the intention to commence any notifiable work and any work that will at any time include any notifiable work, in accordance with Health and Safety in Employment Regulations 1995.

Noise and nuisance

1.4 LIMIT CONSTRUCTION NOISE

Minimise the effects of noise generation by including in the planning of the work such factors as placing of plant, programming the sequence of operations and other management functions. Limit construction noise to comply with the requirements of NZS 6803, the requirements of the Resource Management Act sections 326, 327 and 328 and the Health and Safety in Employment Regulations 1995 clause 11.

1.5 ACCEPTABLE NOISE LEVELS

Refer to NZS 6803 Tables 2 and 3 for the upper limits of construction work noise received in residential zones, dwellings in rural areas, industrial areas and commercial areas, note also the allowed adjustments. Do not exceed these limits or any limits imposed by regional councils or territorial authorities.

1.6 PROVIDE INFORMATION TO NEIGHBOURS

Provide information to neighbours of any noise generation from the site liable to constitute a problem. Explain to them the means being used to minimise excessive noise and establish with them the timings most suitable for the noise generating work to be carried on.

Discuss with any complainant the measures being used to minimise noise. Where possible modify these measures to accommodate particular circumstances. Finally, determine the sound level at the location under discussion using methods and observation reporting as laid down in NZS 6803. If the noise level is above the upper limits of NZS 6803, table 2 and table 3, cease the noise generating operation and remedy the problem.

1.7 ROADWAY AND FOOTPATH

Keep the adjacent footpath and road clear at all times. Where work must be carried out in the roadway or footpath, obtain required consents from the territorial authority. Where temporary use is made of the footpath or roadway for deliveries and the like ensure that public safety is protected and the goods and materials moved as soon as practicable. Sweep, wash and otherwise clean the roadway/footpath and restore it to its previous condition.

1.8 VEHICLE CROSSING

Make good damage that has occurred as a result of carrying out the contract works. Where there has been significant damage, contact the territorial authority and obtain instructions for making good. Pay the territorial authority costs associated with making good.

1.9 TRAFFIC SAFETY

The management of traffic safety on-site and related traffic off-site, to WorkSafe Managing Work Site Traffic - Good Practice Guidelines. Movement on- and off-site also to territorial authority and/or NZTA requirements.

1.10 DIRT AND DROPPINGS

Remove dirt and droppings deposited on public or private thoroughfares from vehicles servicing the site to the satisfaction of the appropriate authorities and the contract administrator.

1.11 DAMAGE AND NUISANCE

Take precautions to prevent damage and nuisance from water, fire, smoke, dust, rubbish and all other causes resulting from the construction works.

1.12 SMOKE FREE REQUIREMENTS

In accordance with the Smoke Free Environments Act 1990 smoking is not allowed on site.

1.13 RESTRICTIONS

Do not:

- light rubbish fires on the site.
- bring dogs on to or near the site.
- bring radios/audio players on to the site.

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Set-out and tolerances

1.14 SURVEY INFORMATION

Locate and verify survey marks and datum points required to set out the works. Where these do not exist or cannot be located advise the contract administrator who will arrange for the required points to be established.

Record and maintain their position. Re-establish and replace disturbed or obliterated marks.

1.15 DATUM

Establish a permanent site datum to confirm the proposed levels and their relationship to all other existing and new levels.

1.16 SET-OUT

Set out the work to conform with the drawings.

1.17 SET-OUT BY LICENSED CADASTRAL SURVEYOR

Before commencing construction provide the contract administrator with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site.

During construction provide the contract administrator with a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines. Necessary adjustments are to be determined and agreed to by the contract administrator before proceeding further.

1.18 CONFIRM HEIGHT IN RELATION TO BOUNDARY

Arrange for the licensed cadastral surveyor to provide a certificate certifying that the building has been constructed within the allowed height in relation to boundary. Obtain details from the principal of the person they have engaged to carry out this certification and advise the surveyor when they can carry out the required survey.

Provide the certificate to the local authority. Provide a copy of the certificate to the contract administrator.

1.19 USE OF SET-OUT INSTRUMENTS

Permit without charge, the use of instruments already on site for checking, setting out and levels.

1.20 CHECK DIMENSIONS

Check all dimensions both on drawings and site, particularly the correlation between components and work in place. Take all dimensions on drawings to be between structural elements before linings or finishes, unless clearly stated otherwise.

1.21 TOLERANCES

All work to be level, plumb, and true to line and face. Unless otherwise specified in specific work sections of this specification, tolerances for structural work shall comply with the following:

Concrete construction:	To NZS 3109 Concrete construction Clause 3.9 Tolerances for reinforcement Table 5.1 Tolerance for precast components Table 5.2 Tolerance for in situ construction To NZS 3114 Concrete surface finishes
Masonry construction:	To NZS 4210 Masonry construction: Materials and workmanship Clause 2.6.5 Tolerances Table 2.2 Maximum tolerances
Structural steelwork:	To NZS 3404.1 Steel structures standard Section 14.4 Tolerances (after fabrication) Section 15.3 Tolerances (erection)
Timber framing:	To NZS 3604 Timber-framed buildings Clause 2.2 Tolerances Table 2.1 Timber framing tolerances

Refer to work sections for tolerance requirements for finishes.

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Execution

1.22 EXAMINE PREVIOUS WORK

Before commencing any part of the work carefully examine the previous work on which it depends, to ensure it is of the required standard.

1.23 REPORT DEFECTIVE PREVIOUS WORK

Refer defects to the contractor to be remedied, if the remedy is outside the scope of the contract documents the contractor shall obtain direction from the contract administrator. Do not carry out work over previous work that is defective and will affect the required standard.

1.24 EXECUTION GENERALLY

Construct the work in accordance with the documents issued for construction including any direction that may have been given by the contract administrator that varies the construction document.

1.25 EXECUTION - NO DETAIL IS PROVIDED

The documents issued for construction will not include all details relating to every material, junction and interface with other materials.

Where the detail provided is of a general nature, or where no detail is provided, refer to the manufacturer's documents for information relating to installation and execution of that part of the work.

Where there is more than one method or detail appropriate to the part of the work in question, refer the options to the Contract Administrator for direction as to which detail or method to use.

1.26 EXECUTION - ACCEPTABLE SOLUTION IS REFERRED TO

Where a NZBC Acceptable Solution is referred to in the specification but not shown on the plans, obtain a copy of that Acceptable Solution and make it available to the workers carrying out that part of the work.

1.27 MINIMISE DELAYS DUE TO WEATHER

Use appropriate techniques and methods to prevent damage and minimise delays due to weather.

Defective or damaged work

1.28 DEFECTIVE OR DAMAGED WORK

Repair defective, damaged and marked elements, or replace them where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Refer to individual work sections for any special requirements.

Hot work - fire safety

1.29 HOT WORK

Generally, to NZS 4781 Code of Practice for Safety in Welding and Cutting, includes but not limited to: Welding; flame cutting; disc cutting; grinding; bitumen blowers; blow lamps; brazing; burning off; soldering; use of hot air guns.
Note - where the standard refers to the use of asbestos, alternative fire-resistant materials are to be used.

1.30 COMBUSTIBLE MATERIAL

Manage fire risk to adjacent combustible materials by isolating hot work at a safe distance away, or store combustible materials away from fire hazards. Additional precautions may be necessary if combustible material cannot be separated from hot work, refer to NZS 4781, 6.1.4.

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1.31 HOT WORK PERMIT

A hot work permit, issued by the main contractor, is required when it is not possible to isolate hot work from adjacent fire hazards. Refer to example in NZS 4781, Appendix A.

1.32 FIRE SYSTEMS

Fire systems should remain operational where possible while welding or cutting work is performed. Where required, shield fire systems to NZS 4781 clause 6.4.

1.33 DURING SUSPENDED WORK

Maintain a fire watch at least 30-minutes after hot works are suspended e.g. during lunch breaks or overnight, to NZS 4781, clause 6.2.7.
For hot works in confined spaces, prevent potential ignition of flammable gases, to NZS 4781 clause 6.5.

Qualifications

1.34 QUALIFICATIONS GENERALLY

The work is to be carried out by workers and / or supervisors who are experienced, competent and familiar with the materials and the techniques specified. Workers must also be familiar with the manufacturers' and suppliers' installation and application instructions and standard details provided by them in relation to the use of the products for this project. If requested provide evidence of qualification / experience.

1.35 QUALIFICATIONS WORKERS – RESTRICTED BUILDING WORK

Where restricted building work (RBW) forms part of the contract works, workers, or supervisors of that work must be licensed building practitioners (LBP) holding current licenses for the particular restricted building work.
For rare instances where non-RBW also requires an LBP refer to individual work sections for details.

1.36 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Where required by a manufacturer or supplier, workers must be specifically trained /approved / accredited / registered / licensed / certified by them. Refer to individual work sections for details.

1.37 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Where workers and / or supervisors of work are required to be licensed, registered or similar under legislation, they must have a current license before they start the work and maintain currency until their part of the work has been completed and all documentation that is required has been provided.

1.38 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Where workers and / or supervisors of work are required to be trained / licensed / certified or similar under industry rules or contractual requirements, they must have a current qualification before they start the work and maintain currency until their part of the work has been completed. Refer to individual work sections for details.

1.39 QUALIFICATIONS – PRODUCER STATEMENTS

Where producer statements are required for parts of the work, ensure that person is suitably qualified and authorized to issue such producer statements.

1.40 REPLACEMENT OF PERSON

Should it be necessary to replace a person, ensure that records of work, producer statements, warranties and the like required for the part of the work they have carried out are obtained.

Ensure that the replacement person takes responsibility for the work they carry out and that they are able to provide such records of work, producer statements, warranties and the like required as a condition of the contract and the building consent.

Products

1.41 NEW PRODUCTS

Products to be new unless stated otherwise, of the specified standard, and complying with all cited documents.

1.42 COMPATIBILITY OF PRODUCTS

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

1.43 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Protect products during transit and delivery on site and / or off site. Reject and replace goods that are defective or damaged or will not provide the required finish.

Handle products carefully to avoid damage and distortion and in accordance with codes of practice and the manufacturer's or supplier's requirements. Avoid any contact with potentially damaging surfaces or conditions.

Store products to avoid visual damage, environmental damage, mechanical damage and distortion. Store in accordance with codes of practice and the product manufacturer's or supplier's requirements. Maintain the proper condition of any protective packaging, wrapping and support.

Refer to individual work sections for any special requirements.

1.44 SUBSTRATE CONDITIONS

Ensure substrate conditions are within the manufacturer's or supplier's stated guidelines both before and during the installation of any material, product or system. Obtain written instructions on the necessary action to rectify unsatisfactory conditions.

1.45 INSTALLING PRODUCTS

Install in accordance with the manufacturer's or supplier's technical literature. Ensure that all installers are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques.

1.46 COMPLY WITH STANDARDS

Comply with the relevant and/or cited Standard for any material or component. Obtain certificates of compliance when requested by the contract administrator.

1.47 CONDITION OF PRODUCTS

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To be in perfect condition when incorporated into the work.

1.48 INCOMPATIBLE PRODUCTS

Separate incompatible materials and metals with separation layers, sleeves or gaskets of plastic film, bituminous felt or mastic or paint coatings, installed so that none are visible on exposed surfaces.

Samples

1.49 SAMPLES FOR REVIEW

Where specified in the work sections submit samples and any nominated supporting documentation to the named reviewer and notify the contract administrator of the submission. Where no person is named as the reviewer, submit to the contract administrator.

Samples for review may be described as a portable sample for review, portable control sample, fixed sample for review or fixed control sample. A portable sample refers to a sample that is easily movable, convenient for carrying. A fixed sample refers to a sample that is not portable. If the location of a fixed sample is not defined in the work section, obtain direction from the contract administrator.

For samples that are located on site, or by agreement with the contract administrator are located off site, notify the reviewer and contract administrator of their location and availability for review.

Timing for the provision and review of samples is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review. Allow for such resubmission and further review as may be required. No extension of time will be allowed for resubmission and further review.

Obtain written instructions in relation to the samples from the contract administrator. Do not proceed further with related work items until advised to continue.

Samples may be incorporated in the finished work if confirmed in writing by the contract administrator, otherwise allow to completely remove any fixed samples. Remove from the site any rejected samples.

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Refer to SAMPLES clauses in work sections for further detail.

1.50 CONTROL SAMPLES

Samples become control samples if an instruction is given by the contract administrator to that effect. Control samples will be used for comparison purposes throughout the contract. Control samples may be portable or fixed in place, refer to SAMPLES clauses in work sections for further detail.

Control samples that are to remain on site, or otherwise in the care of the contractor, are to be maintained in original condition.

If confirmed by the contract administrator, fixed control samples may be incorporated in the finished work, otherwise allow to remove fixed control samples from site when instructed by the contract administrator.

1.51 OTHER SAMPLE REQUIREMENTS

Where specified in the work sections obtain samples for the purposes described.

Prototypes

1.52 PROTOTYPES - TESTING

Where specified in the work sections provide and test prototypes. Timing for the provision, testing, disassembling, re-assembling, retesting and review of prototypes and test results is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review of test results. Submit test results to the named reviewer and to the contract administrator. Where no person is named as the reviewer submit test results to the contract administrator.

Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - TESTING clauses in work sections for further detail.

1.53 PROTOTYPES - REVIEW

Where specified in the work sections provide prototypes for review. Timing for the provision, disassembling, re-assembling and review of prototypes is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for review by the named reviewer. Where no person is named as the reviewer notify the contract administrator for direction.

Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - REVIEW clauses in work sections for further detail.

1.54 PROTOTYPES - GENERAL

Refer to the PROTOTYPES - TESTING and PROTOTYPES - REVIEW clauses in work section for details on what is to happen after the review and or testing of the prototype is complete. Where no information is provided refer to the contract administrator for direction.

Prototypes may become control samples if an instruction is given by the contract administrator to that effect.

Spares & maintenance products

1.55 SPARES & MAINTENANCE PRODUCTS

Collect, protect, package, label and store safely all spares and maintenance products specified in the work sections. Give the contract administrator an inventory of all spares and maintenance products.

If no instruction is given within a work section for the location of spares and maintenance products, then deliver to the owner.

If no instruction is given within a work section for timing in relation to the provision of spares and maintenance products, then provide at practical completion.

Cleaning during the works

1.56 PERIODIC SITE CLEANING

Carry out periodic site cleaning during the contract period. Place waste material in appropriate storage pending removal from the site. Keep food waste separate from construction waste.

1.57 TRADE CLEANING

Keep the work area clean, remove of all debris, unused and temporary materials and elements from the site as work progresses and on completion. Refer to individual work sections for any specific requirements.

Remove protection

1.58 REMOVE PROTECTION

Remove all temporary markings, labels, packaging and coverings to products unless instructed otherwise, or where they are required for protection.

Maintain temporary protection until removal is required by the manufacturer/supplier, the execution of the work or the requirements of individual work sections. Re-establish protection as necessary.

Remove temporary protection and special protection immediately prior to practical completion or before when there is no further risk of damage.

Refer to individual work sections for any special removal requirements.

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Completion

1.59 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.60 LEAVE WORK

Leave work to the standard required for the following procedures.

1.61 COMPLETION - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

1.62 REMOVE CONSTRUCTION WASTE

Remove all debris, unused materials and the like from the site. Arrange for material to be recycled to be collected or delivered to the recycler.

1.63 COMPLETE ALL SERVICES

Ensure all services are complete and operational, with all temporary labelling removed, required labelling fixed and service instructions provided.

1.64 CLEANING BY CONTRACTOR

Clear the contract works of all construction materials, waste, dirt and debris. Clean the contract works including:

- Wipe all surfaces to remove construction dust.
- Clean out service ducts and accessible concealed spaces.
- Clean out all gutters and rainwater heads.
- Wipe dust from both sides of glass. Take particular care when removing paint or cementitious materials to not damage the glass. Do not use metal scrappers that may damage the glass.
- Remove adhesive residue left by labels and other temporary protection/markings.
- Clean out the interior of all cabinetry.
- Wash down external concrete including driveways and concrete masonry. Take care when waterblasting to not cause damage to the surface or allow water to enter the building.
- Remove rubbish and building material from the area immediately adjacent to the contract works.

1.65 CLEANING BY COMMERCIAL CLEANER

In addition to cleaning carried out by the contractor, use a commercial cleaning company to clean the whole of the interior of the building, including all appliances, equipment, fittings, surfaces and finishes to leave it without any blemish. Cleaning to include:

- Clean and wash down all exterior hard surfaces to remove dirt, debris and marking.
- Clean all interior surfaces including cabinetwork, joinery, sanitary and hardware items.
- Clean all floor finishes.
- Clean and polish all glass, both sides. Take particular care when removing paint or cementitious materials to not damage the glass. Do not use metal scrappers that may damage the glass.

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Commissioning

1.66 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.67 MOVING PARTS

Adjust, ease and lubricate all doors, windows, drawers, hardware, appliances, controls and all moving parts to give easy and efficient operation.

1.68 COMMISSIONING - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

1.69 INSTRUCTION AND DEMONSTRATION

Provide instruction and demonstration to the owner/occupier to the extent that is listed below and as required for them to reasonably occupy and use the building. This is to include at least the following:

- Location and isolation of all services connections.
- Operation of all emergency systems.
- Locking and security arrangements.
- Operation of basic building services including lighting, heating, mechanical ventilation, air conditioning and security.
- Special cleaning requirements and procedures.
- Any other features that the owner/occupier needs to know about.

1.70 SECURITY AT COMPLETION

Remove any temporary lock cylinders and complete final keying prior to handing over keys to the principal on completion of the works. Leave the works secure with all accesses locked. Account for all keys/cards/codes and hand to the principal along with an itemised schedule, retaining a duplicate schedule signed by the principal as a receipt.

Practical completion submission

1.71 ADDITIONAL PRACTICAL COMPLETION INFORMATION

In addition to requirements in the contract and contained elsewhere in the specification provide the following information submissions for practical completion:

- All documents which the contractor has obtained on behalf of the owner/occupier.
- Information required by the owner/occupier to be able to use the building.
- Advice that NUO accounts in the contractor's name have been closed and as appropriate changed to be in the name of the owner/occupier.
- A list of persons to be contacted to carry out any emergency or remedial work including 24 hour/7 day contact details.

1.72 ADDITIONAL PRACTICAL COMPLETION REQUIREMENTS

Refer to the conditions of contract for the definition of practical completion and the conditions relating to practical completion.

Defects period submissions

1.73 DEFECTS REMEDIATION - SUBMISSIONS

Provide the following at periods required by the contract administrator, where no period is stated, provide this information monthly:

- A copy of the contractor's check list identifying remaining defects and omissions to be completed recording progress made in completing and correcting the items.
- A copy of lists issued by the principal/employer identifying omissions and defects recording progress made in completing and correcting the items.
- A copy of lists issued by the contract administrator identifying omissions and minor defects recording progress made in completing and correcting the items.

Completion submissions

1.74 FINAL COMPLETION - SUBMISSIONS

In addition to requirements in the contract and contained elsewhere in the specification provide:

- Contractors advice that all defects have been corrected and omissions and deferred work completed.
- All documents which the contractor has obtained on behalf of the owner/occupier.

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2210 PREPARATION & GROUNDWORK

1 GENERAL

This section relates to the clearance, excavation and backfilling of the site area in preparation for:

- footings and floor slabs
- backfilling behind basement retaining walls

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZS 3604	Timber-framed buildings
WorkSafe	Good Practice Guidelines - Excavation Safety

1.2 SITE SAFETY

Provide adequate support for all excavations. Cover holes and fence off open trenches and banks.

1.3 ARCHAEOLOGICAL DISCOVERY

If fossils, antiquities and other items of value are found refer to the general section 1220 GENERAL REQUIREMENTS for actions to be taken with archaeological discovery.

2 PRODUCTS

2.1 EXCAVATED CLEAN FILL

Clean, free of contamination, mineral soil from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

2.2 ROCK FILL

Hard material comprising rock, broken stone, hard brick, concrete, run of pit scoria, or other comparable inert material capable of being placed and compacted as specified.

2.3 SAND FILL

Clean sand of such grading in particle size to achieve mechanical compaction to 90% maximum density.

2.4 HARD FILL

Scoria or crushed rock to GAP (General All Passing) 40 grading.

2.5 GRANULAR FILL

Approved screened crushed gravel or scoria, graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.

2.6 DRESSING COURSE

Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.

2.7 FREE-DRAINING AGGREGATE

Scoria or crushed gravel graded 50 to 14 clean.

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3 EXECUTION

3.1 WASHOUT BAY FOR TRUCK

Provide a designated area for trucks to be washed down to avoid mud and dirt being carried off site.

3.2 EXCAVATION GENERALLY

Carry out excavation, using plant suitable for the purpose, to the guidelines set by the WorkSafe, Good Practice Guidelines - Excavation Safety.

3.3 BURNING OF MATERIALS

Burning of materials is not permitted on site.

3.4 PROTECT EXISTING WORK

Protect from damage existing buildings, structures, roads, paving and services nominated on the drawings as being retained.

3.5 PROTECT EXISTING TREES, PLANTING, OR LANDSCAPE FEATURES

Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained. Ensure existing levels are undisturbed beneath the dripline of retained trees.

3.6 EROSION CONTROL

Ensure measures are in place to contain silt dislodged as a result of water infiltration and to prevent it being carried off site with stormwater.

3.7 SURFACE PREPARATION

Comply with NZS 3604, section 3.5, **Site preparation**. Remove all turf, vegetation, trees, topsoil, stumps, uncontrolled fill and rubbish from the area to be built on.

3.8 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove old foundations, slabs, drainage pipes, manholes, tanks, cables and redundant services. Report for instructions when any unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to territorial authority approval.

3.9 STOCKPILE TOPSOIL

Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.

3.10 SHORING AND UNDERPINNING

Carry out shoring and underpinning shown on the drawings and as necessary to prevent subsidence of adjoining public or private property and to ensure the safety of the public and site personnel. Maintain protection throughout the progress of the works, or until foundations and subgrade structures have been completed and the stability of adjoining public and private property secured.

3.11 GENERAL EXCAVATION

Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.

3.12 ROCK EXCAVATION

If rock is found at any level above the underside of the structural foundations, or above required base levels for site service trenches, immediately notify the owner. Obtain written instructions from the consulting geotechnical engineer on the proposed approach to rock excavation, or consequent alterations to subgrade construction. Confirm any changes with the territorial authority.

3.13 FOUNDATION EXCAVATION

Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and free of soft spots, stepped as detailed and clean and free of water.

3.14 INADEQUATE BEARING

If localised bearing is not to NZS 3604, 3.1.2 **Foundations** and 3.1.3 **Determination of good ground**, then excavate further and backfill as specified by consulting geotechnical engineer

3.15 STANDARD OF COMPACTION

Place fill in layers of not more than 150mm and compact to achieve 95% of maximum dry density. For granular fill material, the fill shall be compacted to 80% of saturated dry density.

3.16 GRANULAR BASE FOR SLABS

If not specified by consulting engineer, conform to NZS 3604, section 7.5.3, **Granular base**. Consolidate with a vibrating roller. Blind the surface with 20mm of coarse sand or sand/cement and roll ready to receive a damp-proof membrane.

3.17 GENERAL BACKFILLING

Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150mm layers with the last 200mm in clean topsoil, lightly compacted and neatly finished off.

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3.18 RETAINING WALLS

Backfill behind retaining walls with free draining granular material and compact in 200mm layers. Ensure any tanking membranes, protection sheets, drain coil and damp-proofing are not damaged.

3.19 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

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3155FR FIRTH RIBRAFT® FLOOR SYSTEMS

1 GENERAL

This section relates to the supply and installation of **Firth Industries** RibRaft® X-Pod® floor system.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/AS1	Structure
NZBC G13/AS1	Foul Water
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings
NZS 3631	NZ Timber grading rules
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials

CodeMark CM70056 Rev 4 - Firth Ribraft Floor System

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.

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Firth RibRaft Technical Manual October 2024
Firth RibRaft HotEdge Installation Guide February 2024
Firth RibRaft X-Pod Installers Guide November 2021
Firth RibRaft X-Pod Structural Design Guide October 2024
Firth RibRaft, RibRaft X-Pod, RibRaft TC2 and RibRaft TC3 BPIR

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Manufacturer/supplier contact details

Company:	**Firth Industries**
Web:	www.firth.co.nz
Email:	info@firth.co.nz
Telephone:	0800 FIRTH1 (0800 347841)

Further information and/or names of tradespeople who have installed Firth RibRaft® floors are available by phoning Firth Information Service 0800 347841.

Requirements

1.3 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Firth RibRaft® Floor System, Firth HotEdge® and Firth RibRaft® X-Pod® Floor System product or component, or associated Firth products. Concrete used for the construction of Firth RibRaft® Floor System and Firth RibRaft® X-Pod® Floor Systems must be supplied by Firth. RibRaft® & RibRaft® X-Pod® formers are only available from Firth Industries and are only supplied on a project with confirmation of an order for Firth Concrete.

1.4 QUALIFICATIONS GENERALLY

Tradespeople to be competent, experienced, and familiar with the Firth RibRaft® Floor System and Firth RibRaft® X-Pod® Floor System materials and techniques specified. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.5 STEEL REINFORCING COMPLIANCE

Steel reinforcing materials for concrete to AS/NZS 4671. Steel to be manufactured in New Zealand, or by an overseas manufacturer holding a current valid (or equivalent) NZ S Mark or ACRS certificate for that type of steel. Confirm compliance and provide evidence if requested.

1.6 QUALITY RECORDS

Keep accurate records relating to strength and quality of materials used during construction. Include records of workmanship during construction and photographs of as-built details. Make the information available to the Building Consent Authority inspector on request.

2 PRODUCTS

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Materials

2.1 BLINDING

50mm maximum compacted GAP 7.

2.2 TIMBER FORMWORK

No. 2 framing and dressing or merchantable grade radiata pine boards to NZS 3631.

2.3 DAMP-PROOF MEMBRANE

0.25mm minimum polyethylene to NZS 3604: clause 7.5.4, Damp-proof membrane (DPM). Refer to SELECTIONS.

2.4 NORMAL CONCRETE - NON RIBRAFT® APPLICATIONS

Normal concrete 20 MPa grade, maximum aggregate size 19mm to NZS 3104 for concrete work where Firth Raftmix™ or Firth Raftmix™ Pump are not appropriate

2.5 REINFORCEMENT

Bars to AS/NZS 4671. Grade 500E deformed, other than for ties, stirrups, and spirals, unless shown otherwise on the drawings.

2.6 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

Materials – RibRaft® X-Pod® Floor System

2.7 POLYPROPYLENE POD FORMERS – RIBRAFT® X-POD FLOOR SYSTEM

Firth RibRaft® X-Pod® proprietary, black recycled polypropylene 215mm high pods to form 300mm slab with concrete topping.
Four pod options are available: RibRaft® X-Pod® 215/750 to form 100mm ribs at 750mm centres, RibRaft® X-Pod® 215/1500 to form 100mm ribs at 1500mm centres, and adjustable pods RibRaft® X-Pod® MiniPod 215/300 to fill 300mm voids or combine with MiniPod Extender 215/400.600 to fill voids 400 - 600mm

2.8 KEYSTONE CLIPS – RIBRAFT® X-POD FLOOR SYSTEM

Firth RibRaft® X-Pod® proprietary Keystone clips, constructed from recycled polypropylene.

2.9 MESH, CLASS E – RIBRAFT® X-POD® FLOOR SYSTEM

Welded reinforcing mesh to AS/NZS 4671, Class E to NZBC B1/AS1 - Grade 500E, 2.27kg/m2 (1.14kg/m² in each direction), minimum SE62 500E mesh or the equivalent. Refer to SELECTIONS for details.

2.10 CONCRETE 25MPa - RIBRAFT® X-POD® FLOOR SYSTEM

Firth X-Pod® Raftmix25, a 25 Mpa 100mm slump mix in either 13mm or 19mm nominal aggregate size, supplied by Firth Industries. Firth X-Pod® Raftmix™ for direct placement and Firth X-Pod® Raftmix™ Pump for pump applications. Firth mix code IP2519/13X

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage, and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

Application -General

3.3 SITE CLEARANCE

Clear the slab area of any vegetation and topsoil down to the subgrade level.

3.4 BUILDING PLATFORM

Create a building platform to a level surface to the required depth below finished floor level to suit the RibRaft® or RibRaft® Xpod system. Cut and/or fill sloping sites. Confirm finished floor level.

3.5 POST-CUT INSPECTION – RIBRAFT® FLOOR SYSTEM

Inspect and confirm that the soil conditions are as anticipated by the geotechnical investigation and report and conform to the requirements of the Firth RibRaft® manual. Refer to Firth RibRaft® Technical Manual Section 1 - Design Information, 3.5 Foundation Requirement and 3.6 Foundation Soils.

3.6 TEMPORARY BUILDING PLATFORM DRAINAGE

Construct suitable drainage to keep excessive ground water off the building platform during and after construction as required.

3.7 GRAVEL RAFT

Place gravel raft, systematically spread and mechanically compact in layers in accordance with the engineer's requirements, to the extent specified by the engineer.

3.8 BLINDING LAYER

Spread GAP 7 blinding layer to a minimum 500mm past the outside edge of the slab, compact to a level layer no greater than 50mm thick and no higher than 305mm below finished floor level.

3.9 FORMWORK

Construct formwork as required, well braced, and tied to remain in position, straight and plumb during construction. Ensure formwork will provide for the topping depth, including rebates and the required concrete finish.

3.10 INSTALL DAMP-PROOF MEMBRANE

Apply DPM to the prepared basecourse extending to the outside of all edge beams or fold and staple up the inside of the formwork. Overlap all joints in the DPM sheets a minimum 150mm. Tape laps and penetrations with 50mm wide pressure sensitive plastic tape. Ensure DPM is not damaged during the construction process. Repair all damage to DPM before proceeding with following procedures.

Application - RibRaft® X-Pod® floor system

3.11 PIPED SERVICES – BELOW SLAB INSTALLATION

Ensure piped and cabled services are installed in the subsoil or hardfill under the Firth RibRaft® X-Pod® & returned vertically, at right angles, through the X-Pod® and concrete floor slab, in locations as shown on the drawings and according to Firth RibRaft® X-Pod® floor system requirements. All service pipes in contact with concrete shall be lagged with a minimum of 6mm thick, compressible, impermeable material.
Ensure service pipes are not run length-ways within any concrete rib or edge beam or penetrate vertically through an edge beam without specific detailing.

3.12 PLACE POLYPROPYLENE PODS

Place Firth RibRaft® X-Pod® pods in the grid and module pattern as shown on the specific design drawings and in accordance with Firth requirements. Ensure pods are accurately positioned and aligned, to straight and true lines, then secure adjacent X-Pod's with X-Pod® Keystone Clips.
Cut X-Pod formers with grinder on site to form slab set downs, in accordance with specific design drawings and Firth requirements. Cut holes as required for services penetration holes.
Where required cut height of X-Pod's to suit slab set downs in accordance with Firth RibRaft® X-Pod® Installers Guide. Install DPM tape or foam tape to X-Pod cut edges.

3.13 PLACE REINFORCING STEEL

Place reinforcing steel to all ribs and perimeter edge beams in accordance to specific design drawings.

3.14 CUT AND BEND REINFORCING STEEL

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Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3101.1, 8 and NZS 3109: 3.3 Hooks and bends. Minimum radii of reinforcement bends to NZS 3101.1, 8 and NZS 3109: table 3.1, Minimum radii of reinforcement bends. Do not rebend grade 500E bars.

3.15 LAPPED SPLICES

Lap length and locations only as indicated on the specific design drawings. Tie all lapping bars to each other. Plain bars lapped splices must be hooked.

3.16 REINFORCEMENT COVER

For in-situ concrete and foundations the reinforcement cover to be, in accordance with NZS 4229:

Location, cover to:	
Footing, to earth	75mm
Footing, to DPM	50mm
Foundation, to edge	75mm
Slab, to slab top	30mm
Slab, to slab edge	50-75mm

3.17 PLACE REINFORCING MESH

Place reinforcing mesh over the pods. Mesh shall be lapped in accordance with NZS3101.1, lap one mesh square plus 50mm minimum (do not count bar extension beyond the outermost wire). Support mesh on upstands provided in the corners of RibRaft® X-Pod® pods.

Application - General

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3.18 FORM SLAB AND OPENING REBATES

Form rebates, as detailed on drawings.

Form a minimum 50mm rebate in slab for masonry veneer construction with a width dependent on the veneer width, cavity width and overhang. Waterproof the rebate with a bituminous sealer on both the vertical and horizontal faces.

3.19 TOPPING SLAB DEPTH

Refer to SELECTIONS for required topping slab depth.

3.20 PRE-PLACEMENT INSPECTION

Arrange for excavations, formwork and reinforcement to be inspected and passed by the Building Consent Authority.

3.21 EQUIPOTENTIAL BONDING REINFORCING

If it is a project requirement, ensure that reinforcing is electrically equipotential bonded (or at least conductor cable attached) before the concrete is poured. For bonded reinforcing ensure all reinforcing is interconnected with good contact at joints and tight conductive ties.

3.22 CONCRETE PLACEMENT AND COMPACTION

Ensure the rib and edge beam canals are clean, free of debris. Pour the floor in a single pour using only Firth X-Pod® Raftmix™ Pump concrete and ensuring that the pods remain in position during placing. Pour concrete onto the top of each pod prior to filling the ribs around the pod to help prevent them from floating and lifting.

Use F Firth Raftmix™ Pump concrete for placement in the floor by concrete pump.

Compact concrete using a suitable poker vibrator for the ribs and ground beams and into all corners of the formwork. Screed as required. Confirm levels with a laser level.

3.23 CONCRETE FINISHING

Float and trowel to provide a U3 finish to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.

3.24 CONCRETE CURING

Curing of the concrete slab must take place immediately after finishing the concrete to NZS 3109 by one of the following curing methods:

- ponding or continuous sprinkling of water
- placing a wet covering or plastic membrane over the slab

- the use of liquid membrane curing compounds

3.25 SHRINKAGE CONTROL JOINTS

Cut shrinkage control joints as shown on the plans after hardening to a depth of 25mm within 24 hours in summer or 48 hours in winter.

Where shrinkage control joints have not been shown on the plans, position the shrinkage control joints to coincide with major changes in the floor plan. Agree position of shrinkage control joints with the designer.

Bay dimensions formed by the shrinkage control joints to be limited to a maximum ratio of length to width of 2 to 1 with a maximum dimension of 6 meters. Place the shrinkage control joints over the 100mm wide internal ribs wherever possible. Where a shrinkage control joint runs along the line of a 300mm wide loadbearing rib, locate the cut directly above one edge of the 300mm rib.

3.26 CLEAN OUT SHRINKAGE CONTROL JOINTS

Clean out control joints. If required fill with suitable flexible sealant.

Application - other concrete work

3.27 PLACE HARDFILL

Place hardfill and ensure it is spread and compacted with mechanical compaction.

3.28 PLACE CONCRETE

Do not place fresh concrete against the preceding layer after more than 45 minutes, or such lesser time as required by the circumstances, to NZS 3109: clause 7.4, Handling and placing.

3.29 SCREED THE SURFACE

Screed the concrete surface by straight edge or vibrating screed immediately after compaction and to tolerances in NZS 3109: table 5.2, Tolerances for in situ construction.

3.30 CONCRETE FINISHING

Screed and provide a U3 finish to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.

Finishing

3.31 STRIKE FORMWORK

Strike formwork after at least 12 hours after the slab has been finished without damaging or overloading structure.

3.32 SURFACE DEFECTS

Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with suitable patching mortar, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.

Completion

3.33 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.firth.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 DAMP-PROOF MEMBRANE

Brand/type:	Thermathene Black
Thickness:	0.25mm

4.2 NORMAL CONCRETE

Concrete mix:	Firth 20MPa
Thickness:	100mm
Mesh:	Class L, Grade 500L, 665

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Materials - RibRaft® X-Pod® Floor System

4.3 FIRTH RIBRAFT® X-POD® FLOOR SYSTEM

Brand:	Firth RibRaft® X-Pod Floor System
Size:	RibRaft® X-Pod® 215/750, RibRaft® X-Pod® 215/1500, RibRaft® X-Pod® Mini Pod 300 & RibRaft® X-Pod® MiniPod Extender 215/400.600 - Refer to engineer desifn
Concrete mix:	FirthX-Pod® Raftmix25, 25MPa
Topping thickness:	100mm
Mesh:	Class E, Grade 500E, minimum SE62

Finishing

4.4 CONCRETE SURFACE FINISH - FLOORS

Finish class:	U3 (interior)

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3410 STRUCTURAL STEEL

1 GENERAL

This section relates to the fabrication, erection and specialist coating of structural steelwork of a general nature, for Construction Category CC1 or CC2 (to AS/NZS 5131).

1.1 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

AESS	Architecturally Exposed Structural Steelwork
CC	Construction Category
NDE	Non-Destructive Examination

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC F5/AS1	Construction and demolition hazards
AS 1111.1	ISO metric hexagon bolts and screws - Product grade C - Bolts
AS 1111.2	ISO metric hexagon bolts and screws - Product grade C - Screws
AS 1112.1	ISO metric hexagon nuts - Style 1 - Product grades A and B
AS/NZS 1163	Cold-formed structural steel hollow sections
AS/NZS 1214	Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)
AS/NZS 1252.1	High-strength steel fastener assemblies for structural engineering - Bolts, nuts and washers - Technical requirements
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 1554.1	Structural steel welding - Welding of steel structures
AS 1554.2	Structural steel welding - Stud welding (steel studs to steel)
AS/NZS 1554.3	Structural steel welding - Welding of reinforcing steel
AS/NZS 1554.4	Structural steel welding - Welding of high strength quenched and tempered steels
AS/NZS 1554.5	Structural steel welding - Welding of steel structures subject to high levels of fatigue loading
AS/NZS 1594	Hot-rolled steel flat products
AS 1627.4	Metal finishing - Preparation and pretreatment of surfaces - Abrasive blast cleaning
AS 1627.9	Metal finishing - Preparation and pretreatment of surfaces - Pictorial surface preparation standards for painting steel surfaces
AS/NZS 2312:2002	Guide to the protection of iron and steel against atmospheric corrosion by the use of protective coatings
NZS 3404.1	Steel Structures Standard
AS 3597	Structural and pressure vessel steel - Quenched and tempered plate
AS/NZS 3678	Structural steel - Hot-rolled plates, floorplates and slabs
AS/NZS 3679.1	Structural steel - Hot-rolled bars and sections
AS/NZS 3679.2	Structural steel - Welded I sections
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 13918	Welding - studs and ceramic ferules for arc stud welding
GANZ	Galvanizing Association of New Zealand - After-Fabrication Hot Dip Galvanizing. A practical reference for designers, specifiers, engineers, consultants, manufacturers and users

Requirements

1.3 QUALIFICATIONS

Welding operators (and supervisors) to be experienced, competent workers, qualified to AS/NZS 5131, Table 7.4, to suit relevant Construction Category and weld category.

1.4 TOLERANCES

To AS/NZS 5131 Section 12 and Appendix F, Tolerance Class 1.

1.5 VERIFY DETAILS AND DIMENSIONS

Refer to drawings to ensure all required details and fixings are provided for in the structural steelwork. Verify dimensions against site measurements prior to fabrication.

1.6 TESTS

To AS/NZS 5131, Section 13, Inspection, Testing And Correction and AS/NZS 5131 Appendix I, Inspection of Welding and Bolting (New Zealand Only), as follows:

- Welds: Non-destructive examinations (NDE)

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2 PRODUCTS

2.1 STRUCTURAL STEEL

Comply with New Zealand, Australian, British or Japanese Standards for steel as required by NZS 3404.1, section 2, including, type, category, and suppression of brittle fracture. Also to AS/NZS 5131, Section 5.

Steel members and sections steel grade table

Component	Conforming to	Grade
Hot rolled steel sections	AS/NZS 3679.1	300; 350; 300L0; 300S0; 350L0, 300L15; 350L15
Plates and flats	AS/NZS 3678; AS/NZS 1594;	250; 300; 350; 400; 450; WR350; 250L0, 300L0; 350L0; 300L15; 350L15
Plates and flats	AS/NZS 1594; TS 102	HA250; HA300; HA350; HA400; HW350
Circular hollow sections	AS/NZS 1163; TS 102	C250L0; C350L0; C450L0
Square hollow sections	AS/NZS 1163; TS 102	C350L0; C450L0
Rectangular hollow sections	AS/NZS 1163; TS 102	C350L0; C450L0
Welded beams and columns	AS/NZS 3679.2; TS 102	300; 400

2.2 WELDING CONSUMABLES

To comply with and be selected for grade of steel being welded as required by AS/NZS 1554 series of standards.

2.3 FLUX

Welding flux to be dry and from sealed containers.

2.4 BOLTS, NUTS AND WASHERS

Grade 4.6, screws AS 1111.2 and bolts to AS 1111.1. Grade 4.6 nuts to comply with AS 1112.1. Property Class 8.8 bolts and equivalent nuts and washers (high strength structural quality only) to comply with AS/NZS 1252.1. Hot-dip galvanize to AS/NZS 4680 (and AS/NZS 1214), bolts, nuts and washers forming a permanent part of a structure subject to a protective coating.

Bolt Categories and tensioning

Bolting category	Bolt standard	Property Class	Tension method	Tensioned joint type
4.6/S	AS 1111.1	4.6	Snug tight	
8.8/S	AS/NZS 1252.1	8.8	Snug tight	
8.8/TB	AS/NZS 1252.1	8.8	Full tension	Bearing
8.8/TF	AS/NZS 1252.1	8.8	Full tension	Friction

In bearing type connections where the thread position relative to the shear plane is to be controlled.
N - threads included in shear plane
X - threads excluded from shear plane
F - friction type joints - prepare faying surfaces

2.5 GROUT

To AS/NZS 5131, 5.8.

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3 EXECUTION

Preparation, assembly and Fabrication

3.1 GENERALLY

To AS/NZS 5131, Section 6.

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.3 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.4 SURFACE FINISH

Grind off all burrs and sharp arrises.

3.5 CUTTING

To AS/NZS 5131, Section 6.5.

3.6 HOLING

To AS/NZS 5131, Section 6.7
Do not use slotted holes for connections, other than those documented.

3.7 TEMPORARY MEMBERS FOR GALVANIZED ELEMENTS

Provide temporary members, as required, to strengthen prefabricated elements likely to be distorted by the subsequent hot dip galvanizing process. Co-ordinate, with the galvanizer, the details of any temporary members required.

Welding

3.8 WELDING GENERALLY

To AS/NZS 5131, Section 7 and AS/NZS 1554.1. Equipment to comply with AS/NZS 1554.1, clause 1.8.2.
Site weld only when correct alignment and preset or camber have been achieved.
Weld types as documented elsewhere or on drawings
Weld categories not documented elsewhere or on drawings to be Category GP.

3.9 NON-DESTRUCTIVE WELD EXAMINATION

Non-destructive weld examination (NDE) to AS/NZS 5131, clause 13.6.2 and AS/NZS 5131 Appendix I, Inspection of Welding and Bolting (New Zealand Only).
If non-visual NDE is required, use a third party testing authority.
Repair any welds revealed as faulty by NDE and repeat the examination.

3.10 WELDING GALVANIZED OR THERMAL SPRAYED STEEL

When welding already Galvanized steel or Thermal Sprayed steel either:

- remove coating locally and carry out a standard weld
- leave coating and adjust welding technique to those recommended in GANZ After-Fabrication Hot Dip Galvanizing document. (Among other things, this will generally mean a slower welding speed.)

Final weld shall meet all the standards and requirements of a standard weld.

Mechanical fastening

3.11 MECHANICAL FASTENING GENERALLY

To AS/NZS 5131.
Connection contact surfaces to AS/NZS5131, 8.4.1.
Category 8.8/TF bolting to be clean, as rolled and free from applied finishes.
For washers, place one washer under the part rotated during tightening process (nut or bolt head).
Permanent bolt only when correct alignment and preset or camber have been achieved.

3.12 TENSIONING BOLTS

For tensioning of bolting categories 8.8/TB and 8.8/TF, use part-turn method or a direct tension indicator device. Ensure clear thread run out beneath the nut after tensioning is to New Zealand requirement of AS/NZS 5131, 8.2.2.

3.13 THREADS EXCLUDED FROM SHEAR PLANE

Select length of bolts such that the threaded portion does not occur within the shear plane between joined parts.

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Erection of structural steel

3.14 ERECTION GENERALLY

To AS/NZS 5131, Section 11.
Make sure every part of the structure has sufficient design capacity and is stable under construction loads produced by the construction procedure.
Comply with NZBC F5/AS1: Construction and demolition hazards, and the WorkSafe publication: Guidelines for the provision of facilities and general safety in the construction industry.

3.15 BOLTS AND ANCHORAGES

For each group of anchor bolts, provide a template with set-out lines clearly marked for positioning the bolts when casting in.
Start erection only when the holding down bolts and anchorages have been cast-in-place long enough to achieve sufficient strength.

3.16 TEMPORARY WORK

Provide temporary bracing, propping and restraint as required to make structure safe. Fix any temporary members so as not to weaken or deface permanent steelwork. Leave temporary bracing and restraint in place until the erection is sufficiently advanced to allow safe removal of temporary bracing.

3.17 SITE WORK

Other than work shown on the shop detail documentation as site work, do not fabricate, modify or weld structural steel on-site.

3.18 GROUTING SUPPORTS

Before grouting steelwork supported by concrete or masonry, set steelwork on packing or wedges as follows:

- Permanent packing or wedges - Form with solid steel or grout of similar strength to the permanent grout.
- Temporary packing or wedges - Remove before completion of grouting.

Grout at supports before constructing supported floors, walls and roofing.
Do not grout if the base plate or the footing surface temperature are outside the range 3°C to 35°C or to manufacturer's requirements.
Fill the space beneath the base plate with grout, if necessary hammered in tight to ensure complete filling of space.

3.19 DRIFTING

Use drifting only to bring members into position, without enlarging holes or distorting components.

Finishing - galvanizing

3.20 STEELWORK BEING GALVANIZED

Fabricator to provide any temporary members required by the galvanizer to strengthen prefabricated elements likely to be distorted by the subsequent hot dip galvanizing process.
Abrasive blast clean to AS 1627.4, class 2.5.
To galvanize, clean sections thoroughly and apply zinc coating by the hot-dip process to the requirements of AS/NZS 4680. Zinc coating thickness not less than AS/NZS 4680, Table 1 and Table 2

3.21 REPAIR WELD DAMAGED GALVANIZING

Remove welding slag, power tool clean, grind off all burrs and sharp arrises, all repairs to AS/NZS 4680, 8.4 **Site repair**:

- Small repairs:- Colour matched zinc rich paint.
- Large repairs:- With approval, colour matched zinc rich paint or other agreed option.

Finishing - thermal metal spray

3.22 STEELWORK BEING THERMAL METAL SPRAYED

To AS/NZS 2312: 2002 with clear seal finish

- Abrasive blast clean to AS 1627.4, class 2.5, minimum profile 10 microns
- Apply spray coating before discoloration and within 4 hours
- Steel temperature 3°C minimum above dew point and less than 150°C.

Finished dry film thickness to AS/NZS 2312: 2002, table 5.1 for the specified corrosivity category with a minimum adhesion of 10 MPa. Sealer coat to be applied with 4 hours of spraying and to have a uniform appearance with coating defects not exceeding 1mm diameter and not exceeding 0.5mm height.

3.23 REPAIR WELD DAMAGED THERMAL SPRAY

For damage:

- less than 10mm wide, remove welding slag, power tool clean, grind off all burrs and sharp arrises. Finish with colour matched zinc rich paint.
- wider than 10mm, remove welding slag, abrasive blast clean to AS 1627.4, Class 2.5, grind off all burrs and sharp arrises. Finish with metal thermal spray to match original.

All repairs to AS/NZS 2312:2002, 5.2.7, **Repair of metal sprayed coatings**.
Sealer coat to be applied within 4 hours of spraying.

Finishing - preparation

3.24 ENCASED STEELWORK

Clean the steelwork to be encased in concrete to remove all loose mill scale, rust, dirt and other matter affecting bond with concrete. Achieve this by wire brushing and the use of suitable solvents.

3.25 POWER TOOL CLEANING

To AS/NZS 5131, Section 9.
Remove oil and grease by the use of solvents. Scrape, wire brush and power tool clean to a minimum Class 2 finish to AS 1627.9. Clean to bright metal, but avoid producing a polished surface. Check that no burrs or sharp arrises remain which may prevent the full coating thickness being attained.

3.26 ABRASIVE BLASTING

To AS/NZS 5131, Section 9.
Remove oil and grease by the use of solvents. Abrasive blast clean to a Class 2.5 finish to AS 1627.4. Clean to bright metal, but avoid producing a polished surface. Select grit type and equipment such that the cleaned surface profile between peaks and valleys does not exceed one third of the dry film thickness. Check that no burrs or sharp arrises remain which may prevent the full coating thickness being attained.

Finishing - paint and protective coatings

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3.27 UNPAINTED SURFACES

Do not paint:

- faying face of high strength friction grip bolted joints
- areas for site welding, keeping 75mm clear all round
- surfaces being embedded in concrete.

Where steel is only partly encased then extend priming 50mm minimum into the concrete encasement area.

3.28 PRIMING GENERALLY

Coat steelwork, unless specifically noted otherwise, with the specified priming paint, including patch priming on site after erection.

3.29 PATCH PRIMING

Clean areas of damaged priming and areas left clear for site jointing to a standard comparable with that specified for shop cleaning. Wash off chemical deposits from welding fumes. Apply priming coats to the same standard as shop primers, ensuring thorough coating of bolts, nuts and connection areas. Reprime if more than 4 weeks elapse before the final coating system is applied.

3.30 COATING SYSTEMS

Apply all coatings in accordance with the coating manufacturer's requirements. Apply coatings to steel within 4 hours of cleaning and before condensation or light rusting can occur. Ensure steel is dry and atmospheric conditions warm and dry, with an air temperature of greater than 12°C and relative humidity less than 85%.

3.31 TOUCH-UP

Touch up primer. Apply protective coatings as specified.

3.32 TEMPORARY CONNECTIONS

Remove temporary elements on completion and restore the surface.

Completion & Commissioning

3.33 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

4.1 STRUCTURAL COMPONENTS

Refer to Consulting Structural engineers documentation for sizes and details of specifically designed structural components

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3811 PREFABRICATED STRUCTURAL TIMBER FRAMING

1 GENERAL

This section relates to the manufacture, supply and erection, of prefabricated:

- timber trusses
- timber frames

1.1 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

FTMA	Frame and Truss Manufacturers Association of New Zealand Inc.
SED	Specific Engineering Design

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/VM1	Structure
NZBC B2/AS1	Durability
AS/NZS 1170	Structural Design Actions
NZS 1170.5	Structural Design Actions - Earthquake actions - New Zealand
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3640	Chemical preservation of round and sawn timber
FTMA CoP	Frame and Truss Manufacturers Association Code of Practice

Requirements

1.3 QUALIFICATIONS

Fabricators to be experienced competent workers, familiar with the materials and the techniques specified.
Fabrication companies to be members of the FTMA and accredited by the connector plate manufacturers.

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1.4 DESIGN CRITERIA NON-SPECIFIC DESIGN

Frames and trusses to NZS 3604.

1.5 DESIGN CRITERIA SED

Frames and trusses to, NZBC B1/VM1, AS/NZS 1170, NZS 1170.5 and NZS 3603.

Documentation required for the Code Compliance Certificate application

1.6 PROVISION OF STATEMENTS

Provide the following documentation. The statements shall include the name and position within the company of the person providing the statement.
Fabricator Design and Manufacturing Statements shall be noted as being:

- Issued by a named company, accredited as a fabricator by the nail plate manufacturer
- Issued to the named Owner and available for use by a BCA to assist in determining compliance with the NZBC.

1.7 SHOP DRAWINGS

Provide drawings showing the trusses and their layout;

- one prior to fabrication (buildable truss layout) for consent purposes.
- one post fabrication (final truss layout) for construction and code compliance purposes.

The drawing shall be identified as 'Buildable' or 'Final' and shall include the following:

- The name and contact details of the accredited fabricator
- The job/design reference name or number
- The site address/location

Site specific structural and loading information including

- Pitch
- Cladding type
- Wind and snow loading values
- Date drawn
- A truss layout with truss labels and dimensions to locate the trusses on the supporting structure
- Identification of all load bearing walls/beams used to support trusses
- Specification and location of truss to truss and truss to top plate fixings or notification that such items are specified by
- Identification of the location of any resulting loads where the design of the supporting member will be outside the scope of NZS 3604 (point loaded lintels and point loads on internal walls where the downward and upward loads are higher than 16kN)
- Reference to the Fabricator Design Statement

1.8 DESIGN STATEMENT - FABRICATOR

Provide a Design Statement issued by the fabricator listing the job specific inputs used in the design process.

The Design Statement shall identify:

- The name and contact details of the accredited fabricator
- The name of the software/nail plate manufacturer that has accredited the fabricator
- Software date/version
- Reference to the Producer Statement - Design
- Supporting compliance documents including standards for material grades and sizes
- The job/design reference name or number
- The site address/location

Job specific information:

- Loads allowed for in the specific design including dead loads (cladding and ceiling) and live loads (wind and snow)
- Roof pitch
- Nominal overhang length
- Importance Level

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Design working life:

- A list of the designed trusses, spans and maximum spacing
- Date of design

1.9 PRODUCER STATEMENT - DESIGN

Provide a Producer Statement - Design issued by the software provider, supporting the software and the engineering principles being applied by the software.

The Producer Statement shall:

- Have a level of detail consistent with that of an IPENZ Producer Statement PS1
- State the means of compliance with NZBC
- Reference the truss layout and Fabricator Design Statements
- Identify the job/design reference name or number
- Identify the software date/version
- Be signed by a Chartered Professional Engineer

1.10 MANUFACTURING STATEMENT

Provide a statement to support the manufacture of the roof trusses, issued by a fabricator after manufacture has occurred and identifying:

- The job/design reference name or number
- The site address/location
- The name and contact details of the accredited fabricator
- The name of the software/nail plate manufacturer that has accredited the fabricator
- That the trusses were manufactured in accordance with the Fabricator Design Statement
- The name and position within the company of the person providing the statement

Truss identification

1.11 IDENTIFICATION OF TRUSSES ON SITE

A selection of trusses in a job lot manufactured by a fabricator shall carry identification labels or markings fitted during manufacture, to NZS 3604, 10.2.2.5, **Truss identification**.

Identification shall be evident on the bottom chords of main rafter or girder trusses on a minimum of 6 trusses in a job lot, or on every truss where there are less than 6 trusses in the job lot.

Identification text shall be a minimum of 10mm high and shall include:

- The fabricator name
- The nail-plate manufacturer name
- The job/design reference name or number

2 PRODUCTS

Materials

2.1 TRUSSES NOT EXPOSED

Structural grade timber to NZS 3602, NZBC B2/AS1, gauged, maximum moisture content of 20%, treated to NZS 3640, NZBC B2/AS1, hazard class H1.2 and identified with its unique identifier.

2.2 FRAMES NOT EXPOSED

Structural grade timber to NZS 3602, NZBC B2/AS1, gauged, maximum moisture content of 20%, treated to NZS 3640, NZBC B2/AS1, hazard class H1.2 and identified with its unique identifier.

Accessories

2.3 STEEL CONNECTOR PLATES

0.8mm to 2.0mm thick steel sheet, hot-dip galvanized to NZS 3604, table 4.2, **Galvanizing of steel components other than nails and screws** and punched to form a toothed connector or nail on connector.

2.4 STAINLESS STEEL CONNECTOR PLATES

0.9mm to 2.0mm thick 304 stainless steel sheet, punched to form a nail on connector.

2.5 GALVANIZED STRUCTURAL BRACKETS

>3mm thick steel plate brackets, hot-dip galvanized to NZS 3604, table 4.2, **Galvanizing of steel components other than nails and screws** with hot-dip galvanised bolts/screws and washers.

2.6 STAINLESS STEEL STRUCTURAL BRACKETS

>3mm thick, 304 stainless steel plate brackets with stainless steel bolts/screws and washers.

2.7 CORROSION RISKS

For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

3 EXECUTION

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Conditions

3.1 COMPLY

Comply with current standards, code requirements and the FTMA CoP in the design and fabrication of trusses and frames.

3.2 DELIVER, HANDLE AND STORE TRUSSES AND FRAMES

Deliver, handle and store frames and trusses so no structural damage occurs, corners and edges are not damaged, or surfaces marked or stained. Follow manufacturer's requirements. Handle all frames and trusses with nylon strops or similar to prevent damage. Store under cover and clear of the ground, to keep dry prior to installation.

Fabrication

3.3 DIMENSIONS, NOT EXPOSED ELEMENTS

Each member calculated length ±3mm. Width and thickness to gauging tolerances. Each overall joint within ±3mm of correct outside profile (including camber allowance).

3.4 DIMENSIONS, EXPOSED ELEMENTS

Each member calculated length ±1mm width and thickness to gauging tolerances. Each overall joint within ±3mm of correct outside profile (including camber allowance). Joint thickness and width difference between members 1mm maximum. Plate location within half of the manufacturer's tolerances plus a rotation of no more than 1mm in 100mm off reference line.

3.5 INSPECTION

Request inspection when timber for exposed trusses and frames is ready for cutting prior to fabrication.

3.6 FABRICATION

Factory fabricate to FTMA CoP. Build camber into all elements to accommodate normal deflection under load. Lay up members accurately with all joints tight fitting. Mechanically press plates to manufacturer's tolerances, fully and flat over their whole area into the members forming the joint.

3.7 TRUSS AND FRAME FIXINGS

Factory fit truss and frame fixings to comply with the required loading capacity for that particular joint and in accordance with the fixing type and capacity in NZS 3604, Section 10, **Roof framing**, the manufacturer's requirements or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

Site installation

3.8 TRUSS ERECTION

Lift, place and fix trusses without overstressing or deformation. Use temporary supports as needed without causing damage. Fix trusses to wall plates and beams to manufacturer's requirements, but no less than NZS 3604, section 10, **Roof framing** and in particular section 10.2.2, **Roof trusses**. Fit and fix bracing as detailed and to NZS 3604: section 10.2.2, **Roof trusses** and section 10.3, **Systems to resist horizontal loads**. Ensure all trusses are correctly located, plumb and true to line and face.

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3.9 FRAME ERECTION

Lift, place and fix frames without overstressing or deformation. Use temporary bracing and supports as needed without causing damage. Fix frames to floor or base plates and other walls or columns to manufacturer's requirements, but no less than NZS 3604, section 8, **Walls** and in particular section 8.7, **Plates**. Fit and fix bracing as detailed and to NZS 3604: section 5, **Bracing design** and section 8.3, **Systems to resist horizontal loads**. When necessary provide framing to suit any required cladding/lining control joints. Ensure all frames are correctly located, plumb and true to line and face.

3.10 FIT CONNECTORS AND FIXINGS - TRUSS

Fit connectors and fixings to obtain full bearing over all contact surfaces and ensure the required loading capacity for the truss and frame roof is maintained. Fix each roof framing member in accordance with NZS 3604, Section 10, **Roof framing.** Ensure the size, number and location of nails to be used in roof framing comply with requirements of Table 10.8, **Nailing schedule for hand-driven and power-driven nails**, the manufacturer's requirements or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

3.11 FIT CONNECTORS AND FIXINGS - FRAMES

Fit connectors and fixings to obtain full bearing over all contact surfaces and ensure the required loading capacity for the frame is maintained. Fix each framing member in accordance with NZS 3604, Section 8, **Walls.** Ensure the size, number and location of nails to be used in framing comply with requirements of Table 8.19, **Nailing schedule for hand-driven and power-driven nails**, the manufacturer's requirements or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

3.12 DPC TO TIMBER

Lay DPC between all timber frames and concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier. For LOSP treated timber use only a DPC specifically suitable with LOSP treatment.

3.13 TIGHTEN BOLTS

Check and tighten all fixing bolts after erection is completed.

Completion

3.14 REPLACE

Replace or repair damaged elements.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

3.16 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

4.1 PREFABRICATED TIMBER TRUSSES, NOT EXPOSED

1.2Fabricator/brand:	Mi Tek
Species/grade:	Radiata Pine
Moisture content:	16% maximum
Treatment:	H1.2
Connectors:	Galvanised

4.2 PREFABRICATED TIMBER FRAMES, NOT EXPOSED

Fabricator/brand:	Mi Tek
Species/grade:	Raidita Pine
Moisture content:	16% maximum
Treatment:	H1.2
Connectors:	Galvanised

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3820 CARPENTRY

1 GENERAL

This section relates to the supply and erection of timber framing, as a framed structure, or as partitioning. It includes prefabricated timber and engineered wood.

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
AS/NZS 1328.1	Glued laminated structural timber - Performance requirements and minimum production requirements
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 4357.0	Structural laminated veneer lumber - Specification
FTMA CoP	Frame and Truss Manufacturers Association Code of Practice

***A copy of** NZS 3604 **Timber-framed buildings, must be held on site.**

1.2 QUALIFICATIONS

Workers to be experienced, competent trades people familiar with the materials and techniques specified.

1.3 DIMENSIONS

All timber sizes except for battens are actual minimum dried sizes.

2 PRODUCTS

2.1 TIMBER FRAMING, TREATED

Species, grade and in service moisture content to NZS 3602, NZBC B2/AS1 and treatment to NZS 3640, NZBC B2/AS1. Structural grade (SG) to NZS 3604, NZS 3622 with properties to NZS 3603.

2.2 LAMINATED TIMBER

Radiata pine laminations to AS/NZS 1328.1; treated as required by NZS 3602, NZBC B2/AS1, to the requirements of NZBC B2/AS1, AS/NZS 1604.1, NZS 3640, with special attention to Appendix B "Specification advisory notes". Supply weather resistant sealed.

2.3 ENGINEERED WOOD

LVL members to AS/NZS 4357.0, to required sizes and lengths and the manufacturer design properties.
Treatment to NZS 3640 and AS/NZS 1604.1.

2.4 WALL DWANGS, NOGS AND BLOCKING

If dwangs, nogs or blocking is required for exterior insulated walls, ensure they are not full depth of framing. Install flush with face of wall required, leaving a minimum 20mm or 45mm preferable gap to the other face to NZS 3604, 8.8. Dwangs and nogs if required to be at 1350mm centres maximum to NZS 3604, 8.8.

Components

2.5 NAILS

Type to NZS 3604, section 4, **Durability**, and of the size and number for each particular types of joint as laid down in the nailing schedules of NZS 3604, sections 6-10.

2.6 SCREWS

Wood screws to the requirements of NZS 3604, 2.4 Fastenings and Fabrication, and section 4, **Durability**, and of the type, number and form required for each screw application to NZS 3604, sections 6 - 10.

2.7 BOLTS AND COACH SCREWS

Bolts and coach screws complete with washers, to the requirements of NZS 3604, clause 2.4.5 Bolts and Coach Screws, and section 4, **Durability**, and of the type, number and form required for each particular junction to NZS 3604, sections 6 - 10.

2.8 NAIL PLATES

Comply with the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6 - 10. Plates to the plate manufacturer's design for the particular locations as shown on the drawings.

2.9 CONNECTORS

Comply with the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10. Connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

2.10 CORROSION RISKS

For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

2.11 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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3 EXECUTION

3.1 EXECUTION GENERALLY

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

3.2 SEPARATION

Separate all timber framing timbers from concrete, masonry and brick by: -

- a full length bituminous damp-proof membrane overlapping timber by at least 6mm; or
- a 12mm minimum free draining air space

3.3 ATTENDANCE

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

3.4 MOISTURE CONTENT

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

Framing at erection:	24% maximum
Framing at enclosure:	20% maximum
Framing at lining:	16% maximum

3.5 SET-OUT

Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings. When necessary provide framing to suit any required cladding/lining control joints and sheet joints.

3.6 FRAMING SUB-FLOOR

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

3.7 FRAMING FLOORS

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

3.8 FRAMING WALLS

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

3.9 FRAMING ROOFS

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

3.10 FRAMING CEILINGS

Frame to required loading and bracing complete with runners and battens set out to support ceiling lining. All fabricated and fastened to NZS 3604, section 13, **Ceilings**. Trim for openings in ceilings and hatches to NZS 3604 section 13.3, **Openings in ceilings**. Provide blocking for water tanks located in the ceiling space to NZS 3604, section 13.4, **Water tanks in roof space**.

3.11 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

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4 SELECTIONS

4.1 SUB-FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Piles	Radiata pine	SG8	H5
Bearers	Radiata pine	SG8	H3.2
Ground floor joists:	Radiata pine	SG8	H3.2

4.2 FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Mid floor joists:	Radiata pine	SG8	H1.2
Boundary joists:	Radiata pine	SG8	H1.2

4.3 EXTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Exterior walls:	Radiata pine	SG8	H1.2
Exterior walls, bottom plates	Radiata pine	SG8	H3.2
Enclosed decks and balconies:	Radiata pine	SG8	H1.2
Cantilevered joists expsoed decks and balconies:	Radiata pine	SG8	H3.2

4.4 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Trusses:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2
Ceiling joists and battens:	Radiata pine	SG8	H1.2
Valley boards:	Radiata pine	Merchantable	H1.2
Skillion roof framing:	Radiata pine	SG8	H1.2
Enclosed flat roof framing:	Radiata pine	SG8	H1.2

4.5 INTERIOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	SG8	H1.2
Structural and braced walls:	Radiata pine	SG8	H1.2

4.6 LAMINATED VENEER LUMBER (LVL)

Member	Brand/type	Treatment
Beams as noted and scheduled on drawings	LVL	H1.2

4.7 EXTERIOR EXPOSED TIMBERS

Member	Species	Grade	Treatment

Posts:	Radiata pine	SG8	H4 CCA
Exterior stairs and steps:	Radiata pine	SG8	H3.2 CCA
Pergola:	Radiata pine	SG8	H3.2 CCA
Ground contact members	Radiata pine	SG8	H5 CCA

Note all CCA to be preservative code 01 or 02

4.8 DPC

Supercourse 500™ DPC

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4161MI MARSHALL WALL WEATHERIZATION SYSTEM

1 GENERAL

This section relates to the application of the **Marshall Weatherization System** which consists of:

- **Tekton® Building Wrap** (also called **Tekton HouseWrap)**
- **SUPER-STICK Building Tape**
- **Tekton® Seam Tape**
- **TRADE-SEAL** (penetration seal)

1.1 ABBREVIATIONS AND DEFINITIONS

The following definitions apply specifically to this section:

Wall underlay	the same meaning as defined in NZBC E2/AS1, covering kraft based and synthetic wall underlays, sometimes called, wall wraps, building wraps or building papers.
Roof underlay	the same meaning as defined in NZBC E2/AS1, covering kraft based and synthetic roof underlays

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
NZS/AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Specification for **Marshall Weatherization System**
Specification for **Tekton® Building Wrap**
Brochure for **Tekton® HouseWrap**
Specification for **SUPER-STICK Building Tape®**
Brochure for **SUPER-STICK Building Tape®**Specification for **TRADE-SEAL**
Brochure for **TRADE-SEAL**
BRANZ Appraisal 444 - Protecto Sill Window Sealing System
BRANZ Appraisal 548 - Tekton® Building Wrap
BRANZ Appraisal 621 - The Marshall Weatherization System
BRANZ Appraisal 719 - Trade-Seal Pipe and Penetration Seal
BRANZ Appraisal 846 - SUPER-STICK Flexible Flashing Tape

Manufacturer/supplier contact details

Company:	**Marshall Innovations Limited**
Web:	www.mwnz.com
Email:	headoffice@mwnz.com
Telephone:	0800 776 9727

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

15 years:Provide a material manufacturer/supplier warranty:

15 years:	For **Tekton® Building Wrap**
15 years:	For **SUPER-STICK Building Tape®**
15 years:	For **Tekton® Seam Tape**
15 years:	For **TRADE-SEAL**

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS - WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Work to be carried out by competent, experienced tradespeople, who are familiar with the **Marshall Innovations Limited** materials and techniques specified, by or under the supervision of a Licensed Building Practitioner (LBP) with the relevant Licence Class.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified **Marshall Innovations Limited** systems, components and associated products listed in this section.

2 PRODUCTS

Materials

2.1 TEKTON BUILDING WRAP

Tekton® Building Wrap, a synthetic breather-type wall underlay, as a coated spun-bonded polypropylene product approximately 0.6mm thick. Supplied in rolls 2740mm x 37m and 1370mm x 37m.

2.2 TEKTON SEAM TAPE

Tekton® Seam Tape, a white polypropylene film coated with a cold weather acrylic adhesive. Tape is supplied in rolls 48mm wide x 50m long.

2.3 TRADE-SEAL

TRADE-SEAL, a one piece self-adhesive EPDM collar bonded to a polyethylene carrier, for pipes and conduits that penetrate the cladding/wrap/underlay. Provides secondary protection air and moisture seal, and is available in ten size options to suit penetration diameters from 8mm to 220mm.

2.4 SUPER-STICK BUILDING TAPE

SUPER-STICK Building Tape®, a multi-layered silver polyester-faced, copolymer, self-adhesive tape. Utilizes a high tack pressure sensitive adhesive (PSA) combined with a high-performance toughened film. Tape is supplied in 75mm, 150mm and 200mm wide x 22.86m long rolls.

Accessories

2.5 FIXINGS

Staples, clouts, screws, proprietary wrap fixings or other temporary fixings to attach the wall or roof underlay to the framing.

2.6 BUILDING WRAP/WALL UNDERLAY RESTRAINTS

Polypropylene tape or galvanized wire or 75mm galvanized mesh, to NZBC E2/AS1, clause 9.1.8.5, **Wall framing behind cavities**, for intermediate restraining of the building wrap/wall underlay from bulging into the drained cavity where stud spacings are greater than 450mm. Wire or tape to be run horizontally at 300mm centres.

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3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZBC E2/AS1 Table 23 Properties of Roof Underlays and Wall Underlays; and manufacturers technical literature.
Note: Care should be taken not to expose the underlay to continuous wet and windy conditions.

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.
Store all products under clean dry conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture. Rolls of **Tekton® Building Wrap** to be to be stored on end.

3.3 PRE-INSTALLATION REQUIREMENTS

Before starting work, check that the framing will allow work of the required standard. The framing must be free from any sharp protrusions that may damage the wrap/underlay. Carry out remedial work identified before the installation of the **Marshall Weatherization System**.

Installation/application - generally

3.4 STANDARDS AND TOLERANCES

To NZBC B2/AS1 and NZBC E2/AS1. Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - Tekton® Building Wrap

3.5 WRAP/UNDERLAY GENERALLY

To comply with Marshall Innovations Limited specification for the **Marshall Weatherization System**, BRANZ Appraisal 621 - The **Marshall Weatherization System** and BRANZ Appraisal 548 - Tekton® Building Wrap.

Face branded side of the wrap/underlay away from the framing. Run horizontally and extend from upper side of the top plate to the underside of bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs.

Ensure horizontal laps no less than 75mm with the direction of the lap ensuring that water is shed to the outside. End laps to be made over framing and be no less than 150mm wide.

3.6 FIXINGS

Fix the wrap/underlay into place using 6mm to 8mm zinc plated staples, hot dip galvanised large head clouts, tek screws or proprietary wrap/underlay fixings. Care to be taken when fixing in windy conditions, due to large sail area created by roll widths.

3.7 POSITION ROLL

Position roll against the framing with a short length of wrap/underlay free of the roll. Align the guide marks printed on the **Tekton® Building Wrap** with visible studs and nail/staple to the framing.

3.8 FIX TO FRAMING

Unroll wrap/underlay across framing and fix to all framing members at a maximum of 300mm centres. Keep straight and taught over framing. Unroll wrap/underlay across framing and fix to all framing members at a maximum of 300mm centres. Keep straight and taut over framing.

3.9 WRAP/UNDERLAY GENERALLY

To comply with Marshall Innovations Limited specification for the **Marshall Weatherization System**, BRANZ Appraisal 1072 - HYDRA Wall Underlay.

Face branded side of the wrap/underlay away from the framing. Run horizontally and extend from upper side of the top plate to the underside of bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs.

Ensure horizontal laps no less than 75mm with the direction of the lap ensuring that water is shed to the outside. End laps to be made over framing and be no less than 150mm wide.

3.10 FIXINGS

Fix the wrap/underlay into place using 6mm to 8mm zinc plated staples, hot dip galvanised large head clouts, tek screws or proprietary wrap/underlay fixings. Care to be taken when fixing in windy conditions, due to large sail area created by roll widths.

3.11 APPLY SEAM TAPE

Apply **Tekton® Seam Tape** to all horizontal and vertical building wrap/underlay joints. Lap joint to sit halfway under the tape width. Press all tape firmly into position to enhance adhesion. Use **Tekton® Seam Tape** to repair small rips, punctures or tears in the building wrap/underlay and tape into place. Ensure overlapping material extends at least 150mm beyond the damaged area.

3.12 INSTALL PENETRATION SEAL

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For pipe and conduit penetrations of the cladding/wrap/underlay use the appropriate sized **TRADE-SEAL**, to ensure a tight fit around the pipe. Any paired cable or multiple air conditioning pipes must pass through a conduit. Conduits must be sealed to prevent entry of any wind driven moisture. Conduits can be sealed with either an expanding foam or sealant. Install the **TRADE-SEAL** to Marshall Innovations Limited requirements. Push back the collar to fit the cavity width. Ensure the **TRADE-SEAL** exposure to weather and UV does not exceed 90 days. Trade-Seals should never be forced over pipes or conduit, they can be trimmed to get appropriate fit.

Installation - SUPER-STICK Building Tape

3.13 SUPER-STICK BUILDING TAPE

To comply with Marshall Innovations Limited specification for **Marshall Weatherization System**, BRANZ Appraisal 621 - The **Marshall Weatherization System** and BRANZ Appraisal 846 - SUPER-STICK Building Tape®.

3.14 PREPARATION

Ensure all surfaces are clean, dry and free of any foreign matter that may adversely affect adhesion. Do not install tape below -6ºC. When used in conjunction with LOSP treated timber, allow solvent to evaporate for a minimum of 7 days prior to application. Extend building wrap/underlay over opening and cut on a 45º angle away from each corner. Fold flaps into opening and secure to the interior face of framing.

3.15 SILL AREA – OVER BUILDING WRAP

Cut 4 strips of SUPER-STICK at 150mm x 75mm, Apply 2 strips at a 45 degree angle to the two bottom corners overlapping the corner by 3mm to create a seal at the corner junction. Measure and mark 150mm (for 90mm framing) / 200mm (for 140mm framing) up the jamb from the bottom corners of opening. Measure sill length. Measure and cut a length of **SUPER-STICK** 300mm (for 90mm framing) / 400mm (for 140mm framing) longer than sill length. Roll up the cut length with the split release film to the outside of the roll. Peel back 50mm of the split release film from the inside edge. Align SUPER-STICK with 150mm (for 90mm framing) / 200mm (for 140mm framing) mark and flush with inside edge of the opening. Apply tape down frame and tight into corner.

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When the sill jamb junction is reached ensure tape is pressed firmly into corner. Continue removing backing paper and adhering SUPER-STICK across the length of the sill and up the other jamb. Keep tape flush with inside edge of opening and the overhang to the outside of the framing.

At the corner and starting at the front edge of the tape overhang, carefully cut the tape back towards the framing stopping 3mm from the opening corner. The remainder of the split release film can now be removed. Fold the overhang onto the face of the framing and smooth firmly into place over the building wrap and corner butterflies. Press the tape down firmly to ensure proper adhesion.

Apply a layer of 75 mm SUPER-STICK over the top of the original flashing tape along the entire length of the sill. Align the tape to the inside face of the sill or alternatively apply a 150 mm by 150 mm square of Super Stick on top of the original flashing tape on the sill, where a nail will penetrate, to provide a fixing seal as per BRANZ Appraisal.

3.16 TOP CORNERS - OVER BUILDING WRAP

Cut two 300mm (for 90mm framing) / 400mm (for 140mm framing) lengths of **SUPER-STICK**. Mark 150mm (for 90mm framing) / 200mm (for 140mm framing) down from the underside of the lintel. Roll up the cut length with the split release film to the outside of the roll. Peel back 50mm of the split release film from the inside edge. Align SUPER-STICK with 150mm (for 90mm framing) / 200mm (for 140mm framing) mark and flush with inside edge of opening. Apply tape up the frame and tight into the corner. Press tape firmly into the corner junction, then continue across the underside of the opening. At the corner and starting at the front edge of the tape overhang, carefully cut the tape back towards the framing stopping 3mm from the opening corner. The rest of the split liner / release film can now be removed.

Fold the overhang onto the face of the framing and smooth firmly into place.

Take the 75mm x 150mm strips of **SUPER-STICK**, remove the backing paper. Adhere diagonally across each corner, overlapping the corner by 3mm to create a seal at the corner junction. Press the overlap tightly into the corner to form a tight bond between the tapes. Smooth all tape firmly into place to maximize adhesion.

3.17 HEAD FLASHING

Install tape to head flashings using **SUPER-STICK** 75mm in accordance with Marshall Innovations Limited **SUPER-STICK** specification and RAB manufacturers specifications.

Completion

3.18 DEFECTIVE OR DAMAGED WORK

Repair small rips, punctures or tears in the underlay and tape into place. Ensure overlapping material extends at least 150mm beyond the damaged area.

4 SELECTIONS

Systems

4.1 PROTECTO WRAP DETAIL TAPE

Protecto Wrap Detail Tape, a black, self-adhering, un-reinforced, conformable, modified SBS rubberised asphalt membrane tape. Supplied in rolls 150mm wide x 1.0mm thick x 15m long.

4.2 MARSHALL WEATHERIZATION SYSTEM - WALL UNDERLAY

Wrap/underlay:	Tekton Wall Underlay
Seam tape:	**Tekton® Seam Tape**
Penetration seal:	**TRADE-SEAL**
Sill tape/system:	SUPER-STICK Flexible Flashing Tape

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4161T THERMAKRAFT ROOF UNDERLAY, DPM & DPC

1 GENERAL

This section relates to the application of Kingspan Thermakraft DPC & DPM roofing underlays and accessories.

1.1 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:

DPC	Damp proof course
DPM	Damp proof membrane
EPDM	Ethylene propylene diene monomer

The following definitions apply specifically to this section:

Wall underlay	The same meaning as defined in NZBC E2/AS1, covering kraft based and synthetic wall underlays, sometimes called wall wraps, building wraps or building papers.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber-framed buildings
AS/NZS 4347	Damp-proof courses and flashings - Methods of test

CodeMark CMNZ 30028 (Rev H) - Thermakraft Covertek 407 Roof and Wall Underlay

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Thermakraft's Product Data Sheets
Thermakraft's Installation Guides
BRANZ Appraisal 329 (2022) - Supercourse 500 Damp-Proof Course and Concealed Flashing - Amendment 29.08.2023
BRANZ Appraisal 651 (2019) - Thermakraft Covertek 407 Roof and Wall Underlay - Amendment 14.05.2024

Manufacturer/supplier contact details

Company:	Kingspan Insulation NZ Ltd
Web:	www.thermakraft.co.nz
Email:	technical@kingspaninsulation.co.nz
Telephone:	0800 806 595

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Kingspan Thermakraft product range.

- 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.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

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2 PRODUCTS

DPC

2.1 THERMAKRAFT SUPERCOURSE 500

BRANZ appraised, 0.5mm thick embossed black film DPC composed of recycled alloyed polyethylene. Tested to AS/NZS 4347 in accordance with AS/NZS 2904. Available in various width. Refer to SELECTIONS.

DPM

2.2 THERMAKRAFT THERMATHENE BLACK

0.25mm x 4000mm wide black DPM composed of recycled alloyed polythene. Membrane has a vapour flow resistance of at least 90MNs/g to NZS 3604 and NZS 4229, Damp-Proof Membranes. Refer to SELECTIONS.

Synthetic underlays - fire retardant

2.3 THERMAKRAFT COVERTEK 407

CodeMark certified and BRANZ appraised self-supporting synthetic roof and wall underlay, white with red logo print, composed of a water resistant vapour permeable film laminated to two layers of non-woven, spun bonded polyolefin sheet. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Available in 1250mm and 2550mm width. Refer to SELECTIONS.

2.4 THERMAKRAFT PREMIUM JOINING TAPE

75mm wide, black self-adhering multi-layer synthetic construction tape. Refer to SELECTIONS.

2.5 THERMAKRAFT THERMASTRAP

19mm wide, rigid embossed polypropylene strap, colour blue. Refer to SELECTIONS.

2.6 FIXINGS - TO TIMBER

Little grippers, staples, clouts or screws to suit application. Refer to SELECTIONS.

2.7 CODEMARK CERTIFICATE - THERMAKRAFT COVERTEK 407

Thermakraft Covertek 407 roof and wall underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ 30028 (Rev H).

Compliance information - BRANZ appraised

2.8 BRANZ APPRAISED - THERMAKRAFT SUPERCOURSE 500

Thermakraft Supercourse 500 DPC has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 329

2.9 BRANZ APPRAISED - THERMAKRAFT COVERTEK 407

Thermakraft Covertek 407 roof and wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 651 (2019) - Amendment 14.05.2024.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

Installation/application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - DPC

3.5 INSTALL DPC

Ensure substrate's surface is smooth, flat and free from sharp ridges/projections that may puncture membrane. Install as a single layer with minimum 50mm overlap at joints to the Installation Guide.

Installation - DPM

3.6 INSTALL DPM - CONCRETE FLOOR

Install DPM over sand blinding below concrete floors, install in a neat fashion with a smooth surface as a single layer with minimum 150mm overlap at joints to the Installation Guide.

Installation - roof underlay

3.7 INSTALL ROOF UNDERLAY - HORIZONTAL

Install underlay to the Installation Guide horizontally and in true alignment over exterior face of roof framing. Place first sheet overlapping guttering (max. 20mm) or if eaves flashing is used terminate on the upper side of the flashing, draw sheet taut and fix at maximum 300mm centres to roof framing members. Install additional sheets in row repeating the process for the first sheet with sheet end laps to be of at least 150mm. Install sheets up to and over the ridge repeating the installation process for the first row and overlapping higher over lower sheets by at least 150mm.

3.8 INSTALL ROOF UNDERLAY - VERTICAL

Install underlay to the Installation Guide vertically and in true alignment over exterior face of roof framing. Place first sheet up the slope to the ridge overlapping guttering (max. 20mm) or if eaves flashing is used terminate on the upper side of the flashing, draw sheet taut and fix at maximum 300mm centres to roof framing members. Install additional sheets repeating the process for the first sheet lapping joints by at least 150mm.

Completion

3.9 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.thermakraft.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

DPC

4.1 DPC - THERMAKRAFT SUPERCOURSE 500

Manufacturer:	Thermakraft
Brand:	Supercourse 500
Type:	Damp proof course

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4.2 DPM - THERMAKRAFT THERMATHENE BLACK

Manufacturer:	Thermakraft

Brand:	Thermathene Black
Type:	Damp proof membrane
Joint tape:	White General Purpose Tape

Synthetic underlays - fire retardant

4.3 ROOF & WALL UNDERLAY - THERMAKRAFT COVERTEK 407

Manufacturer:	Thermakraft
Brand:	Covertek 407
Type:	Synthetic roof and wall underlay
Fixings:	Galvanized 20mm large head clouts

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4165DV DRISPACE ROOF VENTILATION

1 GENERAL

This section relates to the supply and installation of DriSpace VENT roof ventilation systems.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1	Protection from fire
NZBC C/AS2	Protection from fire
NZBC C/VM1	Protection from fire
NZBC E2/AS1	External moisture

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
BRANZ Appraisal 979 Roof Ventilation Products
Roof Ventilation Design Guide for all roof pitches
VENT Passive Ventilation System - brochure
VENT Product Technical Sheets - for various products

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Manufacturer/supplier contact details

Company:	DriSpace (a division of TCL Hunt Ltd)
Web:	www.drispace.co.nz
Email:	sales@drispace.co.nz technical@drispace.co.nz
Telephone:	0800 DRISTUD (0800 374 7883)

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For durability of DriSpace ventilation products

- Provide this warranty on the TCL Hunt Warranty for DriSpace Products standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Refer to TCL Hunt Warranty for DriSpace Products warranty form for conditions and limitations of warranty.
- Commence the warranty from the date of purchase.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

2 PRODUCTS

Materials

2.1 VENT VB20 VENTILATION BATTEN

VENT VB20 Ventilation Wall Cavity Batten, a 45mm wide x 20mm thick x 1800mm long batten manufactured from extruded polypropylene with peel-off adhesive backing and with 4mm vents that provides vermin proofing and passive air flow of 16,000mm² per lineal metre. Used both horizontally and vertically to provide drainage and ventilation as a non-structural cavity batten.

2.2 VENT G502CL ROLL PANEL VENT - ROOF

VENT G502CL Roll Panel Vent (also known as Insulation Guard and Ventilated Eaves Baffle) with castellated profile, 650mm wide x 25mm thick x 6000mm long manufactured from polyethylene terephthalate designed to maintain a continuous 25mm air gap between the underside of the roofing underlay and the insulation at the eaves.

2.3 VENT RV10P ROOF RIDGE VENT

VENT RV10P Ridge Vents, manufactured from extruded polypropylene with an aluminium-based conformable, soft edge flashing along the bottom edge and provides passive air flow of 8,000mm² per lineal metre. VENT RV10P is 410mm wide (including flashing) x 20mm thick x 1200mm long lengths, to suit trough depths that are less than 34mm.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Carry out remedial work identified before installing VENT products.

3.4 CONDITIONS - PREVENTION OF FIRE

Separation or protection must be provided to the VENT products from heat sources such as fire places, heating appliances, flues and chimneys. Refer to NZBC C/AS1-AS2 and NZBC C/VM1 for requirements.

3.5 CONDITIONS - SITE EXPOSURE

Do not expose VENT propylene products to weather or ultra-violet light for a prolonged periods of time, especially G502 Roll Panel Vent (Ventilated Eaves Baffle) which should be covered on the same day as installation.

Installation/application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 INSTALL VENT VB20 VENTILATION BATTEN

Install VENT VB20 Ventilation Wall Cavity Batten behind facia board to the manufacturer's requirements.

Remove peel-off backing to battens and adhesive fix vertically and horizontally over timber framing members, as required by wall cladding system and in accordance to BRANZ Appraisal 1099 requirements. Battens maybe cut with a knife, handsaw or drop-saw. The battens are fixed by the fascia fixings which will penetrate the wall framing studs.

Install VENT VB20 Ventilation Wall Cavity Batten, horizontally and continuously behind the fascia.

3.8 INSTALL ROLL PANEL VENT - ROOF

Install VENT G502 Roll Panel Vent (also known as Ventilated Eaves Baffle), to the manufacturer's requirements. Lay profile across the top of roof trusses / rafters for the entire length of eaves. Nail or staple to secure in position.

3.9 INSTALL ROOF RIDGE VENTS

Install selected VENT Ridge to the manufacturer's requirements after the installation of roof cladding but prior to the installation of flashings. Cut ridge vents in half lengthwise to use as apron vents.

Lay in position over the top of roof cladding, remove peel-off backing and temporary fix in place, if required screw at each corner to ensure the underside of vent is flat against the roof.

Ensure all moisture and dust are removed from roof before dressing down the aluminium soft edge, notch or snip to suit roofing profile.

Completion & Commissioning

3.10 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.drispace.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 VENT VB20 VENTILATION WALL CAVITY BATTEN

Supplier:	DriSpace
Manufacturer:	Blue Building Solutions Ltd (T/A VENT)
Type/Brand:	VENT VB20 - Ventilation Wall Cavity Batten
Size:	45mm wide x 20mm thick x 1800mm long
Fixing:	Self-adhesive backing (temporary fixing)

4.2 VENT ROLL PANEL VENT - ROOF

Supplier:	DriSpace
Manufacturer:	Blue Building Solutions Ltd (T/A VENT)
Type/Brand:	VENT G502CL Roll Panel Vent -(also known as Ventilated Eaves Baffle)
Size:	650mm wide x 25mm thick x 6000mm long
Fixings:	Ñail or staple in place

4.3 VENT RIDGE VENT

Supplier:	DriSpace
Manufacturer:	Blue Building Solutions Ltd (T/A VENT)
Type/Brand:	VENT RV10P Ridge Vent
Size:	410 mm wide (including flashing) x 20mm thick x 1200mm long lengths
Fixings:	Self-adhesive backing (& if required screw at each corner)

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4221JV JSC VERTICAL WEATHERBOARD CLADDING

1 GENERAL

This section relates to the supply and fixing of **JSC** vertical timber weatherboard cladding systems. The range includes**:**

- JSC Vertical Shiplap weatherboards
- JSC Board and Batten weatherboards
- Proprietary cavity battens
- Fascia
- Moulding

1.1 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:

ALYC	Alaskan Yellow Cedar
BSF	Band sawn face
CoC	Chain of Custody
DF	Dressed face
FSC	Forest Stewardship Council
PBS	Pacific Build Supply Ltd. (Butyl tape supplier)
WRC	Western Red Cedar 90

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Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC C/AS1	Protection from fire
NZBC C/AS2	Protection from fire
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring
NZS 3631	New Zealand timber grading rules
NZS 4211	Specification for performance of windows
BRANZ BU 411	Recommended Timber Cladding Profiles
CodeMark CMNZ30083-G	JSC Board & Batten Cladding System
CodeMark CMNZ30084-N	JSC VertiClad Cladding System

1.3 MANUFACTURER/SUPPLIER DOCUMENTS - JSC VERTICLAD VERTICAL SHIPLAP WEATHERBOARD CLADDING SYSTEM

Manufacturer's and supplier's documents relating to this part of the work:

- JSC VertiClad Vertical Shiplap Weatherboard Cladding Installation & Specification Guide
- JSC VertiClad Vertical Shiplap Weatherboard System Technical Drawings
- JSC VertiClad System Installation Checklists
- JSC Exterior Weatherboard Cladding Maintenance Guide
- JSC Structural Cavity Battens Setout and Fixing Guide
- JSC Profile Charts
- JSC Coatings Exterior Wood Oil Range

Third Party certificate documents, samples of machined profiles, colour chips, coating colours are available on request.

1.4 CONTACT DETAILS

Manufacturer/supplier contact details

Company:	J.Scott and Company Ltd.
Trading as:	JSC

Web: www.jsc.co.nz
Email: techhelp@jsc.co.nz
Telephone: Auckland 09 412 2800
Christchurch 03 348 9726

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Performance

1.5 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations. To NZBC B2/AS1, NZBC E2/AS1 and grading rules to NZS 3631. Refer to JSC Weatherboard Cladding Installation & Specification Guides.
Ensure the JSC Weatherboard Cladding System Installation Checklist has been signed off by the main contractor on completion.

1.6 FIXINGS - WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height as required by NZS 3604.

1.7 EXTERNAL FIRE SPREAD - CLADDING EXEMPT FROM TESTING

To NZBC C/AS1, 5.3 External cladding systems or NZBC C/AS2, 5.8 External Cladding Systems, where external walls are located at a distance greater than or equal to 1.0m from a relevant boundary and a building height is less than 10m

Requirements

1.8 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components or associated product listed in this section.

1.10 COMPLIANCE - VERTICAL SHIPLAP WEATHERBOARDS ON CAVITY

For information pertaining to Code Compliance refer to CodeMark Certificate No: CMNZ30084 - JSC VertiClad Cladding System.

- Risk Score to NZBC E2/AS1 no greater than 20.
- Wind zone to NZS 3604 up to & including Extra High
- All corrosion zones to NZS 3604 subject to use of fixing material as prescribed in NZS 3604

1.11 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for the requirements for submission and review of operation and maintenance manuals.
Provide the following operation and maintenance manual(s) prior to Practical Completion:

- JSC Exterior Weatherboard Cladding Maintenance Guide

Compliance information

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:-

- Signed declaration that the JSC product has been installed in accordance with the installation conditions of the CodeMark certificate.
- Other information required by the BCA in the Building Consent Approval documents.

1.13 CODEMARK CERTIFICATE

The JSC cladding system meets the requirements of the NZBC when used within the Conditions and Limitations of the relevant Certificates of Conformity CMNZ30083 and CMNZ30084.

2 PRODUCTS

Materials - Species

2.1 TIMBER SPECIES – ALASKAN YELLOW CEDAR

JSC Alaskan Yellow Cedar, (Callitropsis nootkatensis) heartwood purchased under recognised environmental schemes, harvested from sustainably managed forests. Alaskan Yellow Cedar is a consistent pale-yellow colour with a fine, even texture and straight grain.

Materials - weatherboards

2.2 VERTICAL WEATHERBOARDS

Selected weatherboards machined to JSC profiles, lap and rebate details in accordance with BRANZ BU 411 'Recommended Timber Cladding Profiles', and general design to NZS 3617 'Profiles of weatherboards, fascia boards and flooring', grading to NZS 3631 'New Zealand timber grading rules', species and durability to NZS 3602, Table 2, reference 2A.1, 'Requirements for wood-based building components to achieve a 15-year durability performance'. Weatherboards in lengths to suit specific weatherboard type and construction method with all loose knots and bark-encased knots removed.

Note: A selection of the above weatherboards and fascia are also available in JSC-TMT® range options.

2.3 ASSOCIATED MOULDINGS

To JSC profiles as detailed. Refer to SELECTIONS and JSC Weatherboard Cladding System Technical Drawings.

2.4 FASCIA BOARDS

To JSC profiles as detailed. Refer to SELECTIONS and JSC Weatherboard Cladding System Technical Drawings.

Materials - Cavity battens

2.5 CAVITY BATTENS - STRUCTURAL

Ref. JSC-H; CCA 3.2 treated Radiata Pine timber structural battens, used horizontally, are castellated on both faces with 18-degree slope to provide drainage and ventilation. Sizes: 45mm x 45mm and 45mm x 70mm
Treatment to NZBC B2/AS1 and NZS 3602, Table 1, reference 1D.10.

2.6 CAVITY BATTENS - NON-STRUCTURAL

Ref. JSC-U; CCA 3.2 treated Radiata Pine timber non-structural battens, used horizontally, are castellated on both faces with 18-degree slope to provide drainage and ventilation. Size: 45mm x 20mm.
Treatment to NZBC B2/AS1 and NZS 3602, Table 1, reference 1D.10.

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Components

2.7 WALL UNDERLAY

For flexible wall underlays, rigid wall underlays and rigid air barriers refer to the appropriate separate section(s).

2.8 CAVITY CLOSER/VERMIN-PROOFING

Perforated UPVC, aluminium or stainless steel trays with upstands. Flashing to NZBC B2/AS1: 'Durability', Table 1, NZBC E2/AS1: 4.0, 'Flashings', PBS vermin closure or as per E2/AS1: 9.1.8.3, 'Vermin-proofing'.

2.9 NAILS, SILICONE BRONZE/STAINLESS STEEL - STAIN / OIL FINISH

JSC rose head, flat head or pentagon head annular groove fixings, to NZBC E2/AS1 'External moisture', Table 24. Refer to JSC Weatherboard Cladding Installation & Specification Guides and SELECTIONS for fixing sizes and details.
NOTE: Select appropriate nail size / length to achieve a minimum of 35mm embedment into the framing.

2.10 CLINCH NAILS, STAINLESS STEEL

40mm x 2.0mm Clinch Nail, annular grooved shank Grade 316 stainless steel. Used to retain hidden lap tongues of rebated weatherboard profiles such as vertical shiplap.

2.11 FLASHING

To NZBC E2/AS1: 4.0 'Flashing'. Material, grade and colour as detailed and scheduled and to NZBC E2/AS1, Table 21, 'Compatibility of materials in contact' and NZBC E2/AS1, Table 22, 'Compatibility of materials subject to run-off'. Ensure materials used for flashing are compatible with the cladding and joinery materials and fixings. Refer to JSC Weatherboard Cladding Installation & Specification Guides.

Finishes

2.12 JSC FACTORY COATING

In-house factory coating system involves applying the selected coating using vacuum coating machines under controlled conditions. Options include oil or water-based stain and paint coating systems from all recognised NZ available manufacturers.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to the general section 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to the general section 1250 TEMPORARY WORKS & SERVICES for protection requirements. Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.
Moisture content: Timber framing 14 - 18% maximum at fixing

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 GENERALLY

Execution to NZBC E2/AS1: 3.0 'Weather-tightness risk factors', NZBC E2/AS1: 9.0 'Wall claddings', NZBC E2/AS1: 9.1.8 'Drained cavities' and NZBC E2/AS1: 9.4 'Timber weatherboards'.

3.6 SUBSTRATE

Before starting fixing ensure that the substrate conforms to NZS 3604: 2, Table 2.1, 'Timber framing tolerances' and the requirements of NZS 3604: 6, 'Foundation and sub-floor framing' and NZBC E2/AS1: 9.4 'Timber weatherboards'.

Application - preparation/general

3.7 JSC FACTORY COATING - STAIN / PAINT

JSC In-house Coating System provides factory-applied coating on all 4x sides of weatherboard profiles within a controlled environment delivering a full envelope seal of premium exterior grade coating system. Additional coatings to be applied on site to the coating manufacturer's recommendations.

3.8 CAVITY CLOSER/VERMIN-PROOFING

Install cavity closer/vermin proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters, etc.) to JSC Weatherboard Cladding Installation & Specification Guides.
Fix 75mm upstand to framing one side and 10mm upstand to cladding the other. Length and width to suit cavity.
Ensure the openings in cavity closer/vermin-proofing are kept clear and unobstructed in order to maintain draining and venting of the cavity.

3.9 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding to JSC Weatherboard Cladding Installation & Specification Guides.

Required preparatory work includes the following:

- wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- cladding neatly finished off to all sides of openings
- installation of flashing (required to be installed prior to installation of penetrating elements)

Application - cavity battens

3.10 INSTALLATION - HORIZONTAL NON-STRUCTURAL CAVITY BATTENS

Ensure timber framing consists of studs at 600mm maximum and horizontal noggs at 480mm centres maximum.

Install to JSC 20mm Cavity Setout For Vertical Weatherboards instructions. Install JSC-U 45mm x 20mm cavity battens horizontally over noggs and vertically at corners and around openings. Horizontal JSC-U cavity battens to be installed sloping away from the wall underlay towards the back of weatherboard ensuring water is shed away from the framing when installed horizontally.

Temporarily fix to wall framing studs using stainless steel clout nails over the wall underlay. Battens are firmly fixed by cladding fixings which penetrate wall framing studs; refer to NZBC E2/AS1 9.1.8.5, 'Wall framing behind cavities'. Allow 10mm gap between vertical and horizontal cavity battens.

Seal top of cavity and install PBS cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters, etc.)

3.11 INSTALLATION - HORIZONTAL STRUCTURAL CAVITY BATTENS

Install in accordance with JSC Structural Cavity Battens - Fixing to Framing.

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Install JSC-H 45mm x 45mm Re-Zeinve x 45mm cavity battens in line with nogg lines and vertically at corners and around openings and fix permanently to studs in accordance with JSC Structural Cavity Battens - Fixing to Framing. Allow 10mm gap between vertical and horizontal cavity battens.

Seal top of the cavity and install PBS cavity closer/vermin proofing at the base of walls, open horizontal (or raking) junctions, over openings (windows, meters, etc.)

3.12 INSTALLATION - VERTICAL NON-STRUCTURAL CORNER CAVITY BATTENS

Install a solid 20mm deep batten down one side of an external corner to provide pressure isolation between different walls. Fix using nails with 2° upward slope or clouts to penetrate 35mm minimum into framing. Nails to be a minimum of 50mm from board ends.

Application - fixing nails

3.13 FIXING - OILED / STAINED FINISH

Install to NZBC E2/AS1: 9.4 'Timber weatherboards' and JSC Weatherboard Cladding Installation & Specification Guides.

Coat all cut edges before fixing with specified oil/stain to the product manufacturer's specification.

Pre-drill all fixings 1mm smaller than nail gauge to ensure a snug fit and to minimise risk of moisture entry. Finish the nail heads flush onto and not into the board surface. Do not 'over drive' the nail head and crush the timber surface beneath and surrounding the nail.

Refer to NZBC E2/AS1, Table 24, 'Fixing selection for wall cladding', for dimensions and fixing details.

Application - fixing

3.14 SET-OUT

Using laser or mechanical devices set-out the overlap boards to ensure dimension to exposed face in line of weather is constant and that boards remain true. Use a string line to set out all nailing that will be visible in the finished work. Align all nailing accurately in straight lines.

3.15 FIXING JSC VERTICLAD VERTICAL SHIPLAP WEATHERBOARDS

Install to JSC VertiClad Vertical Shiplap Weatherboard Cladding Installation & Specification Guide.

Adjust set-out to ensure there is a 2mm expansion gap between lapped boards. All nail fixings are to be pre-drilled with 1mm diameter smaller than the nail shank to reduce the risk of moisture entry.

To NZBC E2/AS1, Table 24, 'Fixing selection for wall claddings', single--fix each vertical shiplap weatherboard 35mm from overlapping edge, with nail driven in with a slight (2º+) upward slope. Nails to achieve a minimum 35mm embedment into the framing. Note: Do not pin laps of weatherboards.

All corners to be weatherproofed using corrosion resistant back flashing behind the weatherboards at all external corners to JSC Weatherboard Cladding Installation & Specification Guides.

Ensure all cut edges are sealed and manufacturer's coating schedules adhered to prior to installation.

Where vertical weatherboards have an exposed bottom edge such as at the bottom plate, window head, inter storey junction, overhead soffit junctions, etc. the bottom edge of the weatherboards is to be cut with a 15° degree slope to form a drip edge. From the bottom edge the back of the weatherboards to be coated up to 75-150mm.

Application - Ancillary

3.16 WINDOW FIXING

Fix to JSC Weatherboard Cladding Installation & Specification Guides and technical specifications.

3.17 ALUMINIUM WINDOWS

To NZS 4211**.**

3.18 FLASHING

Fix to JSC Weatherboard Cladding Installation & Specification Guides. Material compatibility to NZBC E2/AS1, Table 21, 'Compatibility of materials in contact' and NZBC E2/AS1, Table 22, 'Compatibility of materials in run-off'.

3.19 SCRIBERS

Scribers are to be wet-sealed in place and fixed in accordance with JSC Weatherboard Cladding Installation & Specification Guides.

Completion & Commissioning

3.20 COMPLETION MATTERS

Refer to the general section 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.jsc.co.nz
Substitutions are not permitted to the following JSC product, unless stated otherwise.

Materials - specific timber weatherboards

4.1 JSC ALASKAN YELLOW CEDAR - VERTICLAD WEATHERBOARDS

Location:	As per plans
Species:	JSC Alaskan Yellow Cedar
Profile number:	APJ361 - 22
Grade:	PC1 (only)
Dimensions:	22mm x 140mm (effective cover 115mm)
Surface finish:	BSF (only)
Moisture content:	14 - 18 % at fixing

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Materials - mouldings

4.2 JSC - ASSOCIATED MOULDINGS

Location:	Refer to plans (Corners, soffits, etc.) - Select profiles to suit
Species:	JSC Alaskan Yellow Cedar
Grade:	PC1
Surface finish:	DF
Moisture content:	14 - 18 % at fixing

Materials - cavity battens

4.3 JSC - CAVITY BATTENS - STRUCTURAL

Profiles:	JSC-H
Timber species:	Pinus Radiata
Timber grade:	Merchant
Treatment:	H3.2
Size:	45mm x 70mm

Materials - accessories

4.4 NAILS

Type:	Refer to manufacturer's details for type

4.5 CAVITY CLOSER/VERMIN-PROOFING

Brand/type:	PBS Vermin closure to NZBC E2/AS1: 9.1.8.3 Vermin -proofing
Material:	UPVC

4.6 INTERNAL AND EXTERNAL CORNER BACK FLASHINGS

Material:	Compatible with NZBC E2/AS1 Table 21
Size:	75mm x 75mm x 90º

Materials - finishes

4.7 JSC FACTORY COATING

Type:	JSC In-house factory coating - Confirm system with manufacterer at ordering
Coating type:	Stain/oil
Coating process:	Factory coating system

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4231HS JAMES HARDIE® STRIA™ CLADDING

1 GENERAL

This section relates to the supply and installation of **James Hardie®** Stria™ Cladding on a drained cavity.

1.1 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:

CLD	Ceramic Low Density
RAB	Rigid air barrier

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS2	Protection from fire
NZBC E2/AS1	External moisture
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standards
NZS 3604	Timber-framed buildings
AS/NZS 3837	Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter
NASH Standard Part 2	May 2019 Light Steel Framed Buildings
CodeMark CMNZ30109 - Rev C	Stria™ Cladding by James Hardie®

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:
James Hardie® Stria™ Cladding Timber Cavity Batten Technical Specification (June 2024)
James Hardie® Stria™ Cladding Technical Specification Hardie™ CLD™ Structural Cavity Batte (June 2024)
James Hardie® Stria™ Cladding Vertical Installation Technical specification (June 2024)
Fire and Acoustic Design Manual by James Hardie®
James Hardie® Cladding to Steel Framing Technical Supplement
BRANZ Appraisal 1224 (2022) - Stria™ Cladding Horizontal
BRANZ Appraisal 1225 (2022) - Stria™ Cladding Vertical

Manufacturer/supplier contact details

Company:	James Hardie New Zealand Limited
Web:	www.jameshardie.co.nz
Email:	info@jameshardie.co.nz
Telephone:	0800 808 868

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For James Hardie® Stria™ Cladding (refer to James Hardie® product warranty.)

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of purchase of the material.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.7 SAFE WORKING

To James Hardie® requirements for safe working practices with James Hardie® products, particularly with regards to cutting and drilling.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:
Relevant James Hardie® maintenance requirements.

Compliance information

1.9 CODEMARK CERTIFICATE

James Hardie® Stria™ Cladding systems meet the requirements of the NZBC when used within the Conditions and Limitations of their Certificate, CodeMark CMNZ30109

Performance - Wind

1.10 PERFORMANCE - WIND

The design wind speeds/zones are to NZS 3604, up to and including Extra High Wind Zone. This is within the scope of James Hardie® literature and details.

Performance - Fire

1.11 EXTERNAL FIRE SPREAD - CLADDING EXEMPT FROM TESTING

To NZBC C/AS1, 5.3 External Cladding Systems or NZBC C/AS2, 5.8 External Cladding Systems, where external walls are located at a distance greater than or equal to 1.0m from a relevant boundary and a building height less than 10m.

2 PRODUCTS

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Materials

2.1 STRIA™ CLADDING

Hardie™ Stria™ Cladding, low density autoclaved panel, 14mm thick, 325mm or 405mm wide and 3000 or 4200mm long, manufactured from treated cellulose fibre, Portland cement, sand and water with proprietary additives. Cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Both faces and all edges pre-sealed.

2.2 WALL UNDERLAY

For flexible wall underlays and rigid wall underlays, refer to the appropriate separate sections.

2.3 TIMBER CAVITY BATTENS

Radiata pine battens, minimum 45mm wide x 18mm thick, H3.1 treated, height to match timber framing studs. To NZS 3602, Table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

2.4 CAVITY CLOSER / VENT STRIP

Refer to SELECTIONS.

Components

2.5 FASTENER

Fasteners to minimum durability requirements of the NZBC. Refer to NZS 3604, section 4, **Durability**, for requirements for fixing's material to be used in relation to the exposure conditions.

Refer to NZBC E2/AS1, Table 20, Material selection for fixing material, and NZBC E2/AS1, Table 21, Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

Zone	Fixing Material
Zone D, Zone E / Microclimates (incl. Geothermal)	Grade 316 Stainless
Zone B, Zone C	Hot-dipped galvanized
Bracing - All zones	Grade 316 Stainless

Check against SED (specific engineering design) requirements for microclimate conditions.

Refer to SELECTIONS for fastener types.

2.6 HORIZONTAL STRIA™ CLADDING COMPONENTS

Refer to SELECTIONS.

2.7 FILL

ADOS CRC Builders fill, two part exterior grade fill to finish over nail holes.

Accessories

2.8 SEALANT

Refer to SELECTIONS.

2.9 PAINT FOR SEALING CUT EDGES OF STRIA™ CLADDING

Refer to SELECTIONS.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 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.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

3.4 PRE-CLADDING REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for specified finish. Do not commence work until the substrate is of the standard required by James Hardie® for the specified finish; plumb, level and in true alignment. Carry out such additional preparatory work as required to bring the substrate to suitable condition.

3.5 TIMBER FRAMING REQUIREMENTS

Check timber framing stud and nog spacing is in accordance with NZS 3604 and framing complies with NZS 3602. For projects with specific engineering design check compliance with AS/NZS 1170 and NZS 3603. Moisture content of framing must not exceed the requirements specified by NZS 3602 to minimize shrinkage and movement after panels are fixed.

Where 600mm spacing of studs apply provide an intermediate means of support for building underlay and insulation using either 75mm galvanised mesh or polypropylene tape. Not required where studs spaced at 400mm centres or where rigid air barriers are provided in place of building underlay.

3.6 CLADDING CLEARANCES

Bottom edge clearance of cladding, ground clearances and overhang to bottom plate to comply with the requirements of NZBC E2/AS1.

Installation

3.7 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - general

3.8 INSTALL CAVITY CLOSURE/VENT STRIP

Install cavity closure/vent strip in accordance with James Hardie® Stria™ Cladding Technical Specification. Install cavity closer at base of walls, on horizontal (or raking) open junctions and over openings (windows, meter boards, etc).

3.9 INSTALL TIMBER CAVITY BATTENS

Install timber cavity battens fixed vertically to studs in accordance with James Hardie® Stria™ Cladding Timber Cavity Batten Technical Specification.

3.10 PENETRATIONS AND FLASHINGS

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

- Wall underlay appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the wall underlay.
- Wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- Required holes in cladding accurately formed and cut to James Hardie® requirements, ensure (if required) services penetration grommets/sleeves/seals/tapes are in place prior to cladding installation.
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.11 INSTALL HORIZONTAL STRIA™ CLADDING TO TIMBER CAVITY BATTEN

Install cladding in accordance with James Hardie® Stria™ Cladding Timber Cavity Batten Technical Specification. Fix nails 100mm from top edge and 100mm from bottom edge/per board/ per stud. Prime cut ends of cladding.

3.12 INSTALL JOINTING SYSTEMS

Install vertical, horizontal, internal and external corner joints in accordance with James Hardie® Stria™ Cladding Technical Specification.

3.13 INSTALL FLASHINGS

Install flashings at all wall openings, penetrations, junctions, connections, window sills, heads and jambs to NZBC E2/AS1.

Completion & Commissioning

3.14 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

3.15 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

4 SELECTIONS

For further details on selections go to www.jameshardie.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

Materials

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4.1 TIMBER CAVITY BATTENS

Timber species:	Radiata pine
Treatment:	H3.1
Size:	45mm wide x 18mm thick minimum, height to match framing studs
Batten spacing:	600crs
Fastener type:	40mm x 2.8mm Hardie™Flex nail

Fastener finish: Hot-dipped galvanized
Fixing centres: 800mm

4.2
JAMES HARDIE® STRIA™ CLADDING - INSTALLED HORIZONTALLY TO TIMBER CAVITY BATTEN

Location: As per plans
Brand/type: Hardie™ Stria™ Cladding
Size: 14mm thick x 405mm wide x 3000mm long
Fastener type: 65 x 2.87mm D head nail or 60 x 2.87mm RounDrive nail
Fastener finish: 316 Stainless steel

Components

4.3 HORIZONTAL STRIA™ CLADDING - VERTICAL JOINT COMPONENT

Location: If required - refer to details
Brand/type: 305827 Hardie™ 14mm Trimline Joint Flashing and flexible sealant, 3000mm long (Fin of joint flashing visible)

4.4 HORIZONTAL STRIA™ CLADDING - EXTERNAL CORNER COMPONENT

Location: External corners - as per details

Brand/type: Hardie™ 14mm Aluminium external box corner and flexible sealant. Anodised extrusion (code 306261 - 3000mm, code 305823 - 4000mm long)

4.5 HORIZONTAL STRIA™ CLADDING - WINDOW JAMB FLASHING

Location: To windows
Brand/type: 305430 Aluminium Window Jamb flashing

4.6 HORIZONTAL STRIA™ CLADDING - VENT STRIP

Location: Refer to details
Brand/type: Refer to details for type

Accessories

4.7 ADHESIVE SEALANT

Type: Sikaflex 11FC Polyurethane adhesive sealant - manufactured by Sika

4.8 FLEXIBLE SEALANT

Type: Sikaflex MS - manufactured by Sika

4.9 PAINT - TO CUT ENDS OF STRIA CLADDING

Type: Dulux 1 Step

Finishing

4.10 PAINTING

Refer to painting section/s for details.

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4239T TIMBER SOFFIT CLADDING

1 GENERAL

This section relates to the supply and fixing of timber cladding to the underside of exterior eaves and includes:

Documents

1.1 DOCUMENTS

The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring

Requirements

1.2 QUALIFICATIONS

Workers / Installers / applicators to be experienced, competent trades people familiar with the materials and techniques specified.

1.3 HEALTH AND SAFETY

Comply with all manufacturer/supplier and WorkSafe New Zealand requirements for health and safety.

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

2 PRODUCTS

Timber board soffit cladding

2.1 TONGUE AND GROOVE TIMBER BOARD SARKING

Tongue and groove timber board profile as detailed, in long lengths with species and grading to the requirements of NZS 3602, table 2, Requirements for wood-based building components to achieve a 15-year durability performance. Select appearance grades to NZS 3631 requirements.

Timber board soffit cladding fasteners

2.2 NAILS - STAINLESS STEEL

Stainless steel to NZS 3604, Table 4.1.

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Flashing

2.3 SOFFIT CLADDING/WALL CLADDING JUNCTION FLASHING

Flashing as detailed with minimum 50 mm return behind soffit cladding and 35 mm cover to wall cladding, complete with hook and kick-out.

3 EXECUTION

Conditions

3.1 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

Moisture content:	16% maximum

3.2 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Do not drag sheets across each other, or across other materials. Protect edges, corner and surface finish from damage. Reject all product with damaged faces or edges

3.3 SUBSTRATE

Do not commence work until the substrate is of the standard required for the specified finish; level and in true alignment. Moisture content of timber framing must not exceed the requirements specified by NZS 3602 to minimise shrinkage and movement after soffits are fixed.

3.4 MOISTURE CONTENT TIMBER BOARD

Immediately before starting fixing, test the moisture content of the boards. Use an electrical moisture meter to test 5% of boards, but not less than 10 boards in the centre of the length. Do not start fixing until 90% of the values obtained are within the range in NZS 3602 table 4, Allowable moisture content (%) at time of installation.

3.5 PENETRATIONS

Form small holes to accommodate penetrations through the soffit as per the method detailed in the sheet manufacturer's technical literature.

Install timber board soffit cladding

3.6 SCARF JOINTS

Where possible run boards/sarking full length. If this is not possible, provide scarf joints over framed support.

3.7 FIXING, CLEAR FINISH

Coat all cut ends before fixing. Drill all fixings located within 25mm of board ends. Finish fixings flush.

3.8 EXECUTION

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

3.9 NAILING, CLEAR FINISH

Punch nails flush with the face of external trim being stained or clear finished.

Completion

3.10 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

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4311RI ROOFING INDUSTRIES PROFILED METAL ROOFING

1 GENERAL

This section relates to the supply and fixing of **Roofing Industries** profiled roofing complete with accessories.

1.1 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
MS	Modified silicone
LBP	Licensed Building Practitioner

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2	Protection from fire
NZBC C/VM2	Protection from fire
NZBC E2/AS1	External Moisture
NZBC G12/AS1	Water Supplies
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
AS/NZS 1665	Welding of aluminium structures
AS/NZS 1734	Aluminium and aluminium alloys - flat sheet, coiled sheet and plate
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - performance requirements
AS 3566	Self-drilling screws for the building and construction industries
AS/NZS 4020	Testing of products for use in contact with drinking water
AS/NZS 4201.6	Pliable building membranes and underlays - methods of test Method 6: Surface water absorbency
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Roofing Industries Profile Technical Summary
Global GreenTag™, GreenRate Level A Roofing Industries New Zealand - for roll-formed systems using ColorCote®, licence number FLE:RF01:2023:GR
Eco Choice Aotearoa, New Zealand Steel, COLORSTEEL® pre-painted and resin coated metal products, licence number 5717145. (Roofing Industries Ltd is an approved partner of New Zealand Steel using EC-57-23 Pre-painted and Resin Coated Metal Products)

Manufacturer/supplier contact details

Company:	Roofing Industries Ltd
Web:	www.roof.co.nz
Email:	techinfo@roof.co.nz
Telephone:	0800 844 822

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

18 years	For paint will not flake, peel or excessively fad
40 years	For substrate will not perforate through corrosion

- Provide this warranty on the material manufacturer's standard Warranty Form
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:
5 years for workmanship

- Provide this warranty on the metal roofing installers standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

NOTE: Include a copy of the Roofing Industries maintenance requirements with the warranty.
Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

Performance - General

1.8 DRINKING WATER

ColorCote® have been tested in accordance with AS/NZS 4020 and have passed the requirements for products in contact with drinking water in accordance with NZBC G12/AS1.

2 PRODUCTS

Materials

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2.1 STEEL - TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED

Formability steel sheet G550 for roll forming or G300 for flashings, coated to AS 1397. Prefinished /prepainted to AS/NZS 2728.

Fixings

2.2 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code.

2.3 FIXING SCREWS

Screws to AS 3566 and Roofing Industries Profile Technical Summary fixing chart or Specific Engineered Design, with a minimum Class 4 or 5 durability and not less than the material being fixed. Refer to SELECTIONS.

2.4 RIVETS

Sealed aluminium, minimum diameter 4.0mm. Refer to Roofing Industries for requirements.

Components

2.5 FLASHINGS GENERALLY

To E2/AS1, 4.0, Flashings.
Formable grade 0.55 BMT for galvanized, coated and pre-painted steel, and 0.90 BMT for folded aluminium to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

2.6 BOOT FLASHINGS

Generally to E2/AS1, 8.4.17 Roof penetrations.
EPDM proprietary pipe flashing laid on 45º bias to roofing, with over-flashing (soaker flashing) if required.
A boot flashing should be positioned so that it dams a roofing pan no more than 50%, if this cannot be avoided use an over-flashing back to the ridge and fix the boot flashing to that.

Accessories

2.7 SEALANT

Neutral curing silicone or MS polymer sealant as required by Roofing Industries and used as directed.

2.8 CLOSURE STRIPS

Non-bituminous compressible, profiled foam strips to fit the sheet profile.

3 EXECUTION

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Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Store on a level firm base with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.

Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing.

Ensure moisture content is:
Timber framing: 18% maximum
12-16% maximum under traverse flashings

When continuous metal roofing etc. Runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

3.4 SEPARATION

Isolate dissimilar materials (metals and non-metals) in close proximity as necessary by painting the surfaces or fitting separator strips of compatible materials. Place isolators between metals and treated timber and cement based materials.

Application

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 FIXING GENERALLY

Install and fix in accordance with the NZMRM CoP recommendations, and to Roofing Industries requirements, to form a weather-tight performance for the completed roofing system, including all junctions, flashing/cappings and penetrations through the roofing.

3.7 WELDING ALUMINIUM FLASHINGS

Welding to be carried out by a welder qualified under AS/NZS 1665. Preparation and welding to comply with AS/NZS 1665. Finish welds smooth and without abrupt surface changes ready for coatings. Refer to SELECTIONS for BMT and coatings.

3.8 PENETRATIONS AND JUNCTIONS

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

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

3.9 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the prevailing wind and line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.

3.10 MARKING AND CUTTING

Use ink pen, chalk line or coloured pencil for marking roof sheets prior to cutting. Do not use lead pencil for marking Zincalume®, Colorsteel® and ColorCote®. Cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.

3.11 FIX SHEETS

Fix sheets in place using the fastening system in accordance with Roofing Industries Profile Technical Summary - fixing chart to suit project wind loadings or in accordance with specific design in accordance with project engineers requirements.

Use only screws as required by Roofing Industries. For timber purlins ensure minimum 30mm embedment and for steel purlins ensure minimum embedment of 3 threads. Paint colour matched fixings and accessories before installation.

3.12 THERMAL MOVEMENT

Fix for Thermal Movement to Roofing Industries Profile Technical Summary for Selected Profile.

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3.13 END LAPS

End laps are not permitted, except where specifically detailed.

3.14 STOP ENDS AND DOWNTURNS

Form stop-ends at the upper end of sheets. Form downturns at the gutter line where the roof pitch is less than 8 degrees. Form using the required tools.

3.15 INSTALL FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Flashings to be installed on timber framing with a moisture content of less than 20%. Where no detail is provided flash to NZMRM CoP recommendations and Roofing Industries and NZBC E2/AS1 requirements. Cut accurately and fix using sealant and rivets to detail and to Roofing Industries requirements to form a weatherproof cover. For visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.16 USE OF SEALANTS

Select and use sealants only as recommended by Roofing Industries. Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

3.17 FLASHING PENETRATIONS

Flash all penetrations through the roof. Fit pipe flashings with a proprietary collar flashing, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

Completion

3.18 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.roof.co.nz.

Substitutions are not permitted to the following, unless stated otherwise.

Roofing

4.1 ROOFING INDUSTRIES - MULTIRIB® PROFILE ROOFING

BMT/material:	0.4mm Steel
Coating system:	ColorCote® MagnaFlow™ PLUS
Purlin material:	Timber
Fixing:	14-10x100 Class 4* Type 17 Woodteks with neos.

Accessories

4.2 FLASHINGS - GENERALLY

BMT/material:	0.55mm Steel
Coating system:	To match roofing
Coating colour:	To match roofing

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4383 TIMBER DECKING

1 GENERAL

This section relates to the fabrication and installation of exterior timber

- spaced boarding to decks
- steps and landings

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC D1/AS1	Access routes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
BRANZ BU 497	Stair construction

Performance - Slip resistance

1.2 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

The entry deck walking surfaces have previously been tested for slip resistance, and comply with NZBC D1/AS1 requirements.

2 PRODUCTS

Materials

2.1 SOLID TIMBER COMPONENTS

Selection to NZS 3602.

2.2 HARDWOOD SPACED BOARDING FOR EXTERIOR DECKS

Plantation-grown hardwood. Dressed four sides and with arrises.

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3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

Check site dimensions. Carry out machining within the practices recommended for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's recommendations. Work to be accurate, square and true to line and face.

Application

3.2 FABRICATE AND INSTALL TIMBER STEPS

Fabricate and install steps and landings to comply with NZBC D1/AS1:4.0 Stairways, and unless detailed otherwise to BRANZ BU 497.

3.3 LAYING TIMBER SPACED BOARDING - EXTERIOR DECKS

Confirm whether the grooved side of the boards is face up or face down. Avoid excessively short or long lengths. Drill for all fixings. Stagger end joints. Space narrow boards (<100mm) a minimum of 2mm apart in general conditions, or minimum 3mm to 4mm apart if wide boards (>100mm) or narrow boards that are likely to swell after fixing, or 5mm apart for wide boards that are likely to swell. Leave a 12mm minimum gap between the exterior wall and the adjacent decking board.

3.4 SCREW FIXING

Pre-drill for all fixings, where the screws allow, use a proprietary deck pre-drilling and countersinking tool.
Use decking screws and power drive into the deck surface to just slightly below the board surface (approx. 0.5mm). Take care to not overdrive the screw as this may result in the screw heads or the boards being damaged. Refer to SELECTIONS.

3.5 CORROSION RISKS

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel or silicon bronze, fixings and connectors, if decking or framing timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

Completion

3.6 LEAVE

Leave work to the standard required by following procedures.

3.7 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 EXTERIOR DECKING - HARDWOOD SPACED BOARDING

Species:	Garapa
Size:	ex 150mm x 25mm
Grooved face:	down
Finish:	Natural

4.2 SCREW FIXING

Screw type:	Stainless steel decking screw
Screw size:	65 x 10g

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4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS

1 GENERAL

This section relates to the fabrication, supply and installation of **APL Window Solutions** residential window and door systems manufactured by either **Altherm**, **First** or **Vantage**.
It includes:

- APL Residential aluminium windows and doors
- Hardware and furniture
- Flashings and sealants

1.1 ABBREVIATIONS AND TERMS

SLS	Serviceability limit state
ULS	Ultimate limit state
WGANZ	Window & Glass Association NZ
PQAS	Powder Coating Quality Assurance System

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Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
NZBC G4/AS1	Ventilation
NZBC H1/AS1-AS2	Energy efficiency
NZBC H1/VM1-VM2	Energy efficiency
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 1580.108.1	Methods of test for paints and related materials - Determination of dry film thickness on metallic substrates - Non destructive methods
AS/NZS 1734	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4303	Ventilation for acceptable indoor air quality
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
AAMA 2603	Voluntary specification, performance requirements, and test procedures for pigmented organic coatings on aluminium extrusions and panels (with coil coating appendix)
AAMA 2604	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
AAMA 2604.05	Performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels
BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
ISO 10077-1	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames
BRANZ BU 636	Protecting Glass From Damage

Window & Glass Association NZ (WGANZ) documents:

Window Installation Guide	Guide to Window Installation as described in E2/AS1
PQAS	Powder Coating Quality Assurance System
SFA 3503-03	Anodic Oxide coatings on wrought aluminium for external architectural application (2005)

US Federal Specification:

TT-S-001543A	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
TT-S-00230C	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)

CodeMark CMNZ10033 (V1)	APL Metro Series ThermalHEART® with Centrafix™ Windows and Doors.

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Altherm Specifier's Guide
First Specifier's Guide
Vantage Specifier's Guide
APL Specifier Guide to Fluoroset FP - Selling, Fabricating, Handling, Care and Maintenance
APL Window Energy Efficiency Rating System (WEERS) Report Series
APL Metro Series ThermalHEART® with Centrafix™ System Guide V1, April 2023
BRANZ Appraisal 1188 [2023] - APL Metro Series ThermalHEART® with Centrafix™ Windows and Doors
BRANZ Appraisal 1259 [2024] - APL ThermalHEART+® Window and Door Systems
Declare Label - Residential Series, Metro Series and APL Architectural Series APL Window Solutions - APL-0001
APL Window Solutions Environmental Product Declaration v1.1
Summary of Toitu Carbonreduce Certification for APL Window Solutions Limited’s Metro Thermal, Residential Thermal and Commercial Series

Manufacturer/supplier contact details

Company:	APL Window Solutions
Web:	www.altherm.co.nz www.firstwindows.co.nz www.vantage.co.nz www.aplnz.co.nz
Email:	specifiersguide@aplnz.co.nz
Telephone::	07 849 2113

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years:	For fabrication
2 years:	For hardware

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years:	For installation

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified APL aluminium system, or associated components and products.

1.7 QUALIFICATIONS

Work to be carried out by trades people experienced, competent and familiar with the materials and techniques specified.

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer / supplier warranty
- Installer / applicator warranty
- Other information required by the BCA in the Building Consent Approval documents.

1.9 COMPLIANCE

Windows and doors to be manufactured and installed to NZBC E2/AS1.

1.10 CERTIFICATION

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

Performance

1.11 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211, including:

- Deflection, opening sashes, air infiltration, water penetration, ultimate strength, torsional strength of sashes, marking.

1.12 STRUCTURAL/WEATHER-TIGHTNESS

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

1.13 PERFORMANCE - THERMAL, HOUSING ONLY

Thermal performance of windows & doors to NZBC H1/AS1. The construction R-Value of windows & doors determined by Appendix E, Table E1.1.1 Construction R-values (R window) of selected generic windows and doors. Refer to SELECTIONS for construction R-values.

Performance - Wind

1.14 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters of NZS 3604, table 5.1.

Finishes

1.15 CERTIFY COATINGS - POWDER COATING

Certify on request, compliance with this specification and support with control and sampling records. Test for film thickness to BS 3900, part C5, method No. 4, using method (b) or to AS/NZ 1580.108.1 for certifying thickness and method (a) where any dispute arises as to the thickness provided. The coating should be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

2 PRODUCTS

2.1 WINDOWS

Refer to SELECTIONS for type and finish.

2.2 DOORS

Refer to SELECTIONS for type and finish.

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Materials

2.3 ALUMINIUM EXTRUSIONS

Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.

2.4 ALUMINIUM SHEET AND STRIP

Complying with AS/NZS 1734 of suitable thickness. Rolled for anodising or powder coating.
Alloy designation: 5251 - H16 or 5005 - H16

2.5 STAINLESS STEEL SHEET AND STRIP

Type: 316 austenitic steel
Finish grade: 2B (satin lustre)

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2.6 GLASS

Refer to the glazing section for glass types and installation.

Reveals

2.7 REVEALS - TIMBER PAINTED

Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.

2.8 REVEALS - ALUMINIUM

Aluminium reveals fitted to frame via thermal break.

Flashings

2.9 FLASHINGS GENERALLY

To NZBC E2/AS1, 9.1.10 Windows and Doors. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components for installation - cavity systems

2.10 STANDARD CAVITY CLOSER

A device constructed from either aluminium or PVC to close the cavity above the window or door unit, between the cladding and head flashing, to provide ventilation in accordance with NZBC E2/AS1 to the spaces above the window or door.

2.11 SUPPORT BAR

WGANZ extruded aluminium support bar with built in drainage and ventilation to NZBC E2/AS1, and support bar location bracket, to provide continuous support to the window unit. Size to suit cladding type.

Components

2.12 GLAZING GASKETS

Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.

2.13 HARDWARE AND FURNITURE

Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable window hardware able to be keyed alike.

2.14 SAFETY STAYS

Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Section 2.0, Opening windows.

2.15 FIXING BRACKETS

Designed by manufacturer to specific design.

2.16 WEATHERING/INSTALLATION SEALANT

Building sealant used in accordance with manufacturer's instructions for weather sealing aluminium frames to the cladding, complying with US Federal Specification TT-S-001543A, or a one-part polyurethane moisture curing, elastic joint sealant of medium modulus (± 25% movement) to US Federal Specification TT-S-00230C.

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Accessories

Finishes

2.17 DURALLOY POWDER COATED ALUMINIUM

Polyester powder organic coating in accordance with WGANZ PQAS and AAMA 2603.

3 EXECUTION

Conditions - generally

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

3.4 PROTECTIVE COVERINGS

Retain protective coverings and coatings to BRANZ BU 636 and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

3.5 ADDITIONAL PROTECTION

Supply and fix additional protection as necessary to prevent marking of surfaces which will be visible on completed work.

Assembly

3.6 FABRICATION

Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

3.7 TIMBER REVEALS

Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces. Securely fix reveals through aluminium fin.

3.8 HARDWARE GENERALLY

Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.

3.9 SAFETY STAYS

Factory fit safety stays to all windows scheduled for safety stays and to all windows where safety stays are required to comply with NZBC F4/AS1 4.0, Opening windows.

Installation - windows and doors

3.10 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS.

3.11 EXPOSED FIXINGS AND FASTENINGS

Fixings and fastenings exposed to the weather to be aluminium, or Type 304 stainless steel.

3.12 PROTECTED FIXINGS AND FASTENINGS

Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

3.13 CORROSION PROTECTION

Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.

3.14 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

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

Required preparatory work includes the following:

- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1:9.1.5 Wall underlays to wall openings.
- Full height 20mm jamb battens to NZBC E2/AS1 figure 72A (direct fix only)
- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).
- application of waterproof sealer to all door and window sills in concrete floor or concrete sill situations. To door sills only, apply a suitable membrane over the sealer
- all in accordance with the shop drawings, where applicable.

3.15 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.16 INSTALLATION

Fix to comply with the reviewed shop drawings and installation details including flashings and bedding compounds, pointing sealants and weathering sealants.

3.17 INSTALLATION FIXING

To NZBC E2/AS1, 9.1.10.8, Attachments for windows and doors. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings.
Install packers between reveals and framing at fixing points, except at the head.

3.18 INSTALLATION CAVITY CONSTRUCTION

Install to WGANZ Window Installation Guide details and drawings including WGANZ sill support bars.
For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to NZBC E2/AS1, figure 62(d).

3.19 INSTALL FLASHINGS

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

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

Except where window/door frames are recessed, ensure that head flashings over-sail unit by 20mm plus any jamb scriber width at each end.

3.20 COMPLETE AIR SEAL

To NZBC E2/AS1:9.1.6 Air seals. Form an air-tight seal by means of proprietary expanding foam or sealants used with PEF backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

3.21 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.22 SEAL FRAMES ON SITE

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Seal frames to each other and to adjoining structure and finishes, all as required by the window and sealant manufacturer and to make the installation weathertight.. In very high and extra high or greater wind zones, seal between the window head and the head flashing. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.23 PREPARE JOINTS

Ensure joints are dry. Remove loose material, dust and grease. Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary. Mask adjoining surfaces which would be difficult to clean if smeared with sealant.

3.24 BACK UP

When using back-up materials do not reduce depth of joint for sealant to less than the minimum required by the manufacturer of the sealant. Insert polyethylene rod or tape back-up behind joints being pointed with sealant.

3.25 SEALANT FINISH

Tool sealant to form a smooth fillet with a profile and dimensions required by the sealant manufacturer. Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.

3.26 PROTECTIVE COVERINGS

Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades.
Anodised finishes should be protected from cement products and require immediate clean-up of cement splashes. Only use tapes that have passed WGANZ testing on powder coated products. Remove protection on completion.

3.27 IN-SITU TOUCH-UP TO POWDER COATED ALUMINIUM

In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted to minor surface scratching. Otherwise replace all damaged material.

3.28 SAFETY

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

4 SELECTIONS

For further details on selections go to www.aplnz.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Completion & Commissioning

4.1 SUPPLY AND INSTALLATION

Supply and installation of the specified **APL** aluminium joinery.

Supply:	By fabricator
Installation:	By builder

Performance

4.2 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Building wind zone	H 1360 Pa ULS

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Finishes

4.3 DURALLOY - POWDER COATING FINISH

Type:	Polyester organic powder coating
System integrity:	10 years

Glazing

4.4 GLASS

Type:	Refer to glazing section/s for type

4.5 HARDWARE FINISH

Finish:	Powder coat
Colour:	Match to frame

4.6 FLASHINGS

Material/type:	Powder coat aluminium
Pattern:	Formed to suit details provided

4.7 WEATHERING SEALANT

Type:	1-part polyurethane moisture curing, elastic joint sealant
Colour:	white

Reveals

4.8 TIMBER JAMB REVEALS

Timber species:	Radiata Pine
Grade/treatment:	H3.1
Thickness:	19 mm
Reveals:	Grooved for wall linings
Finish:	Paint

4.9 ALUMINIUM REVEALS - ADAPTOR/INFILLS

Type:	To suit frame location
Finish:	Powder coated

Window and door system - RESIDENTIAL

4.10 APL RESIDENTIAL WINDOWS & DOORS

Brand/type:	**Altherm**, **First** or **Vantage RESIDENTIAL Series**
Window No.:	refer to schedule

4.11 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

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4555 GARAGE DOORS

1 GENERAL

This section relates to the manufacture, supply and installation of garage door systems including required opening/operating systems.

Documents

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 1170	Structural design actions
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3604	Timber-framed buildings
AS/NZS 4505	Garage doors and other large access doors

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.

Requirements

1.2 INFORMATION FOR OPERATION AND MAINTENANCE

Provide operating instructions for the garage doors and associated opening equipment. Provide a list of all components requiring regular maintenance.

Performance

1.3 DESIGN PARAMETERS WIND

Design the installation to the manufacturers requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.

1.4 LOADS - NON - SPECIFIC DESIGN - DOORS UP TO 3.0M HIGH

Garage doors complete with hinges, roller assemblies and fasteners to comply with wind performance requirements to NZS 3604.

1.5 RESPONSIBILITY FOR PERFORMANCE

Accept responsibility for the structural and weathertight performance of the completed garage door installation.

2 PRODUCTS

2.1 GARAGE DOOR

Manufacture to AS/NZS 4505 complete with a compliance label.

2.2 MOTORISED DOOR OPENER

Wireless control units. 1 fixed at internal door and 2 remote controllers

3 EXECUTION

3.1 PREPARATION FOR INSTALLATION

Check that the trimmed and lined openings are formed and constructed to suit the required door units. Do not proceed until openings are properly formed.

3.2 MANUFACTURER'S REQUIREMENT FOR INSTALLATION

Install door, track and operating equipment complete with all specified and necessary accessories and hardware to the manufacturer's requirements.

3.3 START UP

Carry out start up procedures and verify proper performance of the doors.

3.4 ADJUSTMENT

Lubricate bearings and sliding parts and adjust doors to operate easily, free of warp, twist or distortion with a weathertight fit round the entire perimeter.

3.5 DEMONSTRATION

Carry out start up procedures and verify proper performance of the door. Demonstrate the operation of the door to the principal/principal's representative. Set security features to principal's requirements. Reset security features at practical completion of the contract works.

Completion

3.6 ENSURE

Ensure all elements are free of marks or blemishes, with all moving parts working fully and freely.

3.7 REPLACE

Replace damaged, cracked or marked elements.

3.8 LEAVE

Leave work to the standard required by following procedures.

3.9 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 GARAGE DOOR - SECTIONAL OVERHEAD DOOR

Brand:	Garador
Type:	Camden with SDO Precision Belt drive
Face panels:	Flat Panel Smooth
Finish:	pre-painted steel

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4610AG AGP® GLAZING RESIDENTIAL

1 GENERAL

This section relates to the supply and fixing of **AGP®** glass products for use with APL Window Solutions external and internal joinery in residential type buildings and includes:

- Window and door glazing

This **AGP** section is to be read in conjunction with **APL Window Solutions** branded sections

1.1 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

IGU	Insulating Glass Units
PVB	Polyvinyl Butyral

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/AS1	Structure
NZBC B2/AS1	Durability
NZBC F2/AS1	Hazardous building materials
NZBC H1/AS1	Energy Efficiency
NZBC H1/VM1	Energy Efficiency
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4667	Quality requirements for cut and processed glass
NZS 4211	Specification for performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section:

- Product notes and manufacturing limitations
- Care and maintenance of your AGP glass
- Condensation guide
- AGP Glass handling, storage & transportation guide
- Guide to visual quality of residential glass and insulating glass units (IGUs)
- Insulating glass unit (IGU) warranty
- DECLARE Label.
- APL window solutions Environmental Product Declaration

Manufacturer/supplier contact details

Company:	AGP
Web:	www.agpl.co.nz
Email:	technical@agpl.co.nz
Telephone:	07 849 8880

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

12 years:	For insulating glass units (IGUs)
12 years:	For float glass
12 years:	For toughened glass
12 years:	For laminated glass

- 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 supply.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance information

1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Manufacturer / supplier warranty
- Installer / applicator warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents

Performance

1.8 THERMAL STRESS ANALYSIS

For non-heat treated glass obtain a thermal stress analysis for tinted, reflective and other solar control vision glass including IGU's for review before placing final order.

1.9 ENERGY EFFICIENCY

Provide glazing to comply with H1 Energy efficiency requirements of NZBC H1/AS1 or NZBC H1/VM1.
Refer to SELECTIONS and schedules for location and type of glazing.

1.10 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

Design the installation to the manufacturer requirements and as appropriate for the project wind design,

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2 PRODUCTS

Materials, windows and doors

2.1 CLEAR FLOAT GLASS

Clear ordinary transparent float glass for general window/door glazing application. Thickness to NZS 4223.1, NZS 4223.Supp1, NZS 4223.3 and NZS 4223.4.

2.2 TINTED FLOAT GLASS

Body tinted float glass. Thickness to NZS 4223.1 and NZS 4223.Supp 1, NZS 4223.3 and NZS 4223.4.

2.3 OBSCURE GLASS

Translucent rolled glass, sand-blasted or acid etched on one surface for a decorative finish.

2.4 LAMINATED GLASS

Grade A safety glass to AS/NZS 2208 with PVB interlayer.

2.5 TOUGHENED GLASS

Grade A safety glass to NZBC F2/AS1 and AS/NZS 2208.
Heat soaked toughened glass to NZS 4223.1, Appendix E for critical areas.

2.6 INSULATING GLASS UNITS (IGU'S)

To the performance requirements of NZS 4223.2.
Marking to NZS 4223.2 as modified by NZBC B2/AS1, 3.5.
Surface numbering order for glass panes in an IGU are #1, #2, #3, and #4 as follows:

- Surface #1 - outer face of exterior pane
- Surface #2 - cavity face of the exterior pane
- Surface #3 - cavity face of the interior pane
- Surface #4 - outer face of the interior pane

Components, aluminium glazing

2.7 GLAZING TAPE AND GASKETS

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

2.8 SETTING BLOCKS

APL Window and Door Systems setting blocks consisting of PE, PP or PA material selected to suit the frame and panel type.

3 EXECUTION

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Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.2, NZS 4223.3 as modified by NZBC B1/AS1, 7.3.1, and NZS 4223.4.
Interface between external glazing and other elements to be wind and watertight on completion.

3.2 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

3.3 GLASS CONDITION

All glass to have undamaged edges and surfaces in accordance with AS/NZS 4667.

3.4 GLASS THICKNESS

Whether stated in a glazing schedule or not, confirm glass thicknesses to NZS 4223.1, NZS 4223.3, NZS 4223.4. For windows tested to NZS 4211, ensure glass meets the requirements of the window testing.
Determine the final glass thickness based on whether wind loading, or human impact considerations govern.

3.5 REBATE DIMENSIONS

Provide rebates for glazing to the widths and depths necessary for each situation including minimum glass edge cover to NZS 4223.1, Section 4 Glazing.

Conditions - human impact safety requirements

3.6 SAFETY GLAZING, GENERAL REQUIREMENTS

Glazing of doors, side panels, low level and window seat glazing, bathrooms, stairwell landings and similar locations, to NZS 4223.3 as modified by NZBC B1/AS1, 7.3.1, for thickness and maximum areas of safety glass.

3.7 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in NZS 4223.3, that also comply with the relevant requirements of AS/NZS 2208. Ensure material is permanently marked and if cut by the distributor or installer mark each piece to NZS 4223.3, 2.8 Identification.

3.8 CONTAINMENT

Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, 2.3 Edge cover.

Assembly

3.9 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.10 EDGE WORK

Edge work other than a clean cut. Refer to SELECTIONS/drawings for type.

Installation/application

3.11 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.
Refer to AS/NZS 4667 and NZS 4223.1 for glass and glazing.

3.12 INSTALL SAFETY GLASS

To NZS 4223.3.

3.13 INSTALLING INSULATING GLASS UNITS

Refer to the APL branded window manufacturer's requirements and before glazing ensure that the materials forming the opening are strong enough to accept the weight, the rebates are the correct size and prepared to receive the units to the manufacturers requirements. Fit setting and location blocks and bead glaze units using a compatible sealant.

3.14 INSTALLING REFLECTIVE AND COATED GLASS

In addition to the type of glazing specified refer to the requirements of the glass manufacturer and ensure that the rebate dimensions, clearances and edge cover are sufficient to allow for the movement created by the particular solar control glass being used. Check thermal stability for the particular location and ensure any sealant or compound is compatible with the coating.

Application aluminium

3.15 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS 4223.1.

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

Finishing

3.16 SAFETY

Indicate the presence of transparent glass for the remainder of the construction period, with whiting, tape or signs compatible with the glass type.

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN

Building wind zone:
H (High wind speed of 44 m/s) . 1360 Pa ULS

Glass by type

4.2 AGP OBSCURE GLASS

Brand:	AGP
Pattern:	Mistlite

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4.3 AGP PVB LAMINATED GLASS

Brand:	AGP
Type:	PVB
Interlayer:	0.38mm Standard

4.4 AGP SOLUX-E® - LOW E THERMAL AND SOLAR CONTROL IGU

Location:	All IGUs
Brand/type:	AGP SOLUX-E®
Outer glass type:	Clear float
Coated surface:	#2

Spacer type:	ATS-Architectural Thermal Spacer®
Space gas:	Argon
Inner glass type:	Clear

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4710P PINK® BATTS® THERMAL & ACOUSTIC INSULATION

1 GENERAL

This section relates to Comfortech Building Performance Solutions™ Pink® Batts® thermal and acoustic insulation materials for walls, floors, ceilings and roofs.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC H1/AS1-AS2	Energy efficiency
NZBC G6/AS1	Airborne and impact sound
NZBC G6/VM1	Airborne and impact sound
NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (Known as the Australian/ New Zealand Wiring Rules)
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance
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.

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:
Comfortech H1. Done - Insulation Guide
Comfortech Pink® Batts® Insulation - Safety Data Sheet.
Comfortech Pink® Batts® Thermal Solutions - Product Guide
Comfortech Pink® Superbatts® Thermal Solutions - Installation Guide
Comfortech Pink® Batts® - Product Data Sheets
Comfortech Pink® Batts® - Installation Instructions
BRANZ Appraisal 238 (2023) - Pink® Batts® Insulation - Amendment 04 November 2024
BRANZ Appraisal 767 (2023) - Pink® Batts® Skillion Roof Insulation - Amendment 04 November 2024

Manufacturer/supplier contact details

Company:	Tasman Insulation NZ Ltd
Trading as:	Comfortech Building Performance Solutions™
Web:	www.pinkbatts.co.nz
Telephone:	0800 746 522

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Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years	For Pink® Batts® thermal insulation products

- 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.

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For Pink® Batts® insulation products

- 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

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

Compliance information

1.7 BRANZ APPRAISAL

Pink® Batts® Insulation meets the requirements of the NZBC when used in accordance with the conditions and limitations listed in the following Branz Appraisal:
BRANZ Appraisal 238 - Pink® Batts® Insulation
BRANZ Appraisal 767 - Pink® Batts® Skillion Roof Insulation

Performance - Fire

1.8 FIRE PROPERTIES - NON COMBUSTIBLE

Pink® Batts® insulation products, with the exception of Pink® Batts® R2.6 Wall Insulation and Pink® Batts® R2.8 Wall Insulation products, are classified as non-combustible when tested to NZS/AS 1530.1 and achieve a Group Number of 1-S.

2 PRODUCTS

Materials - thermal insulation

2.1 PINK® BATTS® CEILING INSULATION

Pink® Batts® Ceiling Insulation (Pink® Batts® Classic, Pink® Batts® Ultra® and Pink® Superbatts®) rectangular bio-soluble fibrous glass wool slabs manufactured from up to 80% recycled window glass and bonded with thermosetting resin. Coloured Pink for identification. Available in different R-values, sizes and thicknesses. Refer to SELECTIONS.

2.2 PINK® BATTS® WALL INSULATION

Pink® Batts® Wall Insulation (Pink® Batts® Classic, Pink® Batts® Narrow, Pink® Batts® Ultra®, Pink® Batts® Ultra® 140mm Wall, Pink® Batts® Ultra® 140mm Narrow Wall) rectangular bio-soluble fibrous glass wool slabs manufactured from up to 80% recycled window glass and bonded with thermosetting resin. Coloured Pink for identification. Available in different R-values, sizes and thicknesses. Refer to SELECTIONS.

2.3 PINK® BATTS® SKILLION ROOF INSULATION

Pink® Batts® Skillion Roof Insulation (Pink® Batts® Skillion Roof and Pink® Superbatts®) rectangular bio-soluble fibrous glass wool slabs manufactured from up to 80% recycled window glass and bonded with thermosetting resin. Coloured Pink for identification. Available in different R-values, sizes and thicknesses. Refer to SELECTIONS.

Components

2.4 FASTENERS

Insulation anchors complete with retaining washer.

2.5 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape, stapled over framing to retain insulation in unlined wall and ceiling locations.

2.6 ADHESIVE TAPE

Pressure sensitive adhesive tape.

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3 EXECUTION

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Check that framing is free from moisture. Check cavities are not interconnected. Check required wire netting, roof/ underlays are in place and are dry, clean and homogeneous before installing insulation. Ensure main power is isolated and tagged prior to installation.

Installation - general

3.4 INSTALL THERMAL INSULATION - GENERALLY

Install Pink® Batts® insulation in a dry protected environment. Lay, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1-AS2 and Pink® Batts® installation requirements. For all housing and buildings up to 300m², install in accordance to NZS 4246 sections 5 Walls, 6 Ceilings & Roofs, 7 Underfloor - Suspended Framed Floors and 10 Concrete Slab-on-Ground Insulation, for residential light timber or steel framed buildings. Insulate around vents (not over them) to allow unhindered ventilation. Confirm with fireplace manufacturer for clearances; Pink® Batts® insulation is non-combustible and need not be separated except if used in conjunction with, or attached to other heat sensitive materials. Lift up electrical wires, lighting transformers/ controllers and lay the insulation underneath.

3.5 INSTALL PINK® BATTS® WALL INSULATION

Friction fit Pink® Batts® Wall Insulation slabs between framing. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Fill gaps around windows and doors with off-cuts. Insulate around vents (not over them) to allow unhindered ventilation. Fit insulation slabs behind electrical wiring and plumbing. Ensure there are no gaps, folds or undesirable compression at edges.

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3.6 RECESSED LIGHT FITTINGS - 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 for clearances.

3.7 INSULATION CLEARANCES

Install Pink® Batts® insulation with clearances to mechanical and electrical services and equipment, including ducts, chimneys and other heat sensitive materials in accordance with tables below based on NZS 4246, or to equipment manufacturers requirements if they require larger clearances. Installed clearances not to be more than 50mm larger than the required clearance. Smaller clearances that are required by manufacturer can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).
The following installation clearances tables are subject to:

- Requirements of NZS 4246
- 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.
- Clearances 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.
- Clearances 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).
- Loose fill insulation require fixed barriers to NZS 4246 to maintain clearances.

(1) CLEARANCES TO 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	Manufacturer clearances	Do not cover the fittings
Independent control gear	Place on top of insulation & 50mm from fitting	If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
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.

(2) CLEARANCES TO RECESSED HOT APPLIANCES:

Appliance	**Minimum insulation clearance**	**Comments**
Electrical heaters	100mm	Clearance may be able to be reduced with non-combustible insulation. Secure insulation.
Gas appliance exposed flame	200mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Excludes uncommon appliances, refer NZS 4246.
Gas appliance flues	75mm	Clearance may be able to be reduced with non-combustible insulation. Secure insulation. Excludes uncommon appliances refer NZS 4246.
Oil-fired appliances and flues	230mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.
Metal chimneys & flues	75mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.
Solid fuel appliance	600mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.
Solid fuel appliance flue	600mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.

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(3) CLEARANCES TO 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.
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

3.8 INSTALL PINK® BATTS® CEILING INSULATION

Friction fit Pink® Batts® Ceiling Insulation slabs between framing. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Insulate around vents (not over them) to allow unhindered ventilation. Fit insulation slabs beneath electrical wiring and plumbing. Maintain a 25mm gap clearance between the insulation slabs and roof underlay. Install to the outer edge of the top plate. If an insulation guard is in place, this will allow compression of the Pink® Superbatts® from halfway across the top plate inwards to a distance where the available height exceeds the insulation thickness.
Pink® Superbatts® Single Layer Installation:
Friction fit Pink® Superbatts® slabs between truss framing. Notch out the underside of the first slab to the same size as the truss cord. Fit notched side above the truss cord. Fit the second slab next to the first slab and butt up against the side of the next truss under slight compression.
Pink® Superbatts® Double layer Installation:
Friction fit Pink® Superbatts® slabs at the top layer first, with the bottom layer being installed underneath it. Fit the top layer of insulation slabs butt up across the trusses, and fit the bottom layer in between the trusses.

3.9 PINK® BATTS® SKILLION ROOF INSULATION

Friction fit Pink® Batts® Skillion Roof Insulation slabs between framing. Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Insulate around vents (not over them) to allow unhindered ventilation. Fit insulation slabs beneath electrical wiring and plumbing. Install to the outer edge of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

Completion

3.10 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.pinkbatts.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials - thermal insulation

4.1 PINK® BATTS® INTERNAL WALL INSULATION

Brand/ Type:	Pink® Batts® Classic R2.4 Wall Insulation
R-value:	R2.4
Nominal stabilised thickness:	90 mm

4.2 PINK® BATTS® WALL INSULATION

Brand/ Type:	Pink® Batts® Ultra® R3.6 140mm Wall Insulation
R-value:	R3.6
Nominal stabilised thickness:	140 mm

4.3 PINK® BATTS® CEILING INSULATION

Brand/ Type:	Pink® Batts® Classic R3.6 Ceiling Insulation
R-value:	R3.6
Nominal stabilised thickness:	180 mm

4.4 PINK® BATTS® SKILLION ROOF INSULATION

Brand:	**Pink® Batts® Skillion Roof**
R value:	R3.6

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4821 FLASHINGS

1 GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Requirements

1.2 QUALIFICATIONS

Work to be carried out by trades people experienced, competent and familiar with the materials and techniques specified.

1.3 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.4 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1 Table 1: Durability Requirements of Nominated Building Elements and NZBC E2/AS1 Table 20 Material selection.

1.5 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1 Table 20 to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1 table 21 and NZBC E2/AS1 table 22.

2 PRODUCTS

2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings.

2.2 FLASHING FABRICATION

Fabricate flashings generally to NZBC E2/AS1, 4.0, from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm. Provide all hooks, hems, kick outs, bird's beaks, stop ends, soft edges and turn downs etc. to NZBC E2/AS1, 4.0, or as shown on the drawings.

2.3 FIXINGS

Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

2.4 JOINTS - SEALANTS

Neutral Curing silicone or MS polymer sealant as required, with low resistance to compression and be-able to withstand large temperature variations. MS polymer sealant to be used where the sealant is exposed and the surrounding surfaces are to be subsequently painted or coated.

2.5 JOINTS - SOLDER

Eutectic solder of 60% tin/40% lead using a suitable proprietary flux.

3 EXECUTION

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Conditions

3.1 DELIVERY

Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 HANDLING

Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 SUBSTRATE

Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 PROTECT

Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 CONFIRM LAYOUT

Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 CO-ORDINATE INSTALLATION

Co-ordinate installation of flashings with associated trades.

Application

3.8 INSTALLATION

Install flashings in accordance with NZMRM CoP and in compliance with NZBC E2/AS1, 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 15° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

Refer to NZBC E2/AS1 Table 7 for general dimensions of flashings.

3.9 FIXINGS

Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZMRM CoP for details.

3.11 JOINTING - SOLDER

Solder joints in galvanized steel and non-ferrous metals when specified with lead/tin solder. Clean joint ensuring it is dry and free of grease immediately prior to applying a proprietary flux. Lap the flashing 25mm in the direction of the water flow and fasten the lap with rivets or screws at 50mm centres. Completely sweat the joint to avoid leaving any flux residue. Wash down the joint to remove any trace of flux.

3.12 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

Completion

3.13 PROTECT

Protect new work from damage.

3.14 REPLACE

Replace all damaged or marked elements.

3.15 LEAVE

Leave work to the standard required for following procedures.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 FLASHINGS

Materials:	Aluminium, stainless steel, aluminium/zinc coated steel, , uPVC, butyl rubber Refer to NZBC E2/AS1, 4.3, for minimum properties of these
Examples;	
General flashings:	0.55mm Colorsteel Endura
Window Head:	0.9mm aluminium anodised to match window

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5111H JAMES HARDIE® FIBRE CEMENT SHEET LININGS

1 GENERAL

This section relates to the supply and installation of **James Hardie®** Villaboard™ Lining and Hardie™ Groove Lining for:

- internal wall linings
- ceiling linings

Documents

1.1 DOCUMENTS

The following documents are specifically referred to in this section:

NZBC C/AS2	Protection from fire
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in buildings

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:
Villaboard™ Lining
Hardie™ Groove Lining

Manufacturer/supplier contact details

Company:	James Hardie New Zealand Limited
Web:	www.jameshardie.co.nz
Email:	info@jameshardie.co.nz
Telephone:	Ask James Hardie™ on 0800 808 868

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For James Hardie® Villaboard™ Lining, Hardie™ Groove Lining (refer to James Hardie® product warranty)
15 years:	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)
From:	Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

1.5 SAFE WORKING

To James Hardie® requirements for safe working practices with James Hardie® products, particularly with regards to cutting and drilling.

1.6 COMPLIANCE

Fibre cement sheets to AS/NZS 2908.2.

2 PRODUCTS

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Performance

Materials

2.1 PLAIN FIBRE CEMENT SHEET LININGS

James Hardie® Villaboard™ Lining manufactured from treated cellulose fibre, portland cement, sand and water. Cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Sealed on the face.

2.2 PROFILED FIBRE CEMENT SHEET LININGS

James Hardie® Hardie™ Groove Lining treated cellulose fibre in a matrix of cement and sand autoclaved sheet.

Components

2.3 BATTENS, TIMBER

Minimum 45mm wide, 35mm deep timber with depth suitable for length of fasteners used.

2.4 PACKERS

3 - 4mm timber packers.

2.5 NAILS

6mm and 9mm linings:	40mm x 2.8mm galvanized flathead Hardie™ Flex nails
Over Gypsum plasterboard:	50mm x 2.8mm galvanized flathead Hardie™ Flex nails

2.6 SCREWS FOR POWER SCREW GUN DRIVING

Timber framing	
6mm and 9mm linings:	Villadrive 6 gauge x 30mm self embedding screws or Hardie™ Drive self embedding stainless steel screws
Steel framing:	Steel 8 gauge x 32mm self embedding screws

2.7 WALL BOARD ADHESIVE

Polyurethane wallboard adhesive. Refer to James Hardie® product installation manual.

Accessories

2.8 CONTROL JOINTS SECTION

45mm x 10mm shaped PVC control joint or Rondo P35 jointer.

2.9 EXTERNAL CORNER SECTIONS

30mm x 30mm x 1.2mm PVC angle.

2.10 POLYETHYLENE TAPE

Self adhesive polyethylene for behind expressed joints and expressed control joints.

2.11 JOINT REINFORCING TAPE

52mm wide perforated paper tape.

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2.12 BEDDING COMPOUND

Hardie™ Base Coat compound powder.

2.13 FINISHING COMPOUND

Hardie™ Top Coat premixed.

2.14 SEALANT

Silicone or polyurethane sealant. Refer to the James Hardie® installation manual.

2.15 SURFACE FIRE PROPERTIES

Group Number to NZBC C/AS2, Table 4.3. Unfinished fibre cement board has a group number of 1-S when complying with parameters of NZBC C/AS2, Table C1.2

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

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3.3 MOISTURE CONTENT

Maximum moisture content of timber framing to NZS 3602.

3.4 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation.

3.5 BUILDING

Ensure building is weatherproof before lining work commences.

3.6 STORAGE

Take delivery of products dry and undamaged on pallets, and keep on pallet. Protect edges and corners from damage and covered to keep dry until fixed.

3.7 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Carry sheets vertically. Do not drag sheets across each other, or across other materials. Protect edges, corners and surface finish from damage.

3.8 SUBSTRATE

Do not commence work until the substrate is of the standard required by the relevant manufacturer's technical literature for the specified finish; plumb, level and in true alignment. Maximum moisture content of timber framing to NZS 3602.

Application

3.9 FIXING FLUSH JOINTED WALLS, PAINT

Prepare and fix recessed edge sheets to James Hardie® installation manual. Fix with screws and/or nails at edges.

3.10 FIXING IN CERAMIC TILED AREAS

Prepare and fix sheets, horizontally or vertically and stagger joints where possible, to James Hardie® installation manual.

3.11 PROVIDE EXTERNAL CORNER ANGLE

Provide perforated PVC external corner angle or paper faced rigid spine corner mould to external corners.

3.12 INTERNAL CORNERS

When used in tiling applications provide a Lumberlock Stud saver to framed internal corner prior to fixing of Villaboard™ Lining.
Provide perforated PVC corner mould, or paper faced rigid spine corner mould or solid blocking to internal corners.

3.13 FORMING HOLES

Required holes accurately formed and cut to James Hardie® requirements.

3.14 SILICONE JOINTS

Provide polyethylene tape behind joints finished with flexible sealant.

Joint Finishing

3.15 JOINT FINISHING FOR LOW SHEEN PAINT

Apply Hardie™ Base Coat to fill recess. Firmly embed perforated paper tape in joints and cover with a thin layer of Hardie™ Top Coat over all joints, angles, fastener heads and accessories and allow to dry. Apply a second coat of Hardie™ Top Coat over the recess and feather the edges to achieve a level 4 finish.

3.16 JOINT FINISHING FOR GLOSS PAINT AND CRITICAL LIGHTING CONDITIONS

Embed tape in joints and corners and apply Hardie™ Base Coat over all joints, angles, fastener heads and accessories. Apply a thin skim coat of Hardie™ Top Coat to the entire surface to be plastered. Finish to a smooth surface, free of tool marks and ridges to achieve a level 5 finish suitable for these critical finishes.

3.17 JOINT FINISHING FOR TILED AREAS

Joints and corner joints set with Hardie™ Base Coat reinforced with perforated paper tape to achieve a level 3 finish.

Completion & Commissioning

3.18 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

Linings

4.1 JAMES HARDIE® VILLABOARD™ LINING

Type:	James Hardie® Villaboard™® Lining
Thickness:	9 mm
Fixing method:	Screw and adhesive

4.2 JAMES HARDIE® HARDIE™ GROOVE LINING

Type:	James Hardie® Hardie™ Groove Lining
Thickness:	7.5mm
Fixing method:	Screw and adhesive

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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber framed walls and ceilings to form:

- standard systems
- bracing systems
- wet area systems

1.1 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2	Protection from fire
NZBC E2/AS1	External moisture
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber-framed buildings
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section:
GIB® Site Guide (April 2024)
GIB® Wet Area Systems (February 2021)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® Bracing Supplement Document (December 2016)
GIB® Goldline™ Platinum Tape-on Trims
GIB® UltraFlex high impact corner mould

BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems

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Manufacturer/supplier contact details

Company:	Winstone Wallboards
Web:	www.gib.co.nz
Telephone:	0800 100 442

Requirements

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

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

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

1.7 SOUND INSULATION REQUIREMENTS

Provide the GIB® Noise Control Systems. Refer to SELECTIONS for system/STC. Include for forming and treating of perimeters of openings and penetrations in the elements to ensure the specified performance. Ensure absence of adjoining flanking paths.

Performance

1.8 BRACING REQUIREMENTS

Braced wall systems to NZS 3604 when tested to BRANZ Technical Paper P21, using:

- GIB Ezybrace® Systems and/or GIB Ezybrace® Bracing Design Software
- GIB Ezybrace® Bracing Supplement Document

Refer to drawings for location and type.

2 PRODUCTS

Materials

2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish.
GIB® Standard plasterboard
GIB Wideline® plasterboard
GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard
GIB Aqualine® wet area plasterboard

Components

2.2 SCREWS

GIB® Grabber® drywall type screws as follows:

Grabber® type	Used for fixing:
High Thread	GIB Ezybrace® or Standard systems to timber

Refer to GIB® requirements for appropriate details.

2.3 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims
GIB® UltraFlex® high impact corner mould
GIB® Levelline® Tape on Trim

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2.4 CONTROL JOINTS

GIB® Rondo® P35 control joints.
GIB® Goldline™ tape-on trims

Accessories

2.5 ADHESIVE

Timber frame and/or steel frame:
GIBFix® One ultra low VOC water based wallboard adhesive
GIBFix® All-Bond solvent based wallboard adhesive

2.6 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB Trade Finish® Multi

2.7 JOINTING TAPE

GIB® jointing tape.

2.8 ACOUSTIC SEALANT

GIB Soundseal® ultra low VOC water based highly flexible acoustic sealant.

2.9 GAP FILLER

GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.

3.4 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

Check work previously carried out and confirm it is of the required standard for this part of the work.

Framing substrates shall be in accordance to AS/NZS 2589, GIB® Site Guide and GIB X-Block® Radiation Shielding Systems literature.

Check timber framing moisture content is in accordance with requirements of AS/NZS 2589. Refer to NZBC E2/AS1 and GIB® Site Guide.

Timber framing:	18% maximum for fixing plasterboard to timber (8-12% recommended for fixing plasterboard to timber framing if air conditioning and/or central heating are to be installed)

If GIB EzyBrace® systems are used in conjunction with GIBFix® Framing System, ensure that the positioning of the GIB HandiBrac® panel hold-down brackets are to the manufacturers recommended placements for the GIBFix® Framing System.

3.5 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to **AS/NZS** 2589.

3.6 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide.

Application

3.7 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide. Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.8 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

3.9 FORM NOISE CONTROL SYSTEMS

Form to GIB® Noise Control Systems requirements.

3.10 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.11 FORM BRACING SYSTEMS

Form bracing systems to:

- GIB Ezybrace® Systems

3.12 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide requirements.

3.13 INSTALL TAPE-ON TRIMS

Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

Finishing

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3.14 FINISHING GENERALLY

To GIB® Site Guide and AS/NZS 2589.

Completion & Commissioning

3.15 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

Plasterboard

4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
All rooms except garage and wet areas	GIB® Standard plasterboard	10mm	4

4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Ensuite and Bathrooms	GIB Aqualine® plasterboard	10mm	4

4.3 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
All rooms except wet areas	GIB® Standard plasterboard	13mm	5

4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Ensuite and Bathrooms	GIB Aqualine® plasterboard	13mm	5

4.5 GIB® SOUND RATED SYSTEMS

Refer to GIB® Noise Control Systems

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
As marked on plans	Gib Noiseline plasterboard	10mm	4

5123 MDF CEILING LININGS

1 GENERAL

This section relates to the supply and fixing of wall and ceiling linings:

- particleboard
- MDF board
- low density wood fibreboard sheets, tiles or panels
- high density wood fibreboard sheets, tiles or panels

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Related work

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2	Protection from fire
AS/NZS 1859.1	Reconstituted wood-based panels - Specifications - Particleboard
AS/NZS 1859.2	Reconstituted wood-based panels - Specifications - Dry processed fibreboard
AS/NZS 1859.4	Reconstituted wood-based panels - Specifications - Wet processed fibreboard

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.

2 PRODUCTS

Materials

2.1 CEILING BATTENS

Machine gauged kiln dried timber 50mm x 25mm to span 600mm at centres to suit ceiling panels.

2.2 MDF CEILING LINING

To AS/NZS 1859.2.

Components

2.3 SCREWS, PARTICLEBOARD AND MDF

Corrosion resistant Twinfast-type to the sheet manufacturer's requirements for sheet thickness.

2.4 NAILS, MDF

Corrosion resistant annular grooved flooring nails, or helical spiral nails to the sheet manufacturer's requirements for sheet thickness.

Accessories

2.5 ADHESIVE, MULTIPURPOSE

Multi-purpose water based wallboard adhesive to the manufacturer's recommendations.

2.6 CONTACT ADHESIVE

Contact adhesive to the board manufacturer's requirements.

2.7 FILLER

Wood dough type filler to the manufacturer's recommendations.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 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.

3.3 SUBSTRATE

Before commencing installation the building must be completely enclosed, with timber framing dimensions and moisture content to the board manufacturer's requirements and with all other materials free from damp. Ensure the substrate is plumb, level and in true alignment.

Application

3.4 FIXING MDF LINING

Before fixing, the substrate moisture content must be less than 18% and the sheets fillet stacked on site to pre-condition. Provide edge clearances and dimensional increases to the sheet manufacturer's requirements and fix boards vertically with vee-butt joints and with all edges fully supported. Nail edges at 150mm centres. Seal board surfaces immediately after fixing.

3.5 FILL FASTENER HOLES

Stop nail and staple holes with filler using a flat bladed knife.

Completion & Commissioning

3.6 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

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Materials

4.1 MDF CEILING LINING

Manufacturer:	TBC
Type:	9mm Grooved MDF lining to raking ceiling. Sheet length to suit ceiling run. Confirm at set out

5123LS STRANDBOARD TIMBER BOARD LININGS BY LAMINEX

1 GENERAL

This section relates to the supply and fixing of Laminex™ New Zealand Strandboard® engineered reconstituted wood panels for:

- wall linings
- wall bracing

Strandboard® is recommended for dry interior use only and must not be used in an external situation. Strandboard® panels are not waterproof and must not be allowed to come into direct or prolonged contact with water. The panels must be finished with a protective coating prior to occupation of the building.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZS 3604	Timber Framed Buildings
NZBC C/AS2	Protection from fire
NZBC C/VM2	Protection from fire
NZS 1170.5	Structural design actions - Earthquake actions
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 1859.1	Reconstituted wood-based panels - Specifications - Particleboard

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Strandboard® Laminex™ New Zealand Technical Brochure
Declare Strandboard® Laminex™ New Zealand LMX-0001

Manufacturer/supplier contact details

Company:	Laminex™ New Zealand (a division of Fletcher Building Limited)
Web:	www.laminex.co.nz
Email:	info@laminex.co.nz
Telephone:	0800 303 606

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Requirements

1.3 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

Performance

1.5 BRACING REQUIREMENTS

Provide wall/systems to meet the requirements of NZS 3604, Section 5, **Bracing design**

1.6 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters and topographical classification (T) of the site and building height to NZS 3604, table 5.1. Suitable for wind zone up to and including Extra High as specified by NZS 3604.

1.7 SEISMIC - NON SPECIFIC DESIGN

Design the system and its anchorages/fixings to resist the earthquake loads of the earthquake zone in accordance with NZS 3604, 5.3 Earthquake bracing demand.

2 PRODUCTS

Materials

2.1 STRANDBOARD® WALL LINING

Laminex™ New Zealand Strandboard® 12mm thick engineered reconstituted wood panels to AS/NZS 1859.1. Panel size varies and comes in 2400mm x 1200mm, 3600mm x 1200mm and 3600mm x 2400mm (made to order) boards. Confirm compatibility of manufacturing adhesives with adhesives used for waterproofing membranes.

Components

2.2 NAILS - STRANDBOARD®

Corrosion resistant flat-head or jolt-head, hand or power-driven nails to Laminex™ New Zealand Strandboard® requirements for sheet thickness. Refer to Laminex™ New Zealand Strandboard® requirements for size and use in each location.
Either:
40mm x 2.5mm ring shank hot dipped galvanised
40mm x 2.5mm ring shank stainless steel
Fixings along panel edges must be min. 10mm from the panel edge.

Accessories

2.3 ADHESIVE, MULTIPURPOSE

Multi-purpose water based wallboard adhesive to the manufacturer's recommendations. Confirm compatibility of panel manufacturing adhesives with adhesives used for waterproofing membrane where applicable.

2.4 CONTACT ADHESIVE

Contact adhesive to manufacturer's and Laminex™ New Zealand Strandboard® requirements.

2.5 FILLER

Solvent-based wood or non-solvent based dough filler tinted as required for the specific coating application to the manufacturer's recommendations.

2.6 TIMBER FILLETS

20mm H3.2 treated triangular timber internal corner fillets, for membrane installations where applicable to the manufacturer's recommendations. Ensure that filler doesn't shrink and is compatible with coating (refer coating supplier)

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.
On delivery only accept dry and undamaged panels. Store on a level, firm base, well ventilated and completely protected from weather to Laminex™ New Zealand Strandboard® requirements. Protect panel edges and surfaces from damage and avoid contact with damaging substances.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Verify positions of electric power outlets and wiring, joinery fixtures, water supplies, and waste pipe locations. Before commencing installation the building must be completely enclosed, with timber framing dimensions and moisture content to Laminex™ New Zealand Strandboard® requirements. Ensure the substrate is plumb, level and in true alignment.

Moisture content timber framing:	≤*18*% maximum
Timber set-out	Stud, purlin, rafter, beams to accommodate a 2mm expansion gap at Laminex™ New Zealand Strandboard® panel joints

Installation

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 FIXING STRANDBOARD® LINING

Before fixing, the substrate moisture content must be less than 18% and the sheets fillet stacked on site to pre-condition. Provide edge clearances and dimensional increases to Laminex™ New Zealand Strandboard® requirements and fix boards vertically with vee-butt joints and with all edges fully supported. Minimum 10mm, maximum 15mm from the edge, 150mm centres along edges and 200mm centres on intermediate supports. Seal board surfaces immediately after fixing.

3.6 SHRINKAGE & EXPANSION

Arrange jointing and fixing so that shrinkage in any part and direction does not impair the strength or appearance of the finished work or damage the adjoining work.
Allow a 2-3mm gap at edges of linings for sheet expansion; and;

2 - 3mm	at each sheet joint; or
6 - 9mm	at 3.6 metres; or
8 - 12mm	every 4.8 metres

In areas with an expected high level of internal moisture, allow a gap of 4 - 6mm every 1.2 metres.

3.7 FIXING SHEET BRACING

Ensure required hold down, strapping, angles, or bolts are in place, and that framing centres are correct.
Fit and fix to NZS 3604, and Laminex™ New Zealand Strandboard® bracing requirements with sheets and trim all in plumb, true alignment.

Completion & Commissioning

3.8 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

3.9 PROTECTION

Protect the surfaces of finished work if pre-finished or until coatings or coverings have been applied. Board surfaces should be primed or clear sealed immediately after fixing to minimise the effects of atmospheric moisture or direct sunlight and to resist marking during construction activities.

4 SELECTIONS

For further details on selections go to www.laminex.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 LAMINEX™ STRANDBOARD® WALL LINING

Distributor:	Laminex™ New Zealand
Brand/grade:	Strandboard®
Thickness:	12mm

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5151 INTERNAL TRIM

1 GENERAL

This section relates to simple lengths of trim fixed on site as of isolated internal members, with simple end joints.

Documents

1.1 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
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery

2 PRODUCTS

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Materials

2.1 TIMBER TRIM

To NZS 3610 and to profiles detailed on the drawings. Timber species, grade and treatment to NZS 3602.

Components

2.2 BRADS

Bright steel of a length three times the thickness of the member being fixed. Use cadmium plated where prone to dampness.

3 EXECUTION

Conditions

3.1 GENERALLY

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

3.2 STORAGE

Take delivery of trims undamaged and unmarked and store on site under cover, away from moisture, heat and direct sunlight in adequately ventilated area and clear of areas where work is in progress, to ensure materials are of the required standard when fixed in place.

3.3 ACCLIMATISE MATERIALS

Remove materials from packaging, separate and allow to acclimatise in the proposed installation area for 48 hours minimum prior to installation.

3.4 ENSURE

Ensure that the substrate to trims will allow work of the required standard. If it does not, do not proceed until the substrate has been remedied.

Application - Generally

3.5 INSTALL TIMBER TRIM

Use full lengths. Fit with scribed internal joints, mitred external joints and, mitred and returned at stop ends. Fix plumb, level and true to line and face using nails or brads to suit. Leave secure and with no movement possible.

Finishing

3.6 PUNCH

Punch all nail heads below the face of trim ready to receive stopping, as specified under painting preparation.

Completion

3.7 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.8 PROTECTION

Protect the completed work and make good before any surface finish is applied.

3.9 REPLACE

Replace damaged or marked elements.

3.10 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 INTERNAL TIMBER TRIM

Manufacturer:	SPP
Species/grade:	Eco Pine
Profile:	BA 90x10
Finish:	Paint

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5230 INTERIOR DOORS

1 GENERAL

This section relates to the supply and installation of interior doors.

1.1 RELATED SECTIONS

Refer to glazing section/s for glass type and thickness.

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZS 3602	Timber and wood-based products for use in building
NZS 3610	Specification form profiles of mouldings and joinery

2 PRODUCTS

2.1 TIMBER

To NZS 3602.

2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

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

2.3 DOORS, PAINTED

Doors as scheduled (without clashing strips).

2.4 CAVITY SLIDERS

Doors hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

2.5 FRAMED AND GLAZED DOORS

Solid timber framed doors, stop end jointed and bead glazed.

2.6 DOOR HINGES

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

2.7 SLIDING DOOR GEAR

To suit door/sash size and glazed weight and as detailed.

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3 EXECUTION

3.1 SITE MEASURE

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

3.2 EXECUTION GENERALLY

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

3.3 FACTORY FIT HARDWARE

Factory fit the following where specified: -

- Hinges

3.4 FACTORY FINISHING

Before delivery to site: -

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

Internal doors

3.5 INTERNAL JOINERY FRAMES

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

3.6 DOOR FRAMES, SOLID REBATED

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

3.7 DOOR LINERS, EXTENDED

Heads and jambs finished 30mm, rebated for wall linings and extended a minimum of 10mm. 10mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.8 CAVITY SLIDERS

Install in accordance with the door manufacturer's requirements, allowing for removal of top trim for maintenance.

Completion

3.9 CHECK

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

3.10 TEMPORARY PROTECTION

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

4 SELECTIONS

4.1 CAVITY SLIDER DOOR

Brand/type:	CS 4 Doors
Door size:	as scheduled on drawings
Finish:	Paint
Hardware:	to owners selection

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4.2 SLIDING DOOR GEAR

Brand/type:	Henderson rollers

4.3 DOORS

Manufacturer:	Superior Doors
Description:	MDF faced with Ribcore
Hardware:	to owners selection

Accessories

4.4 DOOR HINGES

Interior doors

Type:	Loose pin
Size:	89mm
Material:	Zinc-plated steel
Pin:	Loose-pin zinc-plated steel

5431S STRANDFLOOR® TIMBER FLOORS BY LAMINEX

1 GENERAL

This section relates to the supply and fixing of **Laminex New Zealand** Strandfloor® flooring:
It includes:

- Strandfloor® Square Edge
- Strandfloor® Tongue & Groove
- Strandfloor H3.1® Square Edge
- Strandfloor H3.1® Tongue & Groove

1.1 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:

FSC®	Forest Stewardship Council®
COC	Chain of Custody

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2	Prevention of Fire Occurring
NZBC C/VM2	Prevention of Fire Occurring
AS/NZS 1860.1	Particleboard flooring - Specifications
NZS 3604	Timber-framed buildings
NASH Standard Part 2	May 2019 Light Steel Framed Buildings
BRANZ Appraisal 676	Strandfloor® Flooring
BRANZ Appraisal 677	Strandfloor® H3.1 Flooring

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1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Technical Literature: Strandfloor® Technical Manual, Edition 5, 03/19.
BRANZ Codemark Certification - CM-1003 - Strandfloor® Flooring
BRANZ Codemark Certification - CM-1004 - StrandfloorH3.1® Flooring
BRANZ Appraisal 676 - Strandfloor® Flooring
BRANZ Appraisal 677 - Strandfloor® H3.1 Flooring
Declare Label LMX-0004 Laminex Strandfloor
FSC Certificate No FSC-C102329 COC Code No SAI-COC-001586 expires 15 Jan 2022. FSC certification available on request.

Manufacturer/supplier contact details

Company:	**Laminex New Zealand Ltd**
Web:	www.laminexnewzealand.co.nz
Email:	info@laminex.co.nz
Telephone:	0800 303 606

This literature gives in depth details of design and installation methods referred to in this specification. For specific design applications contact Laminex New Zealand customer services.

Requirements

1.4 SURFACE FIRE PERFORMANCE - UNFINISHED FLOORING

Unfinished Laminex Strandfloor® has a critical radiant flux 2.2kW/m2 as defined by NZBC C/VM2 Appendix B, Table B1 and in accordance with performance requirements of NZBC C/AS2, 4.17.3 and Table 4.5 Critical Radiant Flux Requirements for Flooring.

2 PRODUCTS

Materials

2.1 STRANDFLOOR SQUARE EDGE

Strandfloor® Square Edge 20mm high density flooring to AS/NZS 1860.1.

2.2 STRANDFLOOR H3.1 SQUARE EDGE

Strandfloor H3.1® Square Edge 20mm high density flooring to AS/NZS 1860.1

Components

2.3 SCREWS

45mm x 8g Type 17 countersunk head self-drilling screws (min).

2.4 ADHESIVE

Elastomeric Construction Adhesive or Foaming Polyurethane Adhesive i.e. Bostik Alpha Grip, Sika Nailbond Premium or Holdfast Gorilla Grip.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 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.

3.3 SUBSTRATE

Do not commence work until the substrate is plumb and level, in true alignment and to the Strandfloor supplier requirements.

3.4 SUPPORT EDGES AND JOINTS

Fully support edges and joints on square edges of sheets. T&G edged sheet joints are not fully supported unless shown otherwise.

Application

3.5 ADHESIVE FASTENING

Use construction adhesive to joists in conjunction with mechanical fixing. Apply adhesive in a continuous 5mm bead to all floor joists. For Strandfloor® Tongue & Groove and Strandfloor H3.1® Tongue & Groove, apply a 2mm bead of construction adhesive to the top of the tongue prior to insertion into the groove. Remove excess adhesive.

3.6 SCREW FIXING

Screw panel ends (and panel edges for square edge product) at 150mm centres 10mm from the edge. Screw intermediate support at maximum 200mm. Where T & G material is used, locate screws 15mm from the edge to avoid tongue damage. Quick-drive screw attachment will provide best results.

Installation

3.7 LAYING STRANDFLOOR SQUARE EDGE AND STRANDFLOOR H3.1 SQUARE EDGE

- Programme work for minimal exposure to weather and lay sheets across the joists in a staggered pattern.
- Panels to span at least 3 joists.
- Install panels with Strandlfoor® label facing up and production identification printing on underside of panels, for future production identification if required
- Allow 8mm minimum clearance between panel edges and fixed objects including columns and bottom plates.
- Provide continuous edge support at perimeter and at panel edges with solid blocking minimum 100mm x 50mm.
- Do not allow fixings to initially penetrate below the surface of the panel.
- Tighten fixings; punch nails and tighten screws prior to sanding.

- Close butt edges and ends of panels. Do not cramp.
- Do not allow water to remain ponded on the floor surface -remove as soon as possible.
- Do not cover panels with polythene or apply liquid sealers, while exposed to weathering.
- Wet areas - framing at 600mm centres both ways. Fixing, glue and stainless steel screws.

Completion & Commissioning

3.8 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

3.9 SURFACE FINISHING

Tighten fixings; punch nails and tighten screws prior to sanding.

Carpet:	Single cut with a drum or belt sander:	60 - 100 grit
Sheet vinyl:	Single cut with a drum or belt sander:	60 - 100 grit

Installation of vinyl floor covering requires the application of a flexible or sheet underlayment. Refer to vinyl manufacturer technical installation data.

Clear coating:	1st cut with a drum sander:	40 - 80 grit
	2nd cut with a disc sander:	100 grit
	3rd cut with disc sander:	120 - 150 grit

Follow coating manufacturers' instructions.

4 SELECTIONS

For further details on selections go to www.laminexnewzealand.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 STRANDFLOOR RECONSTITUTED WOOD FLOORING

Location:	To attic
Distributor:	Laminex New Zealand
Type/thickness:	20mm T&G
Fixing method:	Adhesive & Screw
Finish:	Clear coat

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5510 JOINERY & PROPRIETARY FIXTURES

1 GENERAL

This section relates to custom joinery fixtures and proprietary fixtures.
It includes:

- fabrication, including off site finishing and installation of cabinetwork and joinery items
- assembly, placing, installation of proprietary fixtures
- fitting out of specialty spaces and cupboards
- fabrication and installation of timber staircases.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

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

2 PRODUCTS

2.1 TIMBER BOARDS AND FRAMES

Carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.

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2.2 STAIRCASE ELEMENTS

Timber selections to NZS 3602.

2.3 PLYWOOD PANEL

Urea formaldehyde resin hot-press bonded timber veneers, select grade interior.

2.4 PARTICLEBOARD

Urea-formaldehyde resin bonded medium density particleboard to AS/NZS 1860.1.

2.5 MEDIUM DENSITY FIBRE BOARD

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2.

2.6 MEDIUM DENSITY FIBRE BOARD, MELAMINE

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid both sides with melamine resin impregnated sheet.

2.7 MEDIUM DENSITY FIBRE BOARD, WOOD VENEER

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid with natural wood veneer.

2.8 PRE-FINISHED BACKING BOARD

Urea-formaldehyde resin bonded fine wood fibre sheet to AS/NZS 1859.2, veneered one side with melamine sheet.

2.9 BENCHTOPS

As detailed on the suppliers drawings and as required for specified fittings and appliances.

2.10 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap or tight joint connectors.

2.11 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

2.12 CONCEALED HINGES

All-metal zinc alloy with automatic spring and screw-fixed. Plastic button door stops.

2.13 DRAWER RUNNERS

Single action under mounted or side mounted powder coated runners or groove mounting type, precision running ball-mounted single-stage extension, bright steel finish system.

2.14 GLUES AND ADHESIVES

As approved by the manufacturer for the timber, timber product, or pre-finished timber product joint being used.

3 EXECUTION

3.1 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.

3.2 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.3 FABRICATION QUALITY

Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line and face.

3.4 FABRICATE JOINERY FIXTURES

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Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50mm maximum centres in solid cheeks. Hang doors on concealed hinges.

3.5 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.

3.6 FABRICATE DRAWERS

Construct drawers as detailed, using proprietary metal section drawer runners. Fit drawers with 3mm clearance into the drawer space.

3.7 FABRICATE TIMBER STAIRS

To NZBC D1/AS1: 4.0 Closed type, unless detailed otherwise. House and wedge treads and risers 15mm into strings, all glued, wedged and blocked. Form nosing overhangs of 25mm by splaying risers forward to finish flush with the front of the treads. Fabricate and install the handrails and balustrading as detailed, complete with associated metal componentry and hardware.

3.8 TRANSIT AND DELIVERY

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.

3.9 ASSEMBLE PROPRIETARY ITEMS

Check all components are included. Assemble to manufacturer's instructions and to achieve finished item.

3.10 INSTALL JOINERY FIXTURES

Scribe fit on site and install level, square, plumb and true to line and face.

3.11 COAT CUPBOARD

Fit out with 300mm wide melamine faced board shelf, on ex 25mm scotia bead to back and ends. Exposed edges clashed to match. Fit a selected white powder-coated aluminium coat rail to the front edge of the shelf. Shelf heights as shown on the drawings.

3.12 STORAGE CUPBOARD

Fit out with 5 full depth melamine faced board shelves of thickness to suit span supported on ex 25mm beads along back and ends. Exposed edges clashed to match.

3.13 LINEN CUPBOARD

Fit out with 5 full depth melamine faced board shelves of thickness to suit span supported on ex 25mm beads along back and ends. Each shelf to have with 20mm ventilation slots at 50mm centres. Exposed edges clashed to match.

3.14 COATING SYSTEM, PREPARATION

- Fill timber defects with proprietary wood filler. (e.g. cracks, holes, etc)
- Sand timber to a smooth even finish using 180 grit paper.
- Remove all sanding dust using air guns and tack rags.
- Ensure substrate is free from dust, grease, dirt and other contaminants.
- Ensure moisture content of the timber is less than 15% immediately before commencing coating operations.

3.15 COATING SYSTEM, APPLICATION

To coating manufacturer's requirements.

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6221B BOSTIK TILING & WATERPROOFING SOLUTIONS

1 GENERAL

This section relates to the preparation of floor and wall surfaces for tiling systems with **Bostik** products:
It includes:

- levelling screeds
- primers
- undertile heating
- internal waterproofing systems
- adhesives
- sealants
- grouts

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Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E3/AS1	Internal moisture
NZBC G6/VM1	Airborne and impact sound
AS CA27	Code of recommended practice for internal plaster on solid backgrounds
AS 1315	Portland Cement
AS 3740	Waterproofing of wet areas within residential buildings
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
AS/NZS 4858	Wet area membranes
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Part 1:Terms, definitions and specifications for for adhesives
BRANZ	Good practice guide: Tiling

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.

1.2 MANUFACTURER DOCUMENTS

Manufacturer and supplier documents relating to work in this section are:

Bostik Technical Data Sheets
Bostik Safety Data Sheets
Bostik Acoustic System catalogue
BRANZ Appraisal 745 - Dampfix Gold Interior Waterproofing Membrane
CSIRO Test Report No. 3918 - Dampfix Gold Waterproofing Membrane
CETEC VOC Content Test Certificate - Bostik Safe Fix
CETEC VOC Content Test Certificate - Bostik Asaphonic

Manufacturer/supplier contact details

Company:	**Bostik New Zealand Limited**
Web:	www.bostik.co.nz
Email (Sales):	nzsales@bostik.com
Email (Q.A. Co-ordinator):	shirley.cotham@bostik.com
Telephone:	09 257 5847

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material Bostik warranty for:

15 years:	For materials for waterproofing systems only
10 years:	For adhesive materials only

- Provide this warranty on the manufacturer standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.4 WARRANTY - INSTALLER/APPLICATOR - WATERPROOFING SYSTEM

Provide an installer/applicator warranty:
5 years: For installation of waterproofing systems

- Provide this warranty in the installer/applicator standard form (if unavailable use the standard form in the general section 1237WA WARRANTY AGREEMENT)

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR - TILING SYSTEM

Provide an installer/applicator warranty:
2 years: For supply and installation of tiling systems

- Provide this warranty in the installer standard form (if unavailable use the standard form in the general section 1237WA WARRANTY AGREEMENT)

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Bostik materials, or associated product, components or accessories.

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing work to be carried out by a Bostik trained Dampfix waterproofing course applicator. Tiling to be carried out by competent tilers experienced with the materials and in the techniques specified.
Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications..

1.8 DEFLECTION CRITERIA FOR SUSPENDED FLOORS

Check that the floor is rigid enough for the tiling. Deflection of suspended floors should not exceed 1/360th of the span under dead load and live load.

1.9 PROJECT REGISTRATION

The project is to be registered with Bostik for quality assurance. Confirm with Bostik quality assurance co-ordinator any relevant key dates and proposed tenderers by e-mail.

Performance

1.10 INTERNAL MOISTURE

Wet area membranes under tiled areas to AS 3740, NZBC E2/AS1, NZBC E3/AS1 and to BRANZ Good Tiling Practice.

2 PRODUCTS

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Compliance information

Materials

2.1 BOSTIK C500 - SELF LEVELLING

Rapid hardening, self-levelling, polymer modified cementitious underlay formulated for maximum flow without shrinkage or cracking. Application thickness feather edge to 25mm. Foot traffic after approximately 2 hours.

Primers / sealers

2.2 BOSTIK ULTRA NP PRIMER - 2 PART

A high performance two part synthetic resin based epoxy primer. Bostik Ultra NP Primer - 2 Part provides a good bond coat prior to the application of Bostik approved tile adhesives and Bostik waterproofing membranes.

Internal wet area membranes

2.3 DAMPFIX GOLD WATERPROOFING SYSTEM

An elastomeric one part, fibre reinforced water based polyurethane membrane, for internal and external use. Dampfix Gold system includes:

- Bostik Multiprime for porous substrates
- Bostik Multiprime 2 Part for non porous substrates
- Bostik N40 Primer for etching PVC wastes
- Bostik Moisture Seal for sealing against rising damp
- Bostik Flexible Silicone (neutral cure) for use as an expansion joint filler and bond breaker for wall/wall and wall/floor junctions.

To AS/NZS 4858. Refer to CSIRO Test Report No. 3918.

Substrate Adhesive

2.4 BOSTIK SAFE FIX ADHESIVE

Multi-purpose construction adhesive based on silane-modified polymers. Refer to BRANZ Appraisal 662 for materials to be adhered to the substrate.

Tiles - Adhesives

2.5 MEGAFIX

Brilliant white adhesive for use in bathrooms, with mosaics or when a very white adhesive is required. Smooth, unsanded formulation means that grout joints are not required to be raked out before grouting. Has classification C1S1ET in terms of ISO 13007.1.

Sealants

2.6 BOSTIK FLEXIBLE COLOURED SILICONE

Bostik Flexible Silicone is a neutral cured, sanitary grade, mould resistant, permanently flexible, specialist tiling silicone sealant. For use as an expansion joint filler and bond breaker for wall/wall and wall/floor junctions. Available in a range of colours. Note: Check compatibility of membrane and sealant, use bond breaking tape to separate them if required.

2.7 SHOWER SEAL SEALANT

Shower Seal is a neutral cure, premium 100% silicone sealant, mould resistant and provides a permanently flexible waterproof seal. For use as an expansion joint filler. Available in white or translucent.

2.8 V60 SILICONE SEALANT

V60 is a neutral cure, high performance, architectural grade glazing waterproofing silicone sealant. For use as a expansion joint filler sealing around general glazing including mirrors, splashbacks and shower screens. Available in black or translucent.

Grouts and Additives

2.9 BOSTIK DESIGNER GROUT

A high performance commercial grade tile grout. Has easy clean and good working properties. Suitable for walls and floors for exterior and interior tiling. For joint sizes from 1.5mm to 15mm wide. Available in a range of designer colours, refer to Bostik for colour palettes.

2.10 MEGALASTIC ADMIXTURE

A multi-purpose additive to upgrade the performance of cement based tile adhesives, grouts, screed and other similar systems. Improves adhesion, flexibilty and water resistance but maintains workability, open time and pot life. Suitable for outdoors and full immersion once cured.

Components

2.11 EXPANSION JOINT, METAL AND RUBBER

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Clear anodised aluminium/brass with metal anchor to set into in-situ concrete, cement screed/bed and complete with rubber infill.

2.12 EXPANSION JOINT, METAL AND COMPOUND

Aluminium/brass angles with high density foam rubber insert and jointing compound.

2.13 EXPANSION JOINT, PLASTIC

Rigid stabilised PVC sides with flexible central section.

2.14 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer/importer/distributor
- Manufacturer/supplier warranty
- Installer/applicator warranty
- Producer Statement - Construction (PS3) from the applicator/installer
- Producer Statement - Construction Review (PS4) from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents

3 EXECUTION

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General

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCT

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of product. Take delivery of packets of tiles undamaged and dry. Handle tiles with care to avoid chipping, soiling and damage. Store on hard level standings in non-traffic, non-work areas that are enclosed, clean and dry.

3.2 CHECK TILES

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient quantity to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

3.3 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

3.4 SETTING OUT

Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.

3.5 BACKGROUND MATERIALS

Ensure that the installation of background materials and substrate materials meets relevant standards and the manufacturer instructions. Inspect background and substrate materials for any conditions unsuitable for tiling over. Do not commence work until the affected area is rectified. Confirm any specific preparation required for the adhesive being used.

3.6 PREPARATION OF BACKGROUNDS

Prepare backgrounds in accordance with AS 3958.1, section 4 and in accordance with the manufacturer instructions for the selected substrate.

Conditions

3.7 SERVICES AND ACCESSORIES

Ensure that all services and accessories are in place and located to suit the tile layout, and that the substrate, background and adjoining surfaces (with the preparation called for in this section) are of the quality necessary to allow tiling of the required standard.

3.8 DO NOT START

Do not start laying tiles until concrete floors are cured, moisture content of floors is such that shrinkage is complete, thermal movement has been accommodated and the levels and surface finish will allow for tile laying of the required standard.

3.9 SUBSTRATE TEMPERATURE

Do not carry out tiling where the substrate temperature is below 5°C or above 40°C.

Application

3.10 APPLICATION GENERALLY

Prepare backgrounds as described in AS 3958.1, Section 4. Suitably prepare backgrounds and substrates in accordance with the manufacturer instructions to receive the bedded finish. Remove all dirt, dust, grease, oil, loose particles and any other form of contamination or deleterious material. Ensure that substrates are sound and dry.
Installation to be in accordance with AS 3958.1, Section 5, including setting out, fitting, movement joints, sealants, tile finish and joints, and grouting.

3.11 SETTING OUT

Setting out, cutting and fitting of tiles to be as described in AS 3958.1, clauses 5.4.2 and 5.4.3. Set out tiling as shown on the drawings. Confirm bond and pattern before installing. Provide even and correct falls to floor tiles where required, including falls to floor wastes. Ensure that a level finish is provided at wall lines. Where falls are not required ensure that the tiles are laid level.

3.12 TILE FINISH AND JOINTS

Provide tile finish and joints, including tolerances, as described in AS 3958.1, clause 5.4.6. Joint widths to be suited to tile and in accordance with the manufacturer instructions.

3.13 GROUTING

Grout tiling as described in AS 3958.1, clause 5.7.

3.14 ADHESIVE APPLICATION METHODS

Ensure that the whole of the back of the tile is in good contact with the adhesive with no voids. Remove a tile periodically during installation to ensure correct coverage. Do not fix tiles over skinned adhesive.

Application - Mixing:
Mix cementitious adhesives with water or liquid admix in accordance with Bostik Technical Data Sheets requirements.

Application - Notched trowel method:
Adhesive application to be as described in AS 3958.1, clause 5.6.2(a). Notched trowel sizes to be 4.5mm x 4.5mm x 4.5mm (mosaics) 6mm x 6mm x 6mm, 10mm x 10mm x 10mm, 12mm x 12mm x 12mm. Use an appropriately notched trowel to achieve full coverage.

Application - Buttering method:
Adhesive application to be as described in AS 3958.1, Clause 5.6.2(c).

Tiles in awkward locations:
The buttering method may be required, or necessary to achieve full bedding, even though the notched trowel method is used generally.

3.15 CLEAN AND PROTECT TILING

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave them completely clean and without blemish. Finally polish glazed tiles with a clean dry cloth. Ensure tiles are not disturbed by foot traffic for at least 24 hours after laying and after grouting. Provide protection to tiles by laying sheet material such as insulating board for the period between completion of laying and completion of the contract works.

Waterproofing

3.16 WET AREA MEMBRANE WATERPROOFING

Provide waterproofing to wet areas as described in AS 3740.

Material:	Refer to SELECTIONS
Locations:	Extent of wet areas as described in AS 3740 and as shown on the drawings.
Installation:	Supply and install waterproofing membrane to Bostik's recommendations, by an Bostik trained Dampfix waterproofing course applicator.

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Completion & commissioning

3.17 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

4 SELECTIONS

For further details on selections go to www.bostik.co.nz.
Substitutions are not permitted to the following selections, unless stated otherwise in writing.

4.1 SUBSTRATE - WALLS

Type:	wet area fibre cement sheets
Adhesive:	Bostik Safe Fix

4.2 LEVELLING

Type:	Bostik C500

4.3 PRIMERS / SEALERS

Type:	Bostik NP Primer

4.4 INTERNAL WET AREA MEMBRANE WATERPROOFING

System:	Dampfix Gold Wet Area Membrane

4.5 ADHESIVE FLOOR

Type:	Megafix

4.6 ADHESIVE WALL

Type:	Megafix

4.7 SEALANT

type:	Bostik Flexible Silicone

4.8 GROUT

Type:	Bostik Designer Grout
Additive:	Bostik Grout Additive

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6311 TIMBER PLANK FLOORING

1 GENERAL

This section relates to the supply, laying and finishing of timber flooring as an overlay, including underlays over the existing substrate.

Warranties

1.1 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:
5 years: For materilas

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.2 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:
1 years: For installation

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.3 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

Performance

1.5 TESTING MOISTURE CONTENT

Sample and test the substrate to ensure that moisture content is within the limits specified. Provide a written record.

2 PRODUCTS

Materials

2.1 TIMBER PLANK FLOORING

Refer to SELECTIONS for product selection.

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Accessories

2.2 CONCRETE SEALER

Two part water based epoxy coating.

2.3 EXPANSION STRIPS

Coloured silicone flexible expansion sealant.

2.4 EXPANSION COVERS

Selected expansion covers as supplied.

2.5 ADHESIVE, DIRECT STICK

As required by the overlay flooring supplier and as not to cause cupping or curling of timber through moisture absorption from the adhesive.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Accept packs of timber and accessories undamaged and dry. Store on level, dry surfaces in non-traffic, non-work areas that are enclosed and dry. Avoid damage to timber.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Check for moisture content by hygrometer. Do not commence laying flooring until readings for the whole area are within acceptable levels as follows:

Moisture content:	Timber substrate - 8 -12% for air conditioned buildings - 10 -14% for intermittently heated buildings - 12 -16% for unheated buildings
	Concrete substrate 60-70%RH

3.4 BEFORE COMMENCING WORK

Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, and in the case of air-conditioned buildings the air-conditioning operating for 6 weeks, before starting work.

3.5 PREPARATION

Check that the timber supplied is as specified, of a consistent colour and grain and sufficient to complete the work. Reject timber that varies widely in colour or grain. Reject timber that is damaged. Check the moisture content of the timber to ensure it is at the required level for the installation environment.

Check laminated strip and plank flooring to ensure it has been supplied at the moisture content recommended by the suppliers for the proposed location. Do not remove planks from packs until just prior to installation.

3.6 CARRY OUT THE WORK

Carry out the work to conform with this specification and in accordance with the timber floor supplier's technical requirements.

3.7 PROTECTION

Protect adjoining work surfaces and finishes during the installation.

3.8 LAYOUT

Before beginning the installation, confirm the proposed layout of the timber, grain direction, any other visual considerations of the finished work and specified expansion requirements relating to the specified product. Minimise in number with no cut planks less than half width and only at the perimeter of the work.

3.9 SURFACE TOLERANCES, DIRECT STICK

Substrate to have no deviations greater than 3mm over a 3 metre straightedge in any given direction and no abrupt variations greater than 1mm over 250mm.

Application - general

3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Application - surface preparation - new

3.11 PREPARATION NEW CONCRETE

Clear substrate of debris, then vacuum to remove dust. Refer to allowable surface tolerances. Check for moisture content by hygrometer. Do not commence installation until the hygrometer readings show 60-70%. Apply concrete sealer if required before commencing flooring installation.

Application - installation

3.12 LAYING, DIRECT STICK

Apply adhesive approved by the flooring supplier, at the required spread rate. Follow requirements for open time, taking note of substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using approved techniques. Install the flooring strictly in accordance with the flooring supplier's stated requirements. Ensure the required expansion gap is left at perimeters and around fixed obstacles.

3.13 EXPANSION GAPS, PERIMETERS

Calculate expansion gaps strictly to manufacturer's requirements, to suit the environment, size of the installation and product type.

3.14 EXPANSION STRIPS

Apply coloured silicone flexible expansion sealant supplied by the flooring manufacturer to match the dimensions of the expansion gap flush with the finished flooring. Apply to flooring manufacturer's directions.

3.15 EXPANSION COVERS

Cover expansion joints using matching expansion joint covers supplied by flooring manufacturer.

Finishing

3.16 SURFACE FINISHING, UNFINISHED FLOORS

Allow the adhesive to cure fully and then finish the timber surface with five fine sandings.

3.17 CLEAN TIMBER FLOORING

Leave timber flooring surfaces free of adhesive, dirt and debris. Vacuum off, damp mop with a low-foam neutral detergent and allow to dry.

Completion

3.18 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 TIMBER LAMINATED PLANK FLOORING

Brand:	Creative Flooring
Species:	Oak

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6511 CARPETING

1 GENERAL

This section relates to the supply and installation of carpet laid conventionally (stretched), direct stuck or double bonded (double direct stuck).
It includes:

- carpet underlay
- woven sheet carpet

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2	Protection from fire
AS/NZS 2455.1	Textile floor coverings - Installation practice - General

Warranties

1.2 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year:	For materials

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.3 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year:	For execution

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

2 PRODUCTS

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Materials

2.1 UNDERLAY

To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.

2.2 CARPET

To AS/NZS 2455.1 Textile floor coverings.

Components

2.3 BINDER BARS

Anodised aluminium section with fluted face.

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2.4 DIVIDER STRIPS

Hardwood strips 20mm x 15mm or as specified.

2.5 EDGE GRIPPER

Timber/plywood to AS/NZS 2270 with steel grippers to carpet manufacturer's requirements, constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6580N over a 1220 mm length.

Accessories

2.6 ADHESIVE, UNDERLAY

To AS/NZS 2455.1, clause 1.5.3. and underlay manufacturer's requirements.

2.7 ADHESIVE, CARPET

To AS/NZS 2455.1, clause 1.5.3. and carpet manufacturer's requirements.

2.8 TAPE

To carpet manufacturer's requirements.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Handle carpet on flat dollies using carpet cradles, with probes on fork- lifts and without sharp bending or folding. Store carpet in flat bins with a maximum height of three rows. Keep dry. Protect from damage.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Ensure all fittings and fixtures around which the carpet is to be scribed are in place. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Confirm moisture content of substrate in accordance with AS/NZS 2455.1. Appendix B Do not commence laying carpet until readings for the whole area are within acceptable levels as follows:

Moisture Content:	Timber substrate - 8 -12% for air conditioned buildings - 10 -14% for intermittently heated buildings - 12 -16% for unheated buildings
	Concrete substrate 75%RH

3.4 BEFORE COMMENCING WORK

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

3.5 PROTECTION

Protect adjoining work surfaces and finishes during the carpet installation.

3.6 TAPE

Tape for binding and seaming using type and width required by the carpet manufacturer to suit the specified carpet and the standard of performance required.

3.7 LAYOUT

Plan the general layout so that:

- seams run lengthways
- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the light source.

3.8 TEMPERATURE

Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

Application - general / substrate preparation

3.9 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dry. Remove loose material and dust.

3.10 PREPARING NEW WOOD PRODUCT FLOOR

To be level, sanded smooth and dry with loose material and dust removed.

Application - carpet laying

3.11 INSTALLATION, UNDERLAY

Installation to underlay manufacturer's requirements. Lay at right angles to the carpet direction.

3.12 INSTALLATION, CONVENTIONAL SYSTEM

Tape carpet joints, fix grippers to floor and install underlay and carpet to AS/NZS 2455.1, section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls.

3.13 LAYING TO STAIRS

Install on stairs in accordance with AS/NZS 2455.1.

3.14 FIXING TRIMS

Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to the carpet manufacturer's requirements. Ensure that junctions with other materials are neatly formed, with bars and trim securely fastened to the substrate, 20mm from each end and at a maximum of 100mm centres.

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

4.1 UNDERLAY

Brand	Type/thickness/weight
Styrene based rubber latex slab	Heavy duty 11mm

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6700D DULUX PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to painting work using **Dulux** paint.

1.1 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

APAS	Australian Paint Approval Scheme
MPNZA	Master Painters New Zealand Association Inc.
VOC	Volatile organic compound

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 2311	Guide to the painting of buildings
AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 9001	Quality management systems - Requirements
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Guidelines for the management of lead-based paint
MPNZA	Specification manual
MPNZA	Health and Safety Programme

Health and Safety at Work Act 2015

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

Dulux DuSpec specification sheets and product data sheets

Copies of relevant literature are available from **Dulux**

Web:	www.dulux.co.nz/specifier or www.duspec.co.nz
Email:	specifier@dulux.co.nz
Telephone:	0800 800 424
Facsimile:	0800 801 424

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Warranties

1.4 WARRANTY

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

Product warranty: Products must be applied in accordance with application and preparation procedures according to **DuluxDuSpec** Specifications and Product Data Sheets. Contact a **Dulux** Trade Representative for project specific warranties.

Refer to the general section 1237WA WARRANTY AGREEMENT for the required format and details of when completed warranty must be submitted.

Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Dulux** system, or associated components and products.

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.

1.6 QUALIFICATIONS

Painters to be experienced competent workers, familiar with Dulux products and the required application techniques specified and may be a member of the Master Painters New Zealand Association Inc. or hold a recognised painter/decorator qualification.

The applicator is to have the necessary skill, experience and equipment to undertake the work. The applicator remains responsible for ensuring proper completion of the work.

Painters to be selected from the Dulux Accredited Painter programme, which recognises painters in the industry who demonstrate high levels of workmanship and pride themselves on their professionalism, customer service and reliability.
Refer to https://www.dulux.co.nz/services/find-a-painter-nz for a list of Dulux Accredited Painters in the local area.

1.7 HEALTH AND SAFETY

Refer to the Health and Safety at Work Act 2015 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Health and Safety Programme. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to WorkSafe: Guidelines for the management of lead-based paint for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

1.8 PRIOR TO WORK COMMENCING

Before any work commences painters should verify with architect or specifying authority, that their paint matches a previously supplied standard card or panel. Differently coloured paints will vary in price, opacity and durability. **Dulux** normally only specify two coats of colour but with certain colours such as bold, brights and some corporate colours, three coats may be needed.

1.9 SAFETY DATA SHEETS

Refer to **Dulux** for the safety data sheets for every applicable product and comply with the safety procedures listed. Keep sheets on the site. Refer to www.dulux.co.nz/specifier.

Performance

1.10 DULUX INSPECTION

Permit representatives of **Dulux** to inspect the work in progress and take samples of their products from site if requested.

1.11 INSPECTION OF THE WORK

Inspection of the whole of the work at each of the stages set out in SELECTIONS may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

2 PRODUCTS

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Materials

2.1 PAINT TYPES

Use the manufacturer's complete system and only the product specified.

2.2 MATERIALS GENERALLY

Use only **Dulux** product which are guaranteed for their consistency and performance under AS/NZS ISO 9001 and APAS approval, prepared, mixed and applied as directed in the **Dulux** DuSpec specification sheets, specification manuals and product data sheets.

2.3 THINNERS/ADDITIVES

Use only if and when expressly directed by **Dulux** for their particular product in a particular application.

Accessories

2.4 FILLERS

For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified preparation system.

2.5 GYPSUM FILLER - INTERIOR

Finishing compound to match the plasterboard stopping system and finishing grade gypsum plaster to match the fibrous plaster system. For interior surfaces such as paper faced plasterboard use **Dulux** Professional Ultra 5 Surface Prep & Finish as an aid to achieving a Level 5 finish.

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Conditions

3.1 EXECUTION

To conform to manufacturer's requirements and those methods, practices and techniques contained in AS/NZS 2311, the MPNZA Specification manual, and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry.

3.2 CORROSION PROTECTION SUPERVISION FOR STRUCTURAL STEEL

To AS/NZS 5131, 9.9.20, for corrosion protection of structural steel. Provide an Inspection and Test Plan (ITP) to AS/NZS 5131, 13.9.1, prior to commencement.
Corrosion protection painting to be supervised by a competent person.

3.3 PREPARE

Prepare surfaces to **Dulux** requirements.

3.4 COATED SURFACES

Ensure that substrate surfaces are able to achieve the specified finish.

3.5 PRE-PRIMED SURFACES

Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

3.6 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

3.7 COMPATIBILITY

Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.

3.8 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

3.9 BACK PAINTING

Co-ordinate with cladding and/or lining installer as to who will do the work and timing.

Exterior
For exterior cladding and trim that require on site finishing, paint the back and exposed bottom edges at the base of the cladding (generally, bottom plate overhang and horizontal flashings) to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2x coats or 1x coat if pre-primed.
Refer to appropriate exterior paint sections SELECTION clauses for claddings to be back painted.

Interior
For lining and trim that require on site finishing and/or back painting (usually wet areas), paint the back and exposed bottom edges at the base of the lining, to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2x coats or 1x coat if pre-primed, or if no front finish seal to manufacturer's requirements.
Refer to appropriate interior paint sections SELECTION clauses for linings to be back painted.

3.10 ANCILLARY SURFACES

The coatings listed in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.

3.11 HARDWARE

Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.

3.12 PROTECTION

Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

Preparation

3.13 PREPARATION

Refer to the DuSpec specification sheets for detailed substrate preparation notes

- www.duspec.co.nz.

Application - before applying final coatings

3.14 OFF-SITE WORK

Carry out off-site preparation and coating under cover, in a suitable environment and with adequate lighting. Store items both before and after coating in a clean, dry area, protected from the weather and mechanical damage, properly stacked and spaced to permit air circulation and to prevent sticking of surfaces.

3.15 PRIMING JOINERY

Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP treated joinery has dried sufficiently to lose odour.

3.16 CONCEALED JOINERY SURFACES

Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.

3.17 CONCEALED METAL SURFACES

Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.

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3.18 DOORS

Prime or seal and paint all six faces of doors before hanging.

3.19 PUTTY FRONTING

According to the putty manufacturer's instructions allow putty to set, then prime with an appropriate Dulux primer, either **Dulux** 1 Step Acrylic Primer Sealer & Undercoat, or **Dulux** 1 Step Oil Based Primer, Sealer & Undercoat. Fully protect the putty by completing the **Dulux** coating system as soon as it is sufficiently firm.

Application - generally

3.20 PAINTING GENERALLY

Comply with the **Dulux** DuSpec specification sheets, product data sheets and the additional requirements of this work section.

3.21 MIXING

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

3.22 ENVIRONMENT

Paint exterior surfaces only in favourable weather conditions:

- warm dry days without frost or heavy dews
- avoid painting in direct sunlight any surfaces that absorb heat excessively

- as far as possible apply paint in the temperature range 15°C to 25°C
- do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

3.23 SEQUENCE OF OPERATIONS

Painting work to generally the following sequence:

- Back-painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Dulux**
- Allow the full drying times between coats laid down by **Dulux**
- Do not expose primers, sealers and undercoats beyond a few days before applying the next coat
- Finish broad areas before painting trim
- Ensure batch numbers of tins are matched for whole areas
- Internally paint ceilings before walls and walls before joinery, trim and other items.

3.24 PAINT APPLICATIONS

Select brush, roller, or pad and apply paint to the requirements of **Dulux** and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

3.25 DRYING TIME

Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.

3.26 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

3.27 DEFECTIVE WORK

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Correct defective work immediately and re-coat as required, following precisely the **Dulux** paint system specified.

3.28 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- uniform finish, colour, texture, sheen and hiding power
- the specified number of coats applied
- no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering
- proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application

Note that some colours may require more than two top coats and/or the use of a tinted undercoat. This is particularly relevant when using bright or high chromatic coloured paints (e.g. colours derived off True Red, Bold Yellow, Orange, and Extra Bright base) or when painting over existing dark colours.

Completion

3.29 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.

3.30 CLEAN EQUIPMENT

Use **DuluxEnviroWash** system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal. Phone 0800 800 424 for information regarding this system.

3.31 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.32 REMOVE

Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.33 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

4 SELECTIONS

Substitutions are not permitted unless stated otherwise.

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7120 HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G4/AS1	Ventilation
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
NZBC H1/AS1-AS2	Energy Efficiency
AS 1432	Copper tubes for plumbing, gas fittings and drainage applications
AS/NZS 1477	PVC pipes and fittings for pressure applications
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2345	Dezincification resistance of copper alloys
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
AS/NZS 2537.1	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) General
AS/NZS 2537.2	Mechanical joining fittings for use with crosslinked Polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Crosslinked Polyethylene (PE-X) - Fittings
AS/NZS 2537.3	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) fitness for purpose of system
AS/NZS 2537.4	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) Guidance for the assessment of conformity.
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe systems - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation
AS 3688	Water supply and gas systems - metallic fittings and end connectors
AS/NZS 3879	Solvent cements and priming fluids for PVC (PVC-U and PVC-M and ABS and ASA pipes and fittings
AS 4032.2	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
AS/NZS 4129	Fittings for polyethylene (PE) pipes for pressure applications.
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
NZS 4305	Energy efficiency domestic type hot water systems

NZS 4606.1	Storage water heaters. General requirements
NZS 4606.2	Storage water heaters. Specific requirements for water heaters with single shells
NZS 4606.3	Storage water heaters. Specific requirements for water heaters with composite shells.
NZS 4607	Installation of thermal storage electric water heaters: valve-vented systems
NZS 4617	Tempering (3-port mixing) valves
AS 4809	Copper pipe and fittings. Installation and commissioning
AS 5200 part 053	Plumbing and drainage products, Stainless steel pipes and tubes for pressure applications.
AS/NZS 60335.2.35	Household and similar electrical appliances. Safety - Pat 2.35 Particular requirements for instantaneous water heaters

Plumbers, Gasfitters and Drainlayers Act 2006

NZ Backflow Testing Standard: NZ Backflow Testing Standard 2019, Field testing of backflow prevention devices and verification of air gaps

Warranties

1.2 WARRANTY

Provide warranty for:

2 years:	For the supply and installation of the plumbing system and fixtures

- Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Requirements

1.3 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.4 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

Storage water heaters to store water at not less than 60ºC.

Hot water piping system, with temperature controls where necessary (tempering valve etc), to provide water at the outlet at the following temperatures:

For personal hygiene fixtures (showers, baths, wash hand basins etc) temperatures to be close to but not to exceed 50ºC

For non-personal hygiene fixtures (kitchen sinks and equipment, laundry tubs, etc) temperatures must be less than 65°C

Performance

1.5 TESTING - TO NZBC G12/AS1

Test to NZBC G12/AS1, 7.6, Watertightness, for hot and cold water.

- Test to a pressure of1500 kpa for period not less than 15 minutes.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

2 PRODUCTS

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Materials

2.1 COPPER PIPE

To NZBC G12/AS1, 2 Materials. Copper pipe to NZS 3501, AS 1432 (type A, B & C) and AS 3688 for fittings.

2.2 POLYBUTYLENE PIPE

To NZBC G12/AS1, 2 Materials. Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fitings and accessories brand-matched . Protect from sunlight.

2.3 POLYETHYLENE PIPE

To NZBC G12/AS1, 2 Materials. Polyethylene pipes to AS/NZS 4130 and fittings to AS/NZS 4129. Except for solid black PE, protect from sunlight. For cold water applications only.

2.4 CROSS LINKED POLYETHYLENE PIPE

To NZBC G12/AS1, 2 Materials. Cross Linked Polyethylene Pipe to AS/NZS 2492 and fittings to AS/NZS 2537.1, AS/NZS 2537.2, AS/NZS 2537.3 and AS/NZS 2537.4. Except for solid black PE-X, protect from sunlight.

2.5 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENTS

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

2.6 WATER METER

To the requirements of the network utility operator.

2.7 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to NZBC G12/AS1.

2.8 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to AS/NZS 2845.1 where it is possible for water or contaminants to backflow into the potable water supply. Refer to NZBC G12/AS1, 3.4 Backflow protection & 3.5 Containment Backflow protection and NZBC G12/AS1, table 2, Selection of Backflow Protection and table 2A Containment Backflow Protection

2.9 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

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Materials - Hot water heating appliances

2.10 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To NZS 4305 NZS 4606.1, NZS 4606.2 and NZS 4606.3, electric water storage cylinder, insulated and complete with required fittings, overflow tray and tundish

Components

2.11 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to NZBC H1/AS1-AS2 and AS/NZS 3500.4.

2.12 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

3 EXECUTION

3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3.

3.2 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.4 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.5 CORROSION

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.6 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.7 PIPE SIZE

Flow rates to each outlet to be no less than those given in AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters.

3.8 ELECTROLYTIC ACTION

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

3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - Jointing

3.10 JOINTING COPPER PIPE

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to NZBC G12/AS1 and AS 4809.

3.11 JOINTING POLYBUTYLENE PIPE

Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

3.12 JOINTING POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to NZBC G12/AS1 and AS/NZS 2033.

3.13 JOINTING STAINLESS STEEL PIPE

Proprietary stainless steel fittings to NZBC G12/AS1 and pipe system manufacturer's requirements.

Application - Pipework installation

3.14 WATER SUPPLY CONNECTION

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to NZBC G12/AS1.

3.15 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

3.16 HOT WATER PIPEWORK

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Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 9 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings

Lag all pipes with rigid insulation to the manufacturer's requirements and AS/NZS 3500.4 as modified by NZBC G12/AS3 or G12/AS1.

3.17 EQUIPOTENTIAL BONDING METALLIC WATER SUPPLY PIPES

If it is an electrical requirement, before enclosing, ensure metallic water supply pipes and metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) to NZBC G12/AS1, 9.0.

3.18 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

Application - Hot water systems

3.19 HOT WATER CYLINDER INSTALLATION GENERALLY

Install hot water cylinders complete to the manufacturer's requirements and to NZBC G12/AS1, 6. 11, Water heater installation or NZS 4607 for Valve-vented systems.

3.20 SEISMIC RESTRAINTS

Storage hot water heaters to be restrained to manufacturer's requirements and NZBC G12/AS1, 6.11, Water Heater Installation.

3.21 INSTALLING HOT WATER PIPE INSULATION

Insulate all hot water pipes to NZBC H1/AS1-AS2 Energy Efficiency, AS/NZS 3500.4, section 8.2 Thermal insulation, and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.

3.22 INSTALL ELECTRIC HOT WATER CYLINDERS

Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.11 or NZS 4607 for Valve-vented systems.

3.23 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1. with integrated tundish

3.24 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

3.25 PENETRATIONS

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

Installation - Valves

3.26 INSTALLING BELOW GROUND ISOLATING VALVE

Install all below ground items such as main isolating valves and water meters in preformed concrete pits or approved equivalent.

3.27 INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED

Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

3.28 INSTALLING BACKFLOW PREVENTION DEVICE

Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS 2845.3 or NZ Backflow Testing Standard.

Completion

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3.29 LABEL

Label all pipework with permanent adhesive markers at 3 metre minimum intervals.

3.30 CLEAN IN-LINE FILTER

Clean all in-line filters on completion of works.

3.31 REPLACE

Replace damaged or marked elements.

3.32 LEAVE

Leave work to the standard required by following procedures.

3.33 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

Brand:	Rheem
Model size:	250 litre

4.2 HOT WATER CYLINDER TUNDISH

Brand:	Allproof
Model size:	HWCT50

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7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES

1 GENERAL

This section relates to the supply and installation of sanitary fixtures, tapware and sanitary accessories.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E3/AS1	Internal moisture
NZBC G1/AS1	Personal hygiene
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
NZBC G13/AS1	Foul water
NZBC G13/AS3	Plumbing and drainage
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3500.1	Plumbing and drainage - water services
AS/NZS 3500.2	Plumbing and drainage - sanitary plumbing and drainage
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 4223.3	Glazing in buildings - Human impact safety requirements

Plumbers, Gasfitters and Drainlayers Act 2006

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Warranties

1.2 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

2 years	For sanitary fixtures tapware and accessories

- 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.

1.3 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For installation

- 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

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Workers or supervisors of work are required to be a Certifying Plumber under the Plumbers, Gasfitters and Drainlayers Act 2006. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.6 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

2 PRODUCTS

2.1 SANITARY FIXTURES

Refer to separate Addendum for product selection.

2.2 TAPWARE

Refer to separate Addendum for product selection

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2.3 SANITARY APPLIANCES

Refer to separate Addendum for product selection

2.4 SANITARY ACCESSORIES

Refer to separate Addendum for product selection

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Ensure water supply and drainage pipework match the requirements of selected fixtures without force or distortion.

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION REQUIREMENTS INCLUDING AS/NZS 3500.2

Install to NZBC G1/AS1, AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3, NZBC G12/AS1, NZBC E3/AS1, AS/NZS 3500.2, as modified by NZBC G13/AS3, and to the fixture manufacturer's installation requirements for each component.

3.6 INSTALLATION SANITARY FIXTURES

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of all required slurries/bedding and sealants in sequence.

Fit the sanitary fixture in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant.

Seal between all sanitary fixtures and floors, wall linings, fixtures and the tops they are in, the tops and wall linings, to NZBC E3/AS1, 3.2. Fixtures include toilets, urinals, baths, basins, tubs, sinks. Tops include, vanities, bath surrounds, sink benches, etc, and their upstands. Form joint or seal between shower bases or urinals and impervious wall linings to NZBC E3/AS1, 3.3.

3.7 INSTALLING SHOWER SCREEN

To NZS 4223.3 and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating.

3.8 INSTALLATION TAPWARE

In accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1, 6.14 Safe water temperatures.

3.9 SEAL SHOWER TAPWARE

Seal shower wall lining penetrations such as shower head, shower hose, mixer, taps etc to NZBC E3/AS1, Fig. 6.

3.10 SANITARY APPLIANCES

Install and provide all required connections to sanitary appliances in accordance with manufacturers requirements.

3.11 EARTHING OR EQUIPOTENTIAL BONDING METALLIC FIXTURES

Before enclosing, ensure equipotential bonding is provided to metallic water pipes and metallic sanitary fixtures using an earth bonding conductor to requirements of NZBC G12/AS1, 9.0 Equipotential bonding and/or AS/NZS 3000, 5.6 Equipotential bonding.

Application - sanitary accessories

3.12 INSTALLING ACCESSORIES

Fit specified fittings firmly in place, all plumb and level.

Locate at heights and/or locations shown on the drawings, or as required to comply with NZBC G1/AS1. For any dimension not shown or known, request direction before proceeding

3.13 CUTTING AND FITTING

Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

3.14 INSTALLING UNITS

Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion & Commissioning

3.15 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

4.1 SANITARY FITTING SCHEDULE

Supplier:	Main Contractor
Refer to:	Refer to separate Addendum for product selection

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7212 GAS SYSTEM LPG CYLINDERS

1 GENERAL

This section relates to Installation and maintenance of a 45kg LPG twin cylinder system and associated piping systems.

1.1 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:

WorkSafe:	WorkSafe New Zealand.
HSNO:	Hazardous Substances and New Organisms Act 1996.
LPGA	LPG Association of New Zealand Inc.

The following definitions apply specifically to this section:

Condensate:	The liquid that separates from the gas downstream of any regulator due to the reduction in temperature resulting from pressure reduction.
Condensate trap:	(also known as a drip leg or tailpipe) a device installed in a gas line to trap the condensate liquid
Enclosure:	A compartment, an enclosed area or a partitioned-off space primarily used for the installing of a gas cylinder meter, or gas pressure regulator.
LAB number:	Number allocated by WorkSafe when a cylinder is approved.
POL fitting:	(Prest-O-Lite) The common name given for a standard union with left hand thread, used for connection to a 45kg cylinder.
Pigtail:	A short length of flexible tube or copper pipe completed with end couplings. Use for connecting the cylinder to the manifold or the changeover valve.
Twin cylinder installation:	A cylinder installation where two cylinders are connected separately to the system. Each cylinder is connected to a change over valve that can be operated manually or automatically, to change over the cylinder which is supplying LPG to the installation. Connection may be made using flexible rubber or copper pigtails, or pipe fittings.

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G10/AS1	Piped services
NZBC G11/AS1	Gas as an energy source
AS 4176	Polyethylene/aluminium and cross linked polyethylene/aluminium macrocomposite pipe systems for pressure applications
AS/NZS 1596	The storage and handling of LPG.
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 4129	Fittings for polyethylene pipes for pressure applications
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
AS/NZS 5601.1	Gas Installations - general installations
LPGA CoP No.2	Installation and maintenance of twin 45kg cylinder systems

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019)
Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006.

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Warranties

1.3 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For the complete gas system

- Provide this warranty on the installer/applicator standard form.

- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010, and AS/NZS 3000.

1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.
Work to be carried out by gasfitters experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying gasfitter under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.6 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.

1.7 DESIGN

Design the piping system to AS/NZS 5601.1, with pipe sizes to give a minimum pressure at any appliance inlet, to AS/NZS 5601.1, Table 5.1, of 2.75 kPa for LPG. Include pressure regulators if required.

1.8 LOCATION OF CYLINDERS

Cylinders and associated equipment to be installed external to buildings, except where AS/NZS 1596 permits. Location and clearances to AS/NZS 5601.1. Ensure location allows good accessibility for cylinder replacement to AS/NZS 5601.1. Coordinate with electrical installations to ensure clearances are maintained.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:
Manufacturer, importer, or distributor warranty

- Installer / applicator warranty
- Gasfitting Certificate of Compliance - from the installer

1.10 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

1.11 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.12 GAS APPLIANCE COMPLIANCE

Supplier to provide Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

2 PRODUCTS

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Materials

2.1 PIPEWORK GENERAL

Pipework requirements to AS/NZS 5601.1, particularly AS/NZS 5601.1, Section 4, **Means of compliance - materials fittings and components**.

2.2 COPPER PIPE

Complete with fittings to AS/NZS 5601.1. Range of use to AS/NZS 5601.1, table 4.1 **Consumer Piping Materials**.

2.3 MACROCOMPOSITE PIPE

Polyethylene/aluminium/cross linked polyethylene combination (PE/AL/PE, PE-X/AL/PE-X or PE-X/AL/PE) macrocomposite pipe systems for pressure applications to AS 4176. Range of use to AS/NZS 5601.1, table 4.1 **Consumer Piping Materials**. Used for general pipework, can also be used in ground beneath a building.

2.4 POLYETHYLENE PIPE

Polyethylene pipes to AS/NZS 4130 Series two, or AS/NZS 4130 Series three. Fittings to AS/NZS 4129. Range of use to AS/NZS 5601.1, table 4.1 **Consumer Piping Materials**. For use in ground but not beneath a building.

2.5 ISOLATING VALVES

Manual shut-off valves to AS/NZS 5601.1.

2.6 CYLINDERS

Full 45kg cylinders to be supplied by the LPG supply company.

Components

2.7 AUTOMATIC CHANGEOVER REGULATOR

To the requirements of AS/NZS 5601.1.
Automatic changeover regulator including a gas pressure regulator and non-return valve on each pigtail connection. The valve must comply with the requirements of HSNO and WorkSafe.

Changeover valves may be comprised of a first and second stage regulator system in a single body, or as a combination of separate component items.

Changeover valves complete with all components necessary for the operation of the bottle gas system including: -

- Flexible Pigtails
- Regulators
- Condensate trap
- Over pressure shut off
- All required valves

Protect from weather.

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Accessories

2.8 ANCHORS AND CHAINS

To the requirements of LPGA COP No.2.
All cylinders larger than 25 litres capacity shall be securely held in place by galvanized chains and brackets. The brackets shall be fastened to a wall or similar robust anchorage. The cylinder(s) fastenings must be capable of withstanding a steady applied load equal to four times the weight of the filled cylinder(s).

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 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.

3.3 GENERALLY

Carry out the whole of this work to the requirements of NZBC G10/AS1, NZBC G11/AS1 and AS/NZS 5601.1.

3.4 BURIED PIPES

Pipes to be bedded in a trench, backfilled, marker taped and separated from other services, to AS/NZS 5601.1, 5.4 **Installation of consumer piping underground.**

Application

3.5 INSTALL PIPING

Run the system, completely concealed, in the most suitable type of pipe for each part of the installation, bent, supported, jointed and complete with all fittings to AS/NZS 5601.1. Confirm the type of pipe and its location. Label pipework to distinguish it from other services to AS/NZS 5601.1, 5.1.12 **Identification of pipework.**

3.6 EQUIPOTENTIAL BONDING METALLIC GAS SUPPLY PIPES

If it is an electrical requirement, before enclosing, ensure metallic gas supply pipes and connected metallic gas fixtures are equipotential bonded (or at least conductor cable attached).

3.7 PRESSURE TEST

Pressure test the system for leakage to AS/NZS 5601.1 before pipework is concealed by linings.

3.8 LOCATION OF CYLINDERS

Cylinders and associated equipment to be installed external to buildings, except where AS/NZS 1596 permits. Location and clearances to AS/NZS 5601.1, Appendix J, **LP Gas cylinder locations.**

Installation of cylinders

3.9 GENERAL

Cylinders shall be installed upright with the valve uppermost to ensure the inlet to the safety valve remains in the vapour space clear of the liquid content of the cylinder.

- Clearances around cylinders shall comply with CLEARANCES AROUND CYLINDER clause.
- Where two or more exchange cylinders are installed, a manual or automatic changeover valve shall be fitted immediately upstream of the regulator. This valve may be an integral part of an automatic changeover regulator.

3.10 SUPPORT

Cylinders shall not be supported by other cylinders.

Cylinders shall be installed on supporting bases that are firm, level, of non-combustible material, and with a finished surface that prevents ponding of water and at least 50mm above the surrounding surface. Soil is not considered an acceptable supporting base.

All cylinders to be securely held in place by galvanized chains and anchor brackets. The brackets shall be fastened to a wall or similar robust anchorage. Fixings shall be galvanised or stainless steel.

3.11 CYLINDER CONNECTION

Cylinders should be connected directly to the changeover valve assembly by flexible pigtails.

An excess flow valve, to prevent cylinder venting if hose fails, shall be fitted immediately upstream of the piping or hose assembly. This excess flow valve may be an integral part of the POL fitting.

Pigtails connecting cylinders to changeover valves or manifolds should not exceed 1 metre in length.

A non-return valve must be fitted in the supply between each cylinder and the changeover valve, or in a manifold system, between each cylinder and its manifold connection, to prevent flow across the changeover system to AS/NZS 5601.1.

3.12 CYLINDERS IN AN ENCLOSURE OR RECESS

To AS/NZS 5601.1, Appendix J, **LP Gas cylinder locations.**

3.13 CYLINDERS UNDER BUILDINGS

To AS/NZS 5601.1, Appendix J, **LP Gas cylinder locations.**

3.14 CLEARANCES AROUND CYLINDER

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Cylinders should be installed with clearances complying with the AS/NZS 5601.1, Appendix J, **LP Gas cylinder locations**, figure J3 **Minimum clearance to ignition sources**, and figure J4 **Minimum clearance to a drain or opening into a building**, and at least 1 metre from any readily ignitable material. Readily ignitable materials include paper, dry grass or oily substances.

3.15 CYLINDER SAFETY VALVE DISCHARGE

The discharge point of the cylinder safety valve shall be directed away from any other cylinder, piping, building, drain, approach path to cylinders and any opening into or under a building.

3.16 TEST POINTS

A pressure test point should be installed immediately downstream of each second stage regulator. Such test point may be an integral part of the regulator.

Completion

3.17 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

3.18 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

Commissioning

3.19 FINAL INSPECTION AND TESTING

Check cylinders are working and ensure all connected appliances are operating correctly. Carry out final inspections and testing, pressure test the system for leakage to AS/NZS 5601.1. Leave system shut off at the cylinders until practical completion.

3.20 HANDOVER

Provide a copy of the system operating and maintenance instructions.

Completion

3.21 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

Materials

4.1 LPG CYLINDER SYSTEM

Location:	Refer to Plans
Cylinder Number/size:	2 x 90kg

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7411C CONTINUOUS SPOUTING RAINWATER SYSTEMS

1 GENERAL

This section relates to **Continuous Group** fascia and rainwater disposal systems. It includes:

- Continuous Group Metal Spouting system
- Continuous Group Metal Downpipe system

1.1 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E1/AS1	Surface water
NZBC E2/AS1	External moisture
AS 1566	Copper and copper alloys - Rolled flat products
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

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.

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Continuous Group Fascia, Spouting and Downpipe Systems.

Copies of the above literature are available from www.continuous.co.nz or by contacting **Continuous Group**:

Web:	www.continuous.co.nz
Email:	cg@continuous.co.nz
Telephone:	0800 50 1993

Branch Contact	**E-mail**
Wellington	wellington@continuous.co.nz

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide material manufacturer/supplier warranty for the following materials:

ColorCote® MagnaFlow™ or Colorsteel Maxx®

15 years:	For failure of paint coating adhesion (manufacturer's standard warranty)
15 years:	For weatherproofing failure caused by material penetration as a result of corrosion (manufacturer's standard warranty)

- 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 completion of the installation.

Refer to Continuous Group for comprehensive warranty terms, conditions and environmental considerations based on performance requirements to AS/NZS 2728. and the correct material selection according to NZS 3604 section 4, Durability.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years:	Weatherproofing failure caused by substandard workmanship and/or sealants.

- 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 completion of the installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Continuous Group installers and local agents to be experienced competent trades people, familiar with the materials and the techniques specified.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.9 MATERIAL SELECTION

Fascia, spouting and downpipes are categorised as a “Sheltered environment”. Ensure correct materials are selected according to exposure zones detailed under NZS 3604, section 4 Durability.

1.10 MAINTENANCE

To ensure the useful life and to uphold warranty conditions of Continuous Group fascia and rainwater systems, regular maintenance is required. Refer to Continuous Group for specific information.

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Compliance information

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicators approval certificate from the manufacturer / importer / distributor
- Manufacturer / supplier warranty
- Installer / applicator warranty
- Producer Statement - Construction from the applicator / installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.12 TEST

Test the completed rainwater disposal system with water to ensure gutters are laid to correct falls, that both spouting and downpipes are unobstructed, and that no ponding occurs. Comply with the requirements of NZBC E1/AS1, section 4.3.

1.13 DESIGN - NZBC E1/AS1

Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with NZBC E1/AS1, section 4.0 Downpipes and section 5.0 Gutters. Refer to NZMRM CoP recommendations, sections 5.3 Gutters and 5.6 Downpipes.

1.14 DESIGN - NZBC E2/AS1

Dimensions, depths, materials & overflows to be designed according to NZBC E2/AS1 section 8.1.6. Refer to NZMRM CoP recommendations, sections 5.3 Gutters and 5.6 Downpipes.

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2 PRODUCTS

Materials

2.1 PRE-PAINTED STEEL

ColorCote® MagnaFlow™, pre-painted G300 steel with a minimum alloy/zinc coating of 200 gsm/m² coated, to AS/NZS 2728.

Products

2.2 CONTINUOUS SPOUTING

Manufactured by Continuous Group using onsite plant to provide made to measure continuous lengths of spouting. Complete with matching brackets and fasteners. Spouting to be sized to comply with NZBC E1/AS1 and NZBC E2/AS1 8.1.6.
Refer to NZMRM CoP recommendations. Refer to SELECTIONS for type.

2.3 DOWNPIPES

Manufactured and supplied by Continuous Group. Complete with matching brackets and fasteners. Downpipes to be sized to comply with NZBC E1/AS1 and installed to NZBC E2/AS1, clause 8.1.6. Refer to NZMRM CoP recommendations. Refer to SELECTIONS for type.

Components

2.4 BRACKETS - SPOUTING

Manufactured from aluminium to comply with NZBC E2/AS1 table 20 requirements for exposure zones B,C,D & E “Sheltered environment” and NZS 3604 section 4, Durability.

2.5 BRACKETS - DOWNPIPES

Manufactured from aluminium to comply with NZBC E2/AS1 table 20 requirements for exposure zones B,C,D & E “Sheltered environment” and NZS 3604 section 4, Durability.

2.6 SPOUTING DROPPERS

PVC-U droppers to fit inside the downpipe.

2.7 DOWNPIPE OFFSETS

Diecast aluminium (male/female) bends and tees for pre-painted steel or pre-painted aluminium downpipes. Mitered soldered or sealed bends and tees for copper spouting. All offsets (bends or tees) to have a minimum fall of 5°.

2.8 SEALANT

Selleys backing sealant (Sil-X advanced polymer) or premium grade neutral cure silicone.

2.9 DOWNPIPE SPREADERS

To comply with NZBC E2/AS1 figure 20 and NZMRM CoP recommendations.
Refer to SELECTIONS for type.

2.10 LEAF DOMES

Gromo stainless leaf domes with spring legs fitted to inside of spouting dropper.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.
Handle and store all fascia and rainwater products to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Avoid exposure to sunlight if strippable film is still on the product.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 SUBSTRATE

Check that the substrate is level and true to line and face, and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

3.4 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the fascia and rainwater system for thermal movement in the lengths of the products. Refer to NZMRM CoP recommendations.

3.5 ELECTROLYTIC CORROSION

Keep all metals which are subject to electrolytic action separate from each other, and from treated timber, concrete and other lime-based substances by space, painting of surfaces, taping, or separator strips.

Check compatibility of metals used for fasteners, fascia and rainwater goods, against the materials they will be in contact with. Refer to NZBC E2/AS1, table 21.

3.6 ENVIRONMENTAL CORROSION

Check that selected metals are suitable for the Exposure Zone according to NZBC E2/AS1 Table 20, and NZS 3604 section 4, Durability.

Installation - general

3.7 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.8 INSTALLATION GENERALLY

Install to NZMRM CoP recommendations where not otherwise specified.

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Installation - spouting

3.9 CONTINUOUS EMERGENCY OVERFLOW SYSTEM (CEOS)

Spouting must be installed with the back lower than the fascia board or cladding, to allow for draining of overflow water through the gap between the spouting back and the fascia or cladding. All Continuous Group Rainwater systems are designed to be used with a bracket system which creates a minimum gap of 3 mm.
All installation to NZMRM CoP section 5.3.2.

3.10 INSTALL SPOUTING BRACKETS

Screw-fix spouting brackets vertically to allow for a Continuous Emergency Overflow System. Brackets for external gutters to be located within 300 mm of all stop-ends, corners and rainwater heads. Maximum bracket spacing 750 mm for gutters < 175 mm wide, and 600 mm for gutters 175 – 300mm wide. In snow load areas, brackets to be fixed at maximum spacing of 600 mm. Brackets should be installed to provide a recommended 1:500 fall of spouting towards the outlets, to prevent ponding. Screw-fix brackets true-to-line.
All installation to NZMRM CoP recommendations section 5.0 Roof Drainage.

3.11 INSTALL SPOUTING

Assemble and fit spouting to brackets. Cut out and form corners, stop-ends and dropper holes neatly and fit, rivet and seal around all joints. Leave a rear emergency overflow gap of minimum of 2 mm as per NZMRM CoP, section 5.3.2 and to comply with NZBC E1/AS1, clause 5.5.2.
All installation to NZMRM CoP recommendations section 5.0**,** Roof Drainage.

Installation - downpipes

3.12 INSTALL DOWNPIPES

Form downpipes complete with offsets as needed, with all joints lapped and sealed as required. Screw fix with matching pipe brackets to rigidly stand plumb to the wall, and discharging into the stormwater gully or pipe inlet. Copper downpipes can be brazed or soldered. All installation to NZMRM CoP recommendations, section 5.0 Roof Drainage.

3.13 INSTALL DOWNPIPE SPREADERS

Install spreaders to downpipes that discharge onto a lower roof. Ensure spreaders do not discharge directly over fasteners, laps or flashings. The area of discharge holes from a spreader is to be not less than the cross-sectional area of the downpipe.
Refer to NZBC E2/AS1 figure 20 and NZMRM CoP, section 5.7.
All installation to NZMRM CoP recommendations, section 5.0 Roof Drainage.

Installation - components

3.14 INSTALL OUTLETS AND OVERFLOWS

Install outlets and overflows where required to NZMRM CoP, clauses 5.5.3, Overflows.

Completion

3.15 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.continuous.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Products

4.1 CONTINUOUS GROUP - RESIDENTIAL SERIES SPOUTING

Manufacturer:	Continuous Group
Profile/size:	CUBE 125 - 125 mm Box spouting
Base material:	Colorcote® MagnaFlow™ (BMT 0.55 mm)
Brackets:	Internal

4.2 CONTINUOUS GROUP - FORM SERIES DOWNPIPES

Manufacturer:	Continuous Group
Profile/size:	FS-80 – Form Series 80 mm Round downpipes
Base material:	Colorcote® MagnaFlow™ (BMT 0.55 mm)
Brackets:	1-piece fixed bracket

Components

4.3 CONTINUOUS GROUP - DOWNPIPE SPREADERS

Manufacturer:	Continuous Group
Base material:	To match downpipe material

4.4 CONTINUOUS GROUP - GROMO LEAF DOMES

Manufacturer:	Continuous Group
Profile/size:	Gromo leaf dome sized to match downpipe selection
Base material:	To match downpipe material

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7421MO MARLEY OPTIM DWV SANITARY SYSTEM

1 GENERAL

This section relates to the supply and laying of **Marley New Zealand Limited** above ground gravity flow PVC-U sanitary systems for residential applications.
It includes:

- foul water
- sanitary fixtures to first underground drain connection
- system wastes, floor wastes, floor waste gullies, traps, vents and valves
- associated components and accessories to make the system work.

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G1/AS1	Personal hygiene
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 1462.22	Methods for test for plastic pipes and fittings - Method 22: Method for determination of pipe stiffness
AS/NZS 1462.3	Methods for test for plastic pipes and fittings - Method for determining the impact characteristics of pipes
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage

Plumbers, Gasfitters and Drainlayers Act 2006

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Marley OPTIM® DWV Technical Design Manual
Marley Material Safety Data Sheets

Manufacturer/supplier contact details

Company:	**Marley New Zealand Limited**
Web:	www.marley.co.nz
Email:	guyy@marley.co.nz
Telephone:	09 279 2799

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1.3 WARRANTY - INSTALLER

Provide an installer warranty:

2 years:	For installation

- Provide this warranty on the installer standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

Compliance information

1.6 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Installer's approval certificate from the manufacturer / importer / distributor
- Manufacturer, importer or distributor Certificate of Conformance
- Installer's warranty
- Producer Statement - Construction from the installer
- Final as built information plan
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.7 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

2 PRODUCTS

Materials

2.1 PVC-U DWV PIPEWORK - RESIDENTIAL

Marley PVC-U DWV pipework comprised of unplasticised PVC waste pipes, traps and fittings manufactured to AS/NZS 1260, tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with AS/NZS 3500.2. Available in a range of pipe types with nominal size DN20 to DN150 and stiffness class SN4 and SN6. Refer to SELECTIONS for options.

2.2 PVC-U VENT PIPES

Marley PVC-U vent pipes comprised of unplasticised PVC including fittings and accessories manufactured to AS/NZS 1260, tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with AS/NZS 3500.2. Available in a range of pipe types with nominal size DN 40 to DN 100 and stiffness class SN4 to SN10. Refer to SELECTIONS for options.

2.3 EXPOSED PIPES AND TRAPS - CHROME

To AS/NZS 3500.2. Satin chrome plated exposed pipes, traps and wastes including all associated fittings refer to SELECTIONS.

2.4 GULLY TRAP

Refer to 7430 DRAINAGE for gully traps.

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Components

2.5 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2, as modified by NZBC G13/AS3, and complete all tests to AS/NZS 3500.2, 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.

3.2 ELECTROLYTIC ACTION

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

3.3 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site under cover on a clean level area, stacked to eliminate movement and away from work in progress.

3.4 SETTING OUT

Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.

3.5 CORE HOLES AND SLEEVES

Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated. Strip core holes and make good after installation of pipework.

3.6 PIPE ACCESS

Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

3.7 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.8 CONFIRM LOCATION

Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

3.9 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

Installation - traps and wastes

3.10 TRAPS AND WASTES - CONCEALED

Conceal traps and wastes in the fabric of the building in accordance with manufacturer requirements.

3.11 TRAPS AND WASTES - EXPOSED CHROME

Fit and fix satin chrome plated exposed pipes, traps and wastes in accordance with manufacturer requirements.

3.12 INSTALL GULLY TRAPS

Refer to 7430 DRAINAGE for installation of gully traps.

Installation - jointing

3.13 JOINTING PVC-U PIPE - SOLVENT WELDED JOINTS

Prime and solvent weld joints using spigots and sockets to Marley requirements.
Jointing to be in accordance with Marley OPTIM DWV jointing procedures as shown in the Marley OPTIM technical manual.

Installation - fixing

3.14 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in PVC-U pipes. Install PVC pipes to AS/NZS 2032. Take particular care to allow for movement at horizontal take-off locations from stacks.

3.15 TRAPS AND FIXTURE DISCHARGE PIPES - AS/NZS 3500.2

Size traps and pipes as required for each fixture or appliance. Establish the developed length of waste pipes. Vent and allow access for cleaning as required. Follow the most direct line with the least number of bends to AS/NZS 3500.2, table 3.3.1, for fixture loading and AS/NZS 3500.2, table 10.2.1, distance between supports.

3.16 DISCHARGE STACKS AND VENTS - AS/NZS 3500.2

Size stacks and vents to AS/NZS 3500.2, table 6.3(A), for fixture discharge pipe sizes and discharge units and AS/NZS 3500.2, table 3.9.3.1, vent pipe sizes. Extend up past the highest branch to form a discharge stack vent terminating to AS/NZS 3500.2, section 6.9 Vents, and finishing at the base with a 45 degree bend. Support system to AS/NZS 3500.2, table 10.2.1, for distances between supports.

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Completion

3.17 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal of all debris, unused materials and elements from the site.

3.18 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable.

Commissioning

3.19 TESTING

Pre-test all pipework during construction. On completion of the work and before approval for acceptance of the pipework, carry out a final test to the approval of the engineer and if required witnessed by the representative of the territorial authority.

4 SELECTIONS

For further details on selections go to www.marley.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

Materials - sanitary systems

4.1 MARLEY PVC DWV PIPEWORK, RESIDENTIAL

Manufacturer:	Marley New Zealand Limited
Pipe brand/type:	Marley Optim
Pipe diameter:	65mm, 100mm
Jointing:	Solvent joint
Stiffness class:	SN4
Fittings:	to Marley DWV Technical Design Manual

4.2 MARLEY PVC-U VENT PIPE

Manufacturer:	Marley New Zealand Limited
Pipe brand/type:	Marley Optim
Pipe diameter:	50mm, 80mm, 100mm
Jointing:	Solvent joint
Stiffness class:	SN4
Fittings:	to Marley DWV Technical Design Manual

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7430 DRAINAGE

1 GENERAL

This section relates to the supply and laying of gravity foul water (sewage), stormwater and groundwater drainage.

1.1 DOCUMENTS

The following documents are specifically referred to in this section:

NZBC B1/AS1	Structure
NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC E1/VM1	Surface water
NZBC G1/AS1	Personal hygiene
NZBC G13/AS1	Foul water - sanitary plumbing
NZBC G13/AS2	Foul water - drainage
NZBC G13/AS3	Foul water - sanitary plumbing and drainage
AS/NZS 1254	PVC-U pipes and fittings for Stormwater and Surface Water applications
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2439.1	Perforated Plastics Drainage and Effluent Pipes and Fittings - Perforated drainage pipe and associated fittings
AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design
AS/NZS 2566.2	Buried Flexible Pipelines - Installation
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZS 3104	Specification for concrete production
NZS 3111	Method of test for water and aggregate for concrete
AS/NZS 3500.2	Plumbing and drainage - sanitary plumbing and drainage
NZS 3604	Timber-framed buildings
NZS 4402 (set)	Method of testing soils for civil engineering purposes
AS/NZS 4671	Steel reinforcing materials
AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
NZTA F2	Specification for pipe subsoil drain construction

Plumbers, Gasfitters and Drainlayers Act 2006

1.2 AS BUILT DOCUMENTS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

1.3 QUALIFICATIONS

Drainlayers to be experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying drainlayer under the Plumbers, Gasfitters and Drainlayers Act 2006.

2 PRODUCTS

2.1 CONCRETE

17.5 MPa prescribed mix to NZS 3104.

2.2 REINFORCEMENT

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

Components

2.3 PVC-U PIPES

PVC-U pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.
Underground PVC-U pipe to be classified as follows:

Classification:	Use:

SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

2.4 GULLY TRAPS - AS/NZS 3500.2

Gully traps complete with grating to AS/NZS 3500.2, 4.6 Gullies, as modified by NZBC G13/AS3.

2.5 SURFACE WATER SUMP GRATINGS

Cast iron frame with lift-up grating.

2.6 TRENCH BACKFILLING MATERIAL, FOUL WATER - AS/NZS 3500.2

Bedding and backfilling material to AS/NZS 3500.2, 5.4, Bedding of drains, and for concrete, if required, AS/NZS 3500.2, 5.3 Concrete Support.

Surface water

2.7 TRENCH BACKFILLING MATERIAL, SURFACE WATER - AS/NZS 3500.3

Bedding and backfilling material to AS/NZS 3500.3, section 6.2.10, 6.2.11 and 6.3.5, as modified by NZBC E1/AS2.

Subsoil

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2.8 DRAINAGE MATERIAL - SUBSOIL DRAINAGE

Free draining crushed stone, 7 mm to 20 mm in size.

2.9 FILTER FABRIC

Polymeric fabric formed from a plastic yarn or a long chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, amide, ester or vinylidene chloride. Fibres to be rot proof, chemically stable and have low water absorbency. The filter network, (woven or non-woven) must be dimensionally stable and resistant to delamination.

3 EXECUTION

3.1 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs.
Trenches running parallel, below and close to foundations of buildings to NZS 3604 or NZS 4229 to be separated to:

- NZBC E1/AS1, 3.9.7, Proximity of Trench to Building, for stormwater and subsoil drains.
- AS/NZS 3500.3, 6.2.8, Installation near and under buildings, as modified by NZBC E1/AS2.
- NZBC G13/AS2, 5.6, Proximity of Trench to Building, for foul water drains.

3.2 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

3.3 FOUL WATER DRAINAGE GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2 and complete all tests to AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033.

3.4 SURFACE WATER DRAINAGE GENERALLY - AS/NZS 3500.3

Carry out stormwater drainage work to AS/NZS 3500.3, and complete all tests to AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032, AS/NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033 and AS/NZS 2566.1.

3.5 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.

3.6 CONSTRUCT GULLY TRAPS - AS/NZS 3500.2

Set in a minimum 100mm thick concrete with top surround 25mm above paving and 75mm above other surfaces, to AS/NZS 3500.2, section 4.6, Gullies.

3.7 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the underground rainwater storage tank. Overflow to soak pit.

3.8 FILTER FABRIC TO DRAINAGE MATERIAL - SUBSOIL DRAINAGE

Where details require drainage material to be encapsulated in filter fabric to prevent fines from blocking the aggregate. Place fabric and carefully hold in place by pinning and/or by controlled use of aggregate as ballast. After drain installation and required backfilling, complete encapsulation with fabric. Ensure filter fabric is correctly placed, sufficiently overlapped and pinned and/or secured.

3.9 INSTALL SURFACE WATER SUMP

To NZBC E1/AS1 or to AS/NZS 3500.3 section 7 as modified by NZBC E1/AS2, complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.

3.10 SOAK PITS

Dispose of storm water to soak pit on site as shown on the drawings. Refer to separate work section.

3.11 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

3.12 TESTING - FOUL WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

3.13 TESTING - SURFACE WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC E1/VM1, 8.0 Drain Leakage Tests or AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

Backfilling and encasement - Foul water and surface water

3.14 TRENCH BACKFILLING GENERALLY - FOUL WATER

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

Up to 300mm above the pipe, compaction shall be by tamping by hand using a rod with a pad foot (having an area of 75 ± 25 mm by 75 ± 25 mm) over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing the drains.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

4 SELECTIONS

4.1 PVC-U PIPES - SEWER

Brand/type:	Marley Optim
Size:	100mm
Jointing:	rubber ring
Fittings	to Marley DWV Technical Manual

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4.2 PERFORATED DRAINAGE PIPING - SUBSOIL DRAINAGE

Pipe brand/type:	Marley Drainflo
Diameter:	110mm
Sock brand/type:	Cirtex

4.3 PVC-U PIPES - STORMWATER

Brand/type:	Marley Stormline
Size:	100mm
Jointing:	solvent
Fittings	to Marley DWV Technical Manual

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7455 STORMWATER MITIGATION SYSTEMS

1 GENERAL

This section relates to the design, supply and installation of stormwater soakage systems.
It includes:

- soak pits
- detention tanks
- associated pipework, complete with fittings

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1.1 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

NUO	Network Utility Operator

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC E1/VM1	Surface water
AS/NZS 1254	PVC-U pipes and fittings for Stormwater and Surface Water applications
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent application
AS/NZS 3500.1	Plumbing and drainage - water services
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
AS/NZS 4671	Steel for the reinforcement of concrete
AS 3706.1	Geotextiles - Methods of test. Part 1: General requirements, sampling, conditioning, basic physical properties and statistical analysis
AS 3996	Access covers and grates
NZS 3104	Specification for concrete production
NZS 3106	Design of concrete structures for the storage of liquids
NZS 3109	Concrete construction

Plumbers, Gasfitters and Drain layers Act 2006
Health and Safety at Work Act 2015

WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry

WorkSafe, Good Practice Guidelines - Excavation Safety
WorkSafe, to the Health and Safety at Work (Hazardous Substances) Regulations 2017

Requirements

1.3 QUALIFICATIONS WORKERS - LICENSED UNDER STATUTE

Workers and supervisors to be appropriately qualified to applicable legislative requirements. All work to be carried out under the direct supervision of a certifying drain-layer under the 'Plumbers, Gasfitters and Drain-layers Act 2006.'
Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.4 SITE CONDITIONS

Before starting work check on site the drainage layout, dimensions, levels and invert levels and ensure that line, level, falls and cover are correct.

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.6 PRE-TREATMENT REQUIREMENTS

Provide pre-treatment or settling devices to soakage systems to Local Authority or Network Utility Operator requirements, based on the following guidelines:

- All runoff from paved areas that are larger than 20m² is required to be pre-treated to a

standard where 75% removal of suspended solids is achieved on a long-term average basis.
- All runoff from roof areas must pass through a settling device.
- Runoff from paved areas less than 20m² need only pass through a standard catch pit.

Performance

1.7 TECHNICAL APPLICATION

Refer to Manufacturer for technical support for layout of stormwater soakage system and scheduling.

1.8 ADJOINING PROPERTIES

Take precautions to protect adjoining property from damage or risk of damage arising from excavation and drainage work.

1.9 EXCAVATION SAFETY

To the Health and Safety at Work Act 2015.
Carry out excavation to WorkSafe, Good Practice Guidelines - Excavation Safety. This may include deep excavation, trenching etc.
Carry out excavation using plant and equipment suitable for the purpose. Prevent material rolling into trenches.

1.10 COMPLIANCE WITH NZ BUILDING CODE

All work to comply with NZBC E1/AS1: Surface water, 3.0 'Drainage system materials and construction'.

1.11 PERCOLATION TEST

Carry out a percolation test to NZBC E1/AS1 paragraph 9.0.2 to determine the soakage rate of the natural ground. Confirm the soak pit design and sizing by calculation using NZBC E1/AS1 paragraphs 9.0.4 and 9.0.5, for the approval of the BCA.

Compliance information

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -
- Manufacturer / importer / distributor warranty
- Installer's warranty
- Installer's approval certificate from the manufacturer/importer/distributor
- Installer's Compliance Note (pressure test report) signed by an Approved Service Technician
- Producer Statement - PS1 Design - for design by contractor
- Producer Statement - PS3 Construction - from the certified installer
- Producer Statement - PS4 Construction Review - from the engineering consultant
- Final as-built information.
- Other information required by the BCA in the Building Consent Approval documents.

2 PRODUCTS

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Soakage systems

2.1 SOAK PIT

Proprietry plastic crate system lined with filter cloth to AS 3706.1. Chamber sized to suit ground soakage and give adequate storage to avoid overflowing

Stormwater detention tanks

2.2 UNDERGROUND STORMWATER DETENTION TANK

Tank generally to NZBC G12/AS1 and AS/NZS 3500.1 as modified by NZBC G12/AS3, section 2 Materials and products and 8 Water Storage tanks, and:
- Underground tank manufactured from polyethylene to AS/NZS 4766.
- Underground tank manufactured from reinforced concrete. To be designed, inspected and certified by a professional consulting engineer in accordance with the specified test method, performance requirements, pressure testing and objectives of AS/NZS 1546.1.

Tanks to be fitted with a secure fitting lid to provide internal access for cleaning or inspection.

Materials & components

2.3 CONCRETE

Concrete for foundations to NZS 3104.

Prescribed mix 17.5 MPa:	For in situ bases, anchors and pipe surrounds.
Prescribed mix 14 MPa:	For bedding only.

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2.4 FILTER FABRIC

Polymeric fabric formed from a plastic yarn or a long chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, amide, ester or vinylidene chloride, complying with AS 3706.1. Fibres to be rot proof, chemically stable and have low water absorbency.
The filter network, (woven or non-woven) must be dimensionally stable and resistant to delamination.

2.5 BEDDING SURROUND AND FILLING MATERIALS

Granular:	20/50 grade clean scoria.
Selected:	Fine grain soil or granular material suitable for bedding and excluding topsoil, organic matter and rubbish.
Ordinary:	Top soil or other excavated materials excluding organic matter and rubbish.

2.6 PVC-U PIPES AND FITTINGS

Unplasticised PVC pipe and fittings to AS/NZS 1254.
Underground PVC-U pipe to comply with AS/NZS 1254 and classified as follows:

Classification	Use
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 GROUND CONDITIONS

Specific ground conditions or contaminated ground may require an increase in the concrete surround dimensions or the addition of reinforcement. Check work previously carried out and confirm it is of the required standard for this part of the work.

3.4 GENERAL

Carry out all work to:

- AS/NZS 3500.3, 7.5 STORMWATER PITS, INLET PITS AND ARRESTERS
- NZBC E1/AS1: Surface water, 3.0.

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 EXCAVATION AND SETTING OUT

Carry out excavation and set out as follows:

- Site conditions and end use vary; therefore, it is recommended consultation with a registered engineer who is familiar with end use and site conditions to ensure concrete strength is sufficient, the concrete surround is sufficiently dimensioned and reinforced.

Installation - stormwater detention tanks

3.7 SITE EXCAVATION FOR UNDERGROUND TANK

Excavate to required size. Place tank into excavation and connect up to the plumbing system with backflow prevention fitted to AS/NZS 3500.1 as modified by NZBC G12/AS3. Drainage system to AS/NZS 3500.3, as modified by NZBC E1/AS2. Backfill with free draining material to manufacturer's requirements. Ensure tank access lids are designed and installed to prevent child and stormwater ingress.

3.8 INSTALL UNDERGROUND TANK

Lay minimum 100mm compacted base course material under tank. Position tank on the prepared compacted level base. Fix underground tank installation anchors and hydraulic uplift restraint ties. Backfill around tank with crushed stone or gravel to 150mm above tank crown level minimum.
Backfill and base course material to be either:

- Crushed stone or gravel: washed, with angular particle sizes no larger than 13.2mm with no more than 5% passing a 2.36mm sieve. Dry density must not be less than 1500kg/m³.
- Approved backfill should not be mixed with sand or native soils and should always be brought up to at least the tank crown level. The use of non-specified backfill material could result in tank failure. (i.e. Gap 7).
- Naturally rounded gravel: clean naturally-rounded aggregate with particle sizes no larger than 19mm with no more than 5% passing a 2.36mm sieve. Dry density must not be less than 1500kg/m³.
- Contractor to work in maximum backfill lifts of 300mm. After each lift, contractor to use long handled probe to work the backfill material under the entire length of the tank and within any ribs.
- All voids and spaces to be filled to ensure adequate support of tank.

Stated depths assume no hydraulic loads. Consult engineer if high water table is possible or expected.
Top of tank to be min. 350mm below finished ground level. Depth of cover for tanks must not exceed 2000mm over top of tank. Backfill over tank with clay or native soil, then spread minimum 100mm topsoil over.
Fix trafficable lid and riser.

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Installation - connections

3.9 FILTER INSTALLATION

Install proprietary in-line filter before the inlet connection.

3.10 INLET CONNECTION

Install inlet pipe into top of tank at manufacturer's designated mounting area using a Uniseal type connection.

3.11 OUTLET CONNECTION

Install pipe to manufacturer's installation details. To the outlet connect a floating arm draw-off to deliver water from 100mm below the surface. From the base connection run a flexible hose to the pump. Install ball valve in line between base connection and water pump. Support all pipework at outlet.

3.12 PIPE SEALS

Insert Uniseals in clean cut holes of the correct size. Insert Uniseal into hole with widespread facing the pipe to be inserted. Lubricate the pipe with detergent and push through the Uniseal. Use only on top of tank connections.

3.13 LINKING MULTIPLE TANKS

Link multiple tanks together by the following method:

- Top link - fills tanks individually in series, via overflow pipes. Connect the outlet (to tap) across all tanks (at the bottom; with isolation valve on each.
- Bottom link - fills all tanks in parallel, via bottom inlet. Only one tapping point needed.

Tanks to be sited level with each other.

Installation - soakage systems

3.14 INSTALL SOAK PIT

Install to manufacturers specifications complete with inlet drain, and filter clothLine bottom of chamber with a 250mm minimum layer of 100-150mm rocks/scoria. Cover soak pit with a minimum of 300mm deep soil.

Completion & commissioning

3.15 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

3.16 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

4 SELECTIONS

Stormwater detention tanks

4.1 UNDERGROUND STORMWATER DETENTION TANK

Manufacturer:	MCG
Tank material:	Precast Concrete
Capacity:	10,000 litres

First Flush Divertor

4.2 FIRST FLUSH WATER DIVERTER

Location:	In Ground Inline
Manufacturer:	Blue Mountain Co
Type:	Rain Harvesting Delta In Ground

Soakage systems

4.3 CHAMBER SOAK PIT

Size:	Refer to engineers design
Filter cloth:	To AS 3706.1, with mass of 140gm/m² and minimum thickness of 0.45mm

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7555E ESCEA GAS FIRES

1 GENERAL

This section relates to the supply and installation of **Escea** gas fires, flues and controls.

1.1 RELATED WORK

Refer to 7211 GAS SYSTEM UTILITY NETWORK for piped gas supply.
Refer to 7212 GAS SYSTEM LPG CYLINDERS for cylinder gas supply.
Refer to 7221 GAS APPLIANCES for installation.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G10/AS1	Piped services
AS/NZS 1596	Storage and handling of Liquefied Petroleum Gas

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

- Escea product catalogue
- Installation and User manual for DX1000, DX1500, DS1150, DS1400, DS1650, DS1900, DL850, DL1100, DF700, DF960, DFS730, EF5000
- Flueing information, including internal and external vertical powered flue, horizontal powered flue, masonry vertical powered flue, freestanding internal and external vertical powered flue, freestanding horizontal powered flue, and Poly Pro flue extensions.
- Builders and Architects information for DX1000, DX1500, DS1150, DS1400, DS1650, DS1900, DL850, DL1100, DF700, DF960, DFS730, EF5000
- Specific Architectural Details and Design Guides for Architects, Designers and Installers.

Manufacturer/supplier contact details

Company:	**Escea Ltd**
Web:	www.escea.com/nz
Telephone:	0800 173 000

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 year Firebox Warranty:	For parts
2 years Total Warranty:	For parts and labour

- Provide the warranty in the manufacturer standard form
- Commence the warranty from date of purchase

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years Total Warranty:	For labour

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Gasfitter to be experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying gasfitter under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Escea products, or associated products, components or accessories.

1.8 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010 and the network utility operator requirements. Give notices for inspections and carry out tests as required.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Supply the **Escea** Gas Fire User Guide to the owner at the completion of the testing of the gas fire.

Performance

1.10 FINAL INSPECTION AND TEST

Submit the work for inspection and test and prove to the satisfaction of the network utility operator that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

Testing should be at the time of completion. Confirm this timing before carrying out any tests. Test and demonstrate the system according to manufacturer specification and to appropriate gas Standard.

1.11 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

1.12 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.13 APPLIANCE COMPLIANCE

Supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

2 PRODUCTS

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Materials

2.1 DS SERIES GAS FIRE

Escea DS Series– a thermostatically controlled, flame effect, high efficiency and high output, glass fronted built-in gas fire. Fire can be single or double sided. Operates on natural gas, propane or ULPG. Fire is controlled by a RF wireless remote control handset, or by connection and control through the internet via the home Wi-Fi and Smart Heat app. Fireplace can also be connected to a home automation system. Refer to SELECTIONS for fuel effect and other options.

Components

2.2 FLUES

Escea flue kits with options for different terminal installation requirements. Refer to SELECTIONS for options.

2.3 SMART HEAT

Escea's Smart Heat system to connect each fireplace in your home directly to your modem. When connected, download the Android or iOS app to control fireplace's precise settings and temperature. Alternately log onto Smart Heat website to view and control fire settings.

The fireplace monitors the temperature of the room and adjusts accordingly based on the requested room temperature, automatically modifies the heat output and air fan to ensure no energy is wasted; whisper-quiet system.

Accessories

2.4 MESH SCREEN KIT

Escea mesh screen is fixed to the glass viewing area of the fire, acting as an additional layer of protection from accidental contact with the glass of the fire during operation. Uses Invisi-Mesh technology, seamlessly incorporated into the opening of the fire. Does not require modification of the wall lining. Refer to SELECTIONS.

2.5 FLUE LINER EXTENSION

Black painted 1.2m x 225mm Ø galvanized flue liner. For use where an exposed black flue is desired or to extend the exposed portion of the freestanding fire flue kit length. Refer to SELECTIONS.

2.6 FLUE FLASHING

Flashings to flue termination do not form part of the flue kit and must be specified separately. Installation of flashings by contractor. Refer to SELECTIONS.

3 EXECUTION

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Conditions

3.1 GENERALLY

Carry out the whole of this work to the requirements of NZBC G10/AS1 and the appropriate Standards for gas installation.

Application

3.2 INSTALL GAS APPLIANCES

Fit and connect gas appliances complete with flues as required to Escea installation requirements. Refer also to section 7221 GAS APPLIANCES for installation of appliances and flues.

3.3 HANDLE AND STORE

Handle and store units, cylinders, pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress. Store according to manufacturer's instructions.

3.4 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise.

3.5 CORROSION

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.6 SEISMIC RESTRAINT

Gas fires to be installed and firmly secured onto a continuous base. Refer to the requisite Escea Installation Manual.

3.7 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.8 PIPE SIZE

Gas fitter to check and confirm adequate pipe size, incoming mains and meter on site as a part of the installation. Pipe sizing calculation to appropriate gas Standard.

Installation

3.9 INSTALL IN-BUILT OR CASSETTE-STYLE FIRE

Install Escea fire complete with necessary fittings and components to Escea installation requirements.

3.10 INSTALL FLUE

Install flue to selected location and flash. Refer to Escea installation requirements and 7221 GAS APPLIANCES for flue installation and termination. Refer also to 4821 FLASHINGS or appropriate Cladding section for flashing requirements.

Completion

3.11 REPLACE

Replace damaged or marked elements.

3.12 LEAVE

Leave work to the standard required by following procedures.

3.13 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.escea.com/nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 ESCEA DS1400 SERIES INDOOR GAS FIRE

Location/type:	Refer to plans
Manufacturer:	**Escea**
Model:	**DS1400**
Single/double side:	Single side
Fascia style:	TBC
Fuel effect:	TBC
Flue kit:	Wall vent - refer to plans for location
Gas type:	LPG - bottle supply
Internet connection:	Required - Confirm with owner

Components

4.2 ESCEA HORIZONTAL POWERFLUE KIT (906601)

Location/type:	External wall
Manufacturer:	**Escea**
Model:	**D-Series Horizontal Powerflue Kit**
Fan location:	Externally – outside the building on a wall
Flexible flue:	up to 4m
Power supply:	Supplied cable connecting gas fire to the flue terminal
Condensate trap:	Not required

4.3 FLUE FLASHING

Size:	To suit flue
Material:	PC Aluminium

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7612 RESIDENTIAL EXTRACT SYSTEMS

1 GENERAL

This section relates to the supply and installation of extract systems for residential applications. It includes:

- Kitchen extract systems
- Bathroom and laundry extract systems

Documents

1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC E3/AS1	Internal moisture
NZBC G4/AS1	Ventilation
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).

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.

Requirements

1.2 CO-ORDINATE WORK

Co-ordinate all items with the main contractor, in particular cutting of penetrations and waterproofing. Exterior penetrations to NZBC E2/AS1 as consistent with the project requirements.

1.3 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.4 ELECTRICAL QUALIFICATION

Registered electrician to carry out work to Electricity (Safety) Regulations 2010.

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.6 EXTRACT FLOW RATES

To NZBC G4/AS1.
Extract fans (including associated ducts) to have a minimum flow rate of:

- 25 L/s for showers and baths
- 50 L/s for cooktops

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Compliance information

1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer, importers or distributors warranty
- Installer warranty
- Other information required by the BCA in the Building Consent Approval documents.

2 PRODUCTS

Kitchen extract systems

2.1 KITCHEN RANGEHOOD EXTRACT - TO EXTERIOR WALL / SOFFIT

Mechanical rangehood extract system comprised of rangehood canopy, extract fan, filters, lighting, controls, metal ducting, solid duct wall sleeve, exterior grille and weatherproof cowl.

Bathroom and laundry extract systems

2.2 CEILING MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT

Mechanical fan ducted system comprised of ceiling fan, filters, controls, aluminium foil flexi ducting joined to a solid duct sleeve sloped to remove condensation, exterior weatherproof grille and flashing.

Component

2.3 ELECTRICAL FAN SWITCH

Independent switch connected to socket outlet located near fan / unit.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

Installation - mechanical ventilation

3.3 INSTALL KITCHEN RANGEHOOD

Install rangehood to AS/NZS 3000, AS/NZS 60335.1 and manufacturer installation instructions. Connect unit with ducting to exit either through roof or exterior wall / soffit.

3.4 INSTALL BATHROOM / TOILET / LAUNDRY EXTRACT FANS

Install exterior ducted fans to manufacturer requirements to AS/NZS 3000 and NZBC G4/AS1. Duct through to roof or exterior wall / soffit.

3.5 INSULATION CLEARANCE

Provide 50mm clearance between insulation and motor unit / electrical enclosure. Insulation can abut ducts.

3.6 ELECTRICAL INSTALLATION

Install switch and socket outlets to AS/NZS 3000 and AS/NZS 60335.1. Refer to electrical section(s) for requirements.

Completion & commissioning

3.7 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

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7701 ELECTRICAL

1 GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrically-powered fittings

1.1 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
ELV	Extra Low Voltage
GLS	general lighting service
IP	international (ingress) protection classification
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
SIA	security integration architecture
TPS	tough plastic sheathed
TCF	Telecommunications Carriers' Forum

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Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F6/AS1	Visibility in escape routes
NZBC F7/AS1	Warning systems
NZBC G4/AS1	Ventilation
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 1768	Lightning protection
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification-general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth-leakage devices)
AS/NZS 3439.3	Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
NZS 4514:2009	Interconnected smoke alarms for houses
NZS 4246	Energy Efficiency - Installing bulking thermal insulation in residential buildings
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).

IEC 61643 Components for low voltage surge protection devices
Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services

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.

Warranties

1.3 WARRANTY

Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.
1 year: Warranty period

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Requirements

1.4 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2, and TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Workers and supervisors to be appropriately qualified to applicable legislative requirements. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN

Before installation work commences provide a Certified Design. The Certified Design is to comply with the Electricity (Safety) Regulations (2010), regulations 58. It must be signed by the designer of the installation.

1.8 ELECTRICAL CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations 2010, prior to connection.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect high risk electrical work as required by regulation 70.

1.9 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the owner and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

2 PRODUCTS

2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.5mm² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm² on 16 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity

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	2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Hot water cylinder circuits:	Single phase: 2.5mm² on 20 amp MCBs
Range/oven/hob circuits:	Single phase: 6mm² high temperature cable on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C (roof spaces above insulation etc).

2.3 DISTRIBUTION BOARD

Flush surface mount boards manufactured to AS/NZS 3439.3 , or AS/NZS 61439.3, and installed in accordance with AS/NZS 3000. Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

2.4 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with AS/NZS 3190. MCBs to 4.5kA or 6kA rated.

2.5 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

2.6 SWITCH UNITS

Single pole switches to be 16 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units.
Label all switch units that control electrical equipment or special lighting circuits by proprietary engraved switch mechanisms where applicable.
Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.

2.7 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.8 SWITCHED SOCKET UNITS

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3100, AS/NZS 3112 and AS/NZS 3113, single or multi gang as detailed.

2.9 SMOKE ALARMS

Photoelectric smoke alarm to NZS 4514 comprising photoelectric smoke detecting technology. Completed with alarm sounding feature and hush-button. Available wireless with long-life (minimum 10 years), non-removable, sealed battery or hard wired with back-up battery power supply

2.10 SURGE PROTECTION

Protection for the homes appliances with IEC 61643 Class ll surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class lll surge protection to switched socket outlets.

2.11 DOOR BELL SYSTEM

Complete with transformer for mounting on distribution board.

2.12 LIGHT FITTINGS

High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.95 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 230v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise; integral/non-integral LEDs, reflectors, lenses, heatsinks and drivers - 3,000K to 4,000K, CRI >80, L70.

2.13 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with AS/NZS 60335.1.

2.14 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 60335.1, scratch resistant powdercoated or chrome finish.

2.15 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

3 EXECUTION

3.1 MAIN SUPPLY

Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.

3.2 DISTRIBUTION BOARD

Fit to AS/NZS 3000 and board manufacturer requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

3.3 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.4 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to AS/NZS 3000, 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer requirements.
If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge

3.5 MAIN EARTH

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

3.6 EARTH LEAKAGE PROTECTION

Install RCD protection to AS/NZS 3000.

3.7 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets and lighting except for fixed or stationary cooking equipment, to AS/NZS 3000.

3.8 RCD - SPECIFIC INSTALLATIONS

Install fixed wired RCD protected outlets (SRCD) in the following higher risk areas:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.
- Hand-held tools subject to movement in use, i.e. work-shops, garages.

3.9 SET-OUT

The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.10 CABLING

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Install wiring systems to AS/NZS 3000. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

3.11 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

3.12 WALL BOXES

Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.13 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.

3.14 LIGHT FITTINGS

Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer's requirements.

3.15 EXTRA LOW VOLTAGE LIGHTING

Use electronic drivers (LED) for ELV lamps, one transformer/driver per lamp. Locate to manufacturer's requirements and as close as practicable to the lamp. Ensure transformers/drivers and rear of light fittings are adequately ventilated and appropriately clear of any building elements, to AS/NZS 3000.

3.16 ELECTRIC HOT WATER SYSTEM

For storage heaters, wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

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3.17 SPACE HEATERS

Install to the heater manufacturer requirements, and to AS/NZS 3000. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance, or otherwise connect to a control switch located adjacent to the heater and a remote thermostat.

3.18 SMOKE ALARMS

Install smoke alarm system to NZS 4514 and to the alarm manufacturer requirements. Fit neatly and without damage to the surrounding finish.

3.19 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000 and AS/NZS 1768. When fitting IEC 61643 Class ll protection at the switchboard, protect the device by a dedicated MCB.

3.20 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

3.21 BATHROOM ELECTRICAL FIXTURES

Install all electrical fixtures. Connect the following bathroom and toilet electrical items:

- Heated towel rails: Install to manufacturers requirements and installed in accordance with AS/NZS 3000 and the NZBC G9/AS1
- Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.

3.22 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with AS/NZS 3000 and in accordance with the manufacturer recommendations:

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches and sockets to IP56. Install to manufacturer specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

3.23 LABELLING

Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

Completion & Commissioning

3.24 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

Materials

4.1 SELECTIONS - FITTINGS AND HARDWARE

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

Outlets - fittings

4.2 EXTERIOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance. Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

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AD Architecture Ltd

SPECIFICATION CONTRACT DOCUMENTATION
To be referenced in association with the specification of the work to be done and materials to be used in carrying out the works shown on the accompanying drawings

New House - 40 Anderson Park Drive

Project Specification

40 Anderson Park Drive, Waikanae, New Zealand
Project Ref: 24058

Printed: 01 April 2025
Consent Issue 01/04/25



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masterspec

Specification built using Masterspec software
Project ID: 324271 - 394902

Contract Appendix Documents Index

Truss & Lintel Design & PS1	2
Geotechnical Report	18
H1 Construction R Values	39

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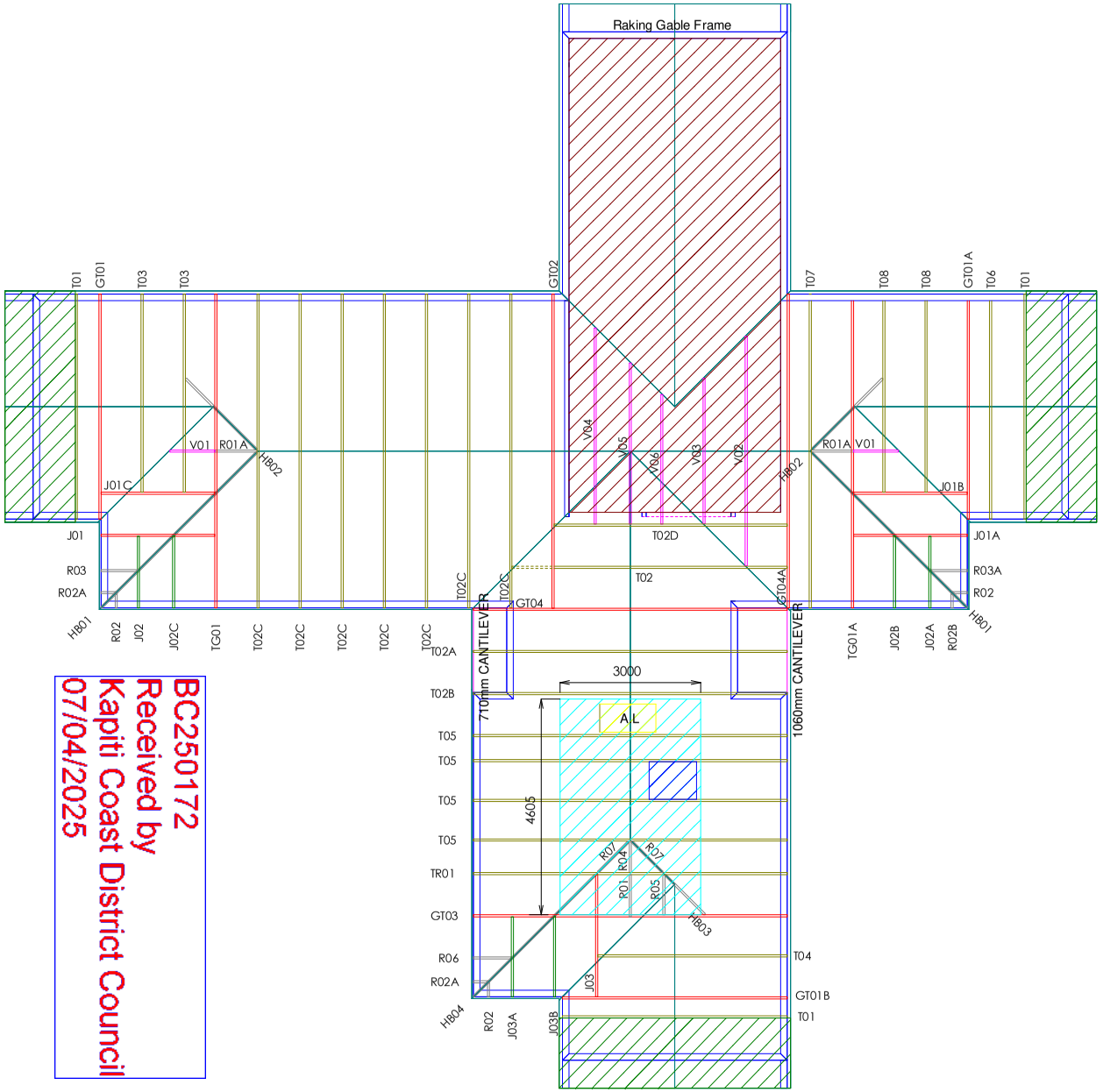
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Rafters Area 35.0°
Rafter sizes & fixings by other

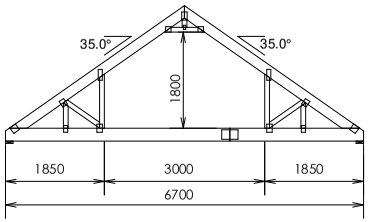
Attic storage:
Distributed :1.5 kPa
Concentrated : 1.8 kN

Skylight

Non-continuous gable wall frame,
broken at the ceiling height, sitting
on top of the standard height flat frame



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Note:
190 heel to all trusses at exterior framing line.
Cantilevered Outrigger Verge option

240

PlaceMakers

Site Address :
Atkinson
40 Anderson
Park Drive

Sheet Title :
For Building Consent
Buildable Truss Layout

Date : 23 Jan,2025 | Drawn : Ly Le
Scale : 1: 100 | System : MiTek 20/20

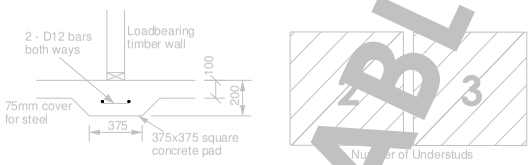
Job Details:

Roof Pitch	: 35.00deg	Truss Centres	: 900mm
Roof Material	: Longrun Iron	Roof Live Load	: 0.250kPa
Ceiling Material	: Gib Board 13mm	Overhang	: 35 / 70 / 600mm
Wind Zone	: High	Wind Speed	: 44m/s
Roof Snow Load	: 0.000kPa		

Job Title : BL262145
Sheet : 1
Revision Number :

ESTIMATING
NATIONAL ESTIMATING UNIT

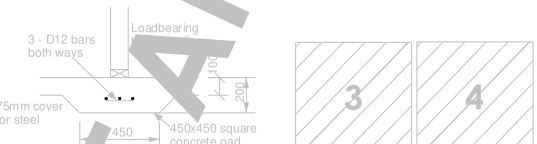
Slab Thickening Details



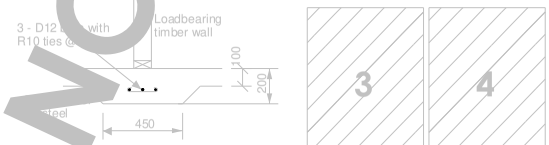
TYPE FP1 - 375x375mm Pad



TYPE FS1 - 300mm Strip footing



TYPE FP2 - 450mm Pad



TYPE FS2 - 450mm Strip footing

NOT APPLICABLE

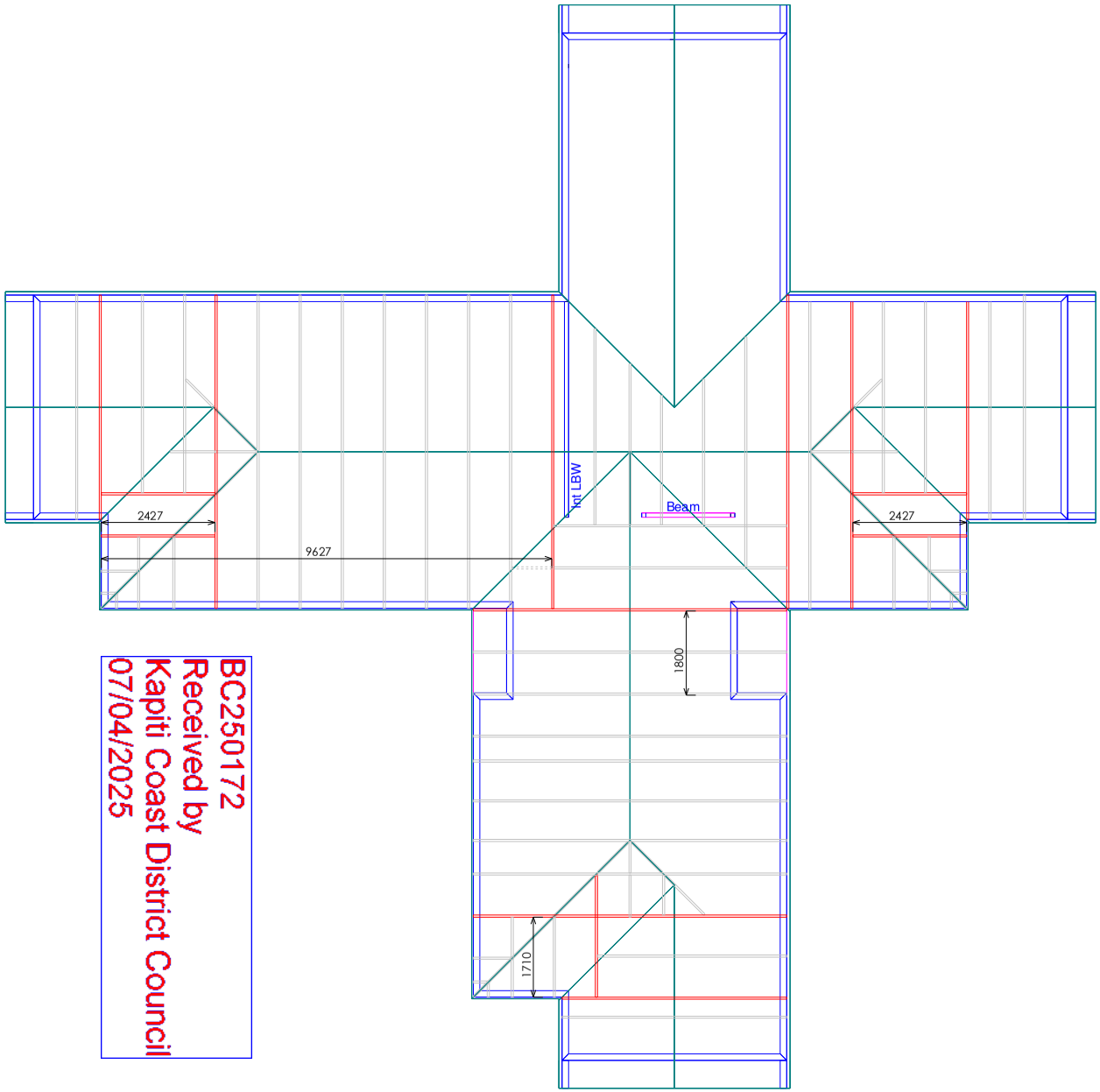
NOTES:

All point loads exceeding 8.0kN are indicated.

All walls shown to be considered load bearing.

Refer to Rib-raft floor desgin for slab thickening.

Layout is null and void if trusses not supplied by PlaceMakers



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07/04/2025

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PlaceMakers

Site Address :
Atkinson
40 Anderson
Park Drive

Sheet Title :
For Building Consent
Rib-Raft Slab

Date : 23 Jan,2025 | Drawn : Ly Le
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 35.00deg	Truss Centres	: 900mm
Roof Material	: Longrun Iron	Roof Live Load	: 0.250kPa
Ceiling Material	: Gib Board 13mm	Overhang	: 35 / 70 / 600mm
Wind Zone	: High	Wind Speed	: 44m/s
Roof Snow Load	: 0.000kPa		

Job Title : BL262145
Sheet : 2
Revision Number :

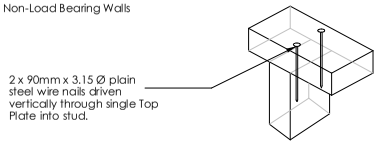
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NATIONAL ESTIMATING UNIT

BOWMAC
STUD-LOK
STUD TO TOP PLATE FIXING OPTIONS

TYPE A - 0.7kN

*Imges are indicative only. Timber Sizes may vary.

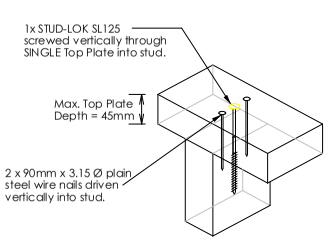
Non-Load Bearing Walls



TYPE B- 4.7kN

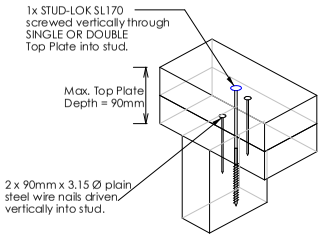
Load Bearing Walls

STUD-LOK SL125
Yellow Head
125mm Long





STUD-LOK SL170
Blue Head
170mm Long

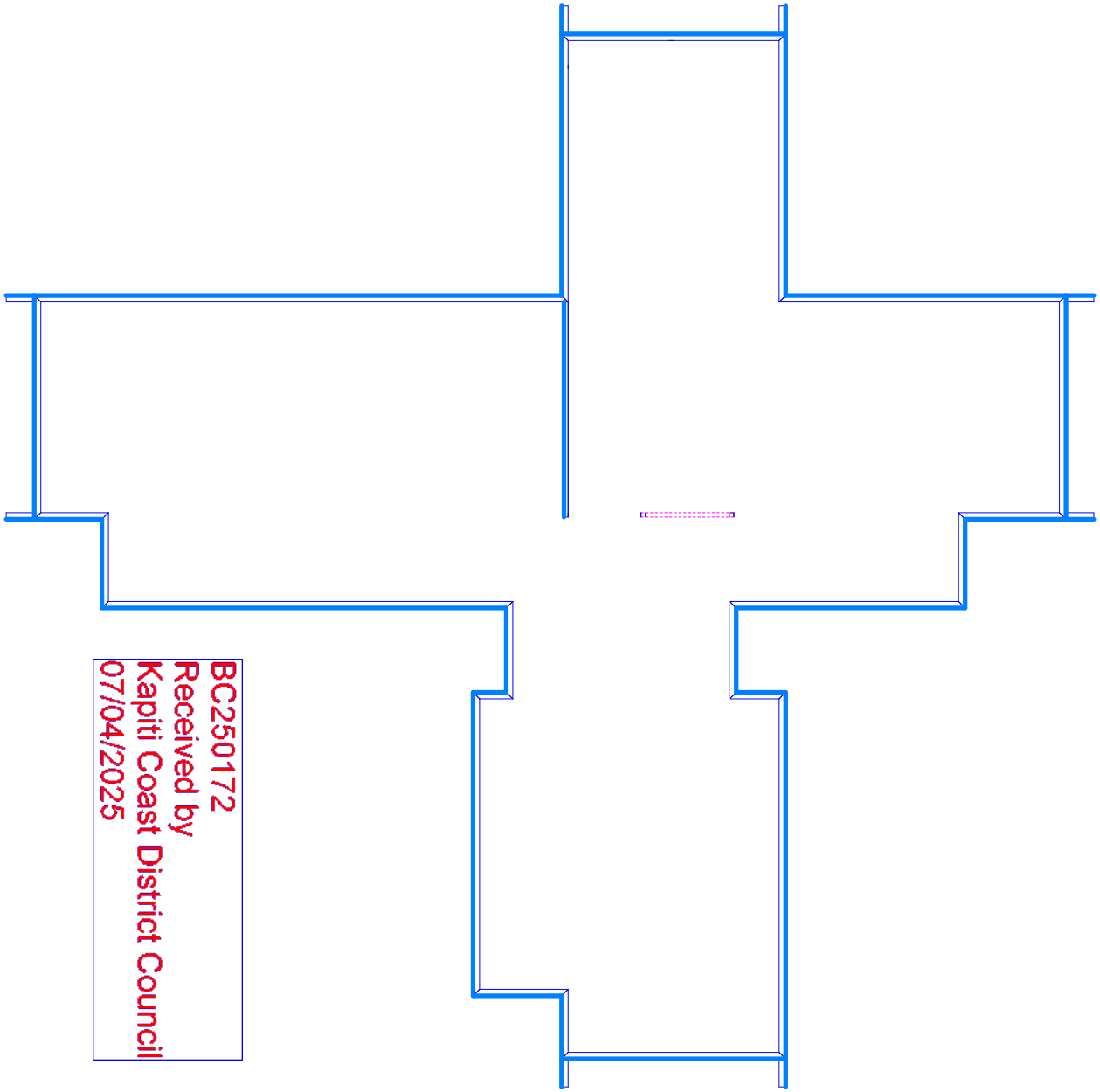




STUD-LOK Wall Fixing Chart - Stud to Top Plate Fixing Schedule (Alternative to NZS3604:2011 Table 8.18)

Loaded Dimension (m) Stud Centres			Light Roof Wind Zone					Heavy Roof Wind Zone				
300mm	400mm	600mm	L	M	H	VH	EH	L	M	H	VH	EH
3.0	2.3	1.5	2N	2N	SL	SL	SL	2N	2N	SL	SL	SL
4.0	3.0	2.0	2N	2N	SL	SL	SL	2N	2N	SL	SL	SL
5.0	3.8	2.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
6.0	4.5	3.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
7.0	5.3	3.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
8.0	6.0	4.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
9.0	6.8	4.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
10.0	7.5	5.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
11.0	8.3	5.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
12.0	9.0	6.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL

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Site Address :
Atkinson
40 Anderson
Park Drive

Sheet Title :
For Building Consent
Stud To Top Plate Fixing

Date : 23 Jan,2025 | Drawn : Ly Le
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 35.00deg	Truss Centres	: 900mm
Roof Material	: Longrun Iron	Roof Live Load	: 0.250kPa
Ceiling Material	: Gib Board 13mm	Overhang	: 35 / 70 / 600mm
Wind Zone	: High	Wind Speed	: 44m/s
Roof Snow Load	: 0.000kPa		

Job Title : BL262145
Sheet : 3
Revision Number :

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Truss Fixings

- D - Pair of Wire Dogs + 2/90x3.15mm skew nails
- X - LUMBERLOK JH47x90 Joist Hanger
- Z - LUMBERLOK JH47x120 Joist Hanger
- P - LUMBERLOK JH47x190 Joist Hanger
- E - LUMBERLOK JH95x165 Joist Hanger
- O - Pair of LUMBERLOK CT200 Ceiling Ties
- H - LUMBERLOK CT400 Cyclone Tie
- B - LUMBERLOK CT600 Cyclone Tie
- M - Pair of LUMBERLOK Multi Grips
- m - Single LUMBERLOK Multi Grip
- NP - LUMBERLOK Nailon Plate
- N - LUMBERLOK N21 Diagonal Cleat
- V - Single LUMBERLOK CPC40 Cleat
- G - LUMBERLOK TTP 9kN Truss to Top Plate set
- C - Single LUMBERLOK CPC80 Cleat
- K - LUMBERLOK TTP 16kN Truss to Top Plate set
- S - LUMBERLOK Split Hanger SPH140
- F - LUMBERLOK Split Hanger SPH180
- T - LUMBERLOK Split Hanger SPH220
- SB - LUMBERLOK 600mm Sheet Brace Strap
- 24 - MiTek Engineered 24kN Uplift Fixing
- 34 - MiTek Engineered 34kN Uplift Fixing
- 45 - MiTek Engineered 45kN Uplift Fixing

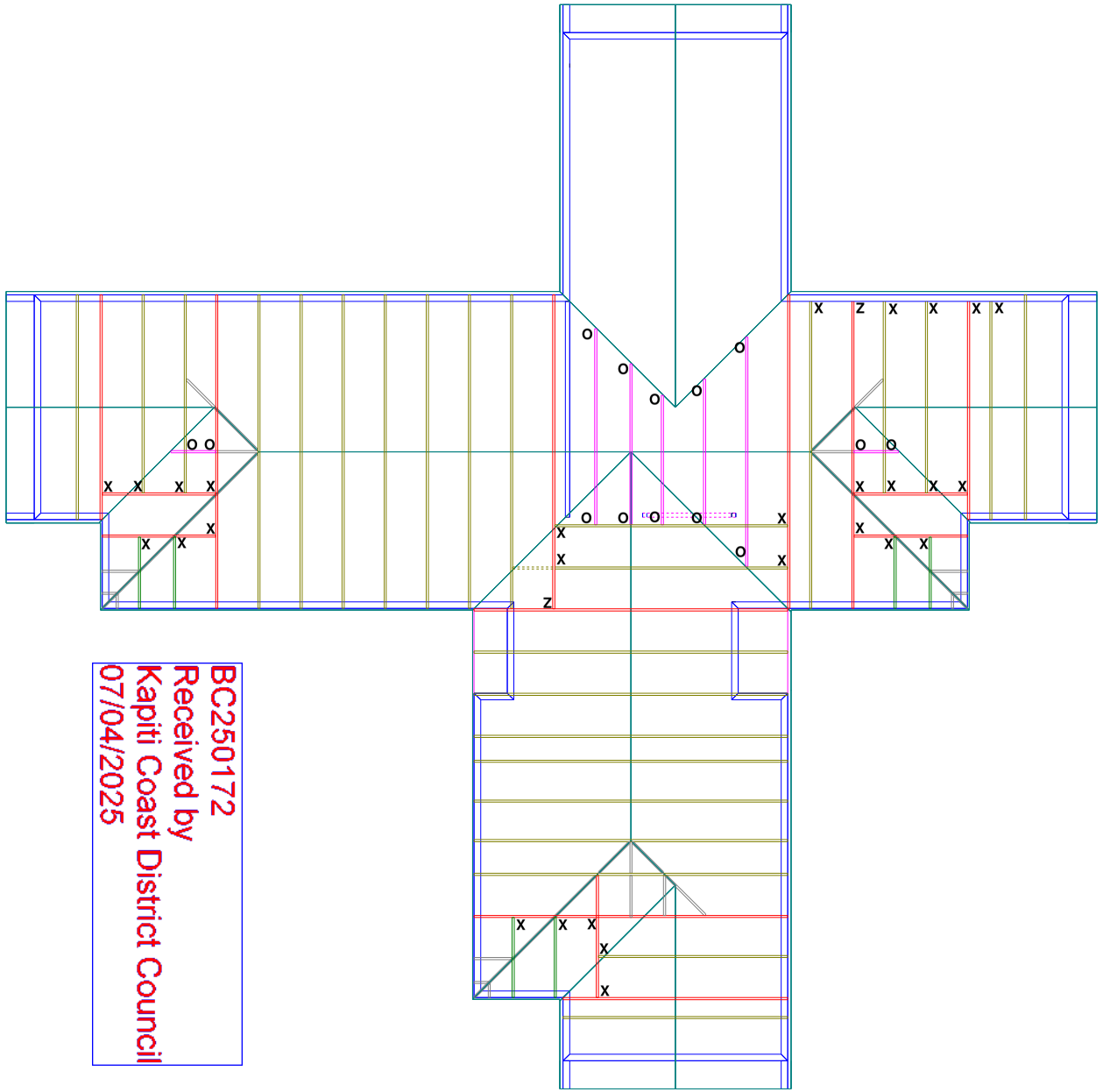
NOTES:

Where there are no fixings indicated, please use 2/90x35.15 skew nails + 2 wire dogs to standard heels. In situations where there are no overhangs shown, raised heels or internal LBW are indicated, a LUMBERLOK 9kN Truss to Top plate set is required for truss to Top Plate connections.

Refer to:LUMBERLOK Timber Connectors Characteristic Loadings Data brochure 03/4

If MiTek Engineered Fixings are specified
Refer to the details attached to this document.

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07/04/2025

243

PlaceMakers

Site Address :
Atkinson
40 Anderson
Park Drive

Sheet Title :
For Building Consent
Truss Fixings

Date : 23 Jan,2025 | Drawn : Ly Le
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 35.00deg
Roof Material	: Longrun Iron
Ceiling Material	: Gib Board 13mm
Wind Zone	: High
Roof Snow Load	: 0.000kPa
Truss Centres	: 900mm
Roof Live Load	: 0.250kPa
Overhang	: 35 / 70 / 600mm
Wind Speed	: 44m/s

Job Title : BL262145
Sheet : 4
Revision Number :

ESTIMATING
NATIONAL ESTIMATING UNIT

Lintel Fixing Details

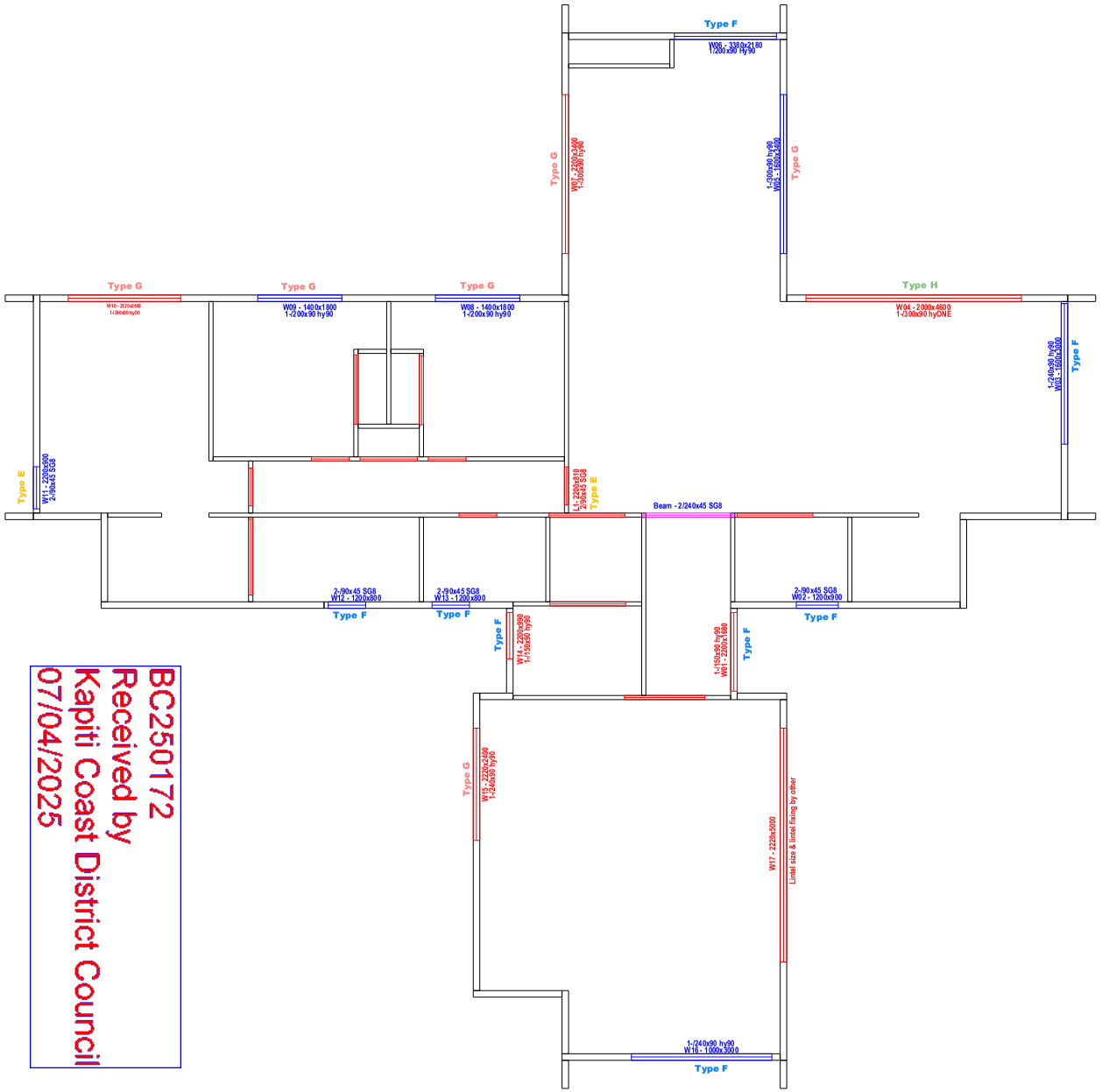
TYPE E
1.4kN

TYPE F
4.0kN

TYPE G
7.5kN

TYPE H
13.5kN

Layout is null and void if trusses not supplied by PlaceMakers



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NOTES:

Refer to:
Stud-Lok Lintel Fixing Schedule 11/2017 on the next page of this document.

(Alternative to NZS 3604:2011 Table 8.14 & Figure 8.12)

Beam fixings are for beam to wall connections only. All beam to post fixings are to be specified by other.

Single/Upper Level Lintels designed only. Lower storey lintels supporting floors are to be S.E.D.

In situations where brick is required above a lintel, the loading for the brick shelf has not been accounted for. If the brick shelf is to be supported by the lintel, an S.E.D design is required.

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Site Address :
Atkinson
40 Anderson
Park Drive

Sheet Title :
For Building Consent
Lintel Fixing

Date : 23 Jan,2025 | Drawn : Ly Le
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 35.00deg
Roof Material	: Longrun Iron
Ceiling Material	: Gib Board 13mm
Wind Zone	: High
Roof Snow Load	: 0.000kPa
Truss Centres	: 900mm
Roof Live Load	: 0.250kPa
Overhang	: 35 / 70 / 600mm
Wind Speed	: 44m/s

Job Title : BL262145
Sheet : 5
Revision Number :

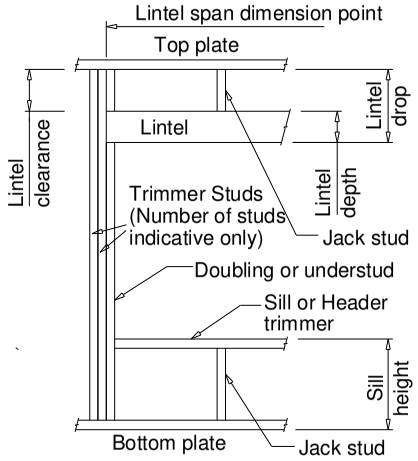
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STUD-LOK Lintel Fixings

NOTE:

- ★ All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ 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:

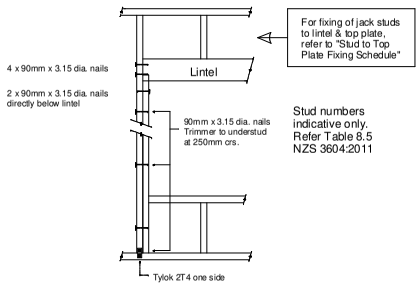
Roof Tributary Area	Light Roof Wind Zone			Heavy Roof Wind Zone		
	L, M, H	VH	EH	L, M, H	VH	EH
8.6 m²	G	G	H	G	G	H
11.6 m²	G	H	H	G	G	H
12.1 m²	G	H	H	G	H	H
15.3 m²	H	H	-	G	H	H
19.1 m²	H	-	-	G	H	-
20.9 m²	H	-	-	H	H	-
21.8 m²	H	-	-	H	-	-
34.3 m²	-	-	-	H	-	-

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.

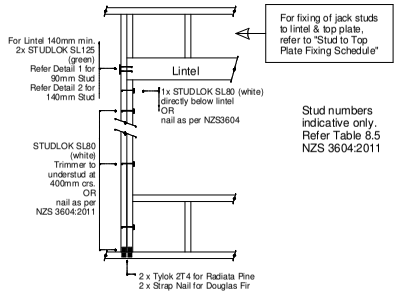
SELECTION CHART FOR LINTEL FIXING

Lintel Span	Loaded Dimension (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	F	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	-	-
	6.0	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
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	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
5.1	2.0	F	F	G	H	H	E	F	G	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
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	6.0	G	H	-	-	-	E	G	H	-	-
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	4.0	G	H	H	-	-	E	F	H	-	-
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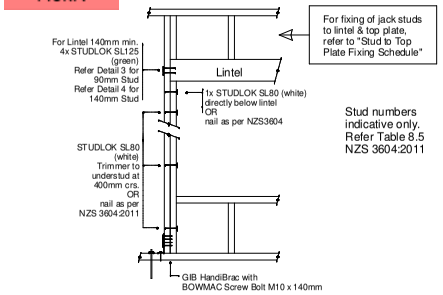
TYPE E 1.4kN



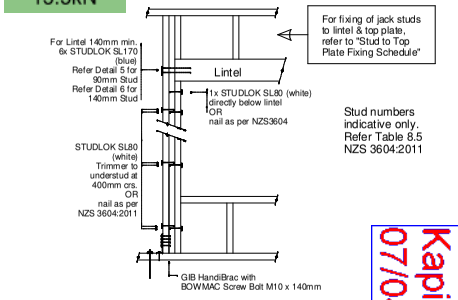
TYPE F 4.0kN



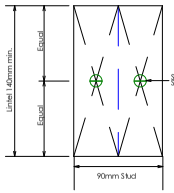
TYPE G 7.5kN



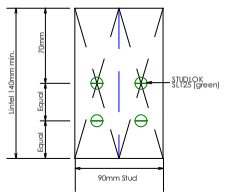
TYPE H 13.5kN



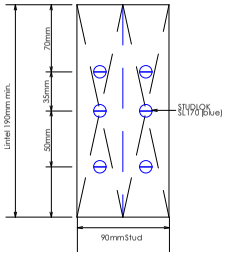
Detail 1:



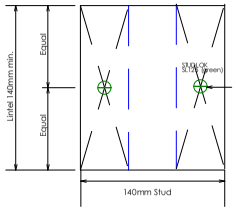
Detail 3:



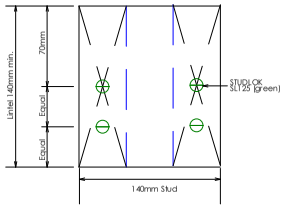
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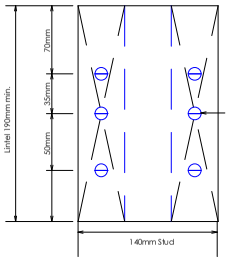
Detail 2:



Detail 4:



Detail 6:



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Kapiti Coast District Council
07/04/2025

MiTek New Zealand Limited

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.miteknz.co.nz

MiTek 20/20 Engineering 4.7.346.0
Printed: 09:39:05 24 Jan 2025

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

ISSUED BY: **MiTek New Zealand Limited**

TO: **Placemakers National Estimating Unit (NEU)**

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

This producer statement covers the MiTek 20/20® truss design and the structural performance of the GANG-NAIL® connector plate for the job reference **BL262145** 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: Friday, 24 January 2025**



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

BC250172
Received by
Kapiti Coast District Council
07/04/2025

Job: BL262145 Client: PlaceMakers Frame & Truss Site: Atkinson
Phone: 40 Anderson
Park Drive
Description:
Building Consent No.: Phone:
MiTek 20/20 Engineering 4.7.346.0 MiTek New Zealand Limited Printed: 09:39:05 24 Jan 2025

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **Placemakers National Estimating Unit (NEU)**, 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 Importance Level : 2 Design Working Life : 50 years

Roof Truss

Timber Group:	NEU-H1.2	Pitch:	35.000 deg	Nominal Overhang:	70 mm / 35 mm
Roof		**Ceiling**		**Wind**	
Material:	Longrun Iron	Material:	Gib Board 13mm	Area:	High (44.0 m/s)
Dead Load:	0.210 kPa	Dead Load:	0.200 kPa	Pressure Coeff:	Cpe = varies; Cpi = -0.30, 0.20
Restraints:	900 mm centres	Restraints:	600 mm centres		
Live Load:	Qur = 0.250 kPa	Live Load:	Qc = 1.400 kN		
	Qc = 1.100 kN	**Occupancy Live Load**			
		Distributed:	Quf = 1.500 kPa		
		Concentrated:	Qcf = 1.800 kN		
Attic Floor		**Attic Room Ceiling**		**Attic Wall**	
Material:	20mm Particle Board	Material:	Standard	Material:	Gib Board
Dead Load:	0.200 kPa	Dead Load:	0.200 kPa	Dead Load:	0.300 kPa
Restraints:	Continuous	Restraints:	400 mm centres	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)
*HB01	2	4706	26.341	900	*R05	1	868	35.000	900	V03	1	3100	35.000	900
*HB02	2	2160	26.341	900	*R06	1	823	35.000	900	V04	1	4187	35.000	900
*HB03	1	1209	26.341	900	*R07	2	951	26.341	900	V05	1	3437	35.000	900
*HB04	1	3691	26.341	900	T01	3	4800	35.000	900	V06	1	2765	35.000	900
J02	1	1527	35.000	900	T02	1	4978	35.000	900 LB	GT02	1	6710	35.000	900
J02A	1	1527	35.000	900	T02A	1	6700	35.000	900	GT04A	1	6700	35.000	900
J02B	1	1527	35.000	900	T02B	1	6700	35.000	900	J01	1	2427	35.000	900
J02C	1	1527	35.000	900	T02C	7	6700	35.000	900	J01A	1	2427	35.000	900
J03A	1	1710	35.000	900	T02D	1	4978	35.000	900	J01B	1	2427	35.000	900
J03B	1	1710	35.000	900	T03	2	4228	35.000	900	J01C	1	2427	35.000	900
*R01	1	900	35.000	900	T04	1	4045	35.000	900	J03	1	1710	35.000	900
*R01A	2	901	35.000	900	T05	4	6700	35.000	900	GT01	1	4800	35.000	900
*R02	3	313	35.000	900	T06	1	4660	35.000	900	GT01A	1	4660	35.000	900
*R02A	2	313	35.000	900	T07	1	6560	35.000	900	GT01B	1	4800	35.000	900
*R02B	1	313	35.000	900	T08	2	4088	35.000	900	GT03	1	6700	35.000	900
*R03	1	788	35.000	900	TR01	1	6700	35.000	900	GT04	1	6700	35.000	900
*R03A	1	788	35.000	900	V01	2	955	35.000	900	TG01	1	6700	35.000	900
*R04	1	673	35.000	900	V02	1	4900	35.000	900	TG01A	1	6560	35.000	900

Total quantity : 75

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The computer design input has been carried out by:

Signed: ..... Date: ...Friday, 24 January 2025....

Name of Detailer: Ly Le..... Qualifications and Title: MiTek 101 - Estimator

On behalf of:Placemakers National Estimating Unit (NEU)



MiTek®

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.miteknz.co.nz

PRODUCER STATEMENT PS1 for MiTek SAPPHIRE™ LINTEL DESIGN

ISSUED BY: **MiTek New Zealand Limited**

TO: **David Reid Homes**

IN RESPECT OF: **MiTek SAPPHIRE™ Lintel Design**

This producer statement covers the MiTek SAPPHIRE™ lintel design for the job reference BL262145-Q01 and be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek SAPPHIRE™ lintel design program has been developed by MiTek New Zealand Limited for the design of lintels in New Zealand. The lintel designs computed by MiTek SAPPHIRE™ are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents issued by MBIE and Verification Method B1/VM1, t satisfy the requirements of Clause B1 of the New Zealand Building Code.

Compliance documents used are:

1) AS/NZS 1170 set - Structural Design Actions
2) NZS 3603:1993 - Timber Structures Standard
3) NZS 3604:2011 - Timber-framed buildings

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

i) All proprietary products meeting their performance specification requirements
ii) Correct input of Lintel Design Parameters as shown in the Lintel Summary for this job
iii) The design being undertaken by the accredited fabricator under the terms of the software licence
iv) Timber is graded to the requirements of the latest edition of NZS3603, AS/NZS1748, AS/NZS4063 and AS/NZS4357.
v) Minimum timber treatment for these lintels shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003

I believe on reasonable grounds that the lintels, if constructed in accordance with the drawings, specifications and othe documents provided, 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: Friday, January 24, 2025**

In Ling Ng, BE (Hons), CMEngNZ, IntPE, CPEng (146585)
ENGINEERING MANAGER, MiTek New Zealand Limited

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Placemakers Frame & Truss

Client: David Reid Homes
Phone:

Site:
40 Anderson Park Drive
Waikanae

MiTek SAPPHIRE™ 8.8.0.202.Update5.S.24 Printed: 09:11:55 24-0

LINTEL SUMMARY

This Lintel Summary is issued by MiTek accredited fabricator Placemakers Frame & Truss being licensed to use the MiTek SAPPHIRE™ software, and i used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

Design Parameters

The MiTek SAPPHIRE™ design for this job is based on the following design parameters entered into the program. The Detailer/Fabricator shall ensure t these job details are current and relevant to the project for the design of the MiTek SAPPHIRE™ lintels.

Job Details

Importance Level : 2 **Design Working Life :** 50 years

Details :

Roof Pitch :	35.000 °	**Loading :**			
Ceiling Pitch :	0.000 °	**Roof :**	Longrun Iron	0.21 kPa	
Overhang :	0 mm	**Ceiling :**	Gib Board 13mm	0.20 kPa	
Truss Spacing :	900 mm	**Wind :**	High	44.0 m/s	**Cpe :** Varies **Cpi :** Varies
		Snow :	None		
		Open Ground Snow (Sg) :		0.000 kPa	

Lintel Schedule

Label	Span (mm)	Size	Opening (HxW)	Panel	Level	Design Status
1-/150x90 hy90	1770	1/150x90 hy90 H1.2	W01 - 2200x1680	E3	1st Floor	Designed
2-/90x45 SG8	990	2/90x45 SG8 DDP H1.2	W02 - 1200x900	E4	1st Floor	Designed
1-/240x90 hy90	3090	1/240x90 hy90 H1.2	W03 - 1600x3000	E7	1st Floor	Designed
1-/300x90 hyONE	4780	1/300x90 hyONE H1.2	W04 - 2000x4600	E8	1st Floor	Designed
1-/200x90 hy90	1890	1/200x90 hy90 H1.2	W08 - 1400x1800	E12	1st Floor	Designed
1-/200x90 hy90	1890	1/200x90 hy90 H1.2	W09 - 1400x1800	E12	1st Floor	Designed
1-/240x90 hy90	2490	1/240x90 hy90 H1.2	W10 - 2125x2400	E12	1st Floor	Designed
2-/90x45 SG8	990	2/90x45 SG8 DDP H1.2	W11 - 2200x900	E13	1st Floor	Designed
2-/90x45 SG8	890	2/90x45 SG8 DDP H1.2	W12 - 1200x800	E17	1st Floor	Designed
2-/90x45 SG8	890	2/90x45 SG8 DDP H1.2	W13 - 1200x800	E17	1st Floor	Designed
1-/150x90 hy90	1080	1/150x90 hy90 H1.2	W14 - 2200x990	E18	1st Floor	Designed
1-/240x90 hy90	2490	1/240x90 hy90 H1.2	W15 - 2220x2400	E20	1st Floor	Designed With Warnings
1-/240x90 hy90	3180	1/240x90 hy90 H1.2	W16 - 1000x3000	E23	1st Floor	Designed

Total Quantity: 13

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The lintel design input has been carried out by:

Signed: PlaceMakers FRAME & TRUSS Date: Friday, 24 January 2025

designIT® HOUSES

CarterHoltHarvey LVL

Producer Statement - PS1 - Design

Issued by:	Carter Holt Harvey LVL Limited
To:	David Reid Homes
To be supplied to:	PlaceMakers
Site address:	40 Anderson Park Drive
In respect of	Member structural design using designIT for houses – Series 6.5

This Producer Statement covers the structural design of Futurebuild Laminated Veneer Lumber (LVL) and Structural Grade timber SG8 members determined using designIT® for houses in respect of the requirements of Clauses B1 and B2 of the Building Code for the proposed work identified in the Design Certificate and drawings. designIT® for houses is provided to designers, architects and engineers to assist in the specification of our Engineered and sawn timber products, to be used as structural elements for the construction of buildings that fall within the scope of NZS 3604:2011, Timber-framed buildings (NZS 3604). In conjunction with a site specific Design Certificate, this Producer Statement may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code (NZBC).

designIT® for houses software has been prepared in accordance with soundly based and widely recognised structural engineering principles. The design methodology used for the software complies with the loading and general design requirements contained within AS/NZS 1170 series and with timber structural design in accordance with NZS 3603:1993, Timber Structures Standard (NZS 3603), including Amendment 4 (Verification method B1/VM1, 6.1). This design methodology uses the most up to date information available from joint Australian/New Zealand standards to determine specified performance levels.

Futurebuild LVL and SG8 members, when used and treated to the required treatment levels prescribed in NZS 3602, Timber and Wood-based Products for Use in Building (NZS 3602), and NZS 3604, will form part of an Acceptable Solution and comply with the requirements of the NZBC (Acceptable Solution B2/AS1, 3.2).

On behalf of Carter Holt Harvey LVL Limited, and subject to:

i. All proprietary products meeting their performance specification requirements;

ii. The designer having knowledge of common building practice and terminology applied in NZS3604 and using designIT® for houses in accordance with the terms of the software licence;

iii. Correct and accurate input of span and loading information by the designer;

iv. Adequate overall building stability and robustness; and

v. Products being treated to the requirements of NZS 3602 and/or Acceptable Solution B2/AS1,

I believe on reasonable grounds that, provided installation is in accordance with the installation requirements provided in the Design Certificate and/or relevant product literature, NZS 3604 or specific engineering design, the product and/or product stress grade and size given by designIT® for houses will comply with the requirements of the New Zealand Building Code, specified above.

Carter Holt Harvey LVL Limited holds a current policy of Professional Indemnity Insurance of no less than $ 200,000.

For and on behalf of Carter Holt Harvey LVL Limited, Date: 30 October, 2024



Signed by: Cameron Rodger, BE(Hons), MIEAust, CMEngNZ, IntPE, CPEng (Registration Number: 1017839)

Note: The total maximum amount of damages payable arising from this statement, whether in contract, tort or otherwise (including negligence) is limited to the sum of $200,000.

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designIT® HOUSES

CarterHoltHarvey LVL

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 1170.0 - 2002 Structural design actions, Part 0: General principles.
4. AS/NZS 1170.1 - 2002 Structural design actions, Part 1: Permanent, imposed and other actions.
5. AS/NZS 1170.2 - 2021 Structural design actions, Part 2: Wind actions.
6. AS/NZS 1170.3 - 2003 Structural design actions, Part 3: Snow and ice actions.
7. AS 1720.1 - 2010 Timber structures. Part 1: Design methods.
8. 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: 30 October, 2024

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07/04/2025

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/

Specifier details:

Specifier:	Ly Le
Business name:	NEU PlaceMakers
Email:	neuadmin@placemakers.co.nz

Project and site details:

Project:	25-00262145
Site address:	40 Anderson Park Drive
For (owner/s):	David Reid Homes
Design wind zone	High
Snow loading	Design snow zone: N0

MEMBER DESIGN DETAILS

Member 1

1) Member code and description	W06 - Lintels - In single or upper storey load bearing walls
2) Date prepared	23 January 2025
3) Serviceability criteria	AS 1720.1: 2010 and AS 1720.3: 2016

4) Design inputs

Span	2.2 m
Roof load width 'RLW'	1.5 m
Roof type and mass	Light roof and ceiling - 40 kg/m²
Nominal wall thickness	90 mm

5) Member specification

Size, stress grade/product	Use 200 x 90 hy90
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

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	0.7 mm (long term)	11.0
Live load - $\Psi_s Q$	8.8 mm	0.2 mm	50.5
Wind load - W_s	11.0 mm	0.5 mm	20.9

* 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]
1.35G	0.60	-1.3
1.2G + 1.5Q	0.80	-2.0
$1.2G + W_u + \Psi_c Q$	1.00	-2.7
$0.9G + W_u$	1.00	1.6

8) Installation requirements

- Provide at least 30 mm bearing at end supports

Member 2

1) Member code and description W05 / W07 - Lintels - In single or upper storey load bearing walls

2) Date prepared 23 January 2025

3) Serviceability criteria AS 1720.1: 2010 and AS 1720.3: 2016

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4) Design inputs

Span	3.4 m
Roof load width 'RLW'	1.5 m
Roof type and mass	Light roof and ceiling - 40 kg/m²
Nominal wall thickness	90 mm

5) Member specification

Size, stress grade/product	Use 300 x 90 hy90
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

6) Serviceability

Load case	Limit[3] on average deflection[2]	Estimated average deflection[2]	Rigidity ratio[4]

Long term load - G + $\Psi_L Q^*$	10.0 mm	1.4 mm (long term)	6.9
Live load - $\Psi_s Q$	13.6 mm	0.4 mm	37.7
Wind load - W_s	17.0 mm	1.1 mm	15.6

* Critical serviceability load case
See 'Notes for interpretation of serviceability data' at the end of this report

7) Reactions

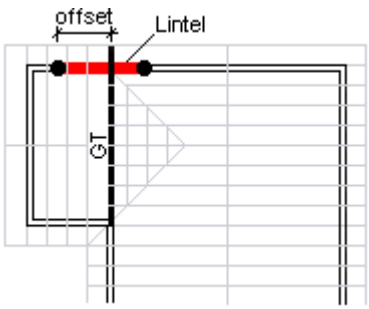
Load case	k_1[1]	Limit States Design Reaction[2,3] End kN[4]
1.35G	0.60	-1.9
1.2G + 1.5Q	0.80	-2.7
1.2G + W_u + $\Psi_c Q$	1.00	-3.7
0.9G + W_u	1.00	2.0

8) Installation requirements

- Provide at least 30 mm bearing at end supports

Member 3

1) Member code and description — Beam - Lintels - Supporting girder truss / truncated girder truss



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2) Date prepared — 23 January 2025

3) Serviceability criteria — AS 1720.1: 2010 and AS 1720.3: 2016

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m²
Roof pitch	35.0 °
Truss spacing	900 mm
Eaves overhang	0 mm
Common truss span	2400 mm
GT span	4750 mm
GT offset	1290 mm
Lintel span	1990 mm
Nominal wall thickness	90 mm

5) Member specification

Size, stress grade/product	Use 2/240 x 45 SG8
Material type	Dry softwood, machine stress graded and verified (NZS 3622)
Assumed design density	< 480 kg/m²

6) Serviceability

Load case	Limit[3] on average deflection[2]	Estimated average deflection[2]	Rigidity ratio[4]
Long term load - G + $\Psi_L Q^*$	6.6 mm	1.5 mm (long term)	4.4
Live load - $\Psi_s Q$	8.0 mm	0.5 mm	17.4
Wind load - W_s	10.0 mm	1.4 mm	7.2

*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]
1.35G	0.60	-2.3
1.2G + 1.5Q	0.80	-3.6
1.2G + W_u + $\Psi_c Q$	1.00	-5.0
0.9G + W_u	1.00	3.1

8) Installation requirements

- Provide at least 30 mm bearing at end supports

Member 4

1) Member code and description L1 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24 January 2025

3) Serviceability criteria AS 1720.1: 2010 and AS 1720.3: 2016

4) Design inputs

Span	0.8 m
Roof load width 'RLW'	1.5 m
Roof type and mass	Light roof and ceiling - 40 kg/m²
Nominal wall thickness	90 mm

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5) Member specification

Size, stress grade/product	Use 2/90 x 45 SG8
Material type	Dry softwood, machine stress graded and verified (NZS 3622)
Assumed design density	< 480 kg/m²

6) Serviceability

Load case	Limit[3] on average deflection[2]	Estimated average deflection[2]	Rigidity ratio[4]
Long term load - G + $\Psi_L Q^*$	2.7 mm	0.3 mm (long term)	7.7
Live load - $\Psi_s Q$	3.2 mm	0.1 mm	30.3
Wind load - W_s	4.0 mm	0.3 mm	12.5

*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]
1.35G	0.60	-0.8

1.2G + 1.5Q	0.80	-1.3
1.2G + W_u + Ψ_cQ	1.00	-1.8
0.9G + W_u	1.00	1.2

8) Installation requirements

- Provide at least 30 mm bearing at end supports
- Vertical lamination required - refer Clause 2.4.4.7 NZS 3604

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 'k_1' 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

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GEOTECHNICAL ASSESSMENT

Lot 39 Anderson Park, Waikanae

BC250172
Received by
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07/04/2025

Job number: 1000-143-04

Date: 13/03/2025

BC250172
Received by
Kapiti Coast District Council
07/04/2025

1. Introduction

Cohesive Consulting have been engaged by Tim Atkinson to provide a geotechnical assessment for a proposed new dwelling at Lot 39 Anderson Park, Waikanae (Legal Description: Lot 39 DP 592074). This geotechnical assessment has been prepared to provide foundation recommendations as part of a building consent application with the Kapiti Coast District Council.

This report considers the following aspects of site development:

- Suitable building platforms and foundations.

A geotechnical site testing plan is attached as Appendix 1 showing the property boundaries, and associated site investigations.

1.1. Relevant Documentation

- Earthworks Recommendations Letter by Cohesive Consulting dated 27 January 2025 (Appendix 1)
- Conceptual plans by AD Architecture dated 22 November 2024 (Appendix 2)
- Earth Fill and Site Suitability Report by CGW Consulting Engineers titled " 110 Ngarara Road – Anderson Park Stage 2" dated 24 August 2022; document reference: 21852-RPT-G-002-A.
- Geotechnical Addendum by CGW Consulting Engineers titled 110 Ngarara Road, Anderson Park Stage 2: Geotechnical Addendum" dated 30 November 2023; document reference 21852-LET-G-001-E.
- NZS 4402:1986 - Methods of testing soils for civil engineering purposes
- NZS4431:2022 – Engineered fill construction for lightweight structures
- NZGS Module 1 and 6 (2021)
- Kapiti Coast District Council: GIS Maps
- Resource Management Act 1991

The requirement for specific engineer design is dependent on whether the site subsoils fall within the NZS3604:2011 definition of 'good ground'. 'Good ground' – means any soil or rock capable of permanently withstanding an ultimate bearing pressure of 300 kPa (i.e., a dependable bearing capacity of 150 kPa using a reduction factor of 0.5) but excludes:

a) Potentially compressible ground such as topsoil, soft soils such as clay which can be moulded easily in the fingers, and uncompacted loose gravel which contains obvious voids.

b) Expansive soils being those that have a liquid limit of more than 50% when tested in accordance with NZS4402 Test 2.2 and a linear shrinkage of more than 15% when tested from the liquid limit in accordance with NZS 4402 Test 2.6.

c) Any ground which could foreseeably experience movement of 25 mm or greater for any reason including one or a combination of the following: land instability, ground creep, subsidence, seasonal swelling and shrinking, frost heave, changing groundwater level, erosion, dissolution of soil in water, and effects of tree roots.

2. Documentation Summary

Cohesive Consulting have carried out a comprehensive review of the existing documentation which includes an Earthworks Completion Report by CGW Consulting Engineers (24 August 2022), Geotechnical Addendum by CGW Consulting Engineers (dated 30 November 2023), and earthworks plans by AD Architecture dated 16 January 2025.

The Earthworks Completion Report by CGW Consulting Engineers provides the following summary on lot 39:

- An ultimate bearing in excess of 200Kpa can be assumed from a depth of 0.3mbgl.
- Site is subject to Specific Engineering Design and is classified as a TC2 site in accordance with the Canterbury Technical Guidance.

The Geotechnical Addendum by CGW Consulting Engineers states for Lot 39, engineered FILL has been placed on top of the original TOPSOIL which is expected at an approximate depth of 0.8-1.0mbgl.

The proposed earthworks plan by ADarchitecture shows that extensive earthworks are proposed on lot 39 in order to provide a suitable building platform:

- Lot 39: excavations are proposed on the lot with a cut area of 70m^2 and a volume of 25m^3. Maximum cut depth of 0.1m is proposed though it should be noted that this will need to extend to a minimum depth range of 0.8-1.0mbgl to ensure that all surface and buried TOPSOIL is excavated and removed from the building platform, prior to the placement of engineered FILL.

3. Proposed Development

It is our understand that a dwelling is to be constructed on Lot 39 Anderson Park, Waikanae, following extensive earthworks in order to prepare a suitable building platform. Upon completion of earthworks, a TC2 compliant stiffened raft system such as an Xpod foundation shall then be constructed to support a single storey dwelling. The proposed dwelling is to have a building footprint of 233m^2 and consist of three bedrooms, two bathrooms, kitchen/dining area, living room, office, outdoor deck spaces and a garage. Refer to Appendix 2 for concept plans.

4. Desktop Study

4.1. Site Description

The site is located at Lot 39 Anderson Park, Waikanae, Kapiti Coast (Legal Description: Lot 39 DP 592074). The site is currently an undeveloped residential lot as part of the Anderson Park subdivision. Some preexisting earthworks have been completed on the lot though it should be noted that these earthworks are to be rectified as approved FILL material has been placed on top of a TOPSOIL layer. The site has an approximate area of 2,242.77m^2 and is shown in Figure 1 which has been sourced from the Kapiti Coast District Council GIS Maps.

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Figure 1: Image displaying site location and extent, Kapiti Coast District Council Maps, 2021.

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4.2. Published Geology

The GNS Science online geology map (Figure 2) shows the underlying geology of the site is defined as Holocene Stable Dune Deposits consisting of sand. However, these are regionally scaled documents and should not be relied on for site-specific acceptance.



Figure 2: Geology of the site from GNS 1:250000 Geological Map of New Zealand.

Holocene Stable Dune Deposits

Late Pleistocene River Deposits

The Ohariu Fault lies approximately 2.4km east of the site and is described by GNS Maps as an active dextral fault with an unknown subsidiary movement sense. The Gibbs Fault lies approximately 3.8km east of the site and is described by GNS Maps as an active dextral fault with an unknown subsidiary movement sense. The Otaki Forks Fault lies approximately 12.8km east of the site and is described by GNS Maps as an active reverse fault with a dextral sense of movement. The Wellington Fault lies approximately 26.5km east of the site. The Wellington Fault is described as a Class 1 active fault and is also known as the collision zone between the Australian and Pacific plate. GNS describes this an oblique dextral strike slip fault indicating possible movement in all directions.

4.3. New Zealand Geotechnical Database

The New Zealand Geotechnical Database was consulted to view any possible nearby testing that had previously been completed in the area. An extensive geotechnical investigation has been carried out by CGW Consulting Engineers as part of the subdivision investigation stage of the project. Geotechnical investigations consisted off test pit excavations, scala penetrometers and CPT testing. Liquefaction analysis results shows the site classifies as a TC2 site in accordance with the Canterbury Technical Guidance.

5. Geotechnical Assessment

Upon review of the existing documentation, the following results and interpretations can be made:

- Geotechnical investigations were not deemed necessary by Cohesive Consulting as the near surface ground profile and underlying geology has already been well summarised by CGW Consulting Engineers. Extensive earthworks are proposed across the lot to rectify the placement of FLL on top of TOPSOIL.
- Previous investigations show that an ultimate bearing capacity in excess of 200kPa and 300kPa can be expected immediately below the buried TOPSOIL. This shall be confirmed with a stripped ground inspection during earthworks monitoring by Cohesive Consulting.
- A liquefaction assessment has been provided by CGW Consulting Engineers which shows the site classifies as a TC2 site in accordance with the Canterbury Technical Guidance.
- The site does not meet the definition of “Good Ground” in accordance with NZS3604:2011 due to a moderate risk of liquefaction. Foundations are subject to Specific Engineering Design.
- A site class D has been conservatively assumed in accordance with NZS1170.5:2004.

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6. Engineering Recommendations

6.1. Earthworks and Build Platform Preparation

All earthworks are to be carried out in accordance with the earthwork’s specifications letter by Cohesive Consulting dated 27 January 2025. The following earthworks summary points can be made in preparation of the building platform:

- All FILL previously placed is to be excavated and stockpiled in appropriate location for inspection and then re-use if deemed suitable.

- All buried TOPSOIL is to be excavated and removed from the site. A stripped ground inspection shall be carried out by Cohesive Consulting to ensure all unsuitable soils have been removed. Scala penetrometers shall be carried out across the base of the excavation to confirm that an ultimate bearing capacity in excess of 200kPa is encountered.
- The use of on site SAND can then be utilised as FILL material (pending approval) which shall be placed and compacted in 150-200mm layers. Scala penetrometers shall be utilised to assess the compaction at half and full lift heights. A water source will need to be utilised to ensure sufficient compaction is achieved.
- Upon approval by Cohesive Consulting, the building platform shall then be capped with a 100mm layer of AP40 to create a smooth working platform for slab construction.

6.2. Foundations

Cohesive Consulting will provide construction monitoring reports and a geotechnical completion letter stating that earthworks have been carried out in accordance with this geotechnical assessment, earthworks specification letter and NZS4431. This documentation shall facilitate both resource consent and building consent applications with the Kapiti Coast District Council. A TC2 compliant stiffened raft system (i.e. TC2 RibRaft or Xpod) can then be founded. Foundation design to be performed by a suitably qualified engineer.

Initial review by:



Maika Fraser
Engineering Geologist/Director
BSc

Prepared and issued by:



Nathan Blaker
Chartered Engineering Geologist/Director
BSc, PMEG, CMEngNZ (pEngGeol)

ENGINEERING NEW ZEALAND OFFICIAL MEMBER

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7. Limitations

This geotechnical assessment has been prepared for Tim Atkinson as our client with respect to the proposed new dwelling at Lot 39 Anderson Park, Waikanae. It shall not be relied upon for any other purpose. The reliance by other parties on the information or opinions contained in this report shall, without our prior review and agreement in writing, be at such parties' sole risk.

Opinions and judgments expressed herein are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions. Where opinions or judgments are to be relied on, they should be independently verified with appropriate legal advice. Any recommendations, opinions, or guidance provided by Cohesive Consulting in this report are limited to technical engineering requirements and are not made under the Financial Advisers Act 2008.

Recommendations and opinions in this report are based on data from testing and observations undertaken on site. The nature and continuity of subsoil conditions away from the tests are inferred and it must be appreciated that actual conditions could vary considerably from the assumed model.

During excavation and construction, the site should be examined by a geotechnical engineer or Engineering Geologist to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. It is possible that the nature of the exposed subsoils may require further investigation, and the modification of the design based on this report. In any event, it is essential that the firm is notified if there is any variation in subsoil conditions from those described in the report as it may affect the design parameters recommended in the report.

Cohesive Consulting have performed the services for this project in accordance with the standard agreement for consulting services and current professional standards for environmental site assessment. No guarantees are either expressed or implied.

There is no investigation which is thorough enough to preclude the presence of materials at the site which presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable now may in the future become subject to different regulatory standards which cause them to become unacceptable and require further remediation for this site to be suitable for the existing or proposed land use activities.

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Appendix 1: Earthworks Specifications Letter

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Job No. 1000-143-04

Monday, 27 January 2025

Attention:

Tim Atkinson

Leith Consultants

Kapiti Coast City Council

RE: Earthworks Recommendations Letter – Proposed development at Lots 39,40 and 41 Anderson Park, Waikanae

1. Introduction

Cohesive Consulting have been engaged by Tim Atkinson to provide an earthworks recommendations letter for a proposed development on lots 39-41 Anderson Park, Waikanae, as per the resource consent conditions issued by the Kapiti Coast District Council.

2. Relevant Documentation

Cohesive Consulting have reviewed all provided documentation which are referenced within this letter and include:

- Earth Fill and Site Suitability Report by CGW Consulting Engineers titled " 110 Ngarara Road – Anderson Park Stage 2" dated 24 August 2022; document reference: 21852-RPT-G-002-A.
- Geotechnical Addendum by CGW Consulting Engineers titled 110 Ngarara Road, Anderson Park Stage 2: Geotechnical Addendum" dated 30 November 2023; document reference 21852-LET-G-001-E.
- Earthworks plans by ADarchitecture dated 16 January 2025

3. Documentation Summary

The Earthworks Completion Report by CGW Consulting Engineers provides the following summary on lots 39-41:

- An ultimate bearing in excess of 200Kpa can be assumed from a depth of 0.3mbgl.
- Site is subject to Specific Engineering Design and is classified as a TC2 site in accordance with the Canterbury Technical Guidance.

The Geotechnical Addendum by CGW Consulting Engineers states for Lot 39, engineered FILL has been placed on top of the original TOPSOIL which is expected at an approximate depth of 0.8-1.0mbgl. The FILL placed on Lots 40-41 has been considered suitable and the recommendations made in the Earthworks Completion Report remain unchanged.

The proposed earthworks plan by ADarchitecture shows that extensive earthworks are proposed across the 3 lots in order to provide suitable building platforms.

- Lot 39: excavations are proposed on the lot with a cut area of 70m^2 and a volume of 25m^3. Maximum cut depth of 0.1m is proposed though it should be noted that this will need to extend to a minimum depth range of 0.8-1.0mbgl to ensure that all surface and buried TOPSOIL is excavated and removed from the building platform, prior to the placement of engineered FILL.

- Lot 40: excavations are proposed on the lot with a cut area of 465m^2 and a volume of 195m^3. Maximum cut depth of 0.95m and a maximum fill height of 2.3m is proposed.
- Lot 41: excavations are proposed on the lot with a cut area of 655m^2 and a volume of 545m^3. Maximum cut depth of 1.25m and a maximum fill height of 2.05m is proposed.

4. Earthworks

Any earthworks on site are to be carried out in accordance with NZS4431:2022.

4.1. Excavations

Proposed excavations in the area of the proposed building platforms on Lot 39-41 must extend to a minimum depth of 0.3mbgl where an ultimate bearing capacity in excess of 200kPa is inferred as per the CGW Earthworks Completion Report. Excavations on Lot 39 are to extend to a minimum depth range of 0.8-1.0mbgl to ensure all buried TOPSOIL is excavated and removed from the site. A stripped ground inspection is to be carried out by Cohesive Consulting to ensure that all unsuitable soils have been removed and the ground at the base of the excavation displays a minimum ultimate bearing capacity of 200kPa.

All unsuitable soils such as TOPSOIL and uncontrolled FILL are to be removed from site or placed in a stockpile at an appropriate location to avoid unfavourable loading on construction or preconstruction slope batters.

Excavations shall not be left exposed for long periods of time. Cuts made in conjunction with the construction of a batter or retaining walls shall be done so in an efficient manner to ensure the stability of the site is maintained.

4.2. Filling and Compaction

All engineered or structural fill should be placed in ≤ 150-250 mm lifts and be compacted to a minimum of 95% of maximum dry density, within suitable limits of optimum moisture content as defined in NZS4431:2022. Compaction should be achieved using standard plant and methodology suitable for the imported material. A water source should be maintained on-site for moisture control. The fill must be tested and certified in accordance with NZS4431:2022 if the thickness exceeds 400 mm and monitored by a suitably qualified engineer.

The use of onsite material such as clean sands are considered suitable for the use as FILL material provided they are appropriately stockpiled and inspected prior to use.

Nuclear densometer testing shall be utilised to assess the compaction of hard FILL material. Scala penetrometers shall be utilised to assess the compaction of onsite SAND material.

Fill may be battered down to natural ground at a maximum grade of 1V in 2.0H if possible and the subgrade should be adequately benched, and the topsoil removed. Alternatively, any compacted fill on site should be retained by retaining structures. FILL batters shall be hydroseeded or planted with appropriate deep rooted vegetation.

We trust this letter meets the requirements of the consent conditions issued by KCDC, please do not hesitate to contact me with any further questions.

Email: Nathan@csvgeotechnical.co.nz

Phone: 021 069 5609

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Prepared by:



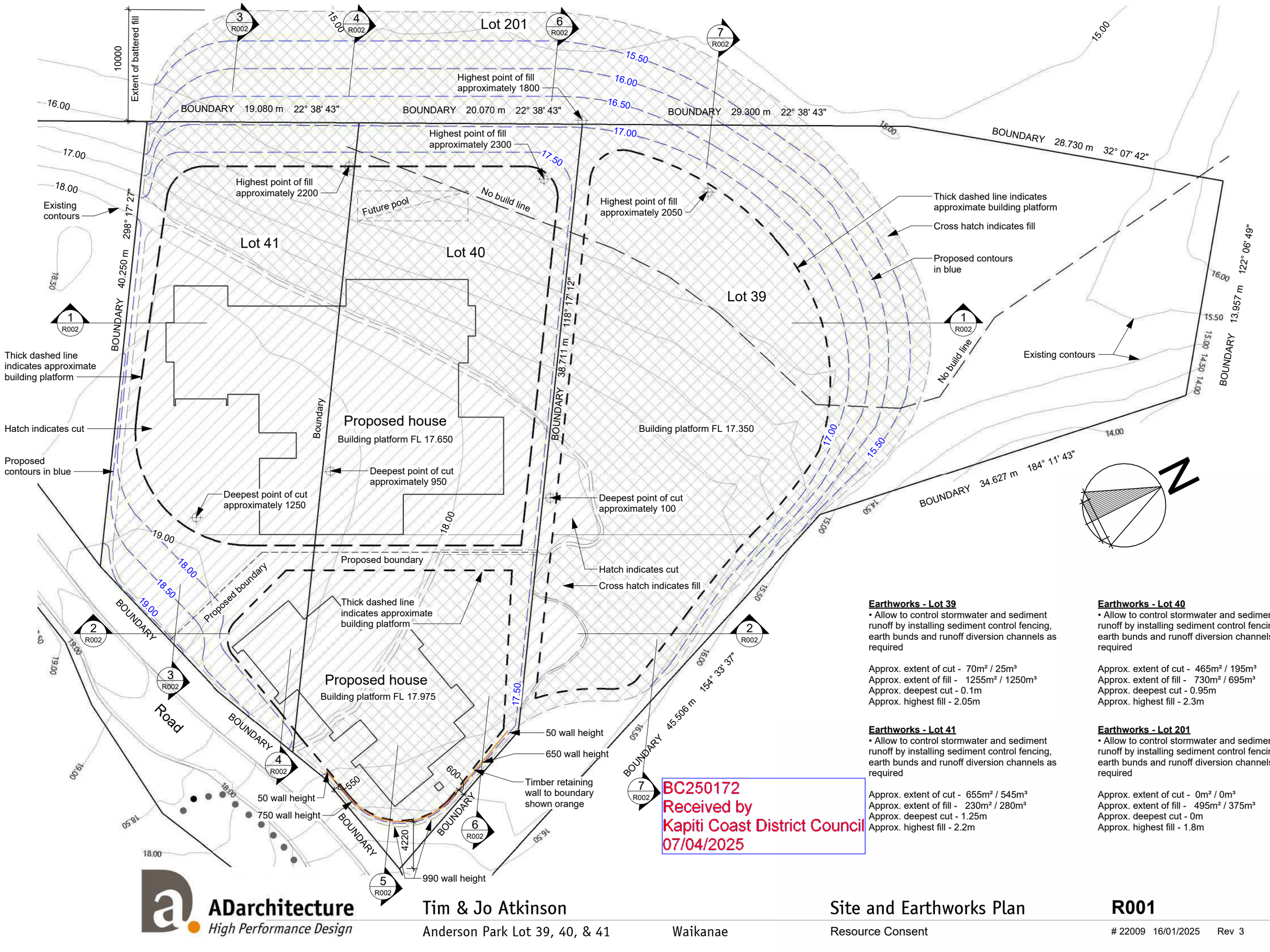
Nathan Blaker
Chartered Engineering Geologist/Director
BSc, PMEG, CMEngNZ (pEngGeol)

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Appendix 2: Conceptual Plans

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Earthworks - Lot 39
- Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

Approx. extent of cut - 70m² / 25m³
Approx. extent of fill - 1255m² / 1250m³
Approx. deepest cut - 0.1m
Approx. highest fill - 2.05m

Earthworks - Lot 40
- Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

Approx. extent of cut - 465m² / 195m³
Approx. extent of fill - 730m² / 695m³
Approx. deepest cut - 0.95m
Approx. highest fill - 2.3m

Earthworks - Lot 41
- Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

Approx. extent of cut - 655m² / 545m³
Approx. extent of fill - 230m² / 280m³
Approx. deepest cut - 1.25m
Approx. highest fill - 2.2m

Earthworks - Lot 201
- Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

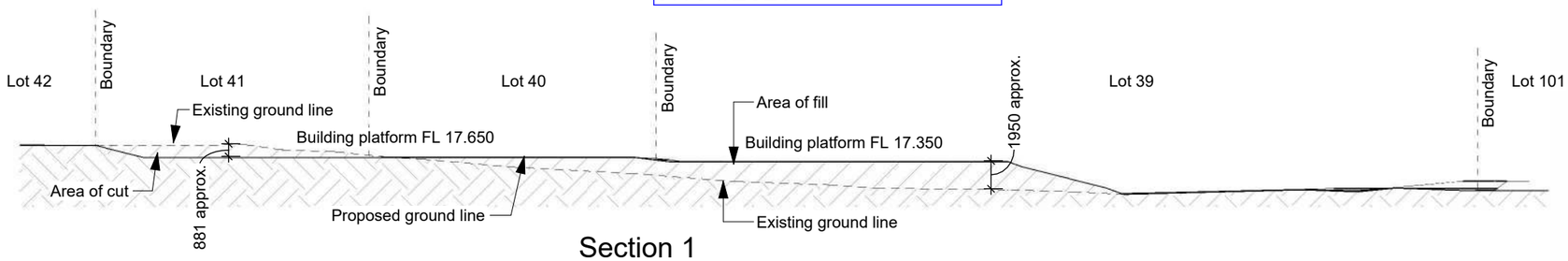
Approx. extent of cut - 0m² / 0m³
Approx. extent of fill - 495m² / 375m³
Approx. deepest cut - 0m
Approx. highest fill - 1.8m

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High Performance Design

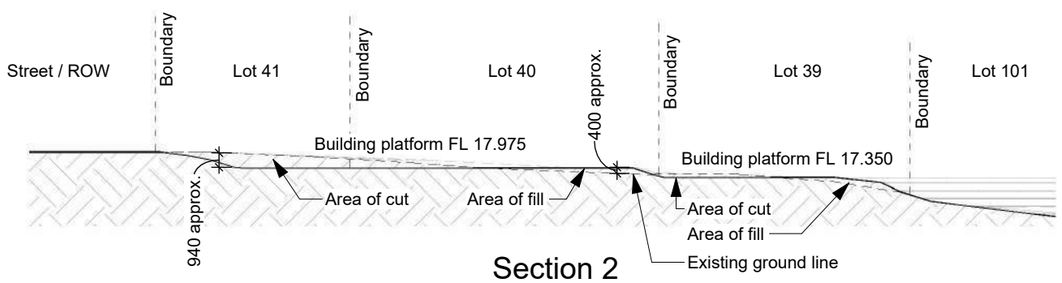
Tim & Jo Atkinson
Anderson Park Lot 39, 40, & 41 Waikanae

Site and Earthworks Plan **R001**
Resource Consent # 22009 16/01/2025 Rev 3 1 : 300

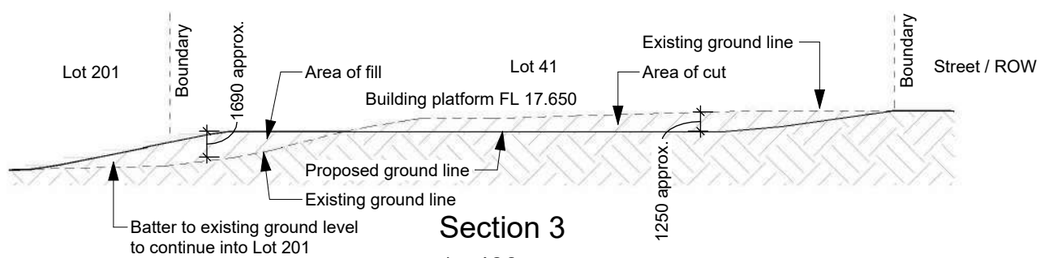
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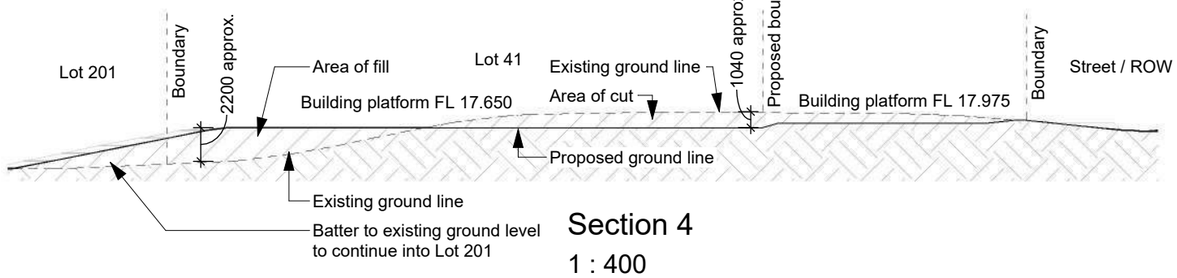
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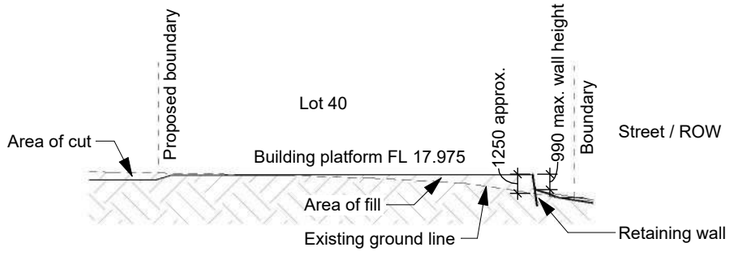
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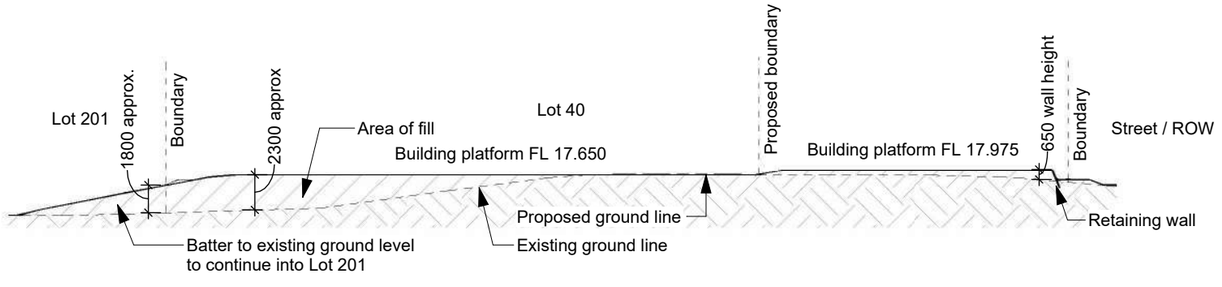
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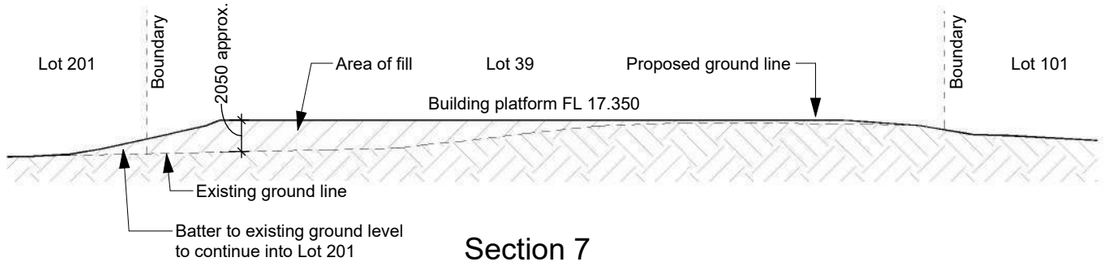
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Section 5
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Section 6
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Section 7
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Tim & Jo Atkinson
Anderson Park Lot 39, 40, & 41 Waikanae

Earthworks Sections
Resource Consent

R002
22009 16/01/2025 Rev 3 1 : 400

PRELIMINARY DRAWINGS		
No.	**Sheet Name**	**Rev.**
P001	Building 3D	
P002	Site Plan	
P003	Floor Plan	
P005	Elevations	
P006	Elevations	
P007	Section	

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Proposed House

FOR

Tim Atkinson

AT

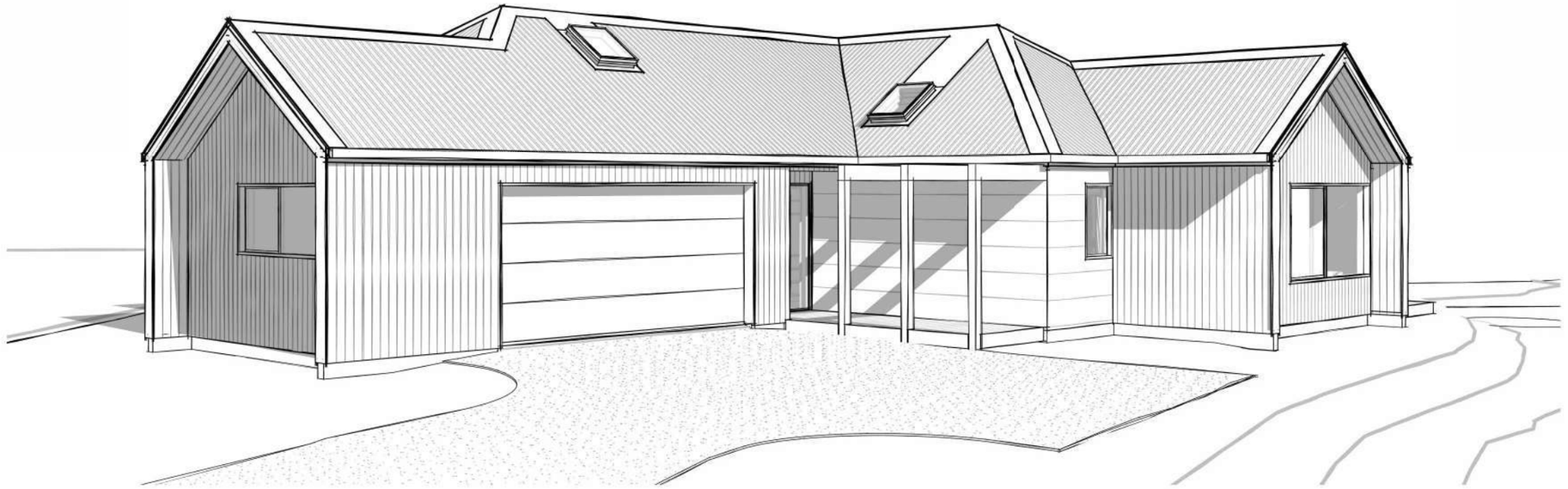
40 Anderson Park Drive
Waikanae



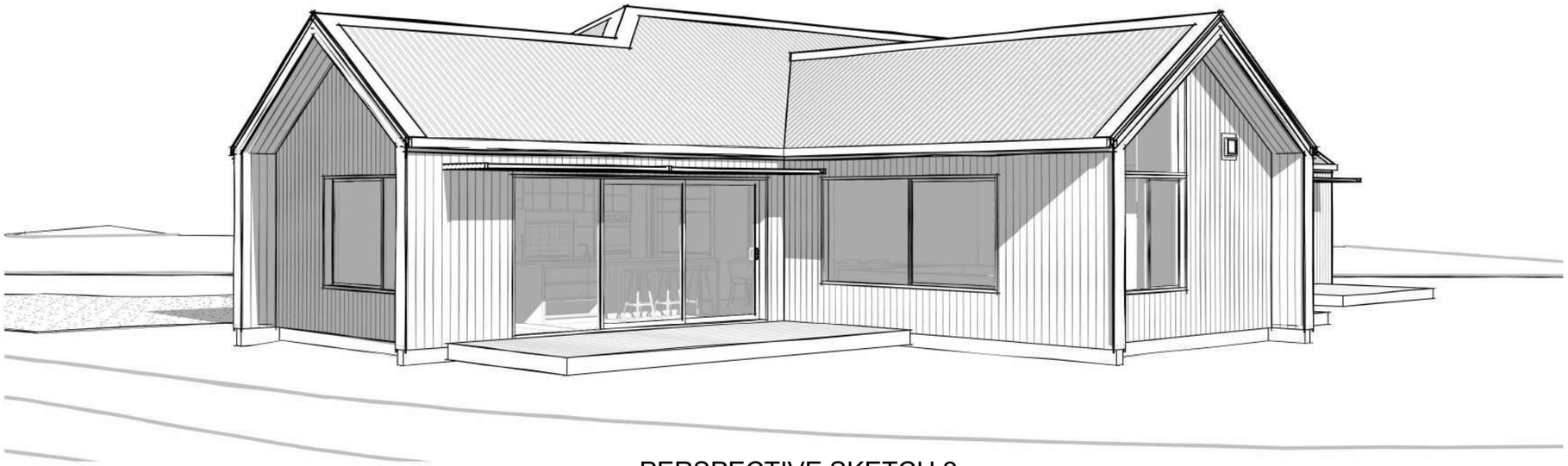




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PERSPECTIVE SKETCH 1

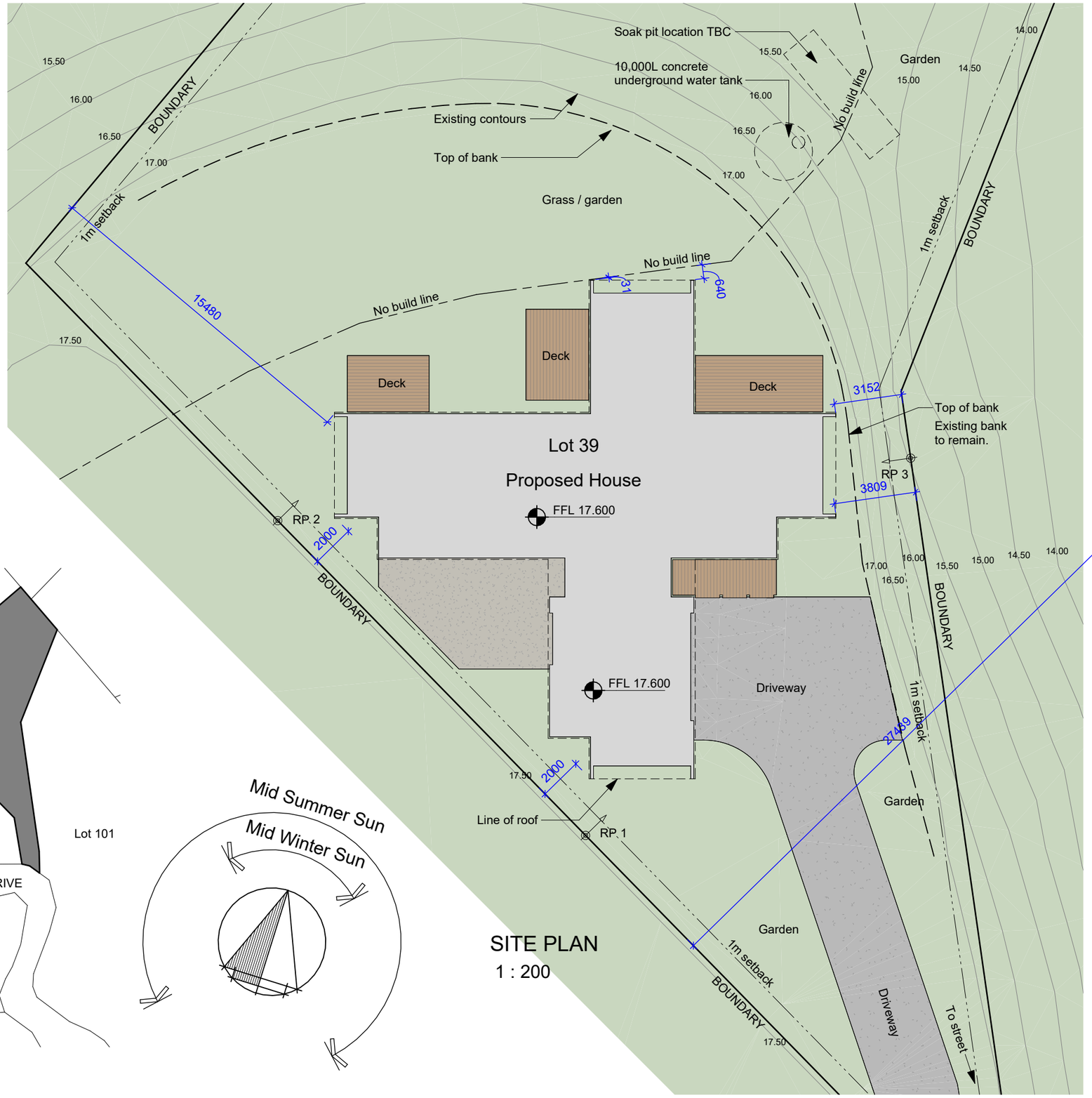


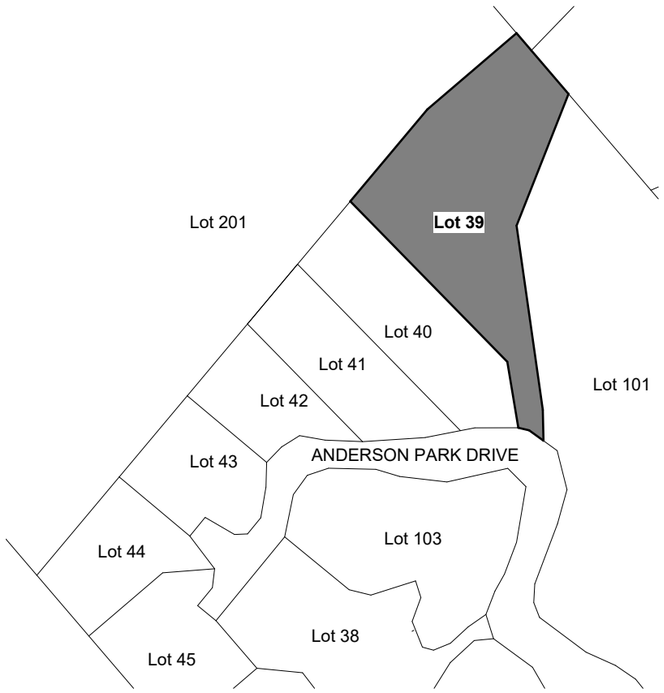
PERSPECTIVE SKETCH 2

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Tim Atkinson		Building 3D	**P001**
40 Anderson Park Drive	Waikanae	Preliminary	# 24058 22/11/2024 Rev NTS

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LOCATION PLAN

SITE PLAN
1 : 200

Legal Description
LOT 39
DP 592074

Site Areas

Net Site Area	2243 m²	
Site Coverage	252m²	11%
Area of Outdoor Living	20 m²	
Area of Paving	218 m²	
Area of Permeable Surfaces	1773 m²	79%

Building Consent Authority
Kapiti Coast District Council

Planning Features
Planning: General Residential
Hazard:
Noise:
Other: SAL 19

Site information

Wind Zone:	High (Eng TBC)
Exposure Zone:	C
To Sea (m):	1760-1800m
Earthquake Zone:	3
Climate Zone:	3
Snow Zone:	N1 (0 - 400m)
Soil Class:	TBC
Liquefaction Area:	High

NOTES:
Refer to Geotech report for ground conditions

SAL19 = Special Amenity Landscape
(At street and neighbouring site/s)

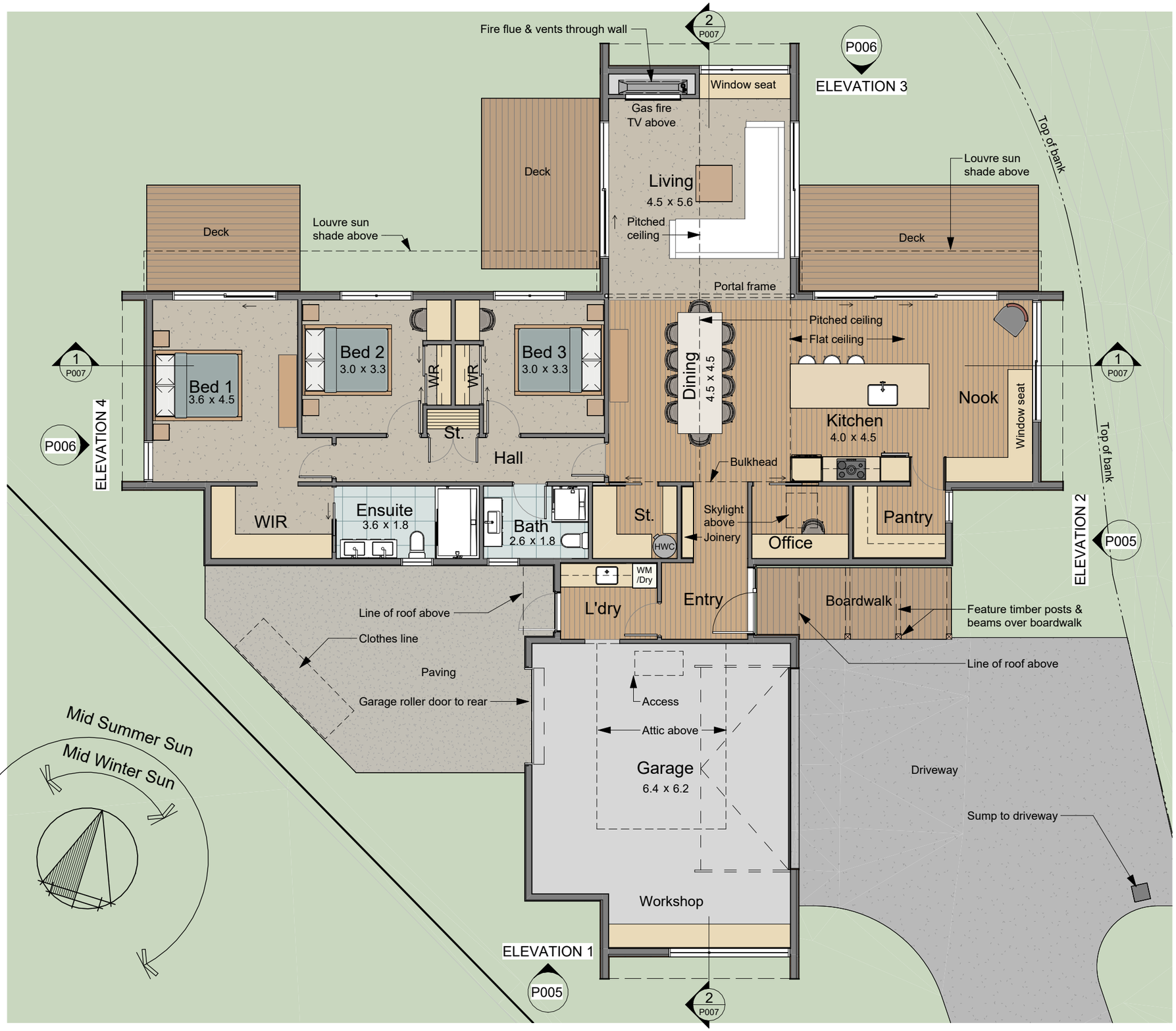
No Build Zone at rear of site
(House located outside of zone)

Minimal Earthworks required <50m3
(House foundations and Driveway only)

Resource Consent Requirements
- Resource Consent not required

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Tim Atkinson		Site Plan	**P002**
40 Anderson Park Drive	Waikanae	Preliminary	# 24058 22/11/2024 Rev As indicated



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FLOOR AREA TO FRAMING
Area 228 m²

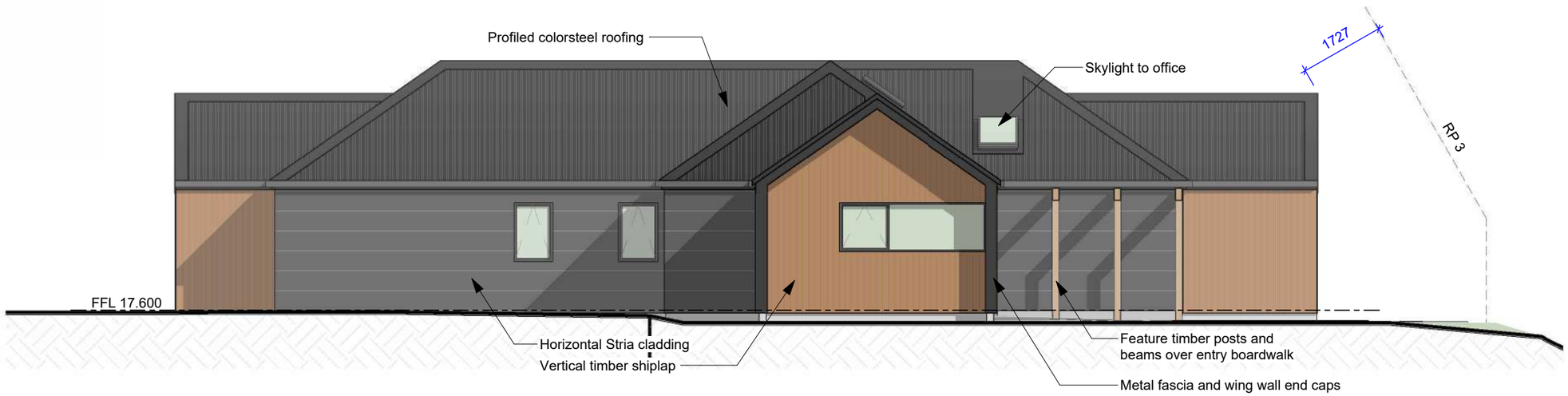
FLOOR AREA TO CLADDING
Area 233 m²

ADarchitecture
High Performance Design

Tim Atkinson
40 Anderson Park Drive Waikanae

Floor Plan
Preliminary

P003
24058 22/11/2024 Rev 1 : 100



ELEVATION 1

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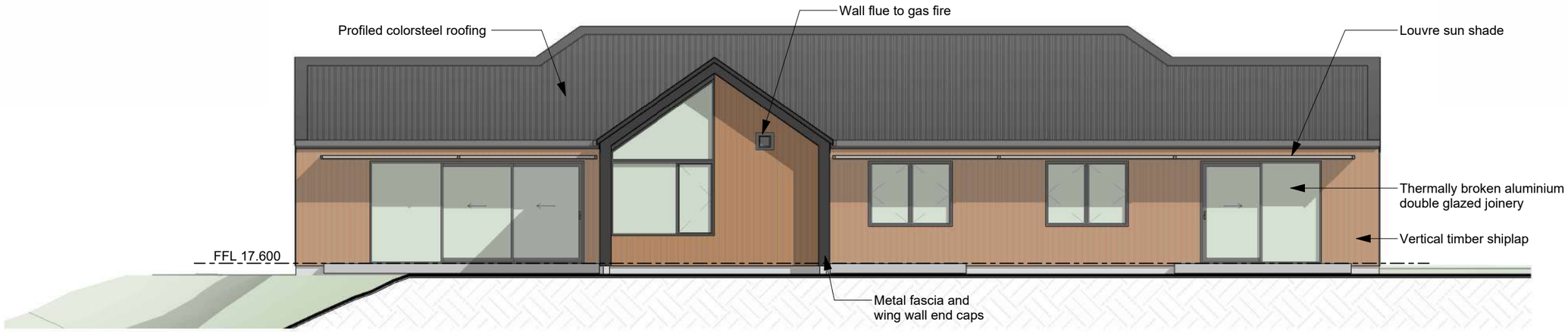
ELEVATION 2

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ADarchitecture
High Performance Design

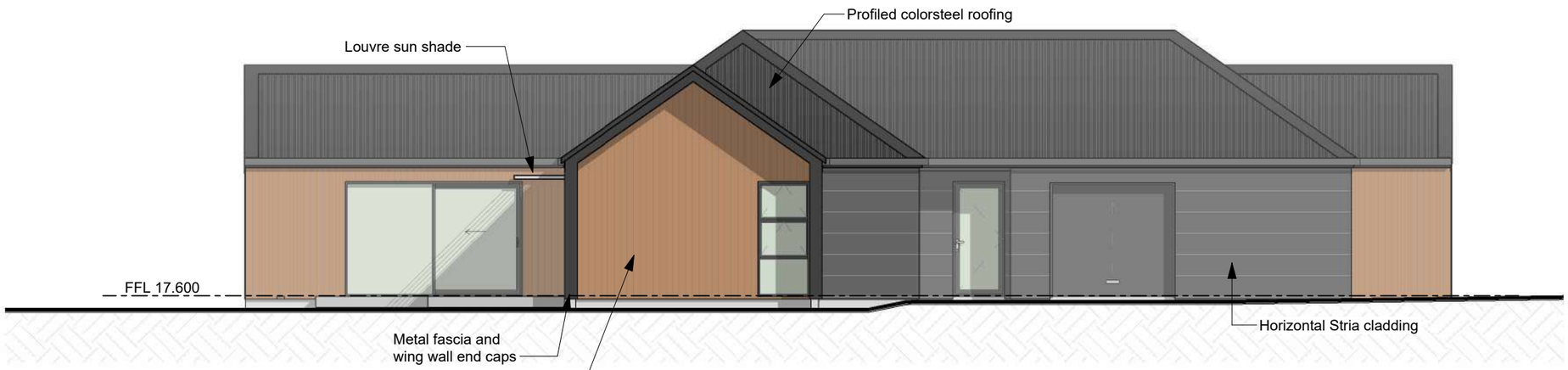
Tim Atkinson			Elevations	**P005**
40 Anderson Park Drive	Waikanae		Preliminary	# 24058 22/11/2024 Rev 1 : 100

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ELEVATION 3

1 : 100



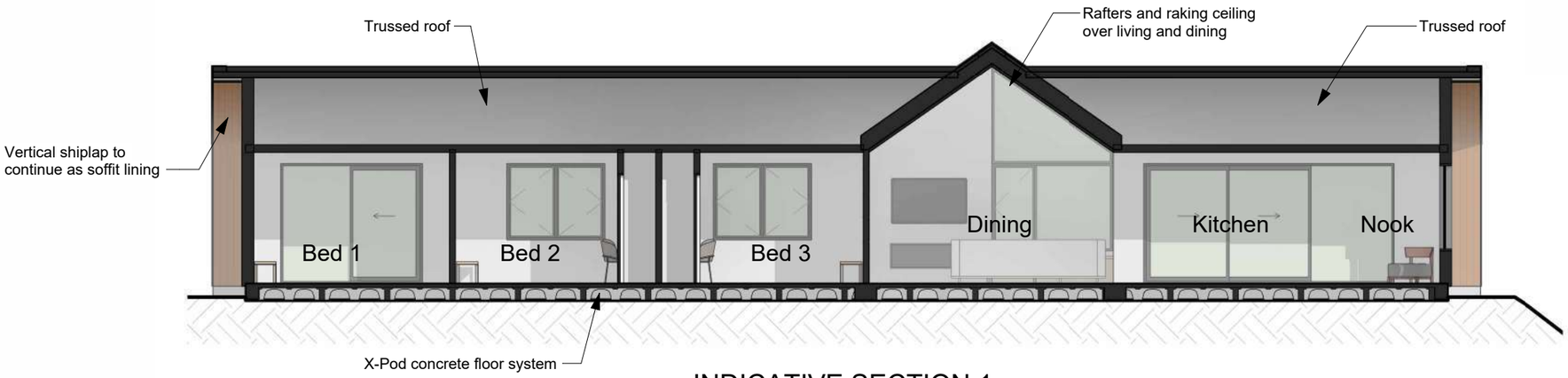
ELEVATION 4

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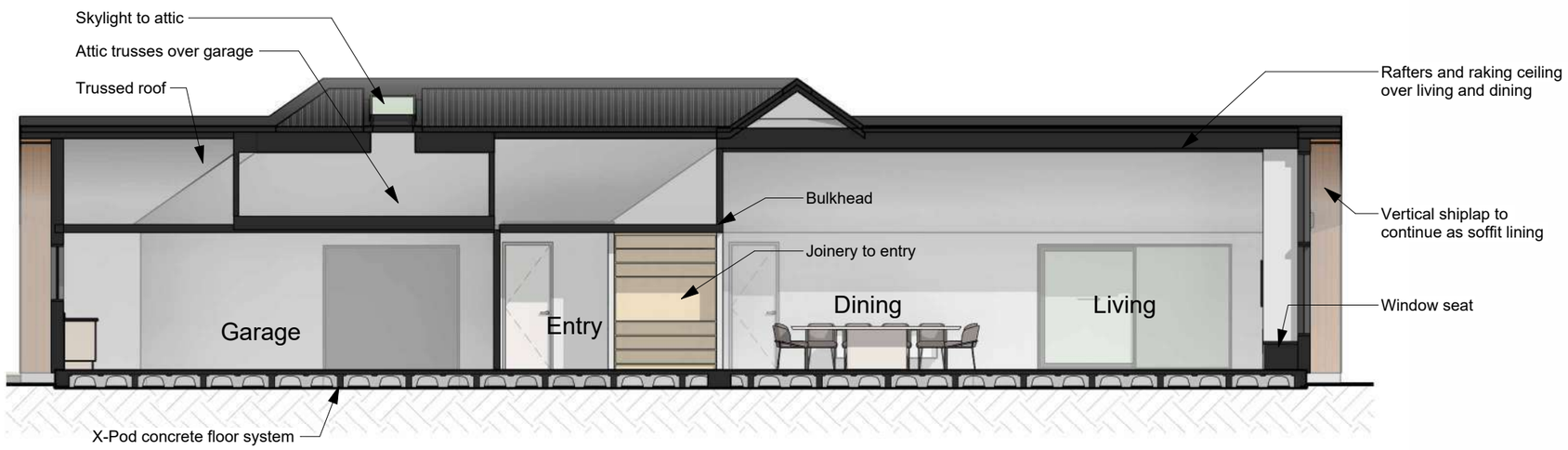
ADarchitecture
High Performance Design

Tim Atkinson		Elevations	**P006**
40 Anderson Park Drive	Waikanae	Preliminary	# 24058 22/11/2024 Rev 1 : 100

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INDICATIVE SECTION 1
1 : 100



INDICATIVE SECTION 2
1 : 100

ADarchitecture
High Performance Design

Tim Atkinson		Section	**P007**
40 Anderson Park Drive	Waikanae	Preliminary	# 24058 22/11/2024 Rev 1 : 100

Construction R-value Calculator

277

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "isothermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors ○
Walls ○
Roofs ◉

Date: 21/02/2025

Roof 1 — 5.64 m²°C/W

Type: Roof: Timber framed truss Roof, direct fixed or battened flat Ceiling

Timber framed truss Roof, direct fixed or battened flat Ceiling [view detail]

external surface 0.03

Roofing : generic - Metal trapezoidal Iron with building paper
R-value: 0.01

Pink(c)Batts(c) R3.6 Ceiling 3.6

Timber Frame & Cavity : 90mm rafters or joists @ 900mm, battens covered with insulation

Roof Frame Area: 5.0%	*Cavity Area: 95.0%*
Roof space (still air) 0.11	Roof space (still air) 0.11
Framing : *R-value: 0.75*	Pink(c)Batts(c) R1.8 Ceiling 1.8 notched to cover bottom chord ☐

Ceiling Lining : generic - gypsum Plasterboard 13mm
R-value: 0.06

internal surface 0.09

Non-IC-rated recessed downlights
Ceiling Area [m²]: Number of downlights: Clearance from lamp holder side [m]:

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Construction R-value Calculator

278

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "isothermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors ○
Walls ○
Roofs ◉

Date: 21/02/2025

Roof 2 — 5.62 m²°C/W

Type: Roof: Timber framed skillion or flat Roof

Timber framed skillion or flat Roof [view detail]

external surface 0.03

Roofing : generic - Metal trapezoidal Iron with building paper
R-value: 0.01

Timber Frame & Cavity : 240mm rafters or joists @ 600mm, battens covered with insulation

Roof Frame Area: 7.5%	*Cavity Area: 92.5%*
Framing : *R-value: 1.99*	still Airgap : 10-30mm airgap (non-reflective) *R-value: 0.13*
Thermal Break : generic - Timber 35mm *R-value: 0.30*	Pink(c)Batts(c) Skillion Superbatts Roof R6.0 6

Ceiling Lining : generic - gypsum Plasterboard 13mm
R-value: 0.06

internal surface 0.09

Non-IC-rated recessed downlights
Ceiling Area [m²]: Number of downlights: Clearance from lamp holder side [m]:

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If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors ○
- Walls ◉
- Roofs ○

Date: 21/02/2025

Wall 1 — 3.11 m²°C/W

Type: Wall: Timber Frame with vented Cavity

Timber Frame with vented Cavity [view detail]

external surface 0.03

Cladding : generic - Weatherboard Rusticated or Shiplap
R-value: 0.16

Air Barrier : generic - Building paper
R-value: 0.01

Timber Frame & Cavity : 140mm, studs @ 600mm, dwangs @ 800mm

Wall Frame Area: 14.4%	*Cavity Area: 85.6%*
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
Framing : *R-value: 1.17*	Pink(c)Batts(c) Ultra R3.6 140mm Wall 3.6
	still Airgap: none *R-value: 0.00*

Wall Lining : generic - gypsum Plasterboard 10mm
R-value: 0.04

internal surface 0.09

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Construction R-value Calculator

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Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors ○
- Walls ◉
- Roofs ○

Date: 21/02/2025

Wall 2 — 3.08 m²°C/W

Type: Wall: Timber Frame with vented Cavity

Timber Frame with vented Cavity [view detail]

external surface 0.03	
Cladding : James Hardie Stria Cladding 14mm *R-value: 0.10*	
Air Barrier : generic - Building paper *R-value: 0.01*	
Timber Frame & Cavity : 140mm, studs @ 600mm, dwangs @ 800mm	
Wall Frame Area: 14.4%	*Cavity Area: 85.6%*
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
Framing : *R-value: 1.17*	Pink(c)Batts(c) Ultra R3.6 140mm Wall 3.6
	still Airgap: none *R-value: 0.00*
Wall Lining : generic - gypsum Plasterboard 10mm *R-value: 0.04*	
internal surface 0.09	

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Construction R-value Calculator

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This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "isothermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors ○
- Walls ◉
- Roofs ○

Date: 21/02/2025

Wall 3 — 2.26 m²°C/W

Type: Wall: Timber Frame (direct fixed Cladding)

Timber Frame (direct fixed Cladding) [view detail]

external surface 0.03

Cladding : generic - Plywood 12mm
R-value: 0.09

Air Barrier : generic - none
R-value: 0.00

Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 800mm

Wall Frame Area: 14.4% | *Cavity Area: 85.6%*

Framing :
R-value: 0.75

Pink(c)Batts(c) Ultra R2.8 90mm Wall 2.8

still Airgap: none
R-value: 0.00

Wall Lining : generic - gypsum Plasterboard 10mm
R-value: 0.04

internal surface 0.09

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Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "isothermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors ○
- Walls ◉
- Roofs ○

Date: 21/02/2025

Wall 4 — **2.26** m²°C/W

Type: Wall: Timber Frame (direct fixed Cladding)

Timber Frame (direct fixed Cladding) [view detail]

external surface 0.03

Cladding : generic - None (facing inside air, i.e. internal bulkhead into roof space)
R-value: 0.09

Air Barrier : generic - none
R-value: 0.00

Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 800mm

Wall Frame Area: 14.4%	*Cavity Area: 85.6%*
Framing : *R-value: 0.75*	Pink(c)Batts(c) Ultra R2.8 90mm Wall 2.8
	still Airgap: none *R-value: 0.00*

Wall Lining : generic - gypsum Plasterboard 10mm
R-value: 0.04

internal surface 0.09

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SUPPORTING MANUFACTURER DOCUMENTATION
For information only. Specification and contract documentation takes precedence.
This version includes documents related to:
Performance | Installation | Maintenance | Warranty | Environmental

New House - 40 Anderson Park Drive

Project Specification

40 Anderson Park Drive, Waikanae, New Zealand
Project Ref: 24058

Printed: 01 April 2025
Consent Issue 01/04/25



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masterspec

Specification built using Masterspec software
Project ID: 324271 - 394902

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3155FR Firth Ribraft Floor Systems

Firth Industries
+64 09 5259190
info@firth.co.nz
www.firth.co.nz

SUPPORTING DOCUMENTS

RIBRAFT® X-POD® Installation-Guide

Ref 48116. Uploaded 4 Feb 2025

Purpose: Performance, Installation, Maintenance, Environmental

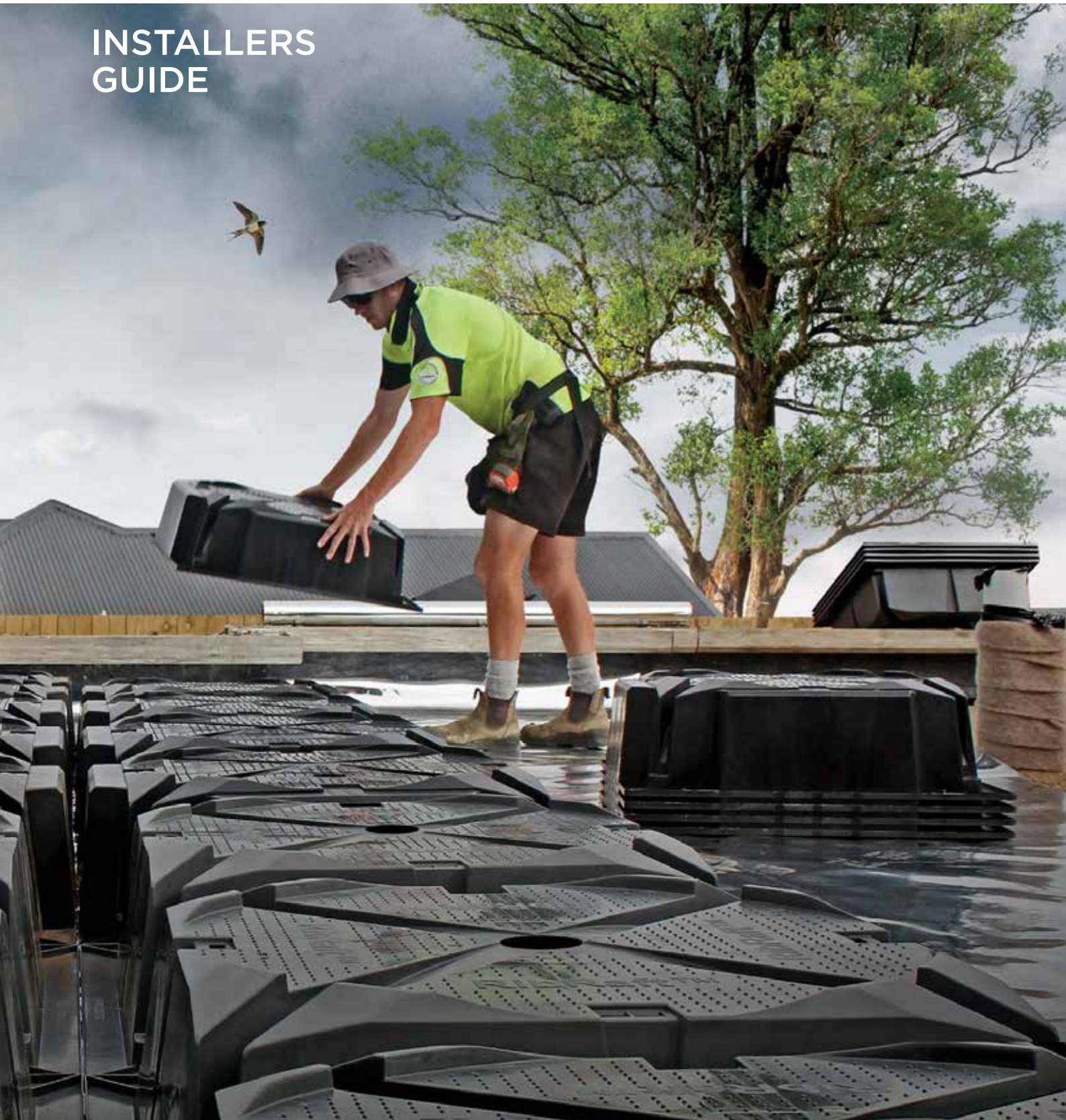
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NOVEMBER 2021

+RIBRAFT® X-POD®

INSTALLERS GUIDE



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RIBRAFT® X-POD®

1 SCOPE

This installation guide has been developed for the exclusive use of Firth customers who are experienced in the construction of residential concrete foundation systems. The Building Act requires that only suitably qualified persons, who are Licensed Building Practitioners, (LBP) or working under the supervision of a LBP, can construct foundations systems. Experience in the placing finishing and early age care of concrete in accordance with NZS3109 is mandatory.

The RibRaft® X-Pod® foundation is a specifically designed systems and as such all details shall be provided in the project drawings. These drawing will have been reviewed as part of the building consent process. Any errors or omissions should be brought to the designers attention for instruction.

Contact your local Firth Representative for supply of Firth RibRaft® X-Pod®s. Pods shall be released to site upon confirmation of the placement of an order for the appropriate Firth concrete mix code (see section 2.1).

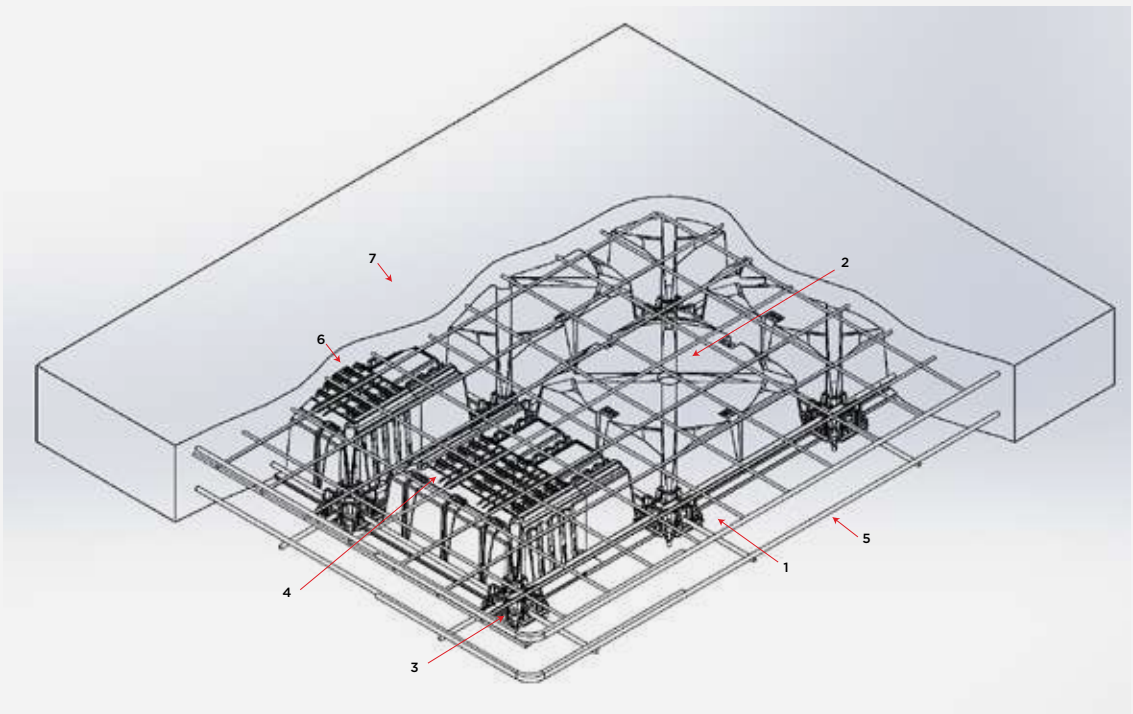
2 DESCRIPTION OF THE SYSTEM

The Firth RibRaft® X-Pod® flooring system comprises of:

- Firth concrete mix IP2019X or IP2519X, refer section 2.1
- A matrix of RibRaft® X-Pod® formers to create typically a total floor thickness of 300mm with ribs at 750 or 1500mm centres and a 85mm minimum topping above the RibRaft® X-Pod®s. Note refer to the project drawings as designers have differing preferences for topping thickness, refer section 2.2
- Firth RibRaft® Keystones which lock the X-Pod®s into place
- Mesh in the topping, refer section 2.3
- Reinforcement typically in the form of DH10s or larger diameter in the ribs, perimeter, and load bearing beams, section 2.4
- DPM providing a vapour barrier between ground and flooring system, section 2.5
- Dependent upon soil conditions the flooring system may sit on a compacted gravel raft, section 2.6
- The system is compatible with Firth HotEdge® should slab edge insulation be specified, section 2.7

FIGURE 1 - THE RIBRAFT® X-POD® SYSTEM

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1	DPM
2	RibRaft® X-Pod® (215/750 or 215/1500)
3	RibRaft® Keystone 8/16
4	RibRaft® Mini Pod 215/300 and MP Extender 215/400.600
5	Steel reinforcing (bars)
6	Steel reinforcing (mesh)
7	Firth Concrete (mix code IP2019X or IP2519X)

2.1 CONCRETE

RibRaft® X-Pod® Foundation systems require a specific Firth designed concrete mix. Choose one of the following:

1 X-Pod® Mix IP2019X – a 20MPa 100mm slump mix available as a pump mix suitable for 100mm pump lines available in either a 13mm or more usually a 19mm nominal aggregate size, or as a structural (non-pump) mix

2 X-Pod® Mix IP2519X – a 25MPa 120mm slump mix available as a pump mix suitable for 100mm pump lines available in either a 13mm or more usually a 19mm nominal aggregate size, or as a structural (non-pump) mix. This mix shall be specified for buildings constructed in the 'sea spray zone' (i.e. within 500m of the sea including harbours, within 100m of tidal estuaries or inlets, on offshore islands and elsewhere as defined as exposure zone D in 4.2.3.3 of NZS3604).

The X-Pod® system is available across most of NZ, where there is a Firth Concrete plant available to supply the X-Pod® special mix concrete. However in some parts of the county, X-Pod® isn't available including Kaitaia, Wairarapa, Kaikoura, Motueka and Golden Bay, where there is no Firth Plant or a Firth Plant is too far away to make the supply of X-Pod® concrete feasible. In these cases, please talk to your local Firth rep for more information and to discuss a suitable alternative foundation design.

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2.2 PODS

The Firth RibRaft® X-Pod® flooring system comprises of 4 pod options which are linked using the X-Pod® Keystone clip to create an efficient and strong flooring system. The pod options are:

- **RibRaft® X-Pod® 215/750.** These units, when laid out and linked with the X-Pod® Keystone create a grid with 100mm ribs at 750 centres. The height of the pods are 215mm which when combined with 85mm of concrete topping give a total floor thickness of 300mm. ***See Figure 2.***
- **RibRaft® X-Pod® 215/1500.** These units, when laid and linked with the X-Pod® Keystone create a grid with 100mm ribs at 1500 centres. The units are designed to form a cross shaped concrete column in the centre of the 1500mm rib grid. The height of the pods are 215mm which when combined with 85mm of concrete topping give a total floor thickness of 300mm. ***See Figure 3.***
- **Ribraft® Mini Pod (215/300 and Mini Pod Extender 215/400.600).** These units can be used when the required spacing between beams and ribs is less than 750mm. The Mini Pod forms a 300mm void. When combined with the MP EXT 215/400.600 unit, voids of between 400 to 600mm can be filled. ***Figure 4 illustrates the units.***

FIGURE 2 - TYPICAL RIBS LAYOUT OBTAINED WITH RIBRAFT® X-POD®S 215/750

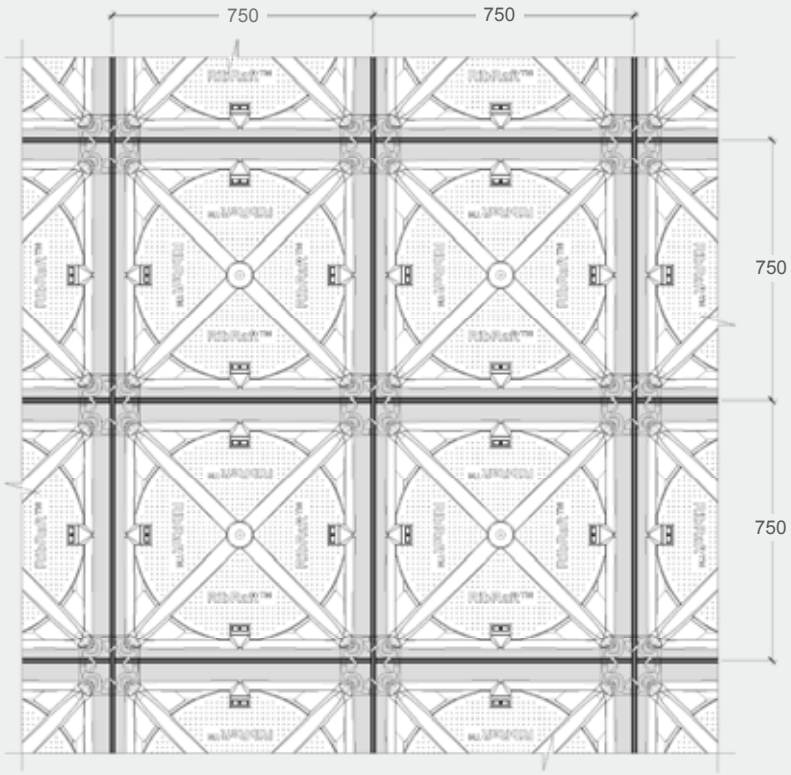


Illustration: © Cresco.co.nz



FIGURE 3 - TYPICAL RIBS LAYOUT OBTAINED WITH RIBRAFT® X-POD®S 215/1500

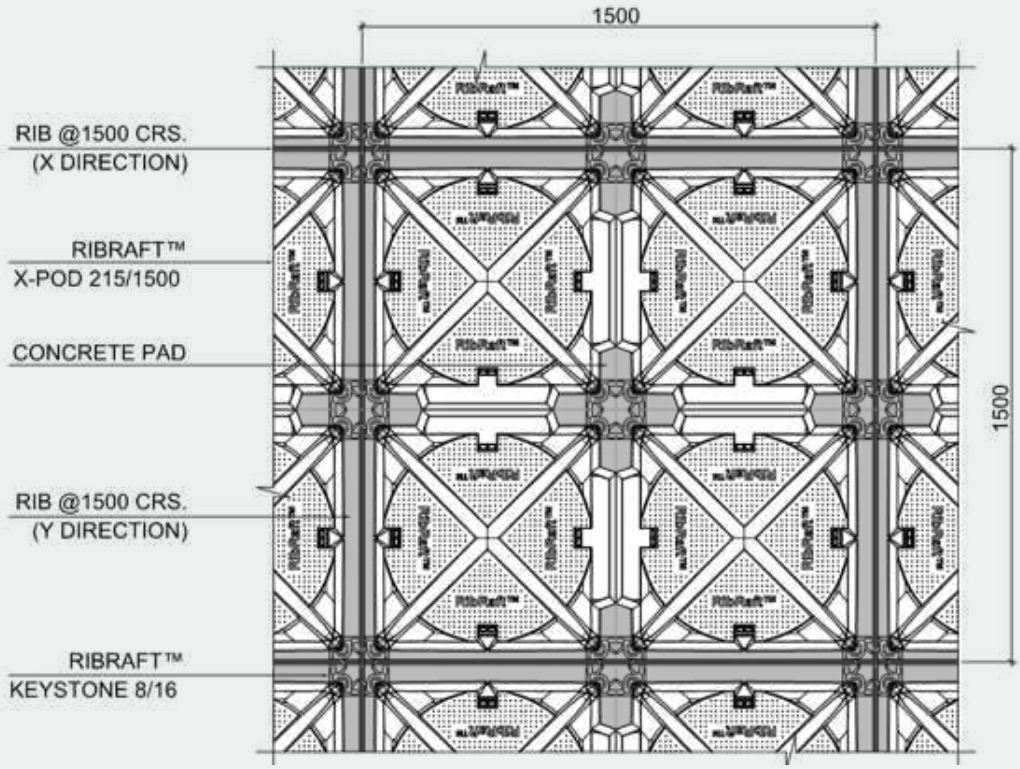
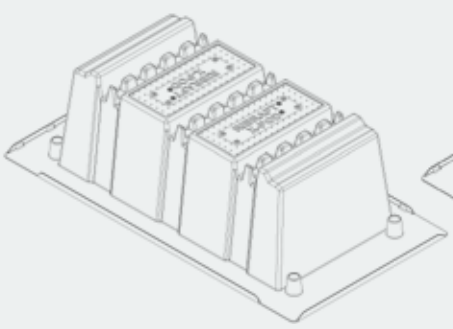
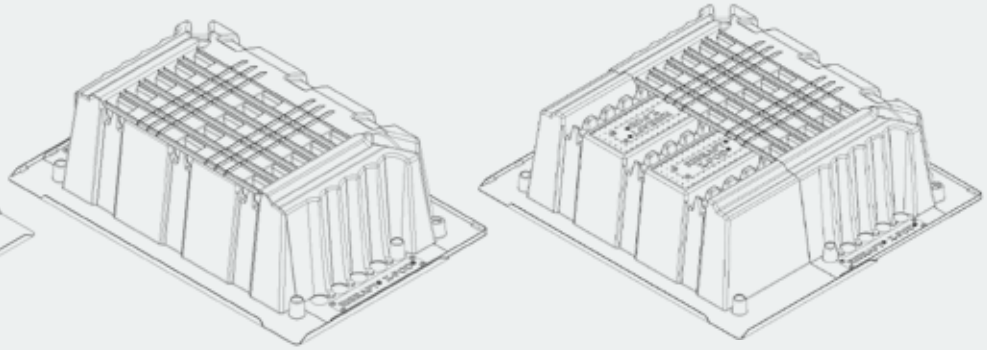


Illustration: © Ribraftdesign.co.nz

FIGURE 4 - RIBRAFT® X-POD® TWO PART ADJUSTMENT PODS



RibRaft® Xpod Mini Pod 215/300



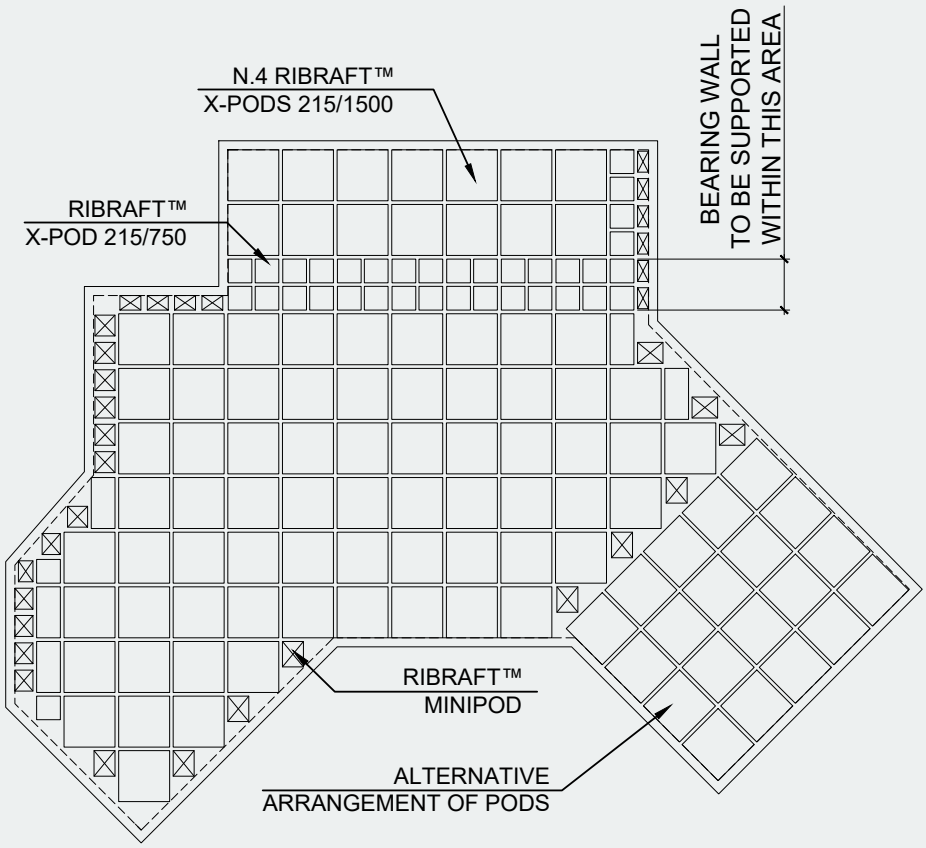
RibRaft® Xpod Mini Pod 215/300 and MP Extender 215/400.600

Firth RibRaft® X-Pod®s are placed directly on levelled ground and are arranged in such a way as to form a reinforced concrete floor slab with a grid of reinforced concrete ribs and edge beams when concrete is placed onto them. The RibRaft® ADJ Series X-Pod®s may be used to suit specific architecture layout and also to accommodate services.

Figure 5 shows how the various X-Pod® components might be utilised on a complex floor arrangement where liquefaction or expansive soils are not a consideration.

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FIGURE 5 - EXAMPLE OF HOW THE VARIOUS X-POD® COMPONENTS CAN BE UTILISED ON A COMPLEX SHAPED FLOOR



2.3 MESH

Mesh shall be Grade 500 and comply with AS/NZS 4671:2001. Typically the mesh will be 665 mesh (Class L) or SE62 ductile mesh (Class E). The Design Engineer shall specify the required mesh.

Class L mesh can be used when the sole purpose is limitation of crack widths and the ground conditions are defined as good in terms of NZS3604. The Class E reinforcing bars in the ribs and beams provides adequate ductility of the system which allow the use of Class L mesh. Class E shall be used when the mesh preforms a structural function such as a slab on ground prone to liquefaction or expansive soils.

Mesh shall be lapped in accordance with NZS3101.

Two options are available for supporting the mesh which shall be defined on the drawings:

1 The mesh can be supported on mesh chairs to achieve cover to the top surface of 35mm. This methodology minimises the cover and therefore enhances the crack width limiting ability of the mesh.

2 The mesh can alternatively be laid on upstands provided in the corners of the pods. The 15mm upstands on the pods mean that cover from the concrete surface to the mesh (SE62) is 58mm and slightly less at mesh overlaps.

2.4 STEEL

The reinforcing bars in the ribs and edge beams shall conform to AS/NZS 4671:2001 Grade 500, Class E “Steel Reinforcing Materials”. The volume of reinforcement shall be documented on the approved building consented drawings.

The Firth RibRaft® X-Pod® Keystones hold the reinforcement in positon without the need for tying. The X-Pod® Keystone can accommodate up to two DH16 bars at a lap positon.

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2.5 DPM

The damp proof membrane (DPM) material shall be polyethylene sheet in accordance with NZS 3604:2011. The DPM shall be laid over the entire building platform directly on top of a sand blinding layer, extending to the outside of the edge beam. The joints shall be lapped not less than 50mm and sealed with pressure sensitive tape not less than 50mm wide. All penetrations of the DPM by plumbing and services or punctures during construction shall also be sealed with pressure sensitive tape. The DPM may extend beyond the edge of the slab i.e. underneath the formwork, or may be folded and stapled up the inside of the formwork. The minimum requirement is that the DPM extends to the outside of the edge beam. It is very important that the DPM is not bunched up at the formwork.

Where enhanced thermal performance is required, ThermoX DPM can be used as the DPM.

2.6 OPTIONAL GRAVEL RAFT

Often a gravel raft is not required below the DPM where ground bearing conditions permit, although a sand blinding layer may be required to provide puncture resistance to the DPM. Where ground conditions are soft, a compacted gravel raft can be provided to reduce the bearing pressures in the natural ground to acceptable levels. Details of any gravel raft shall be provided on the project drawings.

2.7 FIRTH HOTEDGE®

Where additional thermal efficiency is required, Firth HotEdge® can be incorporated into the design. Refer Firth web page for more information.



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3 INSTALLATION OF THE SYSTEM

The following provides an overview of the installation of the Firth RibRaft® X-Pod® system. Where conflict exists between the information provided in this document and the approved building consent drawing set, the drawings shall take precedence.

However, it is mandatory that the concrete used is supplied by Firth Industries to allow management of quality control.

3.1 SITE/EARTH WORKS

The building footprint shall be excavated to a suitable depth to ensure all organic material is removed (top soil, roots etc). Excavation shall extend beyond the footprint a distance shown on the drawings which is typically twice the depth of compacted hardfill beneath the concrete slab. Precautions shall be taken to prevent silt laden runoff from leaving the site should rain occur.

3.2 PLUMBING

Various Territorial Authorities have their own preferences for plumbing details so always check with the local council.

Two options exist for running plumbing:

- The pipes are installed in the ground below the slab and then rise up through the slab at the desired location within the building, referred to as “below slab installation”. This is the preferred option in most situations.
- The pipes run within the plane of the X-Pod® flooring system, referred to as “in floor installation”.

3.2.1 BELOW SLAB PLUMBING INSTALLATION METHODOLOGY

This option is applicable for most situations but should not be used on liquefaction sites for which lateral spread is expected. In most situations this is the norm and most cost effective solution.

For this option, pipes shall be conveyed underground to their plan location then brought up through the X-Pod® and the concrete floor slab. The trenching, placing and bedding of the pipes/ducts and the backfilling shall conform to the requirements of the consent documentation. Services shall not be placed within any concrete except to cross that section of concrete i.e. services shall not run along ribs or edge beams. In accordance with AS/NZS3500.4:2015 pipes penetrating through concrete shall be:

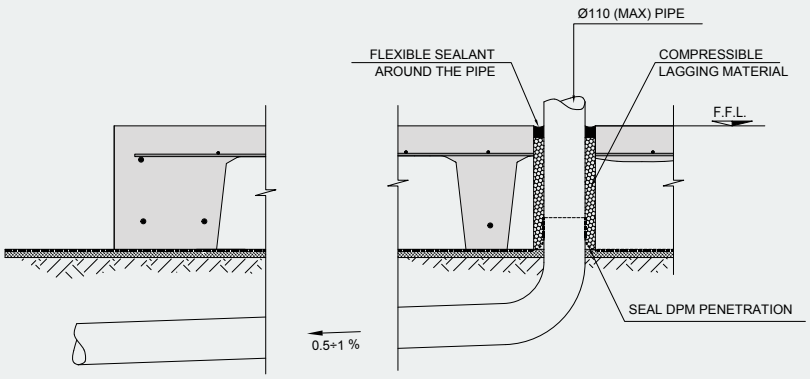
- Installed at right angles to the slab surface
- Lagged with an impermeable material for the full depth of the concrete penetration
- Lagging must be at least 6mm thick

Any services horizontally crossing ribs or the edge beams shall be placed only within the middle third of the member. At no stage shall any of the reinforcement bars be relocated or cut to allow for the services (it is acceptable, however to cut the mesh). In some instances this will dictate the location of the pods.

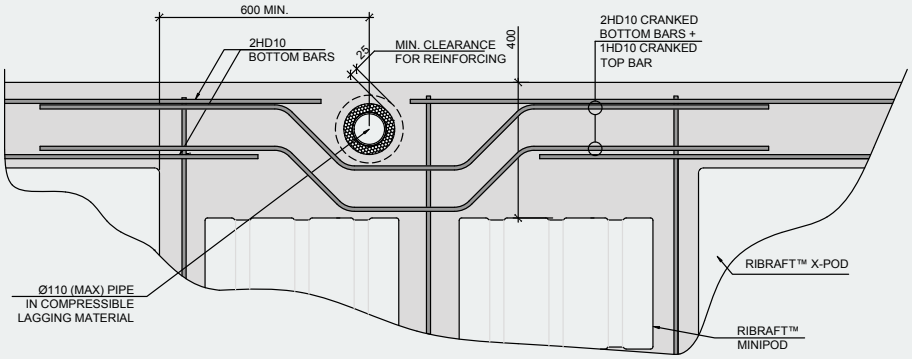
The Xpod® Mini Pods spacers can be used to trim around plumbing penetrations if required.

TYPICAL DETAILS ARE SHOWN BELOW

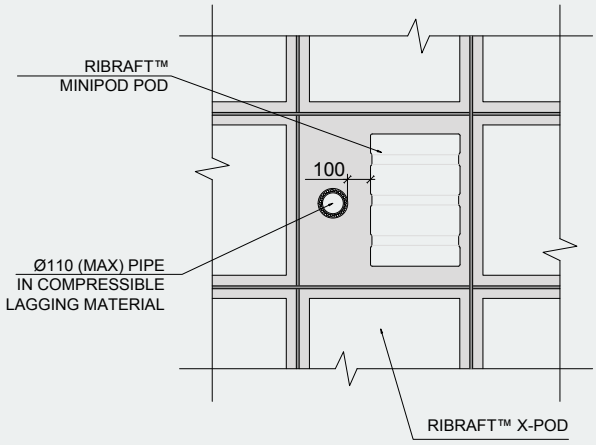
Below slab installation showing lagging of pipes



Details where large diameter pipe required through perimeter beam



Use of Xpod® Mini Pods to create zone for pipes to penetrate slab.



Illustrations: © Cresco.co.nz

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3.3 IN FLOOR PLUMBING INSTALLATION METHODOLOGY

This is the preferred methodology for sites where lateral spread associated with liquefaction is expected as it provides enhanced protection for the pipes compared to the below slab methodology. However, it can be used for all ground conditions.

Pipes services can be run within the plane of the RibRaft® X-Pod®s either exiting out of the side of the perimeter ring beam or going underground near the edge beam. Pipes shall be laid at a fall to comply with NZBC G13/AS1. For pipe up to 65mm diameter the minimum gradient is typically 1 in 40, while for 100mm pipes its 1 in 60, however greater falls may be required dependent upon the required number of discharge units. Table 1 provides distances from the edge of the slab to pipe surface penetration to achieve minimum pipe gradients. Where gradients cannot be achieved, then services will be required to be run under the slab.

Pipes shall either be:

1 Located to pass perpendicular to the ribs and beams and shall not be laid along the length of ribs or beams. X-Pod®s can be cut and sealed as required to achieve the required fall and position.

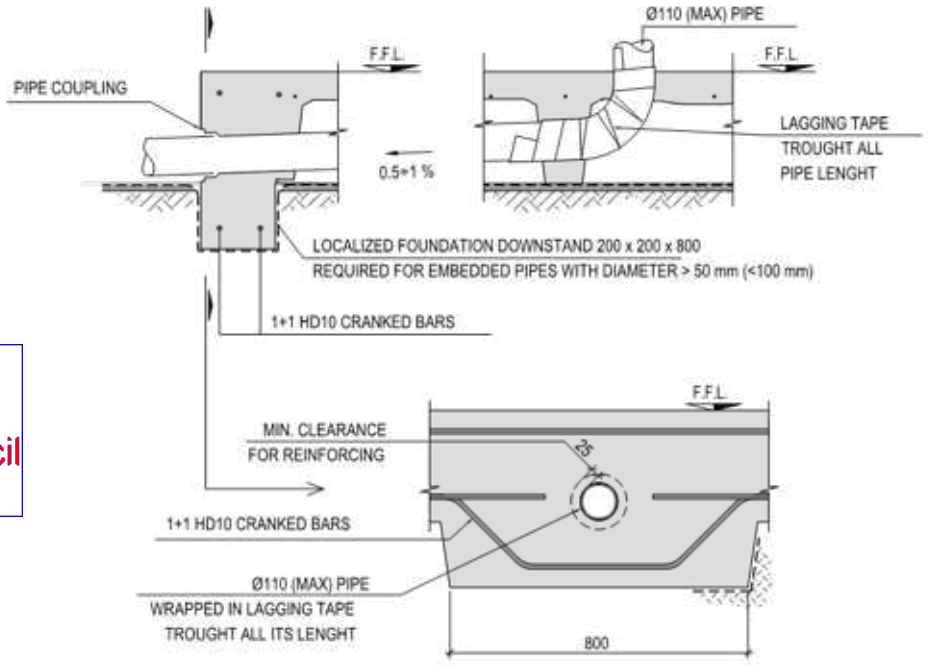
2 The Xpod® Mini Pods spacers can be used to create beams to run services through. Pipes shall be laid to ensure 15mm concrete cover between pipe and reinforcement in the perimeter beam. The width of the rib containing the pipes shall be greater than the specified rib width (typically 100mm) plus the pipe diameter. This ensures the rib width is maintained even though plumbing pipes run through it. All pipes in contact with concrete shall be lagged with an impermeable material of at least 6mm thickness.

TABLE 1 MAXIMUM DISTANCE FROM EXTERIOR TO ENTRANCE POINT OF PLUMBING PIPES

Pipe Diameter (ID)mm	Gradient	Maximum distance to edge with 215mm thick pod
40	1 in 40	3400
50	1 in 40	3000
65	1 in 40	2400
100	1 in 60	1200

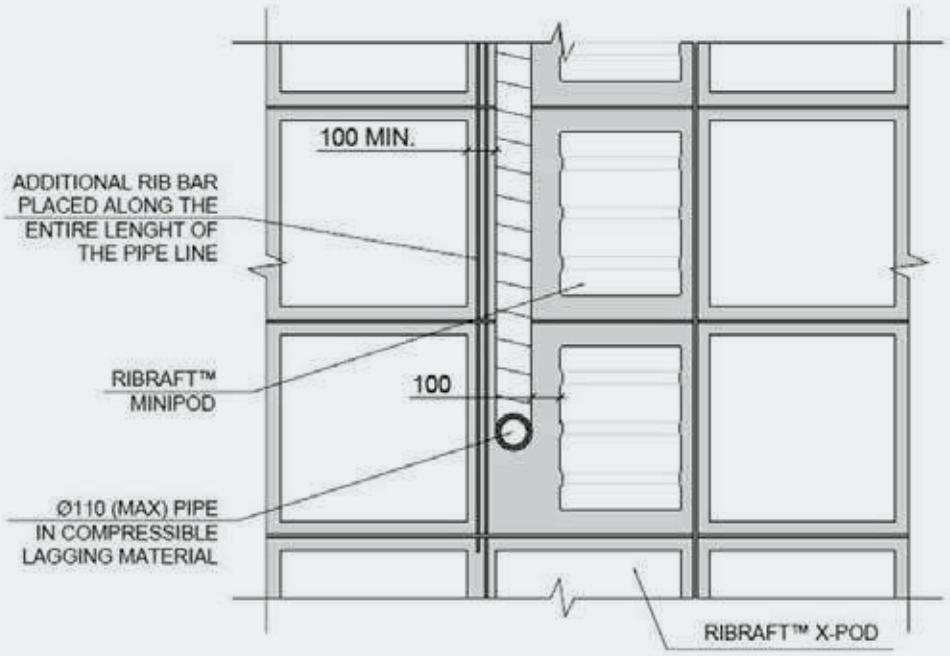
TYPICAL DETAILS ARE SHOWN BELOW

In slab installation pipes cut through rib walls



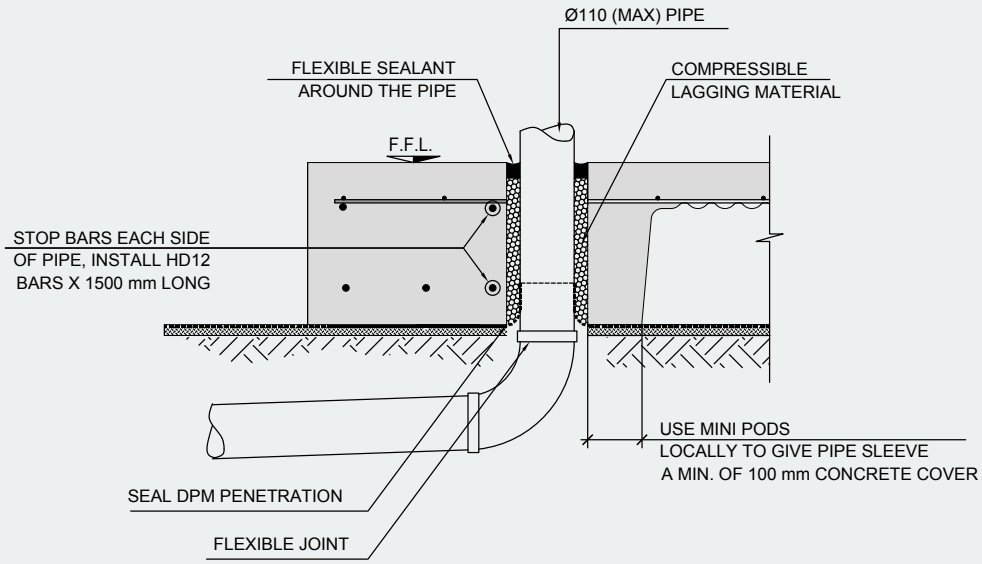
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Use of Xpod® Mini Pods to create zone for pipes to run without compromising the ribs



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Typical drop down detail for sewer line to prevent it being visible at exterior of slab

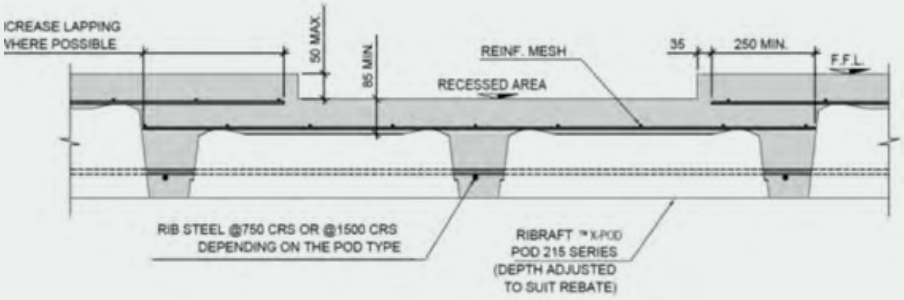


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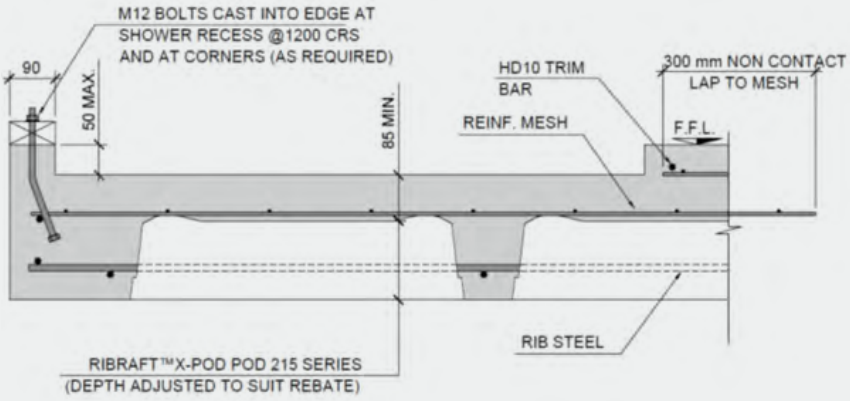
3.4 RECESSES FOR SHOWERS

The following figures provide typical details for recesses and large penetrations.

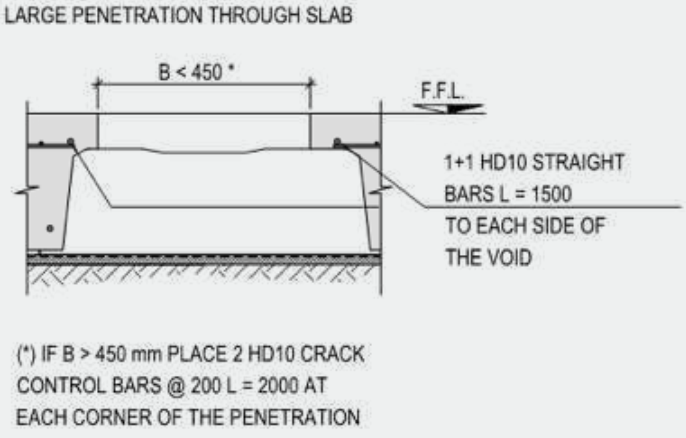
Shower recess distant from slab edge



Shower recess close to slab edge



Large penetration through slab



3.5 SUB-BASE/SUBGRADE

Excavated material shall be replaced with hardfill material compacted in maximum layers of 150mm or as specified by the design engineer. Refer specific project drawings/ specification for minimum hardfill layer under slab. A blinding layer of 0-5 mm sand or crusher dust shall cover base material to a maximum thickness of 25mm (for final hand screeding). The finished level of compacted hardfill shall be determined specifically by the designer for each site. The subgrade/sub-base should be inspected by the design engineer when this is a condition of the building consent, or where concerns exist that the ground conditions are not those implied by the design.

3.6 FORMWORK SETUP

Perimeter shutters shall be set to profiles or string lines with top edge at Finished Floor level. Setting level of shutters must allow for variation across prepared base and final hand screed of sand blinding layer (to +/- 5mm). Shutters shall be adequately braced to ensure minimal movement occurs under full load of wet vibrated concrete and construction loadings. Forms shall prevent the leakage of grout at joints which can result in a bony surface finish.

The finished floor level shall ensure that the height above ground level satisfies the greater requirements of:

- E1/AS1, refer section 2 in particular
- E2/AS1, refer section 9.1 in particular
- any local flood management clearance criteria

The specified levels shall be shown on the project drawings.

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3.7 DPM PLACEMENT

The DPM shall be laid over the entire building platform directly on top of a sand blinding layer, extending to the outside of the edge beam. The joints shall be lapped not less than 50mm and sealed with pressure sensitive tape not less than 50mm wide. All penetrations of the DPM by plumbing and services or punctures during construction shall also be sealed with pressure sensitive tape. The DPM may extend beyond the edge of the slab i.e. underneath the formwork, or may be folded and stapled up the inside of the formwork. The minimum requirement is that the DPM extends to the outside of the edge beam. It is very important that the DPM is not bunched up at the formwork.

ThermoX DPM is highly reflective and sunglasses should be used when installing on sunny days. The reflective side is placed upwards.

3.8 POD INSTALLATION

The drawing should be reviewed to determine whether the symmetrical RibRaft®.

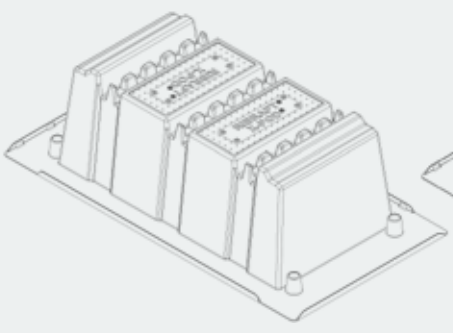
X-Pod® 750/215 is specified or the non-symmetrical

1500/215 pod. Review of the 1500/215 pod will show that only two of the sides only will create a 100mm rib.

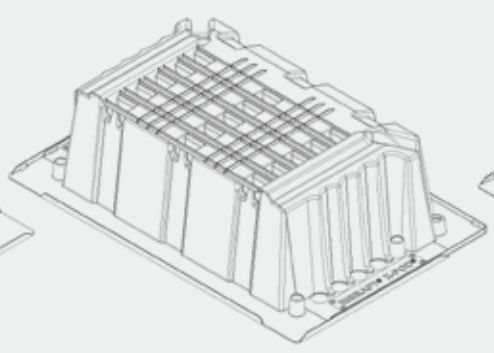
Place a row of RibRaft® X-Pod®s the specified distance away from the formwork (refer consent drawings). Click in X-Pod keystones along perimeter beam to secure in place. Align second row of X-Pod®s and clip together in groups of four pods with X-Pod® Keystone in the holes provided. The X-Pod® Keystones click into place. Continue placing X-Pod®s and clicking together with X-Pod® Keystones. Note the pods are securely held together and modest realignment can occur by pushing. However, take care to avoid damage to the DPM.

Where adjustment pods are specified, or where required to frame around a plumbing penetration, follow the following procedure, ***refer Figure 6.***

FIGURE 6 RIBRAFT® X-POD® TWO PART ADJUSTMENT PODS



RibRaft® Xpod Mini Pod 215/300



RibRaft® Xpod Mini Pod 215/300 and MP Extender 215/400.600

Where a 300mm gap needs filling use the Mini Pod 215/300. Simply clip the Mini Pod to the full pod with the Xpod® Keystones creating a 100mm rib between the full pod and mini pod.

For extension requirements of 400 to 600mm overlay the Mini Pod Extender to achieve the required extension.

The holes on the sides of the extension pods are designed to accommodate the X-Pod® Keystone if required.

3.9 REINFORCEMENT PLACEMENT

The X-Pod® Keystones have been designed to securely hold reinforcement in positon without the need for tying. Place reinforcement in the location and to the details shown on the drawing. Clip reinforcement into place in X-Pod® Keystones.

Mesh can either be placed on reinforcement chairs or supported on the upstands in the corner of each X-Pod®. Refer to the drawings to determined which mesh support mechanism is specified for a particular project to determine the preference of the design engineer.

3.10 CONCRETE PLACEMENT

Firth concrete mix IP2019X or IP2519X are the most commonly specified mix designs for X-Pod® floors. The volume of the concrete floor above the pods can be estimated by calculating the overall volume including the pods (typically 750x750x300) and deducting the volume of the X-Pod®s provided in Table 2.

TABLE 2 VOLUME OF RIBRAFT® X-POD®S

Type of X-Pod®	Volume (litres)
215/750	83
215/1500	91

The Firth concrete mix is designed to have a suitable strength at a higher slump. The mix has been formulated to achieve appropriate filling of the X-Pod® foundation system. Pumping concrete is the recommended method of delivering the fresh concrete to the work face. Other methods of delivery may be suitable however approval from Firth or project engineer is required. For placing and finishing guidelines refer below and to CCANZ's posters number 3 and 5.

1 It is generally preferable to start pour at the garage (allows a harder, flatter finish) and work away. Controlling the flow from the pump nozzle is important to ensure even coverage.

2 Follow behind pour face with immersion (spud) type vibrator to all concrete (beams, ribs and top slab).

3 Care must be taken around plumbing to ensure damage, or movement does not occur.

4 Following vibration, normal concrete finishing techniques shall be carried out (refer poster number 5). Screed off concrete using normal screeding tools or vibrating screeds. Bull float to push down aggregates left at the surface during the screeding operation. Finish the edges with steel trowel and the interior of the slab surface with troweling machines. It is important that final troweling does not commence until all the bleed water has evaporated as premature commencement of troweling can lead to surface delamination or dusting.

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5 Hot and/or windy conditions present during pouring/finishing require steps be taken for the protection of the concrete to prevent plastic cracking. Protection measures include:

a Aliphatic alcohol sprays

b Water vapour misting over surface (ie from water blaster directed upward, and wind carrying mist over slab surface). However this water must be fully evaporated from the surface before commencing trowelling.

c Positioning wind breaks

6 Curing the slab is crucial to ensure strength gain of concrete and protection from early age cracking. Suitable methods of curing include:

a Water spraying/ponding

b Curing membrane sprays

c Polythene covering

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7 If environmental conditions forecast greater than 12 degrees variation of day time to overnight temperatures, then measures to protect slab from thermal shock shall be employed, these include:

a Planning the pour time to minimise the temperature variations the concrete will experience

b Covering surface with fabric, plastic covers or polythene

c Using early entry saws

Forms shall not be struck on the day of the pour, and consideration should be given to leaving forms in place for 2-3 days following pour in very cold or shaded locations.

3.11 SHRINKAGE CONTROL JOINTS

Shrinkage control joints reduce the risk of unwanted cracks, and their placement needs to be carefully considered where uncontrolled cracking could be unacceptable. Two types are described here, saw cut joints (which are tied joints) and free joints.

3.11.1 SAW CUT JOINTS

Saw cuts are located at positons in which the concrete is likely to crack due to stresses induced by restrained shrinkage.

The aim of providing them is for the concrete to crack at the bottom of the saw cut thus minimizing the potential for a visible crack wandering over the surface. The level of reinforcement provided in a RibRaft® X-Pod® flooring system mean that cracks have no structural implications being only an aesthetics issue. Factors to consider are the type of floor finish, the location of ribs and ground beams.

When warm sunny days are followed by cool nights, the change in temperature can cause cracking. Hence preference should be given to using early entry saws which are used immediately after finishing. Shrinkage control joints cut using diamond blades shall be cut as early as possible which is typically within 24 hours of hardening in summer, and 48 hours in winter. They shall be cut to a depth of 25mm. Shrinkage control joints do not guaranteed to eliminate all visible or unwanted cracks.

Joints shall be positioned to coincide with major changes in floor plan. Where concrete is to be exposed, for example in a garage, or brittle covering placed over, the maximum intermediate bay sizes shall be limited to 5m. Bay dimensions formed by shrinkage control joints shall be limited to a maximum ratio of length:width of 1.5:1. Where a shrinkage control joint runs along the line of a load bearing rib, then the joint shall be located directly above one edge of that rib.

In order to limit the width of cracks at re-entrant, or internal corners, extra steel is often specified and is placed on top of the mesh. These are typically 2-HD12 bars (grade 500E), 1200mm long tied to the top of the mesh at 200mm centres, with 50mm cover to the internal corner – refer Building Consent drawing for details.

3.11.2 FREE JOINTS

For large plan areas the designer may specify free joints. These are typically joints which allow unrestrained movement, but are doweled to prevent vertical movement. If specified then follow details shown on the building consent drawings.

3.12 FINISH EXPECTATIONS

The Building Amendment Act 2013 introduced new consumer protection measures which became effective on

1 January 2015. MBIE has developed guidance to the industry on what constitutes a defect and the definition of acceptable/ unacceptable defects. The MBIE guidance document suggest that for a concrete floor it is recognised that some cracking in concrete is common and not necessarily a sign of poor workmanship. The document suggests that cracks up to 3mm wide are acceptable.

It is also recognises that the levelness of the floor is important. NZS3114 requires an even plane within 35mm for every 3m direction for a carpeted floors and 33mm for tiled and vinyl floors. Individual mounds should be less than 3mm high and depressions less than 3mm deep. In additional no abrupt deviations greater than specified in NZS3114 should exist.

Visible reinforcing or bony concrete should not exist along the slab edge.

Concrete is a natural material and shade variation can be expected. Often slight colour variations will fade with time.

4 INSTALLATION DOCUMENTATION

When requested, the installation contractor shall provide a PS3 for the installation of the Firth RibRaft® X-Pod® floor. Confirming that construction was in accordance with the project drawings and that the concrete used for the project was supplied by Firth Industries.



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POSTER No. 3

PLACING AND COMPACTING

PLACING

- Make sure you can see what you are doing
  - Lights may be needed for thin and/or deep formwork
- Concrete mixers, skips and pumps can easily place the concrete exactly where it is needed
- Make sure that you order the right type of concrete with the correct slump for your placing method because you should not add water to a mix on site
  - A different type of concrete is used for pumping than is used for placing with a skip for example
  - Only small amounts of water may be added to a mix on site to make up for loss of water during travel, and may only authorised by the Ready Mix supplier
- Placing must be done at the correct speed
  - Too fast and the compacting gang will not be able to keep up
  - Too slow and the mix will stiffen making compaction very difficult
- Concrete should be placed in layers to make sure that it is compacted properly
  - With poker vibrators the layers shouldn't be deeper than the length of the head
  - With vibrating beams layers shouldn't be deeper than 150 mm
- When dropping concrete from a height use tubes and/or baffle boards to prevent damage to the formwork

1



2



3



4

SLUMP	ON SITE	
Check the slump is right for the job	Site workers must NOT add water to the concrete	Ready Mix suppliers may add up to 10 litres/m³ to adjust the slump

5



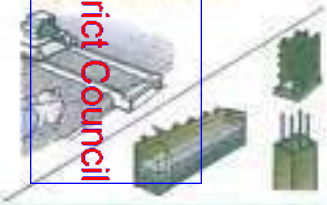
6



7



8



9



10



11



12



COMPACTING

- Air is always trapped in concrete when it is being mixed.
- The aim of compaction is to remove as much of this air as possible.
- Why does getting rid of the air matter?
  - Air holes reduce the strength of concrete.
  - If you don't compact concrete, it may only be half as strong as it should be.
  - Air holes in the concrete stop a good bond forming between the concrete and the reinforcing steel making the structure weaker.
  - Large air holes can cause ugly marks on the surface.
- Use the right compaction equipment for each job.
  - Poker vibrators for beams, columns, walls and deep slabs.
  - Beam vibrators for thin layered slabs.
  - Clamp-on vibrators can be used on special formwork, especially in the precast industry.
- Always have spare compacting equipment in case of a breakdown.
- Fore more information on the use of poker vibrators see Poster No 4 "Using a Poker Vibrator".

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THE NEW ZEALAND READY MIXED CONCRETE ASSOCIATION INC.

SAFETY ON SITE: Suitable protective clothing should be worn when handling wet concrete

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ccanz Cement & Concrete Association of New Zealand

POSTER No. 5

METHODS OF FINISHING CONCRETE

PLANNING

Labour Resources

Make sure you have enough labour for the job size. Typical finishes have the following labour output production.

Floating
- Wood float - 3 to 4 m^2/hour
- Hand steel float 3 to 4m^2/hour
- Power float - 6 to 8m^2/hour

Power Trowelling
- 1 pass - 6 to 8m^2/hour
- 2 passes - 10 to 12 m^2/hour

Equipment

Make sure you have enough equipment for the job. Make sure you know where to get replacement gear for power equipment.

Typical gear list:

- Square Mouthed shovels.
- Concrete Rakes
- Straightedge
- Edging trowels
- Power Finishing
  - Float
  - Trowel
- Hand finishing
  - Bull float
  - Wood float
  - Steel Trowels
- Special broom to suit a textured finish.
- Special finishes: you will need to check you have all the special gear, such as imprinting stamps, etc.

WEATHER

- Do not concrete slabs that are exposed to the weather if rain is forecast. It is virtually impossible to repair a rain-damaged surface.
- Have some sheets of polythene available to cover the slab if you do get caught by a shower of rain.

1



SCREEDED FINISH (U1): This is the simplest finish to produce - the surface is formed with a hand tamping beam during the placement and compaction of the concrete.

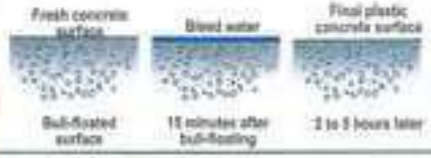
2



FLOATED FINISH (U2): Concrete surface being levelled with a "bull float". On the forward stroke the float is pushed with handle lowered, on the returns stroke the float is pulled with the handle raised.

3

BLEED WATER. Water known as bleed water will come onto the surface of concrete within 15 minutes of compacting the concrete. No finishing work can start until this water has evaporated.



4

WAITING TIME

Warm:
- In cold weather the waiting period could be up to 5 hours.
- The wetter the concrete, you use the longer the wait.

Summer:
- In hot weather, the waiting period could be two hours.
- If it is dry and windy for more than 2 hours, then plastic surface cracking may occur.
- To stop this, spray with water or an aliphatic alcohol special mixture on the plastic surface of the concrete. This should extend the drying time to 2 hours which will allow time for excess water in the lower layers to escape through the still plastic upper surface.



5



FOOTPRINT Concrete is ready for power floating when standing on the concrete creates an imprint not deeper than 2-3mm.

6



POWER FLOATING a slab surface.

7



HAND TROWELLING: The finish near edge is improved with steel hand trowel.

8





POWER TROWELLING can start when the surface has dried and is not sticky to the palm of the hand. The close-up view is of the trowel blade tilted during final stages.

THE PROCESS

- The basic steps are shown in the numbered sequence 1 to 8.
- There must be a waiting period for bleed water to evaporate from the slab surface.
- Be warned that in the summer, evaporation can be too rapid leading to plastic cracking.
- In the summer, surface stiffening may still leave the lower parts of the slab in a plastic state. This can lead to problems of a rolling surface while trying to finish.
- As soon as the concrete has hardened enough to avoid surface marking, usually after 2 passes of steel trowelling, start the curing process, using for example a membrane spray. See Curing Poster No 6

TYPES OF FINISHES

Make sure you understand the specification requirements in NZS 3114 before you start. The finish designations in NZS 3114 are:

U1	Screeded Finish - see Step 1
U2	Floated Finish - typically bull floating after the U1 finish.
U3	Trowelled Finish - developed from a U2 finish after bleed water on the surface has evaporated.
U4	Vibrating steel beam - surface left untouched from beam.
U5/6	Broom finishes - different textures.
U11	Early Age Grinding - usually applied to a U2 finish 36-48 hours after completing.

Note: there are other special finishes in NZS 3114; those using the letter E are Exposed Aggregate finishes.

SLAB PROTECTION

- Have the curing process decided before you start the job - *See Curing Poster No 6*
- In summer, make sure you can apply a mist spray of water or a special aliphatic alcohol to slow down the surface evaporation of water. This is very important with special concretes often used on commercial/industrial floors.
- In winter or in summer where there can be a big change in temperature between day and night, make sure you cover the slab.

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3820 Carpentry

Blue bolt bottom plate fixing

Ref 21867. Uploaded 11 Mar 2021

Purpose: Performance, Installation

Bowmac Stud to Top plate connection

Ref 21866. Uploaded 11 Mar 2021

Purpose: Performance, Installation

Mitek Top Plate Stiffener - 140 frame

Ref 111861. Uploaded 1 Apr 2025

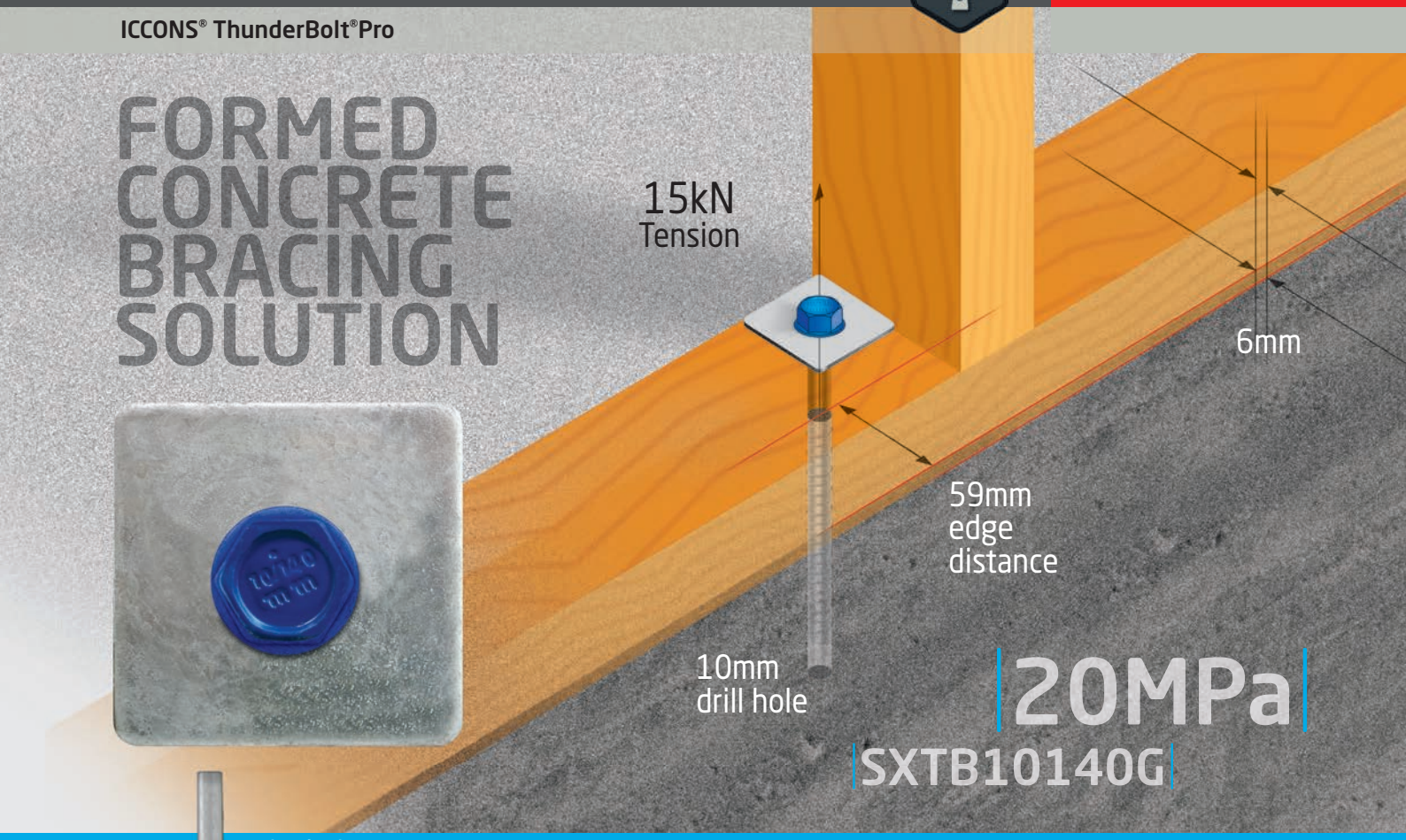
Purpose: Performance, Installation

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PROPRIETARY BRACING SYSTEM

ICCONS® ThunderBolt®Pro

FORMED CONCRETE BRACING SOLUTION



Galvanised

305



The ICCONS® ThunderBolt®Pro is the latest design in high performance screw-in, self-tapping concrete anchors for use in a wide range of concrete and masonry base materials. ICCONS® ThunderBolt®Pro achieves high loads while generating low expansion forces making it ideal for close to edge applications. Available in a mechanically galvanised finish, the ThunderBolt®Pro is the perfect solution for use as a perimeter fixing in accordance with NZ Building Code clauses E2 and E3.

BRACING SYSTEM – PROPRIETARY SOLUTION

The SXTB10140G ThunderBolt®Pro anchor has been independently tested and achieved a Characteristic tie down load of 15 kN (minimum) in 20 MPa concrete.
The SXTB10140G ThunderBolt®Pro anchor is suitable for use as a proprietary bracing solution complying with NZ Building Code clauses B1 and B2.



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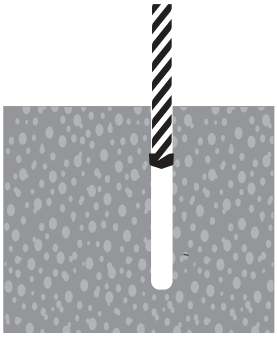
Fixing type	Part No.	Wall type	Characteristic strength (kN)	Minimum edge distance (mm)	Minimum embedment depth (mm)
ThunderBolt®Pro 50x50x3mm Galvanised Washer	SXTB10140G	Internal wall	**15kN**	**59mm**	**90mm**
		External wall - formed concrete foundation	**15kN**	**59mm**	**90mm**

***Galvanised washer sold separately (not supplied with anchor)**

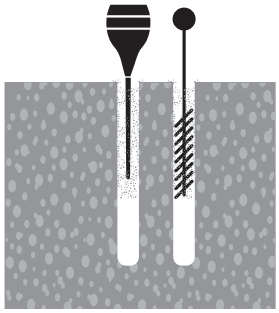
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ANCHOR INSTALLATION INSTRUCTIONS

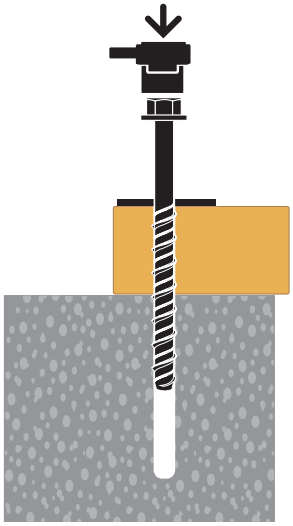
ICCONS® bottom plate fixings must be installed in accordance with ICCONS® published installation instructions



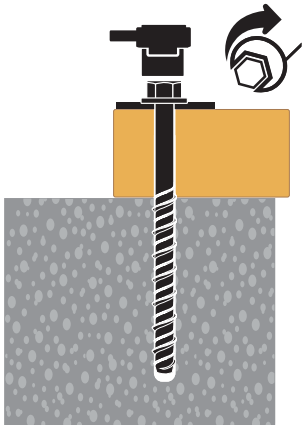
Using a 10mm drill bit, drill a hole to the depth of at least one diameter of the anchor deeper than the required embedment.



Clean dust and other material from the hole.



Install with either a socket or cordless impact driver. Apply pressure against the fixing and rotate to engage the first thread. Continue to tighten the anchor until flanged head is firmly seated against fixture.



Installation complete!

306

DURABILITY

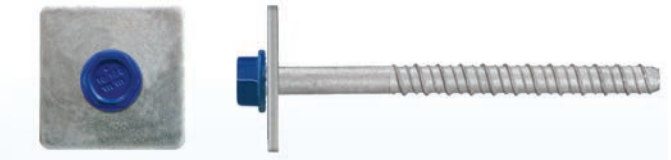
The SXTB10140G ThunderBolt®Pro anchor for use as a proprietary bracing solution is coated with a proprietary mechanically galvanised coating (NAUTILUS XTEND™4) designed to achieve 1000 hours in a Neutral Salt spray Test (NSS). The life expectancy of the SXTB10140G anchor will depend on the environment where the product is installed, for internal dry environments, the SXTB10140G has a life expectancy of 50 years (minimum).The SXTB10140G also complies with durability requirements for all zones in a closed environment as stipulated in NZS 3604-2011, table 4.1.

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WARRANTY

This Technical document has been prepared to provide guidance for design professionals and trades people in the correct selection and use of proprietary bracing systems. ICCONS® and SESTO Fasteners shall not be held liable for any claim, damage, demand expense, injury or loss, direct, incidental or consequential, based on product misuse and factors outside the control of both ICCONS® and SESTO Fasteners.

MATERIAL SPECIFICATIONS



Anchor Part	Mechanically Galvanised
Anchor body	Heat Treated 10B21
Plating	Galvanised Coating thickness 45 microns (min.)

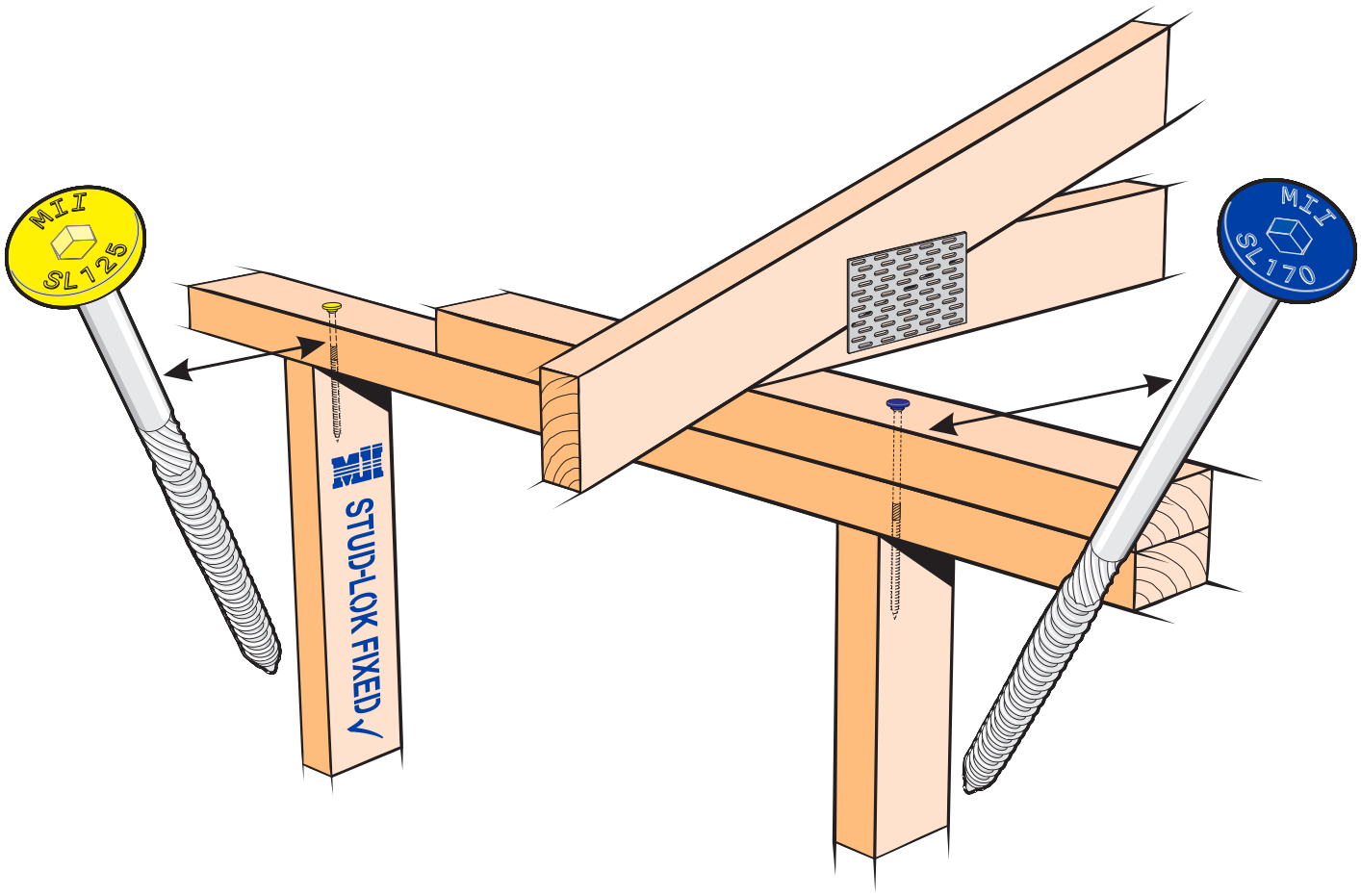
Contact SESTO Fasteners for full independent report details on testing conducted using the SXTB10140G ThunderBolt®Pro (Report: SSL-10009).

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BOWMAC®

STUD-LOK

Provides a solution for top plate to stud fixings for residential timber frame buildings



- ★ Complies with fixing requirements in Section 8 NZS 3604:2011
- ★ The BOWMAC® STUD-LOK forms an integral part of the MiTek Truss & Frame design and layout
- ★ Available in 2 lengths allowing for connections from stud to single top plate (SL125) and stud to double top plates (SL170)
- ★ Applied in the factory
- ★ Is a completely internal connection avoiding any clashes with wall linings

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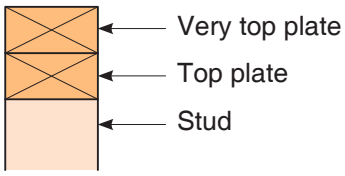
MiTek®

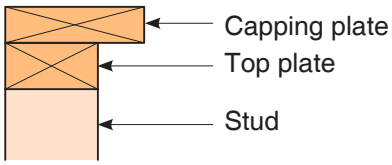
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BOWMAC®

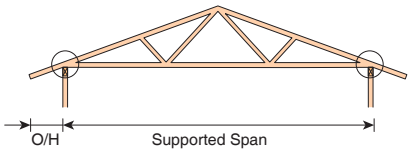
NOTE:
- ★ The STUD-LOK fixing is designed to resist vertical loads only.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads.
- ★ The STUD-LOK connections assume that the correct choice of rafter/truss fixings have been made.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011 and include LVL8 timber grades.

DOUBLE TOP PLATES DEFINITION



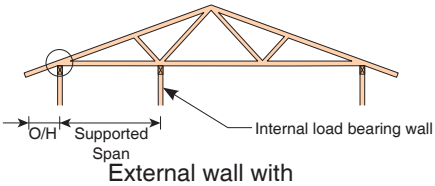


LOAD DIMENSION DEFINITION

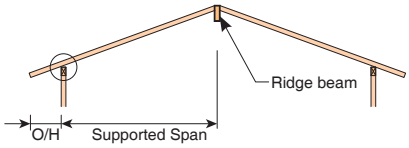


External wall with Standard truss

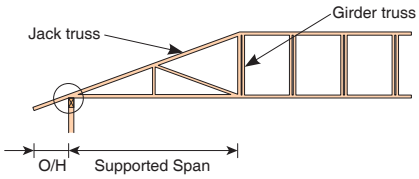
EXTERNAL WALL
LOADED DIMENSION =
$\frac{\text{SUPPORTED SPAN}}{2}$ + O/H



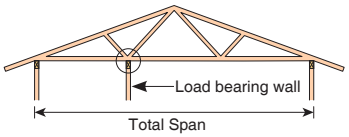
External wall with Internal load bearing wall



External wall with Rafter roof

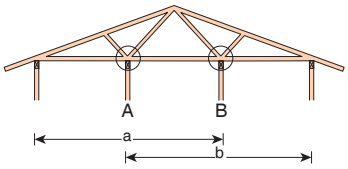


External wall with Jack truss



Internal load bearing wall
(overhang dimension does not apply)

INTERNAL LOAD BEARING WALL
LOADED DIMENSION =
$\frac{\text{TOTAL SPAN}}{2}$



Multiple internal load bearing walls
(overhang dimension does not apply)

MULTIPLE INTERNAL LOAD BEARING WALLS
LOADED DIMENSION FOR
WALL A = $a/2$
WALL B = $b/2$

FIXING SELECTION CHART

(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)

Wind Zones L, M, H, VH, EH as per NZS 3604:2011

Loaded Dimension (m) Stud Centres			Light Roof Wind Zone					Heavy Roof Wind Zone				
300mm	400mm	600mm	L	M	H	VH	EH	L	M	H	VH	EH
3.0	2.3	1.5	2N	2N	SL	SL	SL	2N	2N	SL	SL	SL
4.0	3.0	2.0	2N	2N	SL	SL	SL	2N	2N	SL	SL	SL
5.0	3.8	2.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
6.0	4.5	3.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
7.0	5.3	3.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
8.0	6.0	4.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
9.0	6.8	4.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
10.0	7.5	5.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
11.0	8.3	5.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
12.0	9.0	6.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL

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2N = 2/ 90mm x 3.15 dia. nails

SL = Single STUD-LOK plus 2/ 90mm x 3.15 dia. nails

NOTE:
To calculate the number of STUD-LOK fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this number of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.

MiTek®

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From: NZ - Design <design.miteknz@mii.com>
Sent: Tuesday, 5 November 2024 4:55 pm
To: Mike Robertson <Mike.R@adarchitecture.nz>
Subject: Case #00976740 Stud stiffener

Hi Mike

This is the TPS 140 for 140x45 wall frames. See attached sketch and photo.



In Ling Ng
BE (Hons), CMEngNZ, CPEng (146585), IntPE (NZ)
Engineering Manager

MiTek®
40 Neales Road, East Tamaki, Auckland 2013
PO Box 58-014, Botany, Auckland 2163
O: +64 9 274 7109 | D: +64 9 980 3282 | M: +64 274 798 968
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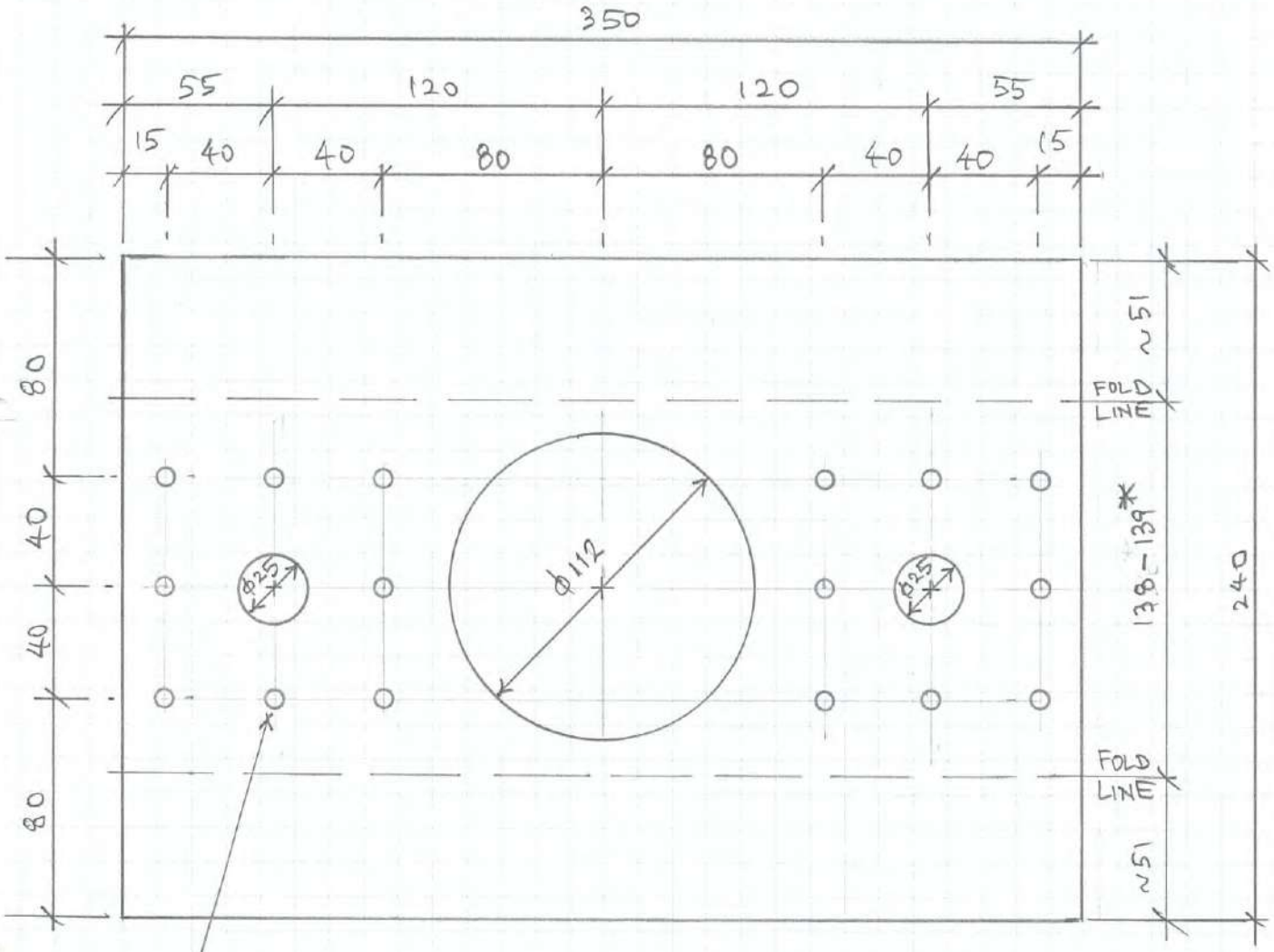
MiTek®
www.miteknz.co.nz

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

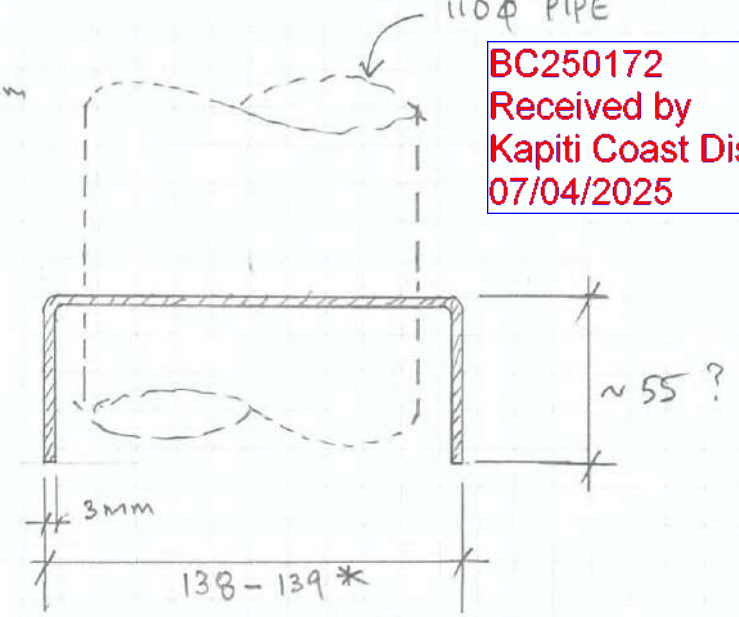
CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03-348 8691

Job Name	Ref
TPS 140	31776
	Date 7/9/2023
Designer: ILN / Checker:	Page 2

STEEL PLATE 350 x 240 x 3mm → FOLDED CHANNEL 140x55 x 350 LONG



ϕ 6.5 HOLES (Typ.)
(16 No.)
For Type 17 -
14g x 35 or 75mm
Screws



* CRITICAL DIMENSION
(< 140mm)

END VIEW

1:25

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4161MI Marshall Wall Weatherization System

Marshall Innovations Ltd
+64 07 5430948
headoffice@mwnz.com
www.mwnz.com

SUPPORTING DOCUMENTS

BRANZ Appraisal 548 - Tekton® Building Wrap

Ref 95746. Uploaded 15 Aug 2024

Purpose: Performance

BRANZ Appraisal 719 - Trade-Seal Pipe and Penetration Seal

Ref 52308. Uploaded 15 Aug 2024

Purpose: Performance

BRANZ Appraisal 846 - SUPER-STICK Flexible Flashing Tape

Ref 52312. Uploaded 15 Aug 2024

Purpose: Performance

ProductWarrantyMarshallWeatherizationSystemJun2020

Ref 52323. Uploaded 15 Aug 2024

Purpose: Warranty

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BRANZ Appraised

Appraisal No. 548 (2024)

TEKTON® BUILDING WRAP



Appraisal No. 548 (2024)

This Appraisal replaces BRANZ Appraisal No. 548 (2019)

BRANZ Appraisals

Technical Assessments of products for building and construction.

Marshall Innovations Limited
PO Box 9411
Greerton
Tauranga
Tel: 07 543 0948
Fax: 07 541 1029
Web: www.mwnz.com

BRANZ
1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz

Product

1.1 Tekton® Building Wrap is a synthetic breather-type flexible wall underlay and air barrier for use under direct and non-direct fixed wall cladding on timber and steel-framed buildings. The product is manufactured of coated spun-bonded polypropylene.

Scope

2.1 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on timber-framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
- with absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including, Very High.

2.2 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on steel-framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer subject to specific design; and,
- situated in NZS 3604 Wind Zones up to, and including, Very High.

2.3 Tekton® Building Wrap has been appraised for use as a flexible wall underlay over rigid wall underlay on timber and steel-framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber-framed buildings or specific design for steel-framed buildings; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.4 Tekton® Building Wrap has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Tekton® Building Wrap into their design in accordance with the declared properties and the instructions of Marshall Innovations Limited.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

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Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Tekton® Building Wrap, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:**

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.2. Tekton® Building Wrap meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Tekton® Building Wrap will contribute to meeting this requirement. See Paragraphs 12.1–12.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Tekton® Building Wrap meets this requirement.

Technical Specification

4.1 Tekton® Building Wrap is a 100 g/m^2 light grey sheet polypropylene membrane material approximately 0.6 mm thick.

4.2 The product is supplied in rolls 1.37 m x 37 m and 2.743 m x 37 m. The product is printed with the Tekton® logo repeated along the length of the roll. The rolls are wrapped with an instruction sticker.

Accessories

4.3 Accessories used with Tekton® Building Wrap which are supplied by the installer are:

- **Fixings** – staples, clouts, screws or proprietary wrap fixings, or other temporary fixings to attach the wall wrap to the framing.
- **Wall underlay support** – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to support the wall wrap in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Handling and Storage

5.1 Handling and storage of the product, whether on-site or off-site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Tekton Specification MW Tekton 10/2014.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Timber and Steel Framing

7.1 Studs must be provided at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 1,200 mm centres.

General

7.2 Tekton® Building Wrap is intended for use as an alternative to conventional building papers which are fixed over timber and steel-framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.

7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed in. Hence, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.

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7.4 Tekton® Building Wrap must not be exposed to the weather or ultraviolet (UV) light for a total of more than 60 days before being covered by the wall cladding.

7.5 Tekton® Building Wrap is suitable for use under wall claddings as a wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23, except that it must not be used with non-absorbent wall claddings such as vinyl or metal-based sidings or weatherboards in direct fixed installations. Tekton® is suitable for use under cavity-based wall claddings as a non-absorbent synthetic wall underlay in accordance with NZS 2295, Table 2.4 on steel-framed buildings. Refer to Table 1.

7.6 Tekton® Building Wrap is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 c). Refer to Table 1.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Wrap Properties	Property Performance Requirement	Actual Property Performance
Absorbency	≥ 100 g/m^2	Classified as non-absorbent (See Paragraph 7.5)
Vapour Resistance	≤ 7 MN s/g	Pass
Water Resistance	≥ 20 mm	Pass
pH of Extract	≥ 5.5 and ≤ 8	9.78 *(Note 1)*
Shrinkage	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	**Edge tear:** Machine direction = 228 N Cross direction = 186 N **Tensile strength:** Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: ≥ 0.1 MN s/m^3	Pass

Note 1: Further testing of Tekton® Building Wrap was completed to determine the effect of the high pH level on the wall underlay and materials it is likely to come into contact with during its serviceable life. The testing confirmed that the high pH had no adverse effects on the wall underlay performance, or the performance of other materials.

7.7 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the wall underlay must be supported between the battens to prevent the wall underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Stucco Plaster

7.8 Tekton® Building Wrap is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1. The wall underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm.

7.9 Tekton® Building Wrap may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3.1 b).

Structure

8.1 Tekton® Building Wrap is suitable for use in all Wind Zones of NZS 3604 up to, and including, Very High when used as a flexible building underlay, and all Wind Zones of NZS 3604 up to, and including, Extra High when used as an overlay for rigid building underlay.

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Durability

9.1 Tekton® Building Wrap meets code compliance with NZBC Clause B2.3.1 (a) not less than 50 years for building wraps used where the cladding durability requirement or expected serviceable life is not less than 50 years, and code compliance with NZBC Clause B2.3.1 (b), 15 years for building wraps used where the cladding durability requirement is 15 years.

Serviceable Life

9.2 Provided it is not exposed to the weather or ultraviolet (UV) light for a total of more than 60 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, Tekton® Building Wrap is expected to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

10.1 Tekton® Building Wrap has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solution C/AS2, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to the Tekton® Building Wrap from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 Tekton® Building Wrap must be used behind claddings that meet the requirements of the NZBC, e.g. such as those covered by NZBC Acceptable Solution E2/AS1, or claddings covered by a valid BRANZ Appraisal.

12.2 Tekton® Building Wrap, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding systems compliance with NZBC Clause E2.

12.3 When used as an air barrier, particular care must be taken to ensure an air tight barrier is achieved, and weather sealing at all openings and penetrations through the cladding meets the requirements of the NZBC.

Installation Information

Installation Skill Level Requirement

13.1 Installation must always be carried out in accordance with the Tekton® Building Wrap Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

Wrap Installation

14.1 Tekton® Building Wrap must be fixed to all framing members at maximum 300 mm centres with hot-dip galvanised, large-head clouts 20 mm long, zinc plated 6-8 mm staples, self-drilling screws, or proprietary wrap fixings. The membrane must be pulled taut over the framing before fixing.

14.2 Tekton® Building Wrap must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.

14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the membrane by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut membrane must be folded inside the opening and stapled to the penetration framing. Excess wall underlay may be cut off flush with the internal face of the wall frame.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

14.4 Tekton® Building Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3.

14.5 When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.

14.6 Any damaged areas of Tekton® Building Wrap, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

14.7 The Technical Literature must be referred to during the inspection of Tekton® Building Wrap installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

15.1 The following tests have been carried out on Tekton® Building Wrap by Scion: folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.

15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: absorbency in accordance with AS/NZS 4201.6, vapour transmission in accordance with ASTM E 96B, shrinkage in accordance with AS/NZS 4201.3, water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421. A range of these tests were completed before and after Tekton® Building Wrap was exposed to UV light.

15.3 The flammability index of Tekton® Building Wrap has been evaluated in accordance with AS 1530.2.

Other Investigations

16.1 A durability opinion was given by BRANZ technical experts.

16.2 Site inspections were carried out by BRANZ to assess methods used for the installation of Tekton® Building Wrap, and to examine completed installations.

16.3 The marketer's Technical Literature, including installation instructions, have been examined by BRANZ and found to be satisfactory.

Quality

17.1 The manufacture of Tekton® Building Wrap has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of product certification by ICC-ES and CCMC covering quality aspects associated with the product.

17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall wrap into their design in accordance with the instructions of Marshall Innovations Limited.

17.4 Quality of installation is the responsibility of the installer, in accordance with the instructions of Marshall Innovations Limited.

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Kapiti Coast District Council
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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Sources of Information

- AS 1530.2–1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1998 Determination of the pH value of aqueous extracts of paper, board and pulp – cold extraction method.
- AS/NZS 4200.1:1994 Pliable building membranes and underlays – materials.
- AS/NZS 4201.1:1994 Pliable building membranes and underlays – Methods of test – Resistance to dry delamination.
- AS/NZS 4201.2:1994 Pliable building membranes and underlays – Methods of test – Resistance to wet delamination.
- AS/NZS 4201.3:1994 Pliable building membranes and underlays – Methods of test – Shrinkage.
- AS/NZS 4201.4:1994 Pliable building membranes and underlays – Methods of test – Resistance to water penetration.
- AS/NZS 4201.6:1994 Pliable building membranes and underlays – Methods of test – Surface water absorbency.
- BS 6538.3:1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295:2006 Pliable, permeable building underlays.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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BRANZ

In the opinion of BRANZ, Tekton® Building Wrap is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Marshall Innovations Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Marshall Innovations Limited:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and quality of work;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Marshall Innovations Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Marshall Innovations Limited or any third party.

For BRANZ

Claire Falck
Chief Executive
Date of Issue: 03 July 2024

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Kapiti Coast District Council
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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ Appraised

Appraisal No. 719 [2019]

TRADE-SEAL
PIPE AND SERVICES PENETRATION SEAL

Appraisal No. 719 (2019)

This Appraisal replaces BRANZ Appraisal No. 719 (2011)

Amended 04 August 2021



BRANZ Appraisals

Technical Assessments of products for building and construction.

Product

1.1 TRADE-SEAL is a wall cladding pipe and service penetration seal consisting of an elastic EPDM sleeve fitted with a self-adhesive flange.

Scope

2.1 TRADE-SEAL has been appraised for use as a pipe and service penetration seal for use where the pipes and service penetration penetrates the wall underlay on timber-framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with BRANZ Appraised flexible and rigid wall underlays; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.2 TRADE-SEAL has been appraised for use as a pipe and service penetration seal for use where the pipes and service penetration penetrates the wall underlay on steel-framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, with regards to building height and floor plan area; and,
- with BRANZ Appraised flexible and rigid wall underlays; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.3 TRADE-SEAL has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of TRADE-SEAL into their design in accordance with the declared properties and the instructions of Marshall Innovations Limited.

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Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, TRADE-SEAL, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:**

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.2. TRADE-SEAL meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the wall cladding system, TRADE-SEAL will contribute to meeting this requirement. See Paragraphs 7.1-7.4 and 11.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. TRADE-SEAL meets this requirement.

Technical Specification

4.1 TRADE-SEAL is an EPDM sleeve, bonded to a carrier material of spun-bonded high density polyethylene film 150 micron thick. The carrier material is backed with a self-adhesive layer. TRADE-SEAL is available with various diameter EPDM sleeve sizes to accommodate different size wall penetrations.

Handling and Storage

5.1 TRADE-SEAL must be protected from damage and weather. It must be stored under cover in clean, dry conditions away from direct exposure to sunlight, heat or flame. TRADE-SEALs should not be removed from the packaging until they are ready to use.

5.2 Handling and storage of TRADE-SEAL, whether on-site or off-site, is the responsibility of the installer.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for TRADE-SEAL. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained within the scope of this Appraisal and the Technical Literature must be followed.

Design Information

General

7.1 TRADE-SEAL when used with BRANZ Appraised flexible and rigid wall underlays provides an Alternative Solution to the pipes and services penetrations specified in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.3 and Figure 68.

7.2 TRADE-SEAL is primarily designed to prevent moisture ingress at pipes and services penetrations through walls.

7.3 The performance of TRADE-SEAL is reliant on it being the correct size for the pipe or service penetration and being fully adhered to the flexible or rigid wall underlay. TRADE SEAL must be protected from ultraviolet (UV) light when installed.

7.4 TRADE-SEAL can be applied to either side of the flexible or rigid wall underlay to provide a seal for pipes and services penetrations.

7.5 Where a proprietary cladding system is used, all flashing details must be carried out in accordance with the specifications of the system. Flashing details which are outside the scope of the cladding system are the responsibility of the designer for compliance with the NZBC.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Durability

8.1 Assessment of durability to meet the NZBC is based on the difficulty of access and replacement, and the ability to detect failure of the TRADE-SEAL during both normal use and maintenance of the building.

Serviceable Life

8.2 Provided the selected flexible and rigid wall underlay is not exposed to the weather or UV light for longer than stated in the relevant Appraisal, [a maximum of 90 days applies to the TRADE-SEAL] and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, TRADE-SEAL is expected to have a serviceable life equal to that of the cladding.

Maintenance

9.1 No maintenance is required for TRADE-SEAL, however regular checks must be made of the cladding system to ensure it is sound and will not allow moisture penetration.

Prevention of Fire Occurring

10.1 Separation or protection must be provided to the TRADE-SEAL from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

11.1 TRADE-SEAL provides suitable flashing and sealing around pipe and service penetrations when used in conjunction with BRANZ Appraised wall underlays and will contribute to the wall cladding meeting code compliance with NZBC Clause E2.3.2.

Installation Information

Installation Skill Level Requirements

12.1 Installation of the product supplied by Marshall Innovations Limited must be completed by competent trades people in accordance with the Technical Literature and this Appraisal.

General

13.1 The appropriate diameter TRADE-SEAL must be used. There must be a tight fit around the pipe or service penetration, but TRADE-SEAL should not be forced over the pipe or service penetration.

13.2 The flexible and rigid wall underlays to receive the TRADE-SEAL must be clean and dry. TRADE-SEAL must be rotated a quarter turn so the point of the TRADE-SEAL flange is upwards before adhering it to the substrate. This will assist moisture run off. The flange is smoothed over to ensure a good bond to the flexible or rigid wall underlay.

13.3 The TRADE-SEAL collar extension can be trimmed to ensure the best fit to the penetration.

13.4 When TRADE-SEAL is used in a retrofit installation, the collar extension is pushed through from the inside.

Health and Safety

14.1 Safe use and handling procedures for TRADE-SEAL is provided in the Technical Literature.

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Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

15.1 Adhesion testing after various forms of accelerated aging has confirmed the adhesion of TRADE-SEAL to a range of flexible and rigid wall underlays. The results have been reviewed by BRANZ experts and found to be satisfactory.

Other Investigations

16.1 Assessment of the composition of the materials used to make TRADE-SEAL has been completed and a durability opinion has been provided by BRANZ experts.

16.2 The practicability of installation was assessed by BRANZ and found to be satisfactory.

16.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

17.1 The manufacture of TRADE-SEAL has not been examined by BRANZ but details of the quality and composition of the materials used were obtained and found to be satisfactory.

17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited.

17.3 The quality of installation on-site is the responsibility of the installer.

17.4 Designers are responsible for the building design, and building contractors are responsible for the quality of the installation of the framing system, the wall underlay and cladding system.

17.5 Building owners are responsible for the maintenance of the cladding system over the TRADE-SEAL.

Sources of Information

- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 04 August 2021.

This Appraisal has been amended to reflect building code updates relating to fire.

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ

In the opinion of BRANZ, TRADE-SEAL Pipe And Services Penetration Seal is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

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Conditions of Appraisal

1. This Appraisal:
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   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Marshall Innovations Limited:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Marshall Innovations Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Marshall Innovations Limited or any third party.

For BRANZ

Chelydra Percy
Chief Executive
Date of Issue:
09 May 2019

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ Appraised
Appraisal No. 846 [2019]

SUPER-STICK FLEXIBLE FLASHING TAPE



Appraisal No. 846 (2019)

This Appraisal replaces BRANZ Appraisal No. 846 (2013).

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 SUPER-STICK is a flexible flashing tape used around framed joinery openings as a secondary weather resistant barrier.

1.2 SUPER-STICK is installed into and around the framed joinery opening over the building wrap and exposed frame to cover both the face and edge of the opening framing. SUPER-STICK is also used at joinery heads to seal flashing upstands to the building wrap.

Scope

2.1 SUPER-STICK has been appraised as a flexible flashing system for use around window and door joinery openings for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- with wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal that specifies a flexible flashing tape system; and,
- with wall underlays compatible with the flexible flashing tape; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.2 SUPER-STICK has also been appraised as a flexible flashing system for use around window and door joinery openings for steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, with regards to building height and floor plan area; and,
- constructed with steel framing complying with the NZBC; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- with wall cladding systems covered by a valid BRANZ Appraisal that specifies a flexible flashing system; and,
- with wall underlays compatible with the flashing tape and steel frame; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

Note: Marshall Innovations Ltd offer SUPER-STICK as a jointing and flashing tape for use with rigid air barrier systems that do not require a flexible wall underlay, but this aspect is outside the scope of this Appraisal. Contact the rigid air barrier system proprietor for system details including recommended jointing and flashing tapes.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

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Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, SUPER-STICK, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:**

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Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years and B2.3.2. SUPER-STICK meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. SUPER-STICK contributes to meeting this requirement. See Paragraphs 7.1 - 7.4 and 11.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. SUPER-STICK meets this requirement and will not present a health hazard to people.

Technical Specification

4.1 SUPER-STICK is a multi-layered silver polyester faced, copolymer, self-adhesive tape. The tape is supplied in rolls of 75 mm x 22.86 m, 150 mm x 22.86 m and 200 mm x 22.86 m.

Handling and Storage

5.1 Handling and storage of all materials supplied by Marshall Innovations Ltd, whether on or off site, is under the control of the installer. Rolls must be stored under cover, in clean, dry conditions away from direct exposure to sunlight.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for SUPER-STICK. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 SUPER-STICK meets the requirements of AC148: 2001 which is an alternative solution to the version of AC148 referenced by NZBC Acceptable Solution E2/AS1, Paragraph 9.1.5 (b). The installation method for SUPER-STICK is an alternative solution to the installation method shown within NZBC Acceptable Solution E2/AS1, Figure 72A and 72B.

7.2 The use of flexible flashing tape systems around window and door joinery openings is critical to assist the overall weathertightness performance of window and door joinery installations.

7.3 SUPER-STICK is suitable for use over flexible wall underlays compatible with the flashing tape in NZS 3604 Wind Zones up to and including Extra High. In the Extra High Wind Zone, the flexible underlay must be installed over a rigid underlay complying with NZBC Acceptable Solution E2/AS1, Table 23.

7.4 SUPER-STICK is designed to prevent air leakage and water penetration around window and door openings at framing junctions (e.g. at the sill trimmer and opening stud junction), and to keep any water that gets past the cladding, or through the joinery, from direct contact with the framing timber.

7.5 SUPER-STICK is not designed to overcome poor detailing and workmanship of the window or door joinery installation. The system must not be considered in isolation, but be considered as part of the wall cladding system. SUPER-STICK flashing tape is designed to be used in conjunction with air seals and joinery flashing systems, not as a substitute.

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7.6 When SUPER-STICK is used in conjunction with LOSP [light organic solvent preservative] treated timber, the solvent from the timber treatment must be allowed to evaporate [generally at least one week] prior to the installation of the system.

Durability

8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement, and the ability to detect failure of SUPER-STICK both during normal use and maintenance of the building.

Serviceable Life

8.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 90 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, SUPER-STICK is expected to have a serviceable life equal to that of the cladding. The maximum exposure period may however be limited by the requirements of the substrate supplier.

Maintenance

9.1 No maintenance is required for SUPER-STICK. Regular checks, at least annually, must be made of the junctions between the joinery and wall cladding to ensure that they are maintained weathertight and that the primary means of weather resistance for the junction e.g. flashing, sealant, etc continues to perform its function, to ensure that water will not penetrate the cladding.

Prevention of Fire Occurring

10.1 Separation or protection must be provided to SUPER-STICK from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

11.1 Where a cladding manufacturer specifies the use of generic flashing tapes around window and door joinery openings at framing junctions as part of their system, or they specify the use of flexible flashing tapes that comply with NZBC E2/AS1, Paragraph 9.1.5 (b), SUPER-STICK may be used.

Installation Information

Installation Skill Level Requirements

12.1 Installation must always be carried out in accordance with the SUPER-STICK Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

General

13.1 The selected building wrap must be installed in accordance with the manufacturer's instructions, and must completely cover the joinery opening. The wrap is then cut on a 45° angle away from each corner of the opening so the flaps can be folded into the opening and secured to the interior face of the timber framing.

13.2 Before SUPER-STICK is applied, the substrate surfaces must be clean, dry and free from any surface contaminants such as dust and grease that may cause loss of adhesion.

13.3 A 75 mm wide x 150 mm long sealing tape 'butterfly' must be installed at 45° across the corner of the jamb/sill junction overlapping the corner by 3 mm to create a seal at the corner junction. A length of SUPER-STICK is then cut to the length of the sill plus 300 mm. The tape is installed flush with the interior face of the opening and is applied along the entire length of the sill and 150 mm up each jamb. The overhanging tape is cut at the corner of the opening to allow the tape to be folded onto the face of the building wrap and "butterfly" installed across the corner. Cut another length of SUPER-STICK the exact length of the sill and overlay onto the already installed Tape to ensure nail sealability requirements are met.

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13.4 A 300 mm length of SUPER-STICK must be installed 150 mm down the jamb and 150 mm along the lintel at each of the top corners of the window or door joinery opening. A 75 mm wide x 150 mm long sealing tape 'butterfly' must be installed at 45° across the corner of the head/jamb junction overlapping the corner by 3 mm to create a seal at the corner junction.

13.5 SUPER-STICK must not be stretched. When joining two sections of tape, the overlap must be 100 mm minimum.

13.6 If SUPER-STICK is exposed to the weather or UV light for more than 90 days, it must be replaced with new material.

Installation Temperature

13.7 SUPER-STICK must not be installed where temperatures are less than -5°C *(Note: Marshall Innovations Ltd approve the installation of SUPER-STICK down to -20°C. This has not been addressed by this Appraisal and is outside its scope.)*

Inspections

13.8 The Technical Literature must be referred to during the inspection of SUPER-STICK installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

14.1 Testing of SUPER-STICK has been completed by BRANZ to the requirements of ICC Evaluation Service Acceptance Criteria for Flashing Materials AC148. The adhesion of SUPER-STICK to black bituminous Kraft building paper complying with the requirements of NZBC Acceptable Solution E2/AS1, Table 23 and selected other synthetic wall underlays have been tested and found to be satisfactory.

Other Investigations

15.1 An assessment was made of the durability of SUPER-STICK by BRANZ technical experts.

15.2 Site inspections were carried out by BRANZ to examine the practicability of installation.

15.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

16.1 The manufacture of SUPER-STICK has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ undertakes an ongoing review of product quality on an inwards goods basis.

16.2 The quality of supply to the market is the responsibility of Marshall Innovations Ltd.

16.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and building wraps in accordance with the instructions of the designer.

16.4 The quality of installation, handling and storage on site is the responsibility of the installer in accordance with the instructions of Marshall Innovations Ltd.

Sources of Information

- ICC Evaluation Service, Inc, AC148 Acceptable Criteria for Flexible Flashing Materials, July 2001.
- NZS 3604: 2011 Timber-framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 (Amendment 8, 30 November 2018).
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ

In the opinion of BRANZ, SUPER-STICK is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Marshall Innovations Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
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2. Marshall Innovations Limited:
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   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Marshall Innovations Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Marshall Innovations Limited or any third party.

For BRANZ

Chelydra Percy
Chief Executive
Date of Issue:
7 June 2019

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Marshall Innovations Construction Solutions

PRODUCT WARRANTY MARSHALL WEATHERIZATION SYSTEM

Marshall Innovations Limited (**Marshalls**) warrants, subject to the conditions set out below, that that products comprised in the Marshall Weatherization System will:

- Be free from manufacturing defects; and
- Meet the specifications in the Marshall Weatherization System BRANZ appraisal No. 621 for a period of 15 years (or such lesser period as may be required under applicable New Zealand law) from the date of purchase.

The products in the Marshall Weatherization System comprise the HYDRA Roof Underlay, Tekton® Building Wrap, HYDRA Wall Underlay, Super Stick Tape or Protecto® Sill System (flexible flashing tapes), Tekton® Seam Tape and TRADE SEAL.

Conditions of Warranty
This product warranty will be void and inapplicable if:

1. The products are not installed, used and maintained in a residential home or building designed and constructed to meet the New Zealand Building Code.
2. The products are not installed, used and maintained in accordance with installation, use and maintenance information contained in:
    - The Marshall Weatherization System Specification published on Marshalls' website (mwnz.com); and
    - BRANZ appraisal No. 621 published on Marshalls' website (mwnz.com).
3. The person claiming for breach of warranty (**claimant**) does not make a written claim:
    - if the defect was reasonably apparent prior to installation, prior to installation; or
    - if the defect was not reasonably apparent prior to installation, within 30 days after the defect became, or should have become, reasonably apparent.
4. The claimant does not provide proof of purchase and such details of installation (including date of installation and name of installer) as reasonably required by Marshalls.

Limitation of liability
The claimant's sole remedy for breach of this product warranty is, at Marshall's option, for Marshalls to supply replacement product, to repair the affected product, to pay the cost of replacing the affected product or to refund the cost of the products.

Notwithstanding any other provision of this product warranty, Marshalls will not be liable for indirect or consequential loss, special damages, economic loss or loss of profit, whether arising in contract or tort. In particular, Marshalls will not be liable for any claims, damages or defects arising from or attributable to poor workmanship, poor design or detailing, settlement or structural movement, normal wear and tear, or growth of mould, mildew, bacteria or any organism on any product.

This warranty may be transferred to each subsequent owner of the building in which the product is installed or used, provided that each subsequent owner must be notified in writing of, and at all times be subject to, these conditions of warranty. An owner will have no rights under this warranty following any such transfer.

Nothing in this product warranty excludes or modifies any legal rights an owner may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified by law. All warranties, liabilities and obligations, except as expressly set out in this product warranty, are excluded to the fullest extent permitted by law.

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4161T Thermakraft Roof Underlay, DPM & DPC

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SUPPORTING DOCUMENTS

BRANZ Appraisal 329 - Supercourse 500 DPC Damp Proofing Course & Concealed Flashing

Ref 80574. Uploaded 27 Nov 2023

Purpose: Performance

BRANZ Appraisal 651 - CoverTek 407 Fire Retardant Roof & Wall Underlay

Ref 109788. Uploaded 5 Mar 2025

Purpose: Performance

CodeMark Certificate CMNZ 30028 RevI - CoverTek 407 Fire Retardant Roof & Wall Underlay

Ref 97001. Uploaded 11 Feb 2025

Purpose: Performance

Covertek 407 - Install Guide

Ref 99086. Uploaded 27 Sep 2024

Purpose: Installation

Supercourse 500 DPC - Install Guide

Ref 99395. Uploaded 3 Oct 2024

Purpose: Installation

Thermathene Black 250µm DPM - Install Guide

Ref 58992. Uploaded 26 Jul 2024

Purpose: Installation

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BRANZ Appraised

Appraisal No. 329 [2022]

THERMAKRAFT™ SUPERCOURSE 500 DAMP-PROOF COURSE AND CONCEALED FLASHING

Appraisal No. 329 (2022)

This Appraisal replaces BRANZ Appraisal No. 329 (2016)

Amended 29 August 2023



BRANZ Appraisals

Technical Assessments of products for building and construction.

Kingspan Thermakraft

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WFTAO

Product

1.1 Thermakraft™ Supercourse 500 is a single layer black polyethylene film, embossed on both faces to produce a small diamond pattern. It is for use as a general damp-proof course (DPC), and also as a concealed flashing for masonry veneer cladding.

Scope

2.1 Thermakraft™ Supercourse 500 has been appraised for use as a DPC for separating timber, wood-based products and metal from concrete, masonry or clay brick in accordance with NZS 3604.

2.2 Thermakraft™ Supercourse 500 has also been appraised for use as a DPC and flashing in masonry veneer walls in accordance with NZBC Acceptable Solution E2/AS1.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Thermakraft™ Supercourse 500 Damp-Proof Course and Concealed Flashing, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:**

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years and B2.3.2. Thermakraft™ Supercourse 500 meets these requirements. See Paragraph 8.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2 and E2.3.3. When used as a flashing as part of a masonry veneer cladding system, Thermakraft™ Supercourse 500 contributes to meeting the requirements of E2.3.2. When used as a DPC, Thermakraft™ Supercourse 500 meets the requirements of E2.3.3. See Paragraphs 11.1 and 11.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Thermakraft™ Supercourse 500 meets this requirement.

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Technical Specification

4.1 Thermakraft™ Supercourse 500 is a 0.5 mm thick, extruded polyethylene film. It consists of a single layer of black polyethylene, embossed on both faces to produce a small diamond pattern. The total thickness of the product after embossing is 0.75 mm. Thermakraft™ Supercourse 500 is supplied in rolls 30 m long and is available in widths of 50, 75, 90, 100, 150, 200, 250, 300, and 500 mm. Other widths are available upon request.

4.2 Each roll is labelled with the product name, dimensions, standards reference and manufacturer's information.

Handling and Storage

5.1 Handling and storage of the product, whether on-site or off-site, is under the control of the installer. The rolls must be protected from damage and weather and must be stored under cover, in clean, dry conditions.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Installation Guide, Thermakraft™ Supercourse 500, Issue 4.0, dated September 2022.
- Product Data Sheet, Thermakraft™ Supercourse 500, Issue 7.0, dated August 2023.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 Thermakraft™ Supercourse 500 exceeds the vapour resistance requirements of NZBC Acceptable Solution E2/AS1, Table 23 for DPCs and is a suitable moisture impermeable alternative to bituminous DPCs.

7.2 Thermakraft™ Supercourse 500 is intended for use as a DPC separating timber, wood-based products and metal from concrete or masonry elements, or where required, timber jack studs or bearers from concrete or timber piles, e.g. where required by NZS 3604, Paragraph 2.3.3 and Figure 6.3. When used as a DPC, the roll width selected must enable the Thermakraft™ Supercourse 500 to extend at least 6 mm beyond each face of the timber in accordance with the requirements of NZS 3604, Paragraph 2.3.3 b).

7.3 Thermakraft™ Supercourse 500 is also intended for use as a flashing material with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.2.4 and also as a DPC in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.2.5.

Timber Treatment

7.4 Thermakraft™ Supercourse 500, when used as a DPC or flashing, is suitable for use in contact with timber treated with light organic solvent preservative (LOSP) or water-based timber preservatives. The solvent from the timber treatment must be allowed to evaporate (generally at least one week) prior to the installation of Thermakraft™ Supercourse 500.

Exposure Zone Fixing Selection

7.5 Where Thermakraft™ Supercourse 500 is used as a flashing behind masonry veneer, fixings shall be hot-dip galvanised clouts in NZS 3604 Exposure Zones B and C, and stainless steel clouts in Exposure Zone D.

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Durability

Serviceable Life

8.1 Thermakraft™ Supercourse 500 is expected to have a serviceable life in excess of 50 years when it is installed in accordance with the requirements of this Appraisal and the Technical Literature, provided it is not exposed to the weather or ultraviolet (UV) light for a total of more than 30 days, and is never exposed to chemicals or solvents that will degrade polyethylene.

Control of Internal Fire and Smoke Spread

9.1 DPCs and flashings are exempt from the surface finish requirements of NZBC Acceptable Solutions C/AS1 and C/AS2 by NZBC Acceptable Solution C/AS1, Paragraph 4.3 e), and NZBC Acceptable Solution C/AS2, Paragraph 4.17.6 e).

Prevention of Fire Occurring

10.1 Separation or protection must be provided to Thermakraft™ Supercourse 500 from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

11.1 Thermakraft™ Supercourse 500, when installed as a flashing in accordance with the Technical Literature and this Appraisal, will assist in the masonry veneer cladding system meeting the performance requirements of NZBC Clause E2.3.2.

11.2 Thermakraft™ Supercourse 500, when used as a DPC in accordance with the Technical Literature and this Appraisal, prevents walls, floors and structural elements in contact with the ground from absorbing or transmitting moisture in quantities that could cause undue dampness or damage to building elements to meet the performance requirements of NZBC Clause E2.3.3.

Installation Information

Installation Skill Level Requirement

12.1 All design and building work must be carried out in accordance with the Thermakraft™ Supercourse 500 Technical Literature and this Appraisal by competent and experienced tradespersons conversant with DPC and flashing installation. Where the work involves Restricted Building Work (RBW) this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License Class.

Installation

General

13.1 Rolls of Thermakraft™ Supercourse 500 may be cut to length with a sharp knife.

DPC Installation

13.2 The surfaces to be separated must be smooth and flat, free from projections such as small stones or sharp ridges that may puncture the membrane when pressure is applied.

13.3 When used to separate timber and wood-based products from concrete or masonry, Thermakraft™ Supercourse 500 should be temporarily held in place with small hot-dip galvanised clouts or zinc plated staples. The strip of DPC must be wide enough to fully protect the width of the material in contact with the concrete or masonry. Refer also to Paragraph 7.2.

13.4 When used under timber plates fixed over concrete floor slabs and foundation walls, a small slit should be made in the material before pushing down over the bolts or fixings. Alternatively, a small hole can be formed by gently tapping the product resting on top of the bolt until a puncture is formed.

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Flashing Installation

13.5 Thermakraft™ Supercourse 500 must be fixed in place to framing members at maximum 300 mm centres with small hot-dip galvanised clouts.

13.6 Horizontal and vertical joints must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the flashing.

13.7 At the sill/jamb junction, the jamb flashing must overlap the sill flashing.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

14.1 The following tests have been carried out on Thermakraft™ Supercourse 500: water permeability, thickness, mass per unit area, pigment, impact resistance, and labelling, all in accordance with AS/NZS 2904 and AS/NZS 4347. The test results have been reviewed by BRANZ experts and found to be satisfactory.

Other Investigations

15.1 Durability and weathertightness opinions were given by BRANZ technical experts.

15.2 Site inspections have been carried out by BRANZ to assess the practicability of installation.

15.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

16.1 The manufacture of Thermakraft™ Supercourse 500 has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory. BRANZ undertakes an ongoing review of product quality on an inwards goods basis.

16.2 The quality of supply to the market is the responsibility of Kingspan Insulation NZ Limited.

16.3 Building designers are responsible for the design of the building, and for the incorporation of Thermakraft™ Supercourse 500 into their design in accordance with the instructions of Kingspan Insulation NZ Limited.

16.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Kingspan Insulation NZ Limited.

Sources of Information

- AS/NZS 2904:1995 Damp-proof courses and flashings.
- AS/NZS 4347:1995 Damp-proof courses and flashings - Methods of test.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4229:2013 Concrete masonry buildings not requiring specific engineering design.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No.1, dated 29 August 2023

This Appraisal has been amended to update the Appraisal Holder, to omit roll widths of 140, 400 and 1,000 mm, and to update the technical literature.

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

In the opinion of BRANZ, Thermakraft™ Supercourse 500 Damp-Proof Course and Concealed Flashing is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Kingspan Insulation NZ Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Kingspan Insulation NZ Limited:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Kingspan Insulation NZ Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Kingspan Insulation NZ Limited or any third party.

For BRANZ

Chelydra Percy
Chief Executive

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ Appraised

Appraisal No. 651 (2024)

THERMAKRAFT COVERTEK 407 ROOF AND WALL UNDERLAY



Appraisal No. 651 (2024)

This Appraisal replaces BRANZ Appraisal No. 651 (2019)

BRANZ Appraisals

Technical Assessments of products for building and construction.

Kingspan Thermakraft

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WFTAO

Product

1.1 Thermakraft Covertek 407 Roof and Wall Underlay is a fire-retardant, synthetic building underlay for use under roof and wall claddings. The product consists of a micro-porous water-resistant film laminated between two layers of non-woven spun-bonded polyolefin.

Scope

Roof Underlay

2.1 Thermakraft Covertek 407 has been appraised for use as a self-supporting roof underlay on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
- with masonry tile roof cladding; and,
- with metal tile and profiled metal roof cladding; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

Flexible Wall Underlay

2.2 Thermakraft Covertek 407 has also been appraised for use as a flexible wall underlay for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 for timber-framed buildings; or,
- the scope limitations of NASH Building Envelope Solutions, Paragraph 1.1 for steel-framed buildings; and,
- with direct-fixed absorbent and non-absorbent wall claddings; or,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; or,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber-framed buildings or NASH Building Envelope Solutions for steel-framed buildings; and,
- situated in NZS 3604 and NASH Standard Part 2 Wind Zones up to, and including, Very High; or,
- situated in NZS 3604 and NASH Standard Part 2 Wind Zones up to, and including, Extra High when used over a rigid wall underlay in accordance with NZBC Acceptable Solution E2/AS1 or NASH Building Envelope Solutions, Paragraph 9.1.7.2.

Specific Design

2.3 Thermakraft Covertek 407 has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Thermakraft Covertek 407 into their design in accordance with the declared properties and the instructions of Kingspan Insulation NZ Limited.

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Building Regulations

New Zealand Building (NZBC)

3.1 **In the opinion of BRANZ, Thermakraft Covertek 407 Roof and Wall Underlay, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:**

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.2. Thermakraft Covertek 407 Roof and Wall Underlay meets these requirements. See Paragraphs 9.1 and 9.2.

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Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.4 (c). Thermakraft Covertek 407 Roof and Wall Underlay meets this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the roof or wall cladding system, Thermakraft Covertek 407 Roof and Wall Underlay contributes to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Thermakraft Covertek 407 Roof and Wall Underlay meets this requirement.

Technical Specification

4.1 Thermakraft Covertek 407 Roof and Wall Underlay is a synthetic building underlay for use under roof and wall claddings. The product consists of a micro-porous water-resistant film laminated between two layers of non-woven spun-bonded polyolefin. Thermakraft Covertek 407 Roof and Wall Underlay is coloured white on the top and bottom faces.

4.2 The product is supplied in rolls 1.250 m wide x 20 m and 40 m long and 2.55 m wide x 29.4 m long. The product is printed with the Thermakraft Covertek 407 logo repeated along the length of the roll. The rolls are wrapped in clear polythene film.

Accessories

4.3 Accessories used with Thermakraft Covertek 407 Roof and Wall Underlay which are supplied by the installer are:

- **Fixings** - stainless steel staples, clouts, screws or proprietary underlay fixings, or other temporary fixings to attach the underlay to the framing.
- **Wall underlay restraint (timber frame)** – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to restrain the wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.
- **Wall underlay restraint (steel frame)** – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to restrain the wall underlay in accordance with NASH Building Envelope Solutions, Paragraph 9.1.9.5.
- **Thermal break sheathing (steel framing)** – in accordance with NASH Building Envelope Solutions, Paragraph 11.4.3.2.

Handling and Storage

5.1 Handling and storage of the product, whether on-site or off-site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Product Data Sheet, Thermakraft Covertek 407, Issue 8.0, April 2024.
- Installation Guide, Thermakraft Covertek 407, Issue 4.0, April 2024.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Design Information

General

7.1 Thermakraft Covertek 407 Roof and Wall Underlay is intended for use as an alternative to conventional kraft paper underlays, which are fixed over timber or steel-framed roofs and walls. The underlay is intended to limit the entry of wind into the roof and wall cavities. For roofs, the underlay assists in the moisture management of the roof cladding system and for walls it acts as a secondary barrier to wind-driven rain. Refer to Table 1 for material properties.

Table 1: Material Properties

NZBC E2/AS1, Table 23 Roof Underlay Properties	Roof Property Performance Requirement	Wall Property Performance Requirement	Results
Absorbency	≥ 150 g/m^2	≥ 100 g/m^2	Pass > 150 g/m^2
Vapour Resistance	≤ 7 MN s/g	≤ 7 MN s/g	Pass
Water Resistance	≥ 100 mm	≥ 20 mm	Pass ≥ 100 mm
pH of Extract	≥ 6.0 and ≤ 9.0	≥ 6.0 and ≤ 9.0	Pass
Shrinkage	≤ 0.5%	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	Edge tear and tensile strength	**Edge tear (Average):** Machine direction = 186 N **Edge tear (Average):** Cross direction = 101 N **Tensile strength (Average):** Machine direction = 6.6 kN/m Cross direction = 3.7 kN/m
Air Barrier	Not applicable	Air resistance ≥ 0.1 MN s/m^3	Pass. Thermakraft Covertek 407 can be used as an air barrier

7.2 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the cladding is installed. Hence, the entire building must be closed-in and made weatherproof before moisture sensitive materials such as internal linings and insulation materials are installed.

7.3 Thermakraft Covertek 407 Roof and Wall Underlay must not be exposed to the weather or ultraviolet (UV) light for a total of more than 7 days before being covered by the cladding when used as a roof underlay, or for more than 60 days when used a wall underlay.

Timber and Steel Framing

7.4 Timber and steel framing must be provided in accordance with the requirements of the NZBC and the cladding manufacturer.

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Use as a Roof Underlay

7.5 Thermakraft Covertek 407 Roof and Wall Underlay is suitable for use under roof claddings on buildings as a roof underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23 for timber-framed buildings and NASH Building Envelope Solutions, Table 23 for steel-framed buildings.

7.6 Thermakraft Covertek 407 Roof and Wall Underlay is suitable for use in residential and commercial roofs with roof pitches of minimum 3°. The product must not span unsupported more than 1,200 mm in one direction. Spans greater than 1,200 mm require additional support such as galvanised wire mesh or safety mesh.

7.7 At roof pitches of 10° or more, Thermakraft Covertek 407 Roof and Wall Underlay may be run horizontally or vertically.

7.8 At roof pitches less than 10° (minimum 3°), Thermakraft Covertek 407 Roof and Wall Underlay may be run horizontally, or vertically if installed over a roof underlay support.

7.9 Refer to Table 2 for a summary of the roof underlay support requirements.

Table 2: Roof Underlay Support Requirements

Roof Pitch	Span	Roof Underlay Support Required?	
		Horizontally Installed	Vertically Installed
10° or more	Greater than 1,200 mm	Yes	Yes
	1,200 mm or less	No	No
Less than 10° (minimum 3°)	Greater than 1,200 mm	Yes	Yes
	1,200 mm or less	No	Yes

Use as a Wall Underlay

7.10 Thermakraft Covertek 407 Roof and Wall Underlay is suitable for use under wall claddings as a wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23 on timber-framed buildings and NASH Building Envelope Solutions, Table 23 on steel-framed buildings, including non-absorbent wall claddings such as vinyl and metal-based weatherboards in direct-fixed situations.

7.11 Thermakraft Covertek 407 Roof and Wall Underlay is suitable for use as an air barrier where walls are not lined, such as attic spaces at gable ends, in accordance with NZBC Acceptable Solution E2/AS1 or NASH Building Envelope Solutions, Paragraph 9.1.4 (c).

7.12 In cavity installations where the cavity battens are installed at greater than 450 mm centres, Thermakraft Covertek 407 Roof and Wall Underlay must be restrained between the battens to prevent the underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity. Refer to NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5 for timber frame or NASH Building Envelope Solutions, Paragraph 9.1.9.5 for steel frame. Wall underlay restraint options include polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens or thermal break sheathing (steel frame only).

Structure

8.1 Thermakraft Covertek 407 Roof and Wall Underlay is suitable for use in all Wind Zones of NZS 3604 and NASH Standard Part 2 up to, and including, Very High when used as a stand-alone flexible wall underlay, and all Wind Zones of NZS 3604 up to, and including, Extra High when used as an overlay for rigid wall underlays or as a roof underlay.

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Durability

9.1 Thermakraft Covertek 407 Roof and Wall Underlay meets code compliance with NZBC Clause B2.3.1 (a) not less than 50 years for underlays used where the roof or wall cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry roof tile cladding or masonry veneer. It also meets code compliance with NZBC Clause B2.3.1 (b) 15 years for underlays used where the roof or wall cladding durability requirement is 15 years.

Serviceable Life

9.2 Thermakraft Covertek 407 Roof and Wall Underlay is expected to have a serviceable life equal to that of the cladding. This is provided the cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather-resistant. In addition, the product must not be exposed to the weather or UV light for a total of more than 7 days when used as a roof underlay prior to installation of the roofing. When used as a wall underlay, a total exposure of 60 days applies prior to installation of the wall cladding.

Control of Internal Fire and Smoke Spread

10.1 Thermakraft Covertek 407 Roof and Wall Underlay has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS1 and C/AS2, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to the Thermakraft Covertek 407 Roof and Wall Underlay from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 Thermakraft Covertek 407 Roof and Wall Underlay must only be used under claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1 or NASH Building Envelope Solutions, or claddings covered by a valid BRANZ Appraisal.

12.2 Thermakraft Covertek 407 Roof and Wall Underlay, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding system's compliance with NZBC Clause E2.

Installation Information

Installation Skill Level Requirement

13.1 All design and building work must be carried out in accordance with the Technical Literature and this Appraisal by competent and experienced tradespeople conversant with underlays. Where the work involves Restricted Building Work (RBW) this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License Class.

Underlay Installation

General

14.1 Thermakraft Covertek 407 Roof and Wall Underlay must be fixed at maximum 300 mm centres to all framing members with large-head clouts 20 mm long, 6-8 mm stainless steel staples, self-drilling screws or proprietary underlay fixings. The underlay must be pulled taut over the framing before fixing.

14.2 When fixing the product in windy conditions, care must be taken due to the large sail area created.

14.3 Any damaged areas of Thermakraft Covertek 407 Roof and Wall Underlay, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

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Roof Underlay

14.4 Thermakraft Covertek 407 Roof and Wall Underlay may be run horizontally or vertically. Refer to Table 2 for a summary of roof underlay support requirements. The roof underlay must extend from the ridge and overhang the fascia board by 20-25 mm.

14.5 Vertical laps must be no less than 150 mm wide. Horizontal laps must also be no less than 150 mm, with the direction of the lap ensuring that water is shed to the outer face of the underlay. End laps must be made over framing and be no less than 150 mm wide. To assist with achieving the correct lap dimension, Thermakraft Covertek 407 Roof and Wall Underlay has a 150 mm lap line printed continuously along the top face.

Wall Underlay

14.6 Thermakraft Covertek 407 Roof and Wall Underlay must be run horizontally and must extend from the upper side of the top plate to the underside of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 150 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.

14.7 Thermakraft Covertek 407 Roof and Wall Underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the underlay by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut underlay must be folded inside the opening and stapled to the penetration framing. Excess underlay may be cut off flush with the internal face of the wall frame.

14.8 Thermakraft Covertek 407 Roof and Wall Underlay can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3 for timber framing or NASH Building Envelope Solutions Paragraph 9.1.11.3 for steel framing.

Inspections

14.9 The Technical Literature must be referred to during the inspection of Thermakraft Covertek 407 Roof and Wall Underlay installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

15.1 The following tests have been carried out on Thermakraft Covertek 407 Roof and Wall Underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23: tensile strength, edge-tear resistance and resistance to water vapour transmission in accordance with AS/NZS 4200.1, shrinkage in accordance with AS/NZS 4201.3, resistance to water penetration in accordance with AS/NZS 4201.4, surface water absorbency in accordance with AS/NZS 4201.6 and pH of extract in accordance with AS/NZS 1301.421s. A range of these tests were completed before and after Thermakraft Covertek 407 Roof and Wall Underlay was exposed to UV light.

15.2 The flammability index of Thermakraft Covertek 407 Roof and Wall Underlay has been evaluated in accordance with AS 1530.2.

Other Investigations

16.1 A durability opinion has been given by BRANZ technical experts.

16.2 An evaluation of the expected performance of Thermakraft Covertek 407 Roof and Wall Underlay in direct contact with metal roof cladding has been completed by BRANZ.

16.3 The practicability of installation of Thermakraft Covertek 407 Roof and Wall Underlay has been assessed by BRANZ and found to be satisfactory.

16.4 The Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

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Quality

17.1 The manufacture of Thermakraft Covertek 407 Roof and Wall Underlay has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

17.2 The quality of supply to the market is the responsibility of Kingspan Insulation NZ Limited.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the roof underlay into their design in accordance with the instructions of Kingspan Insulation NZ Limited.

17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Kingspan Insulation NZ Limited.

Sources of Information

- AS 1530.2:1993 Test for flammability of materials.
- AS/NZS 1301.421s:1998 Determination of the pH value of aqueous extracts of paper, board and pulp - Cold extraction method.
- AS/NZS 4200.1:1994 Pliable building membranes and underlays - Materials.
- AS/NZS 4201.3:1994 Pliable building membranes and underlays - Methods of test – Shrinkage.
- AS/NZS 4201.4:1994 Pliable building membranes and underlays - Methods of test – Resistance to water penetration.
- AS/NZS 4201.6:1994 Pliable building membranes and underlays - Methods of test – Surface water absorbency.
- BS 6538.3:1987 Method for determination of air permeance using the Garley apparatus.
- NASH Building Envelope Solutions: 2019 Light steel-framed buildings.
- NASH Standard Part Two: 2019 Light steel-framed buildings.
- NZS 2295:2006 Pliable, permeable building underlays.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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BRANZ

In the opinion of BRANZ, Thermakraft Covertek 407 Roof and Wall Underlay is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Kingspan Insulation NZ Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Kingspan Insulation NZ Limited:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and quality of work;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Kingspan Insulation NZ Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Kingspan Insulation NZ Limited or any third party.

For BRANZ

Claire Falck
Chief Executive
Date of Issue:
16 December 2024

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Certificate no: CMNZ30028
Version: I
Original issue date: 29 June 2016
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Renewal Date: 01 July 2025

Product Certificate

Thermakraft Covertek 407 Roof and Wall Underlay

1. Certificate Holder Details

Kingspan | Thermakraft

Kingspan Insulation NZ Limited
Trading as Kingspan
11 Turin Place, Otara, Auckland.
info@kingspaninsulation.co.nz
Tel: +64 9 2733727
www.thermakraft.co.nz

2. Product Certification Body

Global-Mark Pty Ltd
Trading as Global-Mark
57 Willis Street, Wellington, 6011
customer.service@global-mark.co.nz
+64 9 889 0622
www.global-mark.co.nz

Complaints: The complaints process for this certificate can be found here:
www.global-mark.co.nz/complaints

Global-Mark Managing Director.

Herve Michoux

3. Description of Building Method or Product

Thermakraft Covertek 407 Roof and Wall Underlay is a synthetic, fire retardant, absorbent, breathable building underlay for use under roof and wall claddings. The product consists of a micro-porous water-resistant film laminated between two layers of non woven spun-bonded polyolefin. Thermakraft Covertek 407 Roof and Wall Underlay is coloured white on the top and bottom faces with red Covertek 407 branding on the exposed face.

4. Intended use of Building Method or Product

Thermakraft Covertek 407 Roof and Wall Underlay is an underlay for use under roof and wall claddings.

5. New Zealand Building Code Provisions

The System if designed, used, installed and maintained in accordance with this Certificate, the system will meet the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1(a), not less than 50 years, B2.3.1(b), 15 years and B2.3.2.

Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.4 (c)

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2, E2.3.5, E2.3.6 and E2.3.7 when used as part of the roof or wall cladding system.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

6. Conditions and Limitations of Use

1. Thermakraft Covertek 407 Roof and Wall Underlay use is certified
   a. as self-supporting roof underlay on buildings:
      i. within the scope limitations of NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5 November 2020), Paragraph 1.1 with regards to building height and floor plan area; and,
      ii. with
         1. masonry tile roof cladding; or,
         2. with metal tile roof cladding or
         3. profiled metal roof cladding; and,

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The purpose of construction site audits is to confirm the practicability of installing the product; and to confirm the appropriateness and accuracy of installation instructions. In issuing this certificate, Global-Mark has relied on the independent expert and/or laboratory advise or reports. In placing the CodeMark mark on the product/system, the certificate holder makes a declaration of compliance with the certification standard(s) and confirms that the product is identical to the product certified herein.

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iii. situated in NZS 3604-2011 and NASH Standard Part 2:2019 - light steel framed buildings Wind Zones up to, and including Extra High.
iv. with a roof pitch of 3° and above

b. as flexible wall underlay for buildings:
i. within the scope limitations of
1. NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5 November 2020), Paragraph 1.1 for timber-framed buildings; or,
2. NASH Building Envelope Solutions: 2019 - Light Steel Framed Buildings, Paragraph 1.1 for steel-framed buildings; and,
ii. with absorbent or non-absorbent wall claddings either direct fixed or installed over an 18 mm minimum drained cavity; or,
iii. with masonry veneer in accordance with
1. NZBC Acceptable Solution E2/AS1 Third Edition including amendment 10 (5 November 2020) for timber-framed buildings or
2. NASH Building Envelope Solutions: 2019-Light Steel Framed Buildings for steel-framed buildings; and,
iv. situated in
1. NZS 3604 and NASH Standard Part 2:2019 light steel framed buildings Wind Zones up to, and including, Very High; or,
2. NZS 3604 and NASH Standard Part 2:2019 light steel framed buildings Wind Zones up to, and including, Extra High when used over a rigid wall underlay in accordance with NZBC Acceptable Solution E2/AS1 Third Edition including amendment 10 (5 November 2020) or NASH Building Envelope Solutions: 2019-Light Steel Framed Buildings Paragraph 9.1.7.2.

2. Thermakraft Covertek 407 Roof and Wall Underlay shall be used and installed in accordance with all relevant technical information relating to the products use contained within Kingspan- Product data Sheet - Thermakraft Covertek 407 Heavy duty self-supporting roof and wall underlay (Issue 8.0, April 2024) and Kingspan- Installation Guide - Thermakraft Covertek 407 Heavy duty self-supporting roof and wall underlay (Issue 4.0, April 2024) and the BRANZ Appraisal No. 651 (2019) Amended 14 May 2024 Thermakraft Covertek 407 Roof and Wall Underlay (refer to www.branz.co.nz).
3. Thermakraft Covertek 407 Roof and Wall Underlay must not be exposed to the weather or ultraviolet light before being covered for a total of more than:
a. 7 days when used as a roof underlay
b. 60 days when used as a wall underlay.
4. Thermakraft Covertek 407 Roof and Wall Underlay must be separated or protected from heat sources such as fireplaces, heating appliances, flues and chimneys.
5. When used as a roof underlay,

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a. Thermakraft Covertek 407 Roof and Wall Underlay can be installed vertically or horizontally and must span no greater than 1200 mm in one direction between framing supports without additional underlay support. All underlay supports must be corrosion resistant material.

b. In addition, at roof pitch less than 10°, the underlay must be installed horizontally unless installed over a roof underlay support.

6. When used as a wall underlay, in cavity installations where the cavity battens are installed at greater than 450 mm centres, Thermakraft Covertek 407 Roof and Wall Underlay must be restrained between the battens to prevent the underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity.

7. Health and Safety Information

Standard industry safety practices and manufacturer safety requirement as detailed in the technical literature including the applicable SDS must be observed at all times. When fixing the product in windy conditions, care must be taken due to the large sail area created.

8. Basis for Certification

The certification decision is based on independent technical review(s) of test report(s), engineering opinion(s) and other documented evidence(s), factory audit(s) and site review(s)

Code Clause	Compliance pathway	Evidence
Clause B2 DURABILITY	Acceptable solution Test report	001, 002, 003 and 004
Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE	Acceptable solution Test report	001, 002, 003 and 004
Clause E2 EXTERNAL MOISTURE	Alternative solution - Expert judgement	001, 002, 003 and 004
Clause F2 HAZARDOUS BUILDING MATERIALS	Alternative solution - Expert judgement	001, 002, 003, 004 and 005

9. Supporting Documentation for Certification

Rev	Author	Description	Date and/or Revision
001	BRANZ	Thermakraft Covertek 407 Roof and Wall Underlay - BRANZ Appraisal No. 651 (2019) Amended 14 May 2024	14 May 2024

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002 *	BRANZ	BRANZ Appraisals Means of Compliance – Basis of Appraisal - Thermakraft Covertek 407 Roof and Wall Underlay BRANZ Appraisal No. 651 (2019)	11488-006
003	Kingspan	Product data Sheet – Thermakraft Covertek 407 Heavy duty self-supporting roof and wall underlay	Issue 8.0, April 2024
004	Kingspan	Installation Guide - Thermakraft Covertek 407 Heavy duty self-supporting roof and wall underlay	Issue 4.0, April 2024
005	Kingspan	Thermakraft Covertek Safety Data Sheet	Issue 5.0, April 2024

* These documents were provided commercial in confidence and are not publicly available

10. Supporting Information About Description (Optional)

Thermakraft Covertek 407 Roof and Wall Underlay is supplied in rolls 1.250 m wide x 20 and 40 m long and 2.550m wide x 29.4m long. The product is printed with the Thermakraft Covertek 407 logo repeated along the length of the roll. The rolls are wrapped in clear polythene film.

Accessories used with Thermakraft Covertek 407 Roof and Wall Underlay which are supplied by the installer are:

- Fixings - stainless steel staples, clouts, screws or proprietary underlay fixings, or other temporary fixings to attach the roof underlay to the framing.
- Wall underlay restraint (timber frame) – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to restrain the wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5 November 2020), Paragraph 9.1.8.5.
- Wall underlay restraint (steel frame) – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to restrain the wall underlay in accordance with NASH Building Envelope Solutions: 2019 - Light Steel Framed Buildings, Paragraph 9.1.9.5.
- Thermal break sheathing (steel framing) – in accordance with NASH Building Envelope Solutions: 2019 - Light Steel Framed Buildings , Paragraph 11.4.3.2.

Thermakraft Covertek 407 Roof and Wall Underlay has an AS 1530 Part 2 – 1993 (including Amendment 1) flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 amendment 3 (02 November 2023), Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

11. Supporting Information About Intended Use (Optional)

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Thermakraft Covertek 407 Roof and Wall Underlay is intended for use as an alternative to conventional kraft paper roof and wall underlays. Thermakraft Covertek 407 Roof and Wall Underlay is suitable for use under wall claddings as a wall underlay on timber-framed buildings and on steel-framed buildings, including non-absorbent wall claddings such as vinyl and metal-based weatherboards in direct fixed situations.

Thermakraft Covertek 407 Roof and Wall Underlay is suitable for use as an air barrier where walls are not lined, such as attic spaces at gable ends, in accordance with NZBC Acceptable Solution E2/AS1 or NASH Building Envelope Solutions, Paragraph 9.1.4 (c).

The material also provides a degree of temporary weather protection during early construction but the product will not make the building weathertight. Some wetting of the underlying structure is always possible before the cladding is installed. Hence, the entire building must be closed in and made weatherproof before moisture sensitive materials such as ceiling linings and insulation materials are installed.

12. Supporting Information About Conditions and Limitations of Use (Optional)

General

- Part 7 of NZBC Acceptable Solutions C/AS2 amendment 3 (02 November 2023), and NZBC Verification Method C/VM1 Second Edition (02 November 2023) provide methods for separation and protection of combustible materials from heat sources.
- Any damaged areas of Thermakraft Covertek 407 Roof and Wall Underlay, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

When used as a Roof underlay:

- Thermakraft Covertek 407 Roof and Wall Underlay must be fixed at maximum 300 mm centres to all framing members with large-head clouts 20 mm long, 6-8 mm stainless steel staples, self-drilling screws or proprietary underlay fixings. The membrane must be pulled taut over the framing before fixing.
- The roof underlay must extend from the ridge and overhang the fascia board by 20-25 mm .
- Vertical laps must be no less than 150 mm wide. Horizontal laps must also be no less than 150 mm, with the direction of the lap ensuring that water is shed to the outer face of the underlay. End laps must be made over framing and be no less than 150 mm wide. To assist with achieving the correct lap dimension, Thermakraft Covertek 407 Roof and Wall Underlay has a 150 mm lap line printed continuously along the top face.

When used as a wall underlay:

- Thermakraft Covertek 407 Roof and Wall Underlay must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 150 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the underlay. End laps must be made over framing and be no less than 150 mm wide.
- Thermakraft Covertek 407 Roof and Wall Underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the underlay by cutting on a 45-degree diagonal from each corner of the penetration. The flaps of the cut underlay must be folded inside the opening and stapled to the penetration framing. Excess underlay may be cut off flush with the internal face of the wall frame.

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- Thermakraft Covertek 407 Roof and Wall Underlay can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3 for timber framing or NASH Building Envelope Solutions Paragraph 9.1.11.3 for steel framing.
- NZBC Acceptable Solution E2/AS1 Third Edition including amendment 10 (5 November 2020), Paragraph 9.1.8.5 for timber frame or NASH Building Envelope Solutions: 2019-Light Steel Framed Buildings, Paragraph 9.1.9.5 for steel frame provide information on Wall underlay restraint options include polypropylene strap, 75 mm galvanised mesh or galvanised wire, vertical cavity battens or thermal break sheathing (steel frame only)., vertical cavity battens or thermal break sheathing (steel frame only).

Signatures
If the signature does not fit on the first page in the column on the left please include the relevant signatures here:
Nil

All CodeMark certificates that are current must be registered with MBIE. MBIE maintains a register of valid product certificates. Please find the register here.

If the certificate is not listed on this register or it appears as (SUSPENDED), it is not a valid CodeMark certificate and does not have to be accepted by a building consent authority as establishing compliance with the New Zealand Building Code.

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INSTALLATION GUIDE

Thermakraft™
COVERTEK
407

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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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Appraisal No. 651

CodeMark
CMNZ30028

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Kingspan®

Covertek 407

Heavy duty self-supporting roof and wall underlay

Roof Application Method

Long-run metal roofing/vertical or horizontal installation method

- Fix Covertek 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

- Covertek 407 upper sheet lapped over lower sheets (shiplap) to ensure water is shed to the outer face. Note: Covertek 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 Covertek 407. Covertek 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.
- Covertek 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.
- Covertek 407 may be unwound to the full length from the gutter to the ridge. However, when ridge ventilation is required Covertek 407 may be terminated or slit at the ridge purlin to allow a free passage of air.
- Covertek 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 Covertek 407 (refer to NZ Metal Roof and Wall Cladding Code of Practice 10.11.5 and the flue suppliers instructions).
- Covertek 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 to Pipe Manufacturers for instructions on sealing penetrations.

Concrete/Metal tile roofing

- Covertek 407 must be laid over rafters prior to fixing the tile battens. The maximum span between rafters for Covertek 407 is 1200mm. Masonry tile roofs must have antiponding boards in accordance with NZBC E2/AS1 Paragraph 8.2.5.
- Installed Covertek 407 may be laid over the top of the antiponding boards and draped into the gutter by no more than 20mm.
- Covertek 407 must be installed by, or under the guidance of a licensed building practitioner.

Application Tips

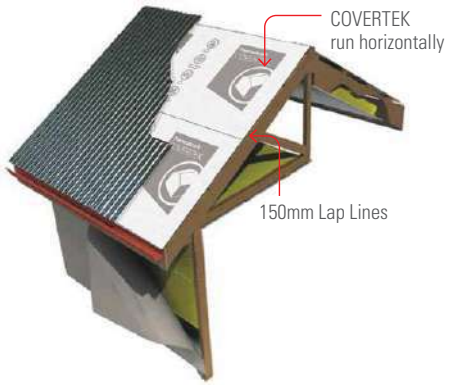
Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in a well ventilated area. Recommended minimum 7 days.

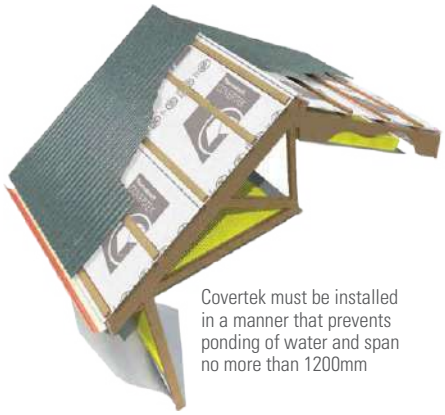
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Covertek 407

Heavy duty self-supporting roof and wall underlay

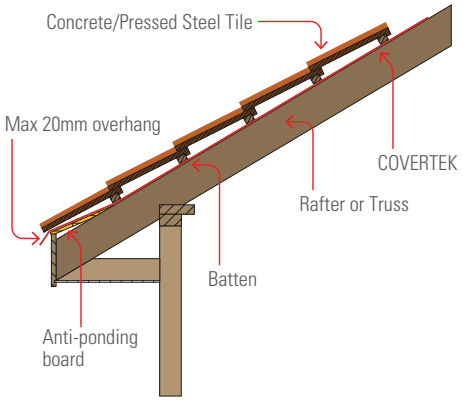
Corrugated roofing:

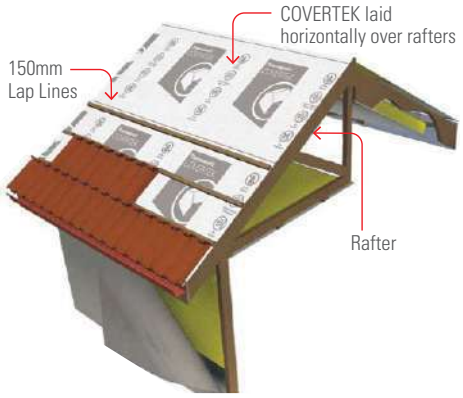




Concrete/metal tile roofing:

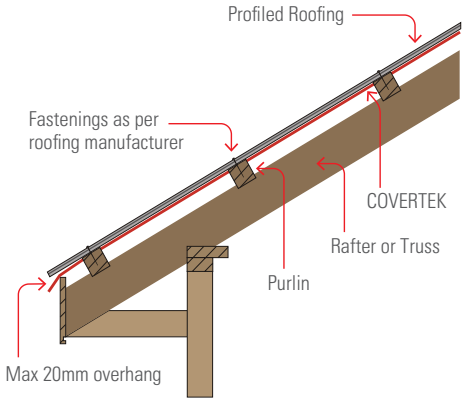
Tile roofing



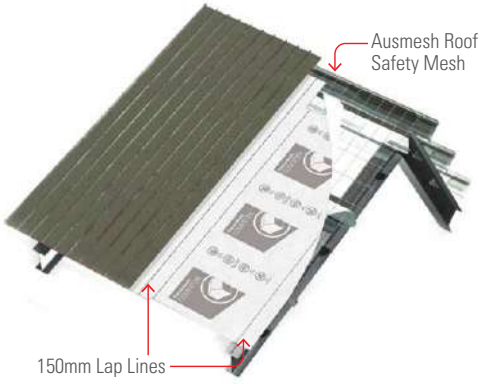


Long run metal roofing:

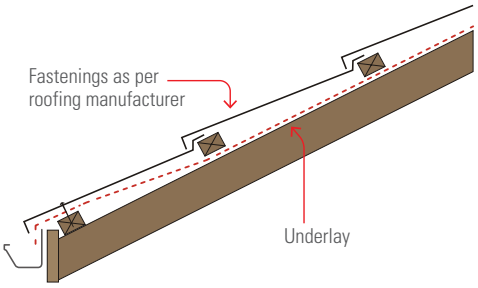
Wooden construction



Steel construction



Metal tile installation



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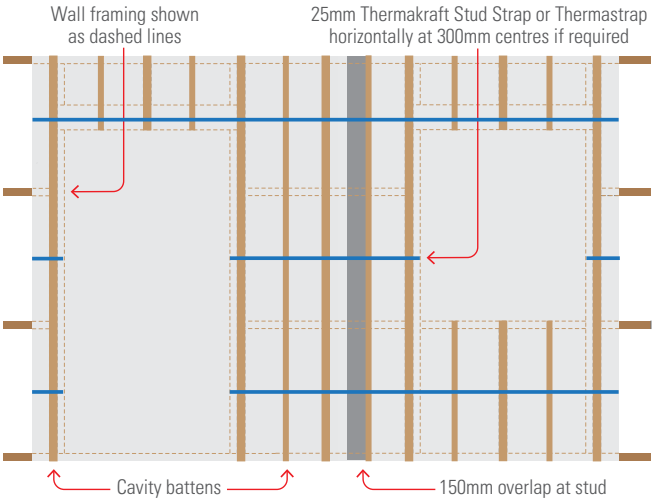
Covertek 407

Heavy duty self-supporting roof and wall underlay

Wall Application Method

- Fix Covertek 407 underlay with printed side facing the exterior.
- Fix to all exterior walls from below bearers to the top plate. Pull the Covertek 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 Covertek 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.
- Covertek 407 underlays are available in widths of 2550mm and 1250mm.
- Cover all windows and door openings with Covertek 407 underlay.
- It is recommended that the Covertek 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.

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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 Covertek 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, Covertek 407 must not be left exposed to the weather or UV for a maximum of 60 days. Covertek 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.
- Covertek 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

- Covertek 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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CodeMark
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www.thermakraft.co.nz

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INSTALLATION GUIDE

Thermakraft™ SUPERCOURSE 500

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Thermakraft™ SUPERCOURSE 500

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Synthetic Damp Proof Course

Supercourse 500 is a general damp-proof course (DPC) used to prevent moisture transfer between building materials. It is also used as a concealed flashing for masonry veneer cladding.

Manufactured using a single layer of black polyethylene, Supercourse 500 is tough, high-impact and tear resistant. It is a suitable moisture impermeable alternative to bituminous DPC.

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Kingspan®

Supercourse 500

Synthetic Damp Proof Course

Product usage

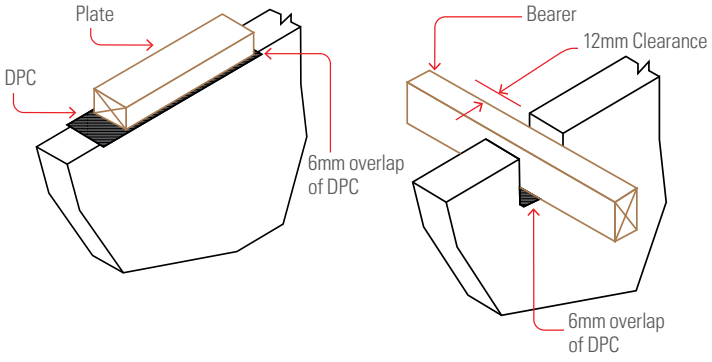
Supercourse 500 provides a moisture barrier protection and prevent walls, floors and structural elements in contact with the ground absorbing or transmitting moisture. When used as a flashing in masonry walls, the product provides moisture protection around window and door joinery.

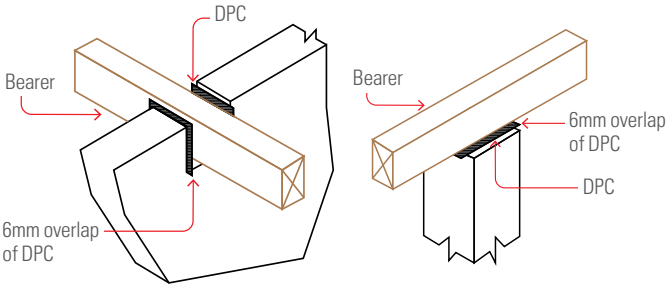
Application Method

Damp-Proof Course (DPC) Installation

- Strips of Supercourse 500 may be cut to length with a sharp knife.
- Surface must be smooth and flat, free from sharp ridges/projections such as small stones that may puncture membrane.
- The strip of Supercourse 500 must be wide enough to fully protect the width of material in contact with concrete or masonry.
- When used to separate timber and wood-based products from concrete or masonry, Supercourse 500 should be temporarily held in place with small hot-dip galvanised clouts or zinc plated staples.

Note: when use as a DPC, the roll width selected must be enable the Supercourse 500 to extend 6mm beyond each face of the timber in accordance with the requirement of the NZ 3604:2011 standard paragraph 2.3.3 (b). See extract image below from NZ 3604:2011.





Note: Timber, unless otherwise stated, to be treated to the levels specified in NZS 3604:2011.

- A small slit should be made in the material to accommodate the bolts or fixings when used under timber plates or concrete floors or foundation walls. Alternative, a small hole can be formed by gently tapping the product resting on top of the bolt until a puncture is formed.

Flashing Installation

- Supercourse 500 must be fixed in place to framing members at 300mm centres with small hot-dip galvanised clouts.
- Horizontal and vertical joints must be no less than 75mm wide, with the direction of the lap ensuring that water is shed to the outer face of the flashing.
- At the sill/jamb junction, the jamb flashing must overlap the sill flashing.

Supercourse 500 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 chemical to flash off in a well ventilated area. Recommended minimum 7 days.

Handling and Storage

Supercourse 500 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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Issue 5.0, August 2024



INSTALLATION GUIDE

Thermakraft™ THERMATHENE BLACK

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Thermakraft™

THERMATHENE BLACK

Damp Proof Membrane (DPM)

Thermathene Black is a concrete underlay that is made from a tear and puncture resistant polyethylene film. It is commonly known as a Damp Proof Membrane (DPM).

Product usage

Thermathene Black is used as a concrete underlay and a moisture vapour barrier in areas where protection is required. The product is 250 microns in thickness and is coloured black. Thermathene Black may also be used under suspended subfloors as ground protection from rising damp.

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Thermathene Black

Damp Proof Membrane (DPM)

Application Method

- Thermathene Black should be installed in accordance with the requirements of NZS3604:2011 and must be laid on a properly prepared base as required by NZS3604:2011 Section 7.5.3 to 7.5.6.2.
- Thermathene Black must be laid in a continuous manner with all laps minimum 150mm, and penetrations to be taped with Thermakraft White General Purpose Tape.
- Thermathene Black should be laid in a neat fashion with a smooth surface, with as many of the ripples as possible eliminated.
- Thermathene Black must be inspected for any damage (tears or pentrations) prior to concrete placement. Any damage must be repaired with Thermakraft White General Purpose Tape, for any larger damage a patch of Thermathene Black maintaining a 150mm lap.
- Thermathene must be installed by a licensed building practitioner.
- Thermathene Black may also be used to cover ground areas under suspended timber floors to prevent the rise of dampness. Ensure that the site is clear of rubbish, sharp edges such as rocks or bricks. Slit and patch around jack studs or pipe work. All penetrations and joints must be taped.

Handling and Storage

Thermathene Black must be handled with care to prevent damage, 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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Issue 2.0, September 2022

4165DV Drispace Roof Ventilation

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SUPPORTING DOCUMENTS

BRANZ_1099_VB20wall

Ref 108769. Uploaded 20 Feb 2025

Purpose: Performance

BRANZ_979_RoofVents

Ref 108770. Uploaded 20 Feb 2025

Purpose: Performance

G502CL Roll Panel/Insulation Guard PTS

Ref 102969. Uploaded 18 Nov 2024

Purpose: Performance, Installation, Maintenance

RV10P Ridge Vent PTS

Ref 102971. Uploaded 18 Nov 2024

Purpose: Performance

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VB20 Ventilation & Drainage Batten Wall PTS

Ref 103309. Uploaded 22 Nov 2024

Purpose: Performance, Installation

BRANZ Appraised
Appraisal No. 1099 [2019]

VENT VENTILATED WALL AND DRAINAGE CAVITY BATTEN



Appraisal No. 1099 (2019)

Amended 09 July 2021

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 The VENT Ventilated Wall and Drainage Cavity Batten is an extruded fluted batten, designed for use as a non-structural cavity batten in cavity-based wall cladding systems. The VENT Ventilated Wall and Drainage Cavity Batten is designed for use with timber-framed buildings.

1.2 VENT Ventilated Wall and Drainage Cavity Battens create a minimum 18 mm cavity, providing a secondary means of weather resistance by separating the cladding from the external wall framing, as well as providing an unobstructed path for any occasional ingress of water that may get past the external skin to drain to the exterior of the building.

Scope

2.1 The VENT Ventilated Wall and Drainage Cavity Batten has been appraised for use as a non-structural cavity batten for use with non-structural wall cladding systems on timber-framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- with cavity-based wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal that specifies a nominal 20 mm (minimum 18 mm) drained and vented cavity; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

(Note: The VENT Ventilated Wall and Drainage Cavity Batten can also be used on buildings subject to specific weathertightness design. Weathertightness design and detailing of these installations is the responsibility of the designer and is outside the scope of this Appraisal. The VENT Ventilated Wall and Drainage Cavity Batten is not suitable for use where pressure equalized cavities are required.)

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Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, the VENT Ventilated Wall and Drainage Cavity Batten, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:**

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. The VENT Ventilated Wall and Drainage Cavity Batten meets the requirements for loads arising from wind and impact [i.e. B1.3.3 (h) and (j)]. See Paragraphs 8.1-8.3.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.2. The VENT Ventilated Wall and Drainage Cavity Batten meets these requirements. See Paragraphs 9.1-9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The VENT Ventilated Wall and Drainage Cavity Batten when used to form a drainage cavity behind a cladding system will contribute to meeting this requirement. See Paragraphs 12.1-12.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The VENT Ventilated Wall and Drainage Cavity Batten meets this requirement.

Technical Specification

4.1 The VENT Ventilated Wall and Drainage Cavity Batten is manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 20 mm thick. The battens are coloured black and are supplied in 1,800 mm long lengths.

Handling and Storage

5.1 Handling and storage of the VENT Ventilated Wall and Drainage Cavity Batten, whether on-site or off-site, is under the control of the building contractor. The battens must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the VENT Ventilated Wall and Drainage Cavity Batten. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 VENT Ventilated Wall and Drainage Cavity Battens can be used to form drained cavities as specified by NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.2, except that VENT Ventilated Wall and Drainage Cavity Battens can also be installed continuously in a horizontal orientation as ventilation and drainage is permitted through the batten flutes.

7.2 VENT Ventilated Wall and Drainage Cavity Battens can be used as an alternative to the timber and polystyrene cavity battens specified within NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.4.

7.3 When installed horizontally and continuously, the VENT Ventilated Wall and Drainage Cavity Batten provides vermin proofing to the bottom of the drained cavity. If a durable life of more than 15 years is required, vermin proofing must be installed at the base of the cavity.

7.4 When installed vertically or for non-continuous horizontal installations, the VENT Ventilated Wall and Drainage Cavity Batten does not provide vermin proofing to the bottom of the drained cavity. A cavity vent strip complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3 must be installed as part of the selected cladding system.

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7.5 Where the VENT Ventilated Wall and Drainage Cavity Batten is installed vertically or horizontally at greater than 450 mm centres and a flexible building underlay is used, a building underlay support in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5 must be installed over the building underlay behind the cavity battens at 300 mm centres horizontally to prevent bulging of the building underlay into the drainage cavity.

7.6 The VENT Ventilated Wall and Drainage Cavity Batten is compatible with wood-based, cement-based, fibre cement, polystyrene, metal and uPVC cladding products and kraft paper based and synthetic building underlays.

Structure

8.1 VENT Ventilated Wall and Drainage Cavity Battens must be treated as non-structural packers only. Fixing lengths for the cladding material must be as required for non-structural timber cavity battens. If VENT Ventilated Wall and Drainage Cavity Battens are to be used with a cladding system that was originally direct fixed, the fixing length must be increased by a minimum of 20 mm to ensure frame penetration depths are maintained.

Impact Resistance

8.2 VENT Ventilated Wall and Drainage Cavity Battens have adequate resistance to impact loads likely to be encountered in normal residential and commercial use. The battens also have adequate resistance to compressive loads likely to be encountered during fixing of the cladding.

Wind Zone

8.3 VENT Ventilated Wall and Drainage Cavity Battens are able to transfer the positive wind loads on the wall cladding to the structural wall frame. VENT Ventilated Wall and Drainage Cavity Battens are suitable for use on buildings situated in all Wind Zones of NZS 3604 up to, and including, Extra High.

Durability

Serviceable Life

9.1 Provided the VENT Ventilated Wall and Drainage Cavity Batten is not exposed to weather or ultraviolet (UV) light for a total of more than 60 days, it is expected to have a serviceable life of at least 15 years.

9.2 The VENT Ventilated Wall and Drainage Cavity Batten will have a durability equivalent to that of the cladding, to meet code compliance with NZBC Clause B2.3.2, provided the cladding system is maintained in accordance with this Appraisal, the battens are continually protected from UV light, and durable vermin proofing is used at the base of the cavity regardless of installation specifics.

Maintenance

10.1 No maintenance is required for VENT Ventilated Wall and Drainage Cavity Battens. Regular checks, at least annually, must be made of the wall cladding, flashings and penetrations to ensure they are maintained weathertight and continue to perform their function, to ensure that water will not penetrate the cladding.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to the VENT Ventilated Wall and Drainage Cavity Batten from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 The VENT Ventilated Wall and Drainage Cavity Batten alone will not prevent airflow from the cladding cavity into the roof space. The cavity must be sealed off from the roof space to meet code compliance with NZBC Clause E2.3.5.

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12.2 Drained cavities constructed using the VENT Ventilated Wall and Drainage Cavity Batten allow excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with NZBC Clause E2.3.6.

12.3 Where a cladding manufacturer specifies a drained cavity that complies with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.2 as part of their system, the VENT Ventilated Wall and Drainage Cavity Batten may be used. Where a proprietary cladding system manufacturer specifies timber or polystyrene cavity battens as part of their system, permission must be obtained from the cladding manufacturer before the timber or polystyrene cavity battens are substituted with the VENT Ventilated Wall and Drainage Cavity Batten.

12.4 The detailing of the cladding system including junctions between the cladding system and external joinery, other wall penetrations, e.g. meter boxes, and other cladding and roofing junctions is the responsibility of the building designer for compliance with the NZBC. These details have not been assessed as part of this Appraisal.

12.5 The use of the VENT Ventilated Wall and Drainage Cavity Batten to form a drained cavity where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirements for junctions, penetrations etc. of the cladding system to remain weather resistant.

Installation Information

Installation Skill Level Requirements

13.1 All design and building work must be carried out in accordance with the VENT Ventilated Wall and Drainage Cavity Batten Technical Literature and this Appraisal by competent and experienced tradespersons conversant with the VENT Ventilated Wall and Drainage Cavity Batten. Where the work involves Restricted Building Work (RBW) this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License Class.

System Installation

Building Underlay and Flexible Sill and Jamb Tape Installation

14.1 The selected building underlay and flexible sill and jamb flashing tape must be installed in accordance with the underlay and flashing tape manufacturer's instructions prior to the installation of the VENT Ventilated Wall and Drainage Cavity Batten.

VENT Ventilated Wall and Drainage Cavity Battens

14.2 The battens may be cut on-site with a knife, hand saw or drop saw.

14.3 The battens must be installed over the building underlay to the wall framing. The cavity battens have a self adhesive on the reverse to temporarily keep them in place. Permanent fixing is made when the cladding is fixed through the batten to the timber structure.

14.4 Where the studs are at greater than 450 mm centres and a flexible building underlay is used, a building underlay support in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5 must be installed horizontally over the building underlay at 300 mm centres.

14.5 The battens must be installed in continuous lengths and may be installed vertically and/or horizontally to suit the requirements of the selected cladding.

Inspections

14.6 The Technical Literature must be referred to during inspection of the VENT Ventilated Wall and Drainage Cavity Batten installations.

Health and Safety

15.1 There are no specific health and safety requirements for the VENT Ventilated Wall and Drainage Cavity Batten, however safe use and handling procedures for the components that make up the cladding system must be followed in accordance with the requirements of the relevant manufacturer's Technical Literature.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

16.1 The following testing has been completed by BRANZ:

- Testing and assessment of the VENT Ventilated Wall and Drainage Cavity Batten for compression resistance when cladding fixings are applied through the batten by gun-driven and tex type screw fixing have been completed. The test results were used to assess the impact on the reduction in batten thickness when claddings are fixed using typical cladding fixing methods.
- BRANZ expert opinion on NZBC E2 code compliance for the VENT Ventilated Wall and Drainage Cavity Batten was based on testing to the relevant components of E2/VM1 [as contained within NZBC Clause E2, Amendment 4]. The testing assessed the performance of the VENT Ventilated Wall and Drainage Cavity Batten in a continuous vertical and horizontal orientation. In addition to the weathertightness test, the Technical Literature has been reviewed, and an opinion has been given by BRANZ technical experts that the VENT Ventilated Wall and Drainage Cavity Batten will meet the performance levels of Acceptable Solution E2/AS1 for drained cavity claddings.

Other Investigations

17.1 A durability opinion has been given by BRANZ technical experts.

17.2 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

17.3 The Technical Literature for the VENT Ventilated Wall and Drainage Cavity Batten has been examined by BRANZ and found to be satisfactory.

Quality

18.1 The manufacture of the VENT Ventilated Wall and Drainage Cavity Batten has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

18.2 The quality of supply to the market is the responsibility of Blue Building Solutions Limited T/A VENT.

18.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems, building underlays, flashing tapes, air seals and cladding system in accordance with the instructions of the designer.

18.4 The quality of installation, handling and storage on-site of the VENT Ventilated Wall and Drainage Cavity Batten is the responsibility of the installer.

Sources of Information

- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 09 July 2021.

This Appraisal has been amended to update the width of the VENT Ventilated Wall and Drainage Cavity Batten and the product name.

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

In the opinion of BRANZ, the VENT Ventilated Wall and Drainage Cavity Batten is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Blue Building Solutions Limited T/A VENT, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Blue Building Solutions Limited T/A VENT:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Blue Building Solutions Limited T/A VENT.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Blue Building Solutions Limited T/A VENT or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
13 December 2019

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ Appraised
Appraisal No. 979 [2023]

ROOF VENTILATION PRODUCTS







Appraisal No. 979 (2022)

This Appraisal replaces BRANZ Appraisal No. 979 [2017]

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Roof Ventilation Products consist of a range of extruded battens and vents for use in pitched and skillion roof construction. The Roof Ventilation Products, when used together, will form a system to assist with the ventilation of the roof space.

Scope

2.1 Roof Ventilation Products have been appraised for use as non-structural roof battens and vents for use with pitched and skillion roof construction on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
- with profiled metal roof cladding; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.2 Building designers are responsible for incorporation of Roof Ventilation Products into their design for weathertightness and detailing of junctions.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Roof Ventilation Products, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:**

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Roof Ventilation Products meet the requirements for loads arising from gravity loads, wind and impact [i.e. B1.3.3 (b), (h) and (j)]. See Paragraphs 8.1-8.3.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.2. Roof Ventilation Products meet these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Roof Ventilation Products contribute to meeting this requirement. See Paragraphs 12.1-12.3.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Roof Ventilation Products contribute to meeting this requirement. See Paragraph 13.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Roof Ventilation Products meet this requirement.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

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Technical Specification

4.1 System components and accessories supplied by VENT are:

- **VENT Ventilated Roof and Drainage Batten 20 mm (VB20)** - manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 20 mm thick and provide a ventilation opening area of approximately 16,000 mm² per lineal metre. VENT Ventilated Roof and Drainage Battens 20 mm are coloured black and are supplied in 1,800 mm long lengths. These battens are installed between the roof underlay and the structural battens and purlins.
- **VENT Ventilated Roof and Drainage Batten 10 mm (VB10)** - manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 10 mm thick and provide a ventilation opening area of approximately 8,000 mm² per lineal metre. VENT Ventilated and Drainage Battens 10 mm are coloured black and are supplied in 1,800 mm long lengths. These battens are installed between the roof underlay and the roof cladding.
- **VENT Ridge Vent** - manufactured from extruded polypropylene with an aluminium-based conformable, soft edge flashing along the bottom edges. VENT Ridge Vents are coloured black with a grey flashing, are supplied in 1,200 mm long lengths, and provide a ventilation opening area of approximately 8,000 mm² per lineal metre.
  - **RV10P** - the vents are cut after extruding to a finished size of approximately 410 mm wide (including the flashing) by 20 mm thick. RV10P are suitable for trough depths that are less than 34 mm.
  - **RV10DT** - the vents are cut after extruding to a finished size of approximately 460 mm wide (including the flashing) by 20 mm thick. RV10DT are suitable for trough depths that are between 34 mm and 60 mm.
- **VENT Apron Vent** - manufactured from extruded polypropylene with an aluminium-based conformable, soft edge flashing along the bottom edges. VENT Apron Vents are coloured black with a grey flashing, are supplied in 1,200 mm long lengths, and provide a ventilation opening area of approximately 8,000 mm² per lineal metre.
  - **RV10P Half** - are VENT Ridge Vent RV10P cut in half. RV10P Half are suitable for trough depths that are less than 34 mm.
  - **RV10DT Half** - are VENT Ridge Vent RV10DT cut in half. RV10DT Half are suitable for trough depths that are between 34 mm and 60 mm.

4.2 System components and accessories supplied by the building contractor are:

- **VENT Ventilated Roof and Drainage Batten fixings** - 40 x 2.5 mm hot-dip galvanised flat head nails, or hot-dip galvanised or stainless steel finishing brads at approximately 400 mm centres.

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Handling and Storage

5.1 Handling and storage of the Roof Ventilation Products, whether on-site or off-site, is under the control of the building contractor. Roof Ventilation Products must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Management of Condensation, VENT Ridge/Apron/Barge Vent RV10P, RV10P-Half, RV10DT & RV10DT-Half, Dec 2022.
- Management of Condensation, VENT Ventilation & Drainage Batten 10 mm, VB10, Dec 2022.
- Management of Condensation, VENT Ventilation & Drainage Batten 20 mm, VB20, Dec 2021.
- VENT Passive Ventilation Drawings 1-11, dated 18/6/2023.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

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Design Information

General

7.1 Roof Ventilation Products can be used to provide passive ventilation of the roof space. The design of the roof ventilation system is subject to specific design and is the responsibility of the designer.

7.2 Roof Ventilation Products are designed to be used with profiled metal roof claddings in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 8.4, or to a specific design. Roof fixings must take into account the thickness of the products for roof fixing penetration into the supporting structure.

7.3 The VENT Ventilated Roof and Drainage Batten 20 mm (VB20) provides a path for passive air flow over the top of structural battens and purlins. It is most suited for skillion roofs and commercial buildings.

7.4 The VENT Ventilated Roof and Drainage Batten 10 mm (VB10) provides a path for passive air flow over the top of the roof underlay.

7.5 The VENT Ridge Vent provides ventilation at roof ridges.

7.6 The VENT Apron Vent provides ventilation at the lower roof void or through the roof barge.

7.7 For further design guidance, refer to roof ventilation articles in BRANZ Publications: BUILD 148, BUILD 151, BUILD 152, BUILD 155, and BUILD 158.

Structure

8.1 The VENT Ventilated Roof and Drainage Battens must be considered as non-structural roof battens only.

Impact Resistance

8.2 The VENT Ventilated Roof and Drainage Battens (VB10 and VB20) have adequate resistance to impact loads likely to be encountered in normal residential and commercial use. The battens also have adequate resistance to compressive loads likely to be encountered during fixing of the claddings. They will withstand normal foot traffic and the function of the products will not be impaired by such traffic.

Wind Zone

8.3 Roof Ventilation Products are suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High.

Durability

9.1 Roof Ventilation Products are required to meet the performance requirements of NZBC Clause B2.3.1 (b) 15 years.

Serviceable Life

9.2 Roof Ventilation Products will have a durability equivalent to that of the roof cladding, to meet code compliance with NZBC Clause B2.3.2, provided the cladding system is maintained in accordance with this Appraisal and the Roof Ventilation Products are continually protected from ultraviolet (UV) light.

Maintenance

10.1 No maintenance is required for Roof Ventilation Products. Regular checks, at least annually, must be made of the roof cladding, flashings and penetrations to ensure they are maintained weathertight and continue to perform their function, to ensure that water will not penetrate the cladding.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to Roof Ventilation Products from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and Verification Method C/VM1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

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External Moisture

12.1 Roof Ventilation Products must only be used under long run metal roof claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1.

12.2 Roof Ventilation Products, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding system's compliance with NZBC Acceptable Solution E2/AS1.

12.3 The detailing of the roof cladding system, including junctions, is the responsibility of the building designer. These details have not been assessed as part of this Appraisal.

Internal Moisture

13.1 Roof Ventilation Products will contribute to the control of internal moisture by providing passive air flow. The building designer is responsible for the design of roof space ventilation.

Installation Information

Installation Skill Level Requirement

14.1 All design and building work must be carried out in accordance with the Roof Ventilation Products Technical Literature and this Appraisal by competent and experienced tradespersons conversant with Roof Ventilation Products. Where the work involves Restricted Building Work (RBW), this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License Class.

System Installation

Roof Underlay Installation

15.1 The selected building underlay must be installed in accordance with the underlay manufacturer's instructions, prior to the installation of the VENT Apron Vent, VENT Ridge Vent, VENT Ventilated Roof and Drainage Batten 10 mm (VB10) and over the VENT Ventilated Roof and Drainage Batten 20 mm (VB20).

Roof Cladding

15.2 Profiled metal roof cladding, including flashings and stop ends, must be in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 8.4, or to a specific design. Roof cladding fixing penetrations into supporting timber must be in accordance with NZBC Acceptable Solution E2/AS1 or specific design.

VENT Ventilation Roof and Drainage Battens

15.3 The battens may be cut on-site with a knife, hand saw or drop saw.

15.4 The VB20 battens must be installed under the roof underlay to the purlins, whereas the VB10 battens must be installed on top of the roof underlay. The battens can be temporary fixed with the adhesive backing. The battens must be fixed in place with 40 x 2.5 mm hot-dip galvanised flat head nails or galvanised or stainless steel finishing brads at approximately 400 mm centres.

VENT Ridge Vent

15.5 The ridge vent may be cut on-site with a knife, hand saw or drop saw.

15.6 The ridge vent is laid centrally over the roof apex with the flashing tape to either side. The ridge vent is then temporarily fixed in place with tape or screws at each corner, ensuring the underside of the vent is flat against the roof.

VENT Apron Vent

15.7 The VENT Ridge Vent must be cut in half with a knife, hand saw or drop saw to create the VENT Apron Vent.

15.8 The vent is placed over the top of the roof cladding. The protective paper is removed from the underside of the flashing tape and then moulded to the roof cladding.

15.9 Additional fixing screw length is required to accommodate the 20 mm thickness of the VENT Apron Vent.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Inspections

15.10 The Technical Literature must be referred to during the inspection of Roof Ventilation Products installations.

Health and Safety

16.1 There are no specific health and safety requirements for Roof Ventilation Products, however safe use and handling procedures for the components that make up the cladding system must be followed in accordance with the requirements of the relevant manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

17.1 The following testing has been completed by BRANZ:

- Roof Ventilation Products were heat-aged and compressed to assess the durability performance of the products.

Other Investigations

18.1 A durability opinion has been given by BRANZ technical experts.

18.2 The practicability of installation of Roof Ventilation Products has been assessed by BRANZ and found to be satisfactory.

18.3 The Technical Literature for Roof Ventilation Products has been examined by BRANZ and found to be satisfactory.

Quality

19.1 The manufacture of Roof Ventilation Products has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

19.2 The quality of supply to the market is the responsibility of Blue Building Solutions Limited T/A VENT.

19.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems, building underlays, flashing tapes, air seals and cladding system, in accordance with the instructions of the designer.

19.4 The quality of the installation, handling and storage on-site of Roof Ventilation Products is the responsibility of the installer.

Sources of Information

- BUILD 148 June/July 2015 Ventilation dries attic space.
- BUILD 151 December 2015/January 2016 Roof space moisture.
- BUILD 152 February/March 2016 Passive roof ventilation.
- BUILD 155 August/September 2016 Vents in skillion roofs.
- BUILD 158 February/March 2017 Airflow through ceilings.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ

In the opinion of BRANZ, Roof Ventilation Products are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Blue Building Solutions Limited T/A VENT, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Blue Building Solutions Limited T/A VENT:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Blue Building Solutions Limited T/A VENT.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Blue Building Solutions Limited T/A VENT or any third party.

For BRANZ

Claire Falck
Acting Chief Executive
Date of Issue:
20 July 2023

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

VENT ROLL PANEL VENT
G502CL

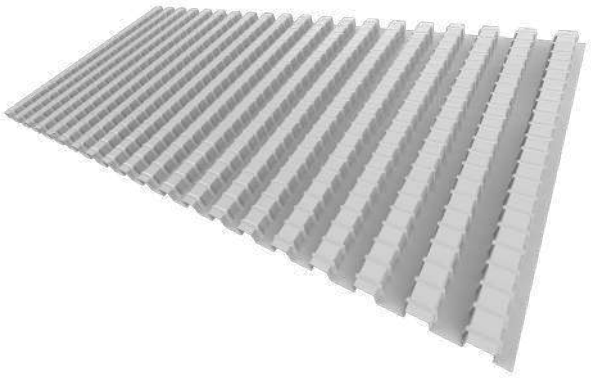
OVERVIEW

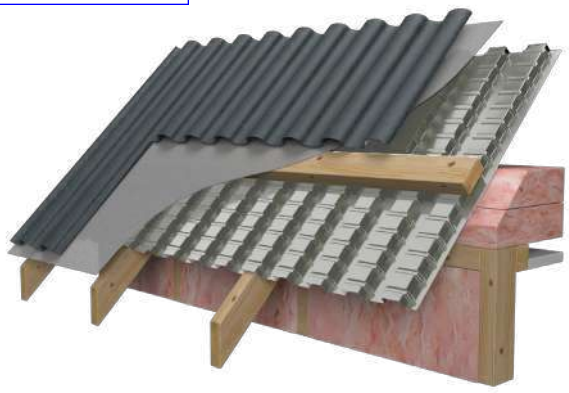
The VENT Roll Panel Vent G502CL commonly referred to as an Eaves Baffle or Insulation Guard is designed to maintain a continuous 25mm air gap between the underside of the roofing underlay or sarking board and the loft insulation at the eaves, in accordance with NZS4246:2016.6.2.10. The G502CL assures calculated air flowing in and out of the roof cavity is unimpeded by loft insulation.

FEATURES

- Facilitates compliance with NZS4246:2016.6.2.10
- Facilitates insulation installations in accordance with H1 Guidelines
- Ideal for trussed roofs of any degree pitch
- Suitable for new builds or renovations/re-roofs
- Works with glass wool or blown insulation
- Prevents heat loss from badly installed insulation
- Protects insulation from internal moisture

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7 Fisher Crescent, Mt. Wellington, Auckland, New Zealand

DRISPACE
A DIVISION OF TCL HUNT

VENT PASSIVE VENTILATION

VENT ROLL PANEL VENT
G502CL

SCOPE OF USE

Can be used individually or as part of proprietary system

STORAGE

Handling and storage of the VENT Ventilation Products, whether on-site or off-site, is under the control of the building contractor. Roof Ventilation Products must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

WARRANTY

15 years

MAINTENANCE

No maintenance requirements

INSTALLATION

1. Lay the castellated profile across the top of the roof trusses/rafters
2. Castellations are designed for timber trusses but can be applied to metal framing
3. Nail or staple the G502CL to hold in position
4. The G502CL can be positioned in between or directly under the purlins
5. The G502CL should be rolled out across the roof trusses parallel to the fascia and directly above the wall plate
6. The G502CL should be rolled out the full length of the eaves and adjusted to align with the required roof truss centres
7. The G502CL should be pulled excessively, i.e. the shape of the castellations should be maintained
8. G502CL can be installed in temperatures up to and including 35°C and can be exposed to the elements for periods of up to 21 days
9. When installing 2x G502CL's please ensure that castellations are aligned so that airflow can flow freely over both G502CL's

SPECIFICATIONS

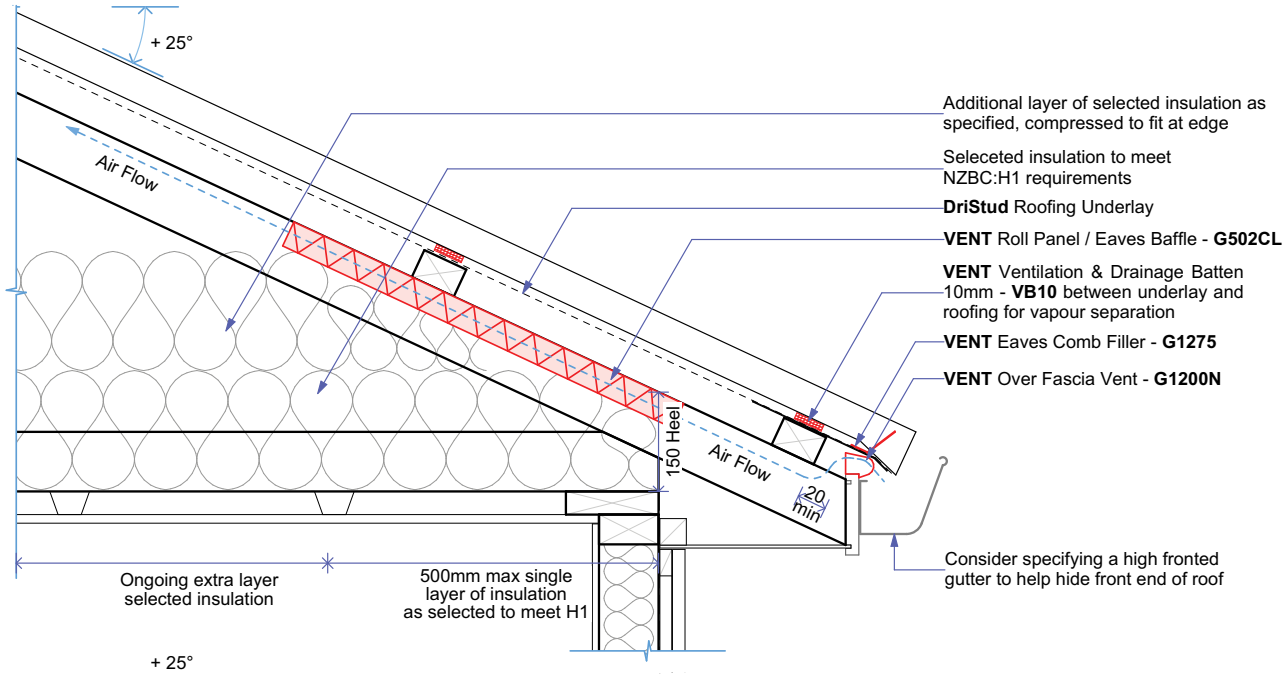
DIMENSIONS	6000mm L x 650m W
COLOUR	Clear
BOX QUANTITY	2 pieces (12LM)
MATERIAL	PET Plastic
MANUFACTURING PROCESS	Injection moulding

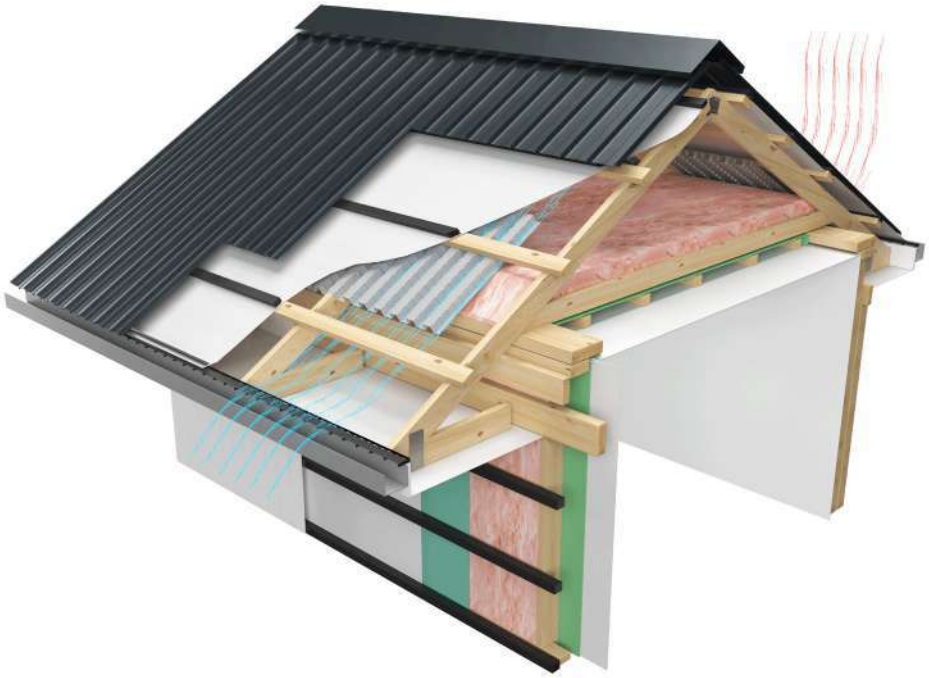
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VENT ROLL PANEL VENT
G502CL

TECHNICAL DRAWING

G502CL APPLICATION WITH G2500N OVER FASCIA VENT, ROOF PITCH >15°





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DRISPACE

VENT RIDGE/APRON/BARGE VENT

RV10P, RV10P-HALF, RV10DT, RV10DT-HALF

OVERVIEW

The VENT Ridge Vent range are specifically designed for long run metal roof claddings with trough depths up to 48mm. The Ridge Vents are designed to allow warm moist air to escape the roof cavity by means of natural convection of the warm air or by means of negative pressure created by wind movement over the roof.

The Ridge Vents can be can be cut in half to create Apron, Barge or Abutment vents. Cut in half, the ridge vents create the perfect ventilation product for both abutment and mono barge details.

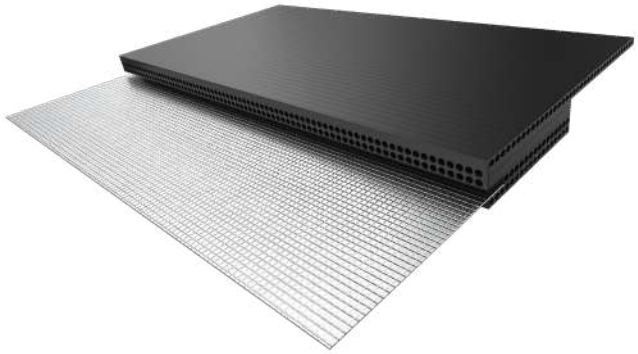
The Ridge Vents come with an adhesive and flexible aluminium flashing attached which is designed to form to most cladding profiles, preventing water ingress on any pitch roof.

FEATURES

Airflow rates:

- The RV10P & RV10DT provide calculated free flow air of 16,000mm² per linear metre (8,000mm² per side of vent).
- The RV10P-Half and RV10DT-Half provide calculated free flow air of 8,000mm² per linear metre.
- Allows warm moist air to escape the roof cavity.
- Creates negative pressure to draw warm moist air from the roof cavity.
- Easy to install - manufactured in 1,200mm lengths for ease of handling.
- 4mm ventilation apertures prevents ingress of nesting insects.
- Discrete, unseen when ridge capping/flashing installed.
- Note: Ridge capping not included.
- Forms part of a passive ventilation system.
- Works year round with no moving parts or energy consumption.





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VENT PASSIVE VENTILATION

BRANZ Appraised
Appraisal No.979 [2017]

VENT RIDGE/APRON/BARGE VENT
RV10P, RV10P-HALF, RV10DT, RV10DT-HALF

BUILDING REGULATIONS, NEW ZEALAND BUILDING CODE (NZBC)

VENT Ridge Vents and Half Ridge Vents, if designed, used, installed and maintained in accordance with the statements and conditions of this Product Data Sheet, will meet or contribute to meeting the following provisions of the NZBC:

- Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. VENT Ridge Vents meet the requirements for loads arising from gravity loads, wind and impact [i.e. B1.3.3 (b), (h) and (j)].
- Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.2. VENT Ridge Vents meet these requirements.
- Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. VENT Ridge Vents contribute to meeting this requirement.
- Clause E3 INTERNAL MOISTURE: Functional Requirements E3.2 (c). VENT Ridge Vents contribute to meeting this requirement.
- Clause F2 HAZARDOUS BUILDING: Performance F2.3.1. VENT Ridge Vents meet this requirement.

SCOPE OF USE

- Whilst essential for use on all skillion roofs of any degree pitch and trussed roofs >30°. The VENT Ridge Vents can be applied to any trussed roof profiles.
- Compatible with corrugate, trapezoidal and most deep trough (flat pan) roof cladding profiles.
- Compatible for shingle type roof.
- Suitable for new builds or renovations.
- Can be used individually or as part of a proprietary ventilation system.

RECOMMENDED APPLICATION:

- RV10P and RV10P-Half for cladding profiles with a trough depth <34mm.
- RV10DT and RV10DT-Half for cladding profiles with a trough depth 34mm - 48mm.

APPRAISALS

BRANZ Appraisal No. 979 [2017]

WARRANTY

15 years

MAINTENANCE

No maintenance requirements

STORAGE

Handling and storage of VENT Roof Ventilation Products, whether on-site or off-site, is under the control of the building contractor. Roof Ventilation Products must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

SPECIFICATIONS

DIMENSIONS	1200mm L x 300mm W x20mm H
COLOUR	Black
BOX QUANTITY	6 x 1200mm (7.2LM per carton)

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VENT RIDGE/APRON/BARGE VENT
RV10P, RV10P-HALF, RV10DT, RV10DT-HALF

INSTALLATION

RV10P & RV10DT Ridge Vent

1. Lay vent on roof centrally over the roof apex as shown with the excess flashing to the right hand side.
2. The protective paper is removed from the underside of the flashing tape which is then moulded to the shape of the roof cladding.
3. Temporarily fix the vent in place with tape or screws at each corner ensuring the underside of the vent is flat against the roof.
4. Continue to the end of the ridge and trim as appropriate. Dress flashing over the roof profile:

— Gable Roof - Fix vent over the barge flashing to the outside edge of the roof.
— Hip Roof - Install hip flashing first and cut the vent up to where the flashings meet.

5. Standard ridge flashings of 200mm can be used to conceal soft edge of the ridge vent.
6. Dress the ridge flashing accordingly over the gable/hip junction.

RV10P-HALF & RV10DT-HALF:

1. The apron, abutment or barge vent is placed over the top of the roof cladding.
2. The protective paper is removed from the underside of the flashing tape which is then moulded to the shape of the roof cladding.
3. Apron, abutment of barge flashings sit on top of the vent.
4. VENT Ventilation & Drainage Battens should not be exposed to direct sunlight for more than 30 days.

GENERAL:

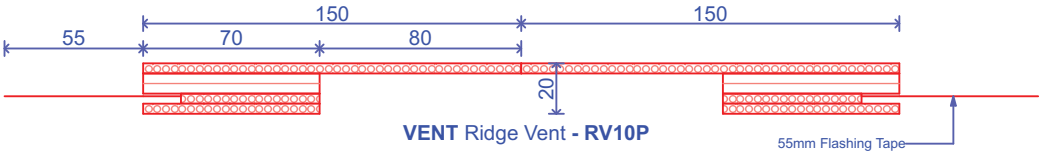
1. Remove all moisture and dust from the roof cladding before dressing down the aluminium soft edge.
2. When vents are fixed, place the ridge flashing centrally over and fix as per usual practice. Additional fixing screw length is required to accommodate the 20mm thickness of the vent (and VB20 where applicable).
3. The aluminium soft edge should be notched or snipped as required to suit the roofing profile. Notching or snipping is always required on deep trough or trapezoidal roofing profiles.
4. Care should be taken when dressing down the aluminium soft edge.
5. When dressing down the soft edge, start at the outer edge of the soft edge and work in towards the vent. Between 17mm and 25mm contact with the trough is required, depending on the cladding profile.
6. Minimum working temperature to dress down the soft edge flashing is +5°.
7. Soft edge flashing temperature resistance: -40° to +90°.
8. Compatibility of the Ridge Vents with chosen ridge capping system should be checked with the roofing manufacturer supplying the ridge capping.
9. VENT Ridge Vents should not be exposed to direct sunlight for more than 30 days.

For technical assitance contact the DriSpace technical team.

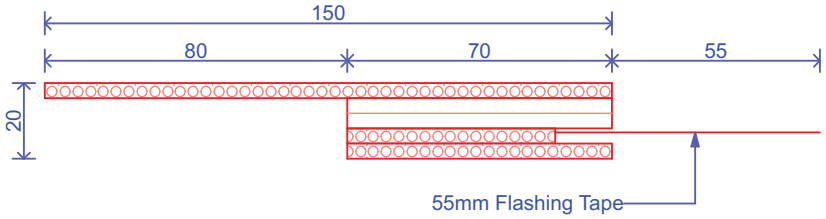
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VENT RIDGE/APRON/BARGE VENT
RV10P, RV10P-HALF, RV10DT, RV10DT-HALF

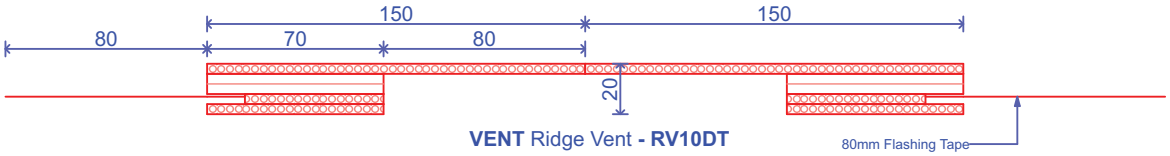
PRODUCT DIMENSIONS



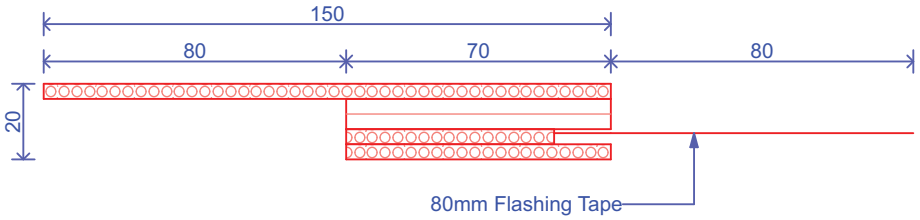
VENT Ridge Vent **- RV10P**



VENT Apron Vent **- RV10P (half)**



VENT Ridge Vent **- RV10DT**



VENT Apron Vent **- RV10DT (half)**

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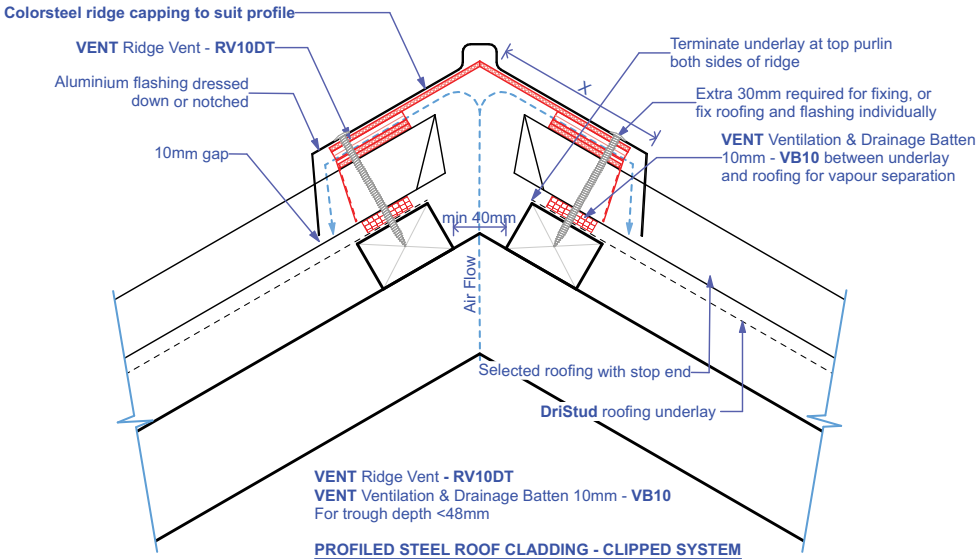
Note: Diagrams are for guidance purposes only. The overall design is the responsibility of the designer as there are often other factors to consider. The company maintains a policy of continuous development of its product range and reserves the right to amend the specifi cation without notice.

VENT PASSIVE VENTILATION

BRANZ Appraised
Appraisal No.979 [2017]

VENT RIDGE/APRON/BARGE VENT

RV10P, RV10P-HALF, RV10DT, RV10DT-HALF

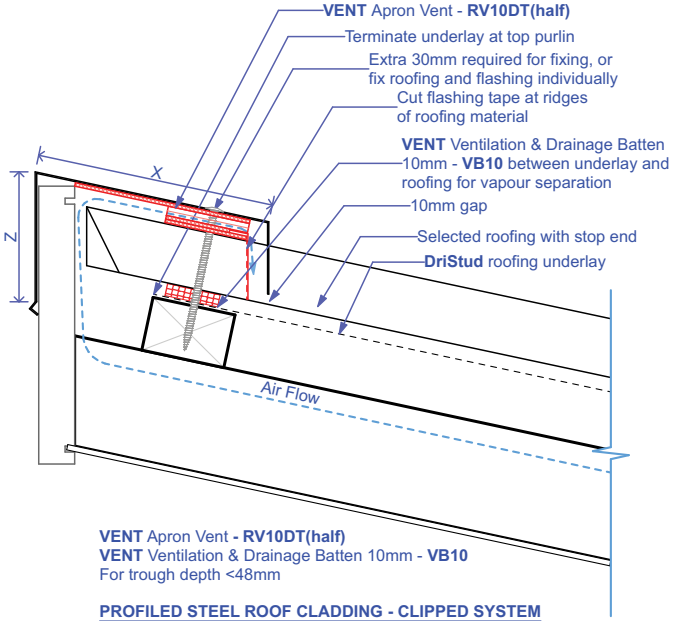


VENT Ridge Vent **- RV10DT**
VENT Ventilation & Drainage Batten 10mm - **VB10**
For trough depth <48mm

PROFILED STEEL ROOF CLADDING - CLIPPED SYSTEM
Ventilated Ridge
Use this method to provide ventilation to trussed roofs only.
Vent **VB20** also required for skillion roofs

Main contractor to ensure correct placement of purlins for fixing of Ridge Vent

The Ridge cap is to be supplied by the roof cladding supplier.
Refer to E2/AS1 for minimum values of X, recommend 200mm min to hide flashing tape



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VENT Apron Vent **- RV10DT(half)**
VENT Ventilation & Drainage Batten 10mm - **VB10**
For trough depth <48mm

PROFILED STEEL ROOF CLADDING - CLIPPED SYSTEM
Ventilated Ridge Barge Detail
Use this method to provide ventilation to trussed roofs only.
Vent **VB20** also required for skillion roofs

Main contractor to ensure correct placement of purlins for fixing of Ridge Barge Vent

The Ridge/Barge flashing is to be supplied by the roof cladding supplier.
Refer to E2/AS1 for minimum values of X & Z, recommend 200mm min at X to hide flashing tape

Note: Diagrams are for guidance purposes only. The overall design is the responsibility of the designer as there are often other factors to consider. The company maintains a policy of continuous development of its product range and reserves the right to amend the specifi cation without notice.

VENT PASSIVE VENTILATION

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VENT VENTILATION & DRAINAGE BATTEN 20mm

VB20 WALL

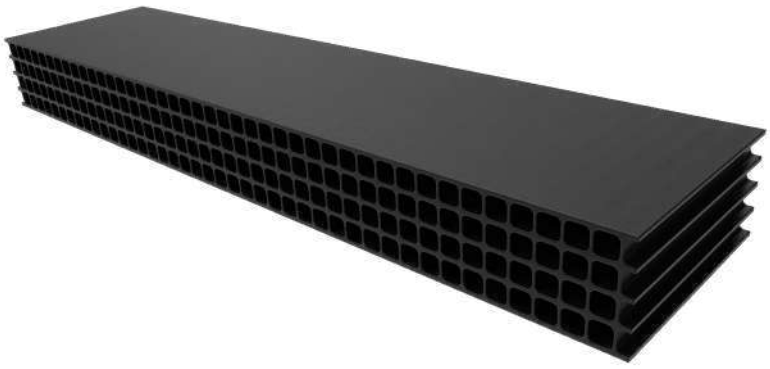
OVERVIEW

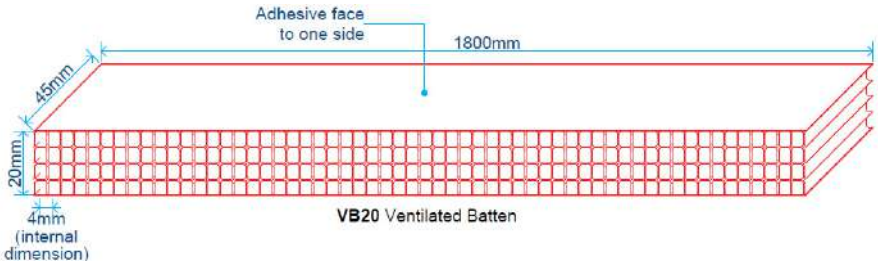
The VENT VB20 is a Polypropylene Ventilation & Drainage Batten 20mm designed to facilitate passive airflow in the wall cavity, reducing the risk of moisture build up and condensation.

FEATURES

- Convenient peel-off adhesive backing eliminates the need for nails or glue.
- Adheres to timber, metal and building wraps.
- Insect proof - 4mm vents prevent ingress of nesting insects.
- Provides passive airflow of 16,000mm² per linear metre.
- Easy to install - manufactured in 1800mm lengths for easy handling.
- Ventilated polypropylene structure is strong and robust.
- Perfect design for drainage for occasional ingress of water.
- Also suitable for use in the roof cavity.

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VENT
PASSIVE VENTILATION

BRANZ Appraised
Appraisal No. 1099 [2019]

VENT VENTILATION & DRAINAGE BATTEN
VB20 WALL

SCOPE OF USE

- Commercial and residential application.
- Suitable for use on all roof types.
- Compliant with NZBC Acceptable Solution E2/AS1

VENT Wall Cavity Battens are suitable for use as non-structural cavity battens for use with non-structural wall cladding systems on timber framed buildings within the following scope:

The scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and, with a risk score of 0- 20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and, with cavity-based wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal that specifies a nominal 20 mm (minimum 18 mm) drained and vented cavity; and, situated in NZS 3604 Wind Zones up to, and including 'Extra High'. (Note: Vent Wall Cavity Battens can also be used on buildings subject to specific weathertightness design. Weathertightness design and detailing of these installations is the responsibility of the designer and is outside the scope of this Appraisal. Vent Wall Cavity Battens are not suitable for use where pressure equalized cavities are required.)

The VENT VB20 is a Polypropylene batten that is the ideal product to create a 20mm cavity for ventilation and drainage in walls for both residential and commercial buildings, as specified by NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.2. Due to the design of the VENT VB20 it can be installed continuously in horizontal or vertical positions. With no temporary fixings required the VENT VB20 is both effective and efficient.

When installed horizontally and continuously, VENT Wall Cavity Battens provide vermin proofing to the bottom of the drained cavity. If a durable life of more than 15 years is required, vermin proofing must be installed at the base of the cavity. When installed vertically or for non-continuous horizontal installations, VENT Wall Cavity Batten do not provide vermin proofing to the bottom of the drained cavity. A cavity vent strip complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3 must be installed as part of the selected cladding system.

Where the VENT Wall Cavity Batten are installed vertically or horizontally at greater than 450mm centres and a flexible building underlay is used, a building underlay support in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.8.5 must be installed over the building underlay behind the cavity battens at 300mm centres horizontally to prevent bulging of the building underlay into the drainage cavity.

APPRAISALS

BRANZ Appraisal No. 1099 [2019]

WARRANTY

15 years

MAINTENANCE

No maintenance requirements

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VENT VENTILATION & DRAINAGE BATTEN
VB20 WALL

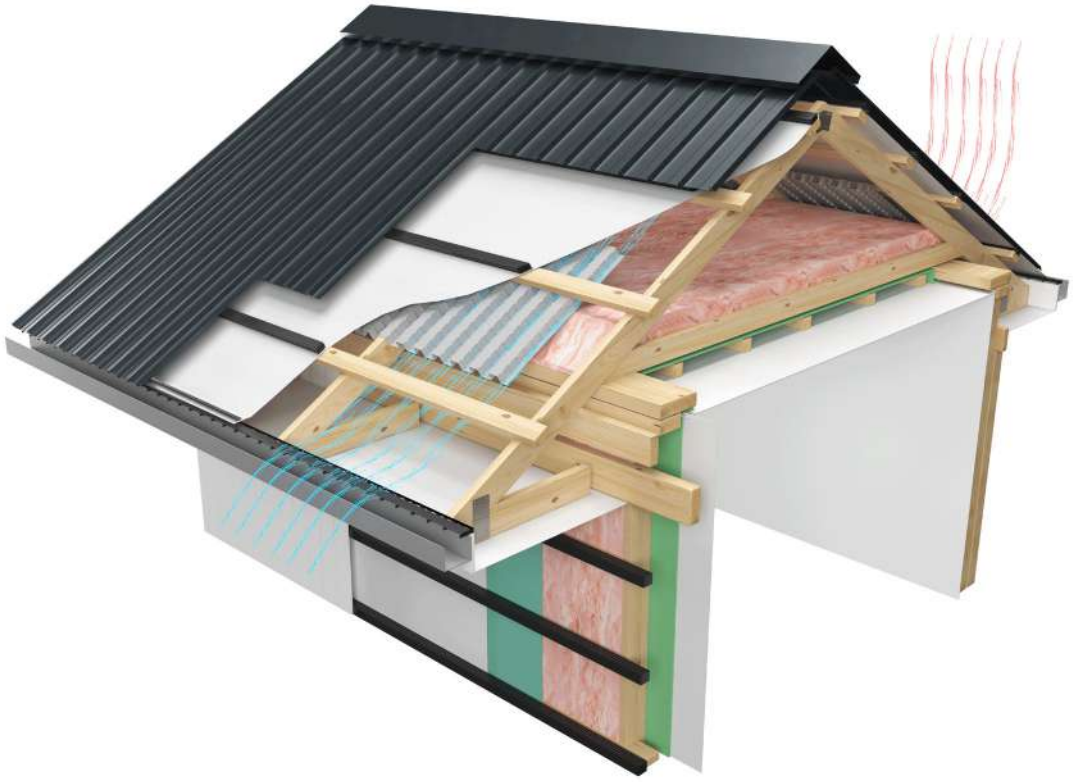
STORAGE

Handling and storage of VENT Wall Ventilation Products, whether on-site or off-site, is under the control of the building contractor. Ventilation Products must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

INSTALLATION

1. Peel-off adhesive backing for temporary fixing.
2. Must be installed over the building wrap.
3. Can be cut with a knife, cutting tool or hand saw.
4. Can be installed both vertically (Fig A) and horizontally (Fig B) in line with requirements of selected wall cladding system.
5. Cladding fixings must be fixed through the VENT VB20 into the studs and dwangs. NB: The VB20 should be treated as non-structural timber cavity batten.
6. Cladding fixings must conform to manufacturer's specifications.

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VENT VENTILATION & DRAINAGE BATTEN
VB20 WALL

Figure B: VENT VB20 Horizontal cladding system

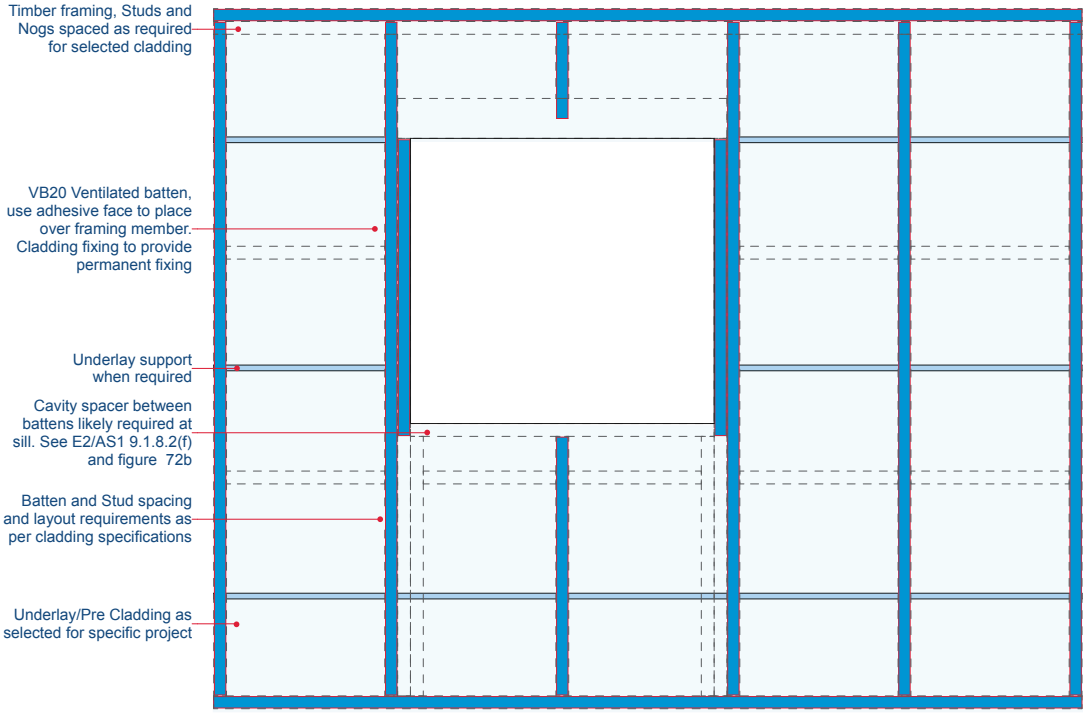
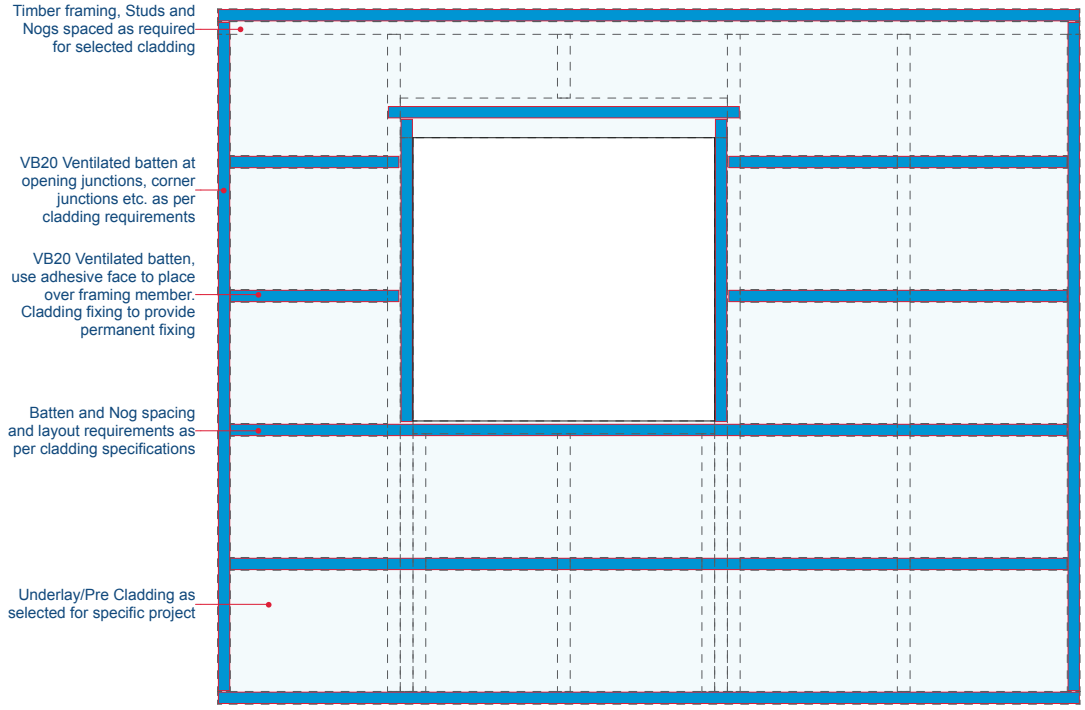


Figure C: VENT VB20 Vertical cladding system



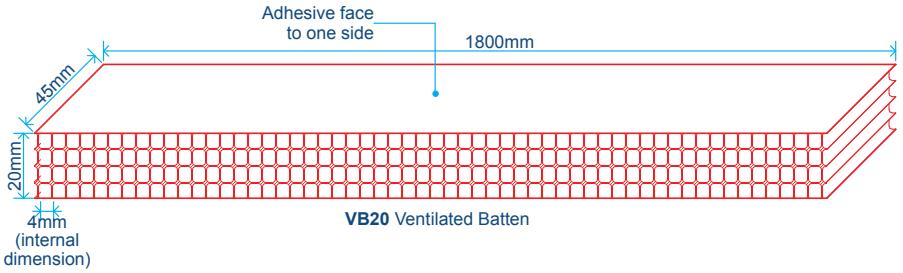
VENT PASSIVE VENTILATION

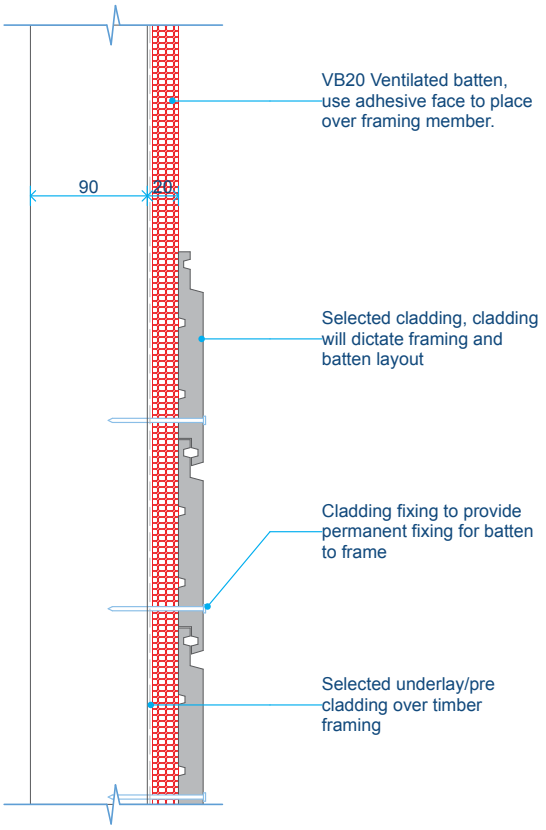
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VENT VENTILATION & DRAINAGE BATTEN
VB20 WALL

Figure D: Dimensions





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Note: Diagrams are for guidance purposes only. The overall design is the responsibility of the designer as there are often other factors to consider. The company maintains a policy of continuous development of its product range and reserves the right to amend the specification without notice.

4221JV JSC Vertical Weatherboard Cladding

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SUPPORTING DOCUMENTS

JSC VertiClad 45mm Cavity Fix on Flexible Underlay Details

Ref 93011. Uploaded 3 Dec 2024

Purpose: Installation

JSC VertiClad CodeMark Certificate - 30084

Ref 93033. Uploaded 3 Dec 2024

Purpose: Performance, Installation, Warranty

JSC VertiClad Specification & Installation Guide

Ref 93028. Uploaded 3 Dec 2024

Purpose: Installation

STRUCTURAL CAVITY BATTEN - Setout and Fixing to Framing Guide

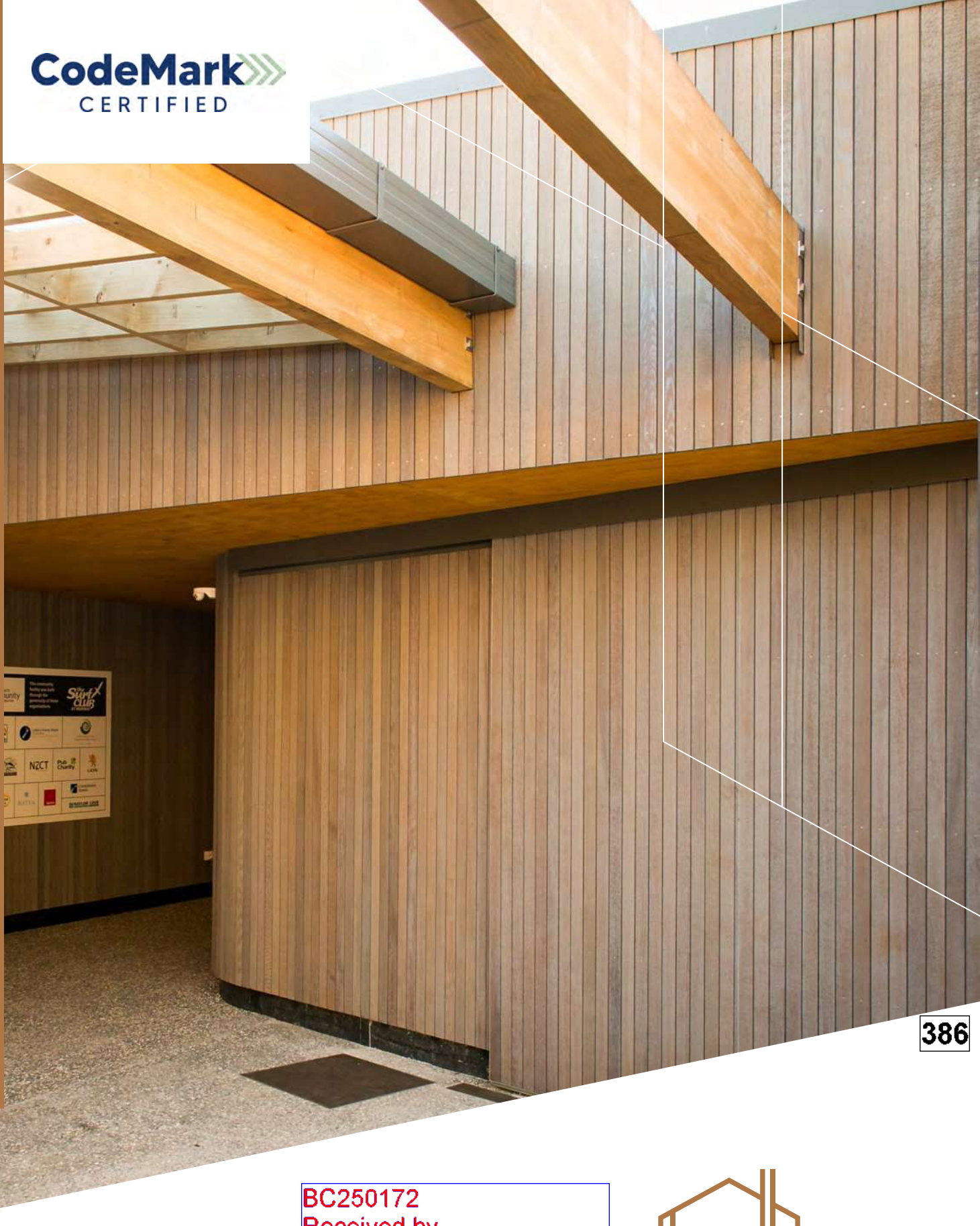
Ref 93005. Uploaded 3 Feb 2025

Purpose: Installation

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CodeMark CERTIFIED

TECHNICAL DRAWINGS



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JSC VertiClad

Vertical Shiplap Weatherboard Cladding

45mm Cavity on Flexible Underlay

Version 1.2 | 12/02/2024

JSC

PREMIUM ARCHITECTURAL
& BUILDING SOLUTIONS

Index

20mm Cavity Setout Guide Fixed Horizontally

JV-F45-SEC01	Sectional Detail – Plan View
JV-F45-SEC02	Sectional Detail – Cross Section View
JV-F45-01	Bottom Plate Detail
JV-F45-01A	Bottom Plate on Timber Detail
JV-F45-02	Top Plate Soffit Detail
JV-F45-03	Raking Soffit Detail
JV-F45-04	Bottom Plate Soffit Detail
JV-F45-05	Inter Storey Junction Detail
JV-F45-06	Parapet Detail
JV-F45-10	Internal Corner Detail
JV-F45-11	Internal Corner Detail
JV-F45-13	External Corner Box Detail – J40W
JV-F45-14	External Corner Box Detail – J42
JV-F45-16	External Corner Box Detail – APJC5
JV-F45-21	Pipe Penetration Detail
JV-F45-25	Meterbox Head Detail
JV-F45-26	Meterbox Jamb Detail
JV-F45-27	Meterbox Sill Detail
JV-F45-30	Window Head Detail
JV-F45-31	Window Jamb Detail
JV-F45-33	Window Sill Detail

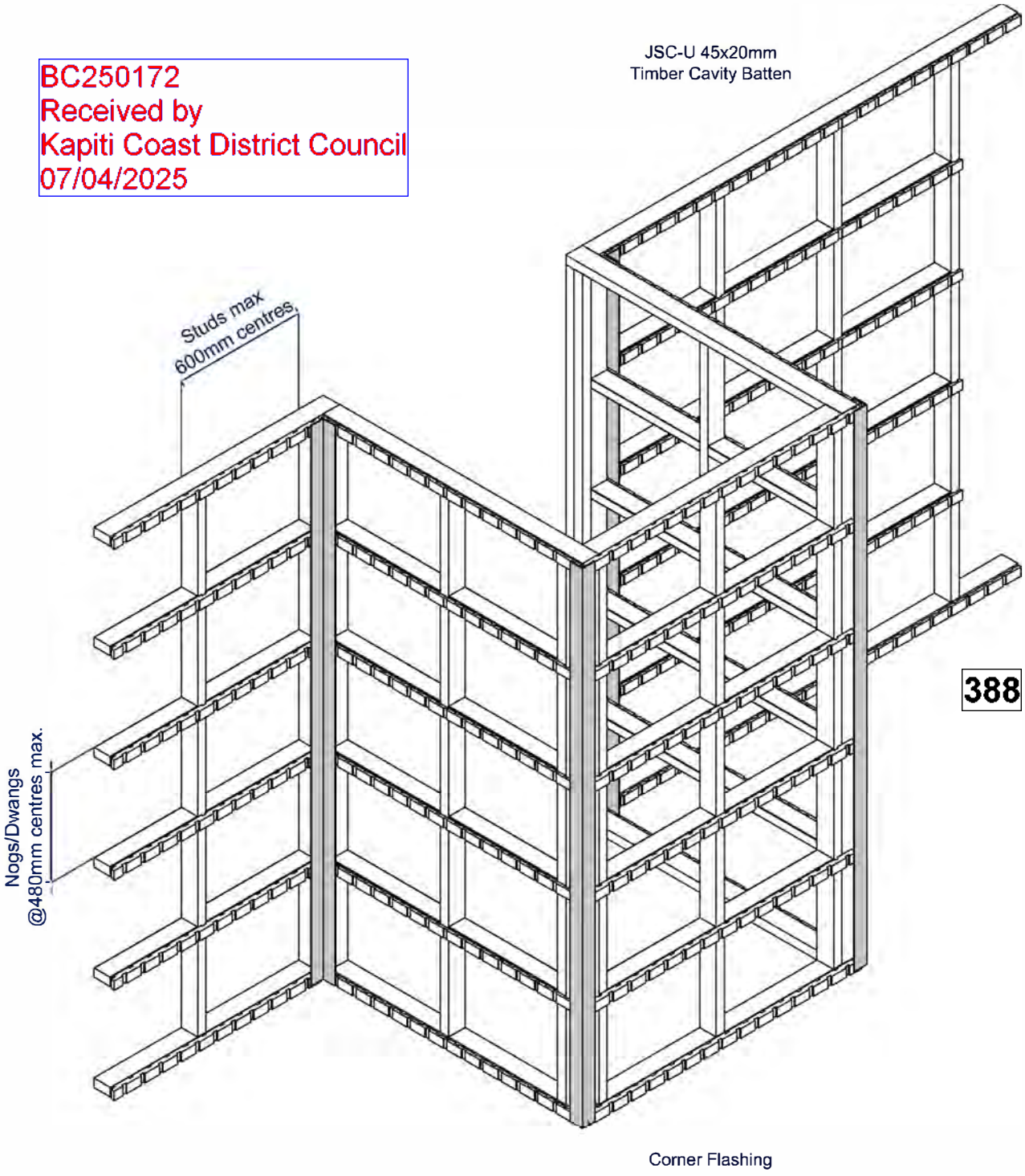
CodeMark
CMNZ30084

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20mm Cavity Batten Setout fixed Horizontally

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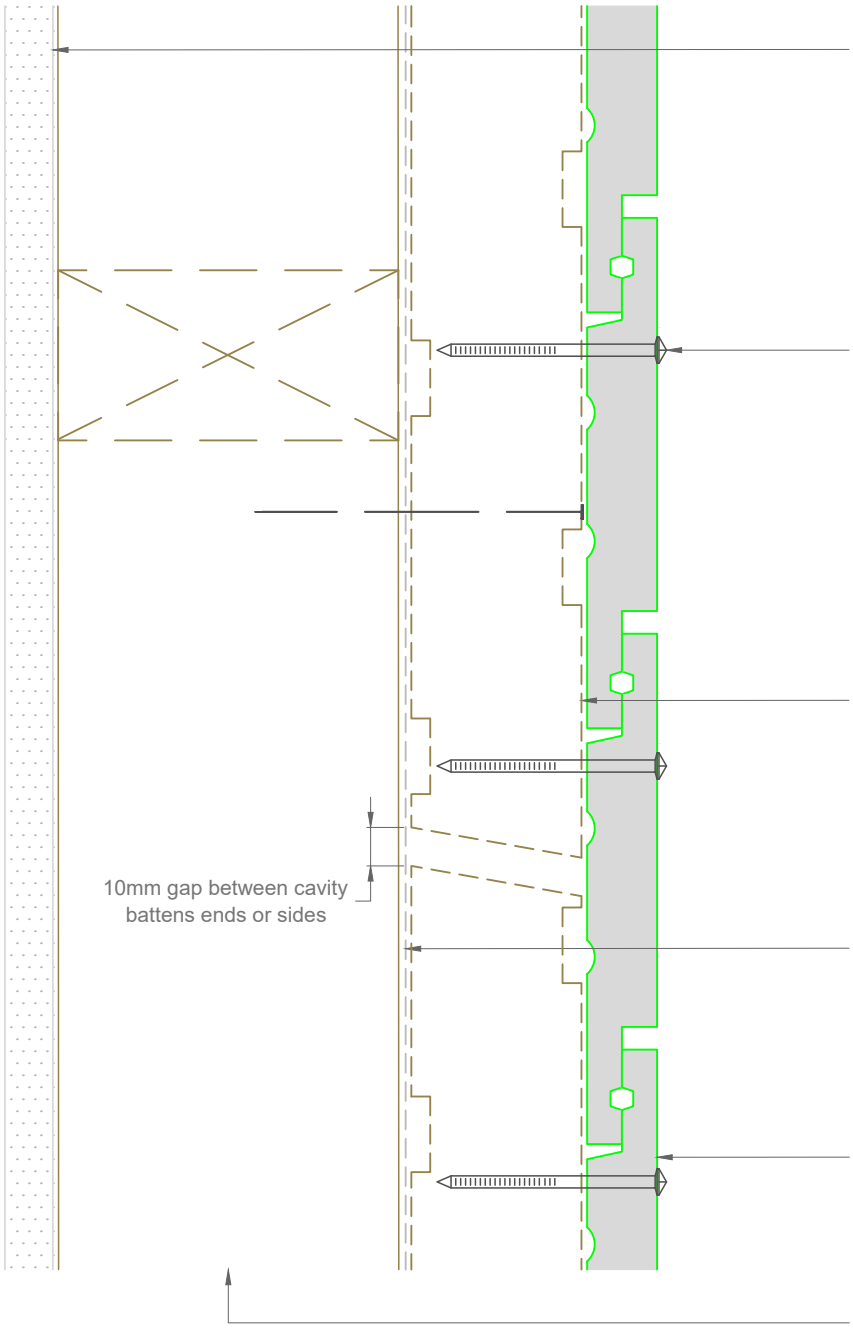


Note: This setout guide is for fixing JSC-U 45x20 mm Cavity Battens for Vertical weatherboard cladding

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Plan View

CodeMark
CMNZ30084



Interior lining or use rigid wall underlay for unlined walls such as gable ends.See NZBC/E2 paragraph 9.1.4

Single fix at each nog with annular grooved stainless steel or silicon bronze nails as per NZBC/E2 Table 24

- Pre-drilled 1mm diameter smaller than nail gauge
- Nailed with a 2º upward slope
- 35mm min penetration into battens
- Nailed 10mm away from the edge of the lower board (35-40 mm from the edge of the board)
- Minimum 50mm from ends of boards except where shown otherwise

JSC-H H3.2 45x45mm treated timber castellated cavity batten

- 10mm gap between battens
- Always slope away from wall
- See JSC structural cavity batten fixing guide

Flexible or rigid wall underlay to comply with NZBC/E2 Table 23 installed to manufacturers specifications

JSC vertical shiplap weatherboard

- coated with approved suitable coating to all 4 sides and ends prior to installation
- 2mm expansion gap at the under lap

Framing to NZS 3604 or "fit for purpose"

Note: *To be read in conjunction with complete JSC installation instructions* • *Details may be subject to change without notification*

Sectional Detail

JV-F45-SEC01

Scale: 1:2
Date: 12/02/2024

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Web: www.jsctimber.co.nz

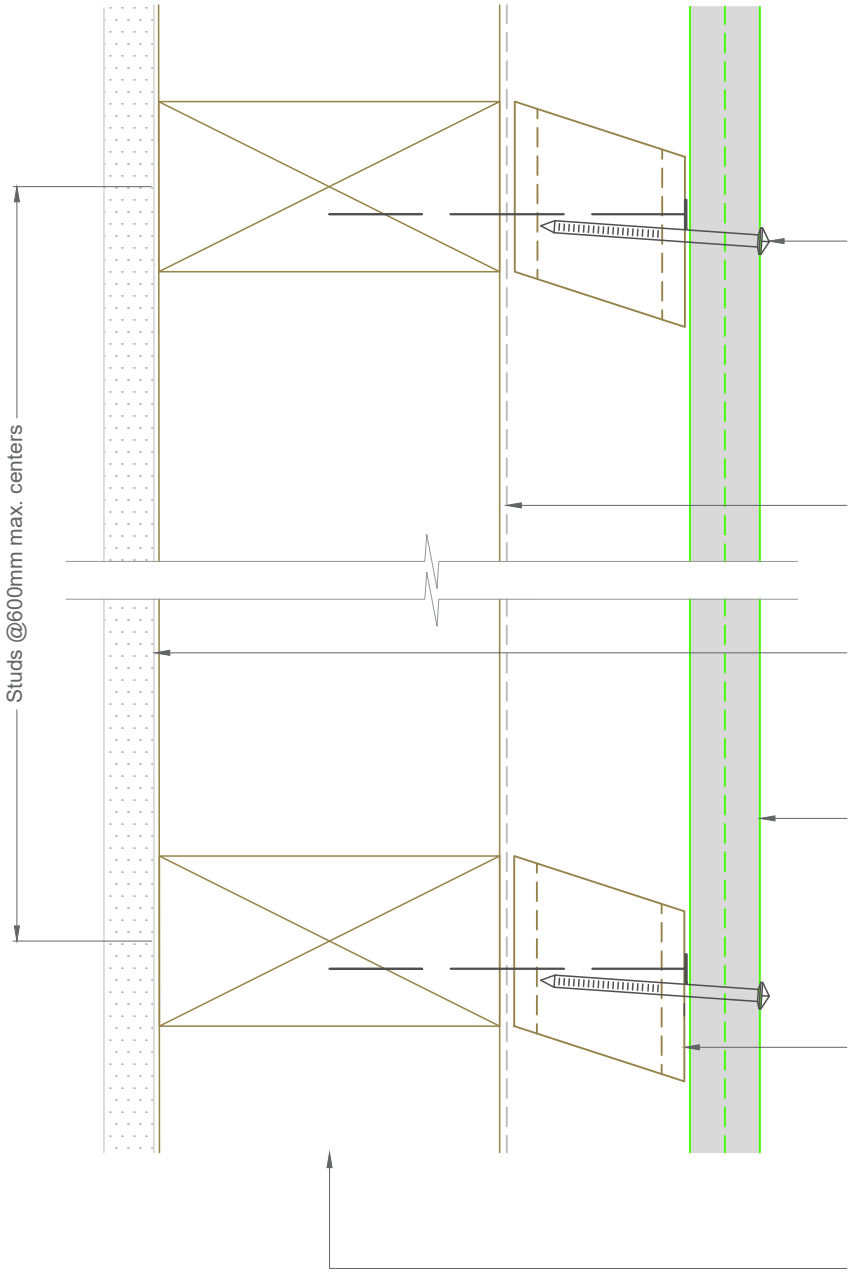
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20 Sawmill Road
Riverhead
09 412 2800

Christchurch
72 Hammersmith Drive
Wigram
03 348 9726

JSC PREMIUM ARCHITECTURAL & BUILDING SOLUTIONS

Cross Section View

CodeMark CMNZ30084



Single fix at each stud with annular grooved stainless steel or silicon bronze nails as per NZBC/E2 Table 24

- Pre-drilled 1mm diameter smaller than nail gauge
- Nailed with a 2º upward slope
- 35mm min penetration into structural cavity batten
- Minimum 50mm from ends of boards except where shown otherwise

Flexible or Rigid wall underlay to comply with NZBC/E2 Table 23 installed to manufacturers specifications

Interior lining or use rigid wall underlay for unlined walls such as gable ends.
See NZBC/E2 Paragraph 9.1.4

Selected Vertical Shiplap Weatherboard coated with approved coating to all 4 sides and ends before and during installation

JSC-H H3.2 45x45mm treated timber castellated cavity batten

- Keep 10mm gap between the cavity battens except at bottom plate
- Cut ends of vertical battens to slope away from wall (10-15°)
- See JSC structural battens fixing guide

Framing to NZS 3604 or "fit for purpose"

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Note: *To be read in conjunction with complete JSC installation instructions* • *Details may be subject to change without notification*

Sectional Detail	JV-F45-SEC02	**Scale:** 1:2 **Date:** 12/02/2024

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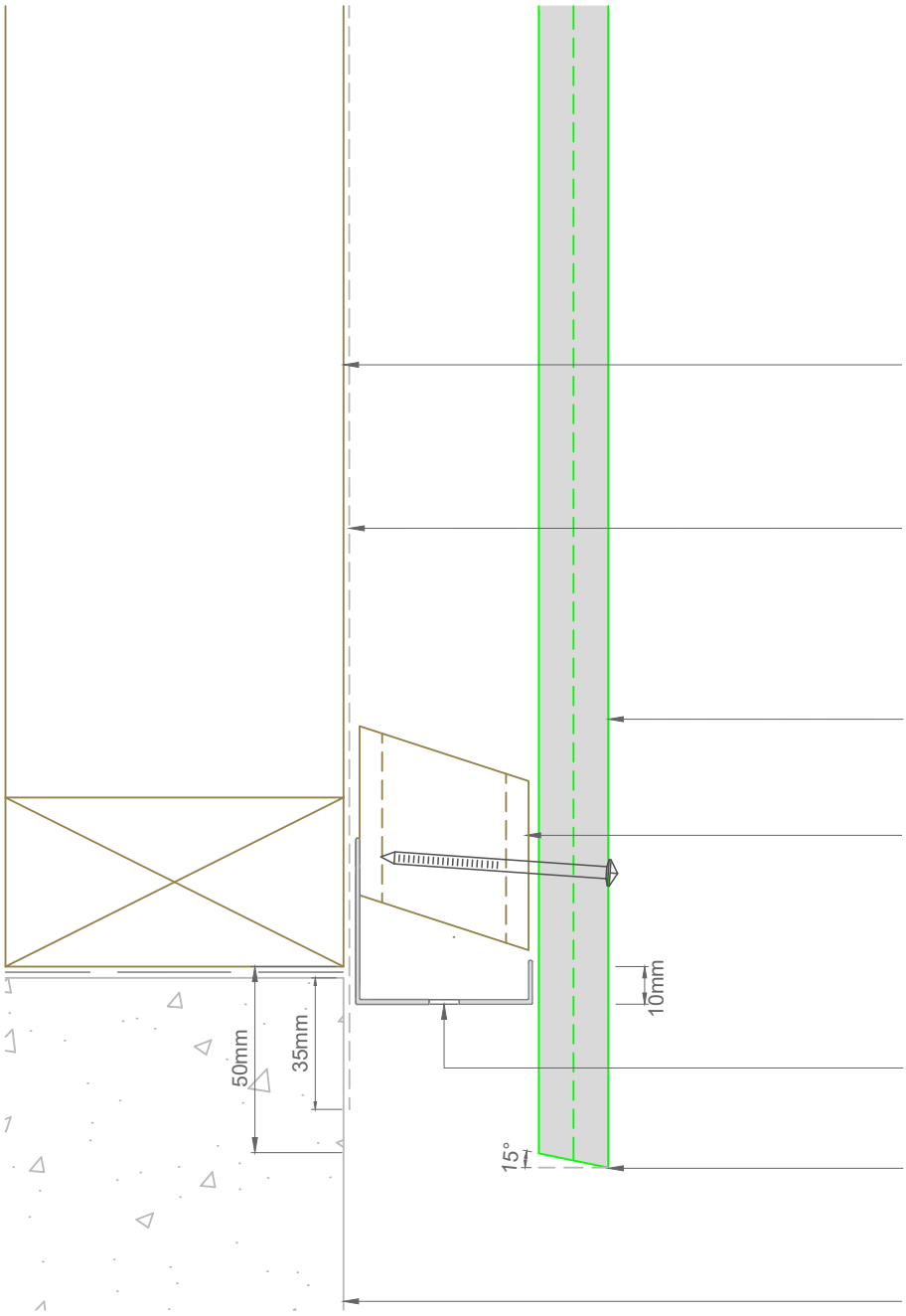
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Framing

Wall underlay

Selected vertical shiplap weatherboard

JSC-H 45x45mm castellated timber cavity batten

Cavity closer to comply with NZBC E2/AS1 9.1.8.3 and Figure 66

Drip edge

Concrete floor slab

Note:- Maintain ground clearance as per NZBC/E2 paragraph 9.1.3.3 and Table 18

Note: *To be read in conjunction with complete JSC installation instructions* • *Details may be subject to change without notification*

Bottom Plate Detail

JV-F45-01

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Date: 12/02/2024

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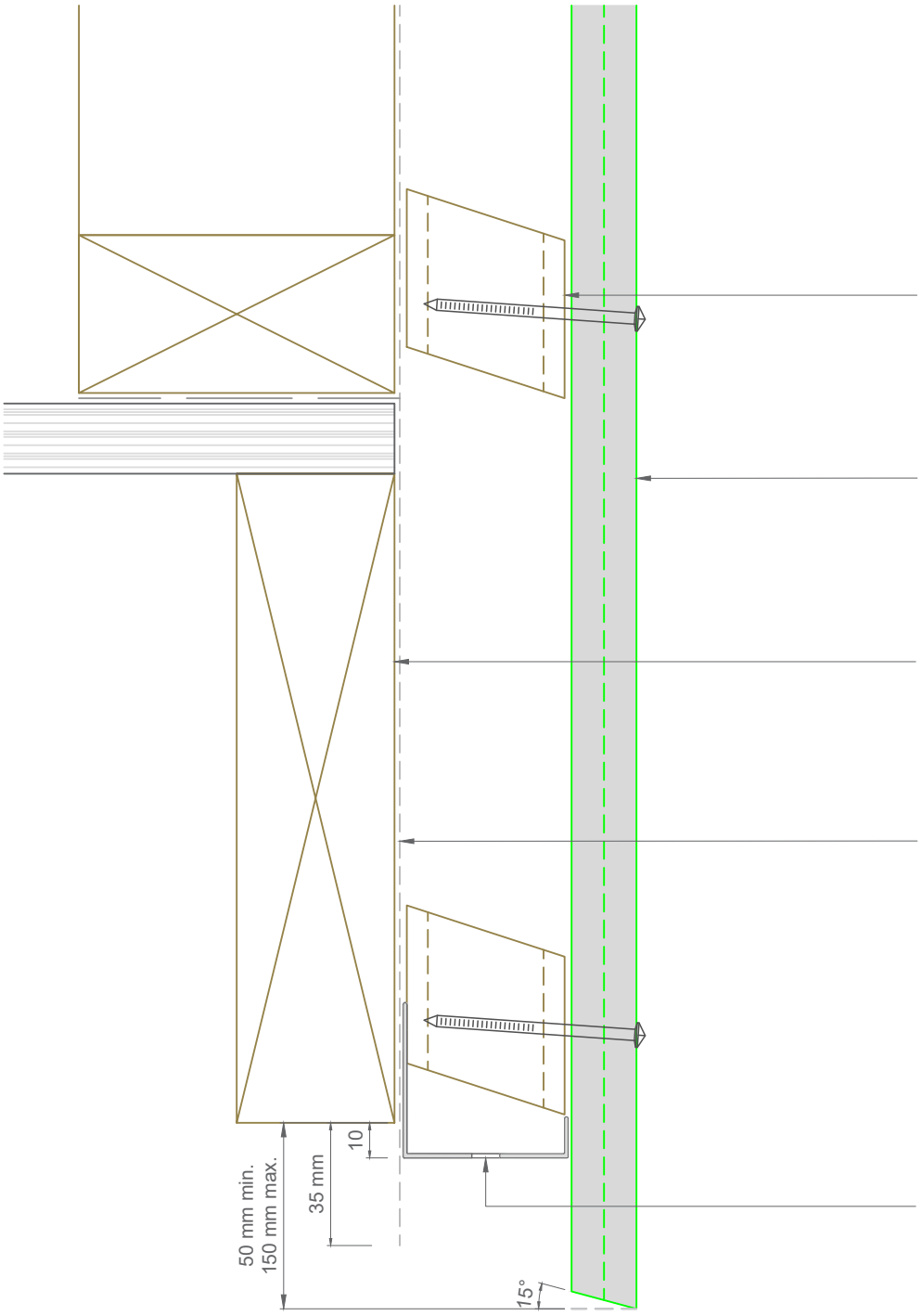
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JSC-H 45x45mm castellated timber cavity batten

Selected JSC vertical shiplap weatherboard

Boundary joist

Wall underlay

Cavity closer with vent slots

Note:- Maintain ground clearance as per NZBC/E2 paragraph 9.1.3.3 and Table 18

Note: *To be read in conjunction with complete JSC installation instructions* • *Details may be subject to change without notification*

Bottom Plate on Timber Detail

JV-F45-01A

Scale: 1:2
Date: 12/02/2024

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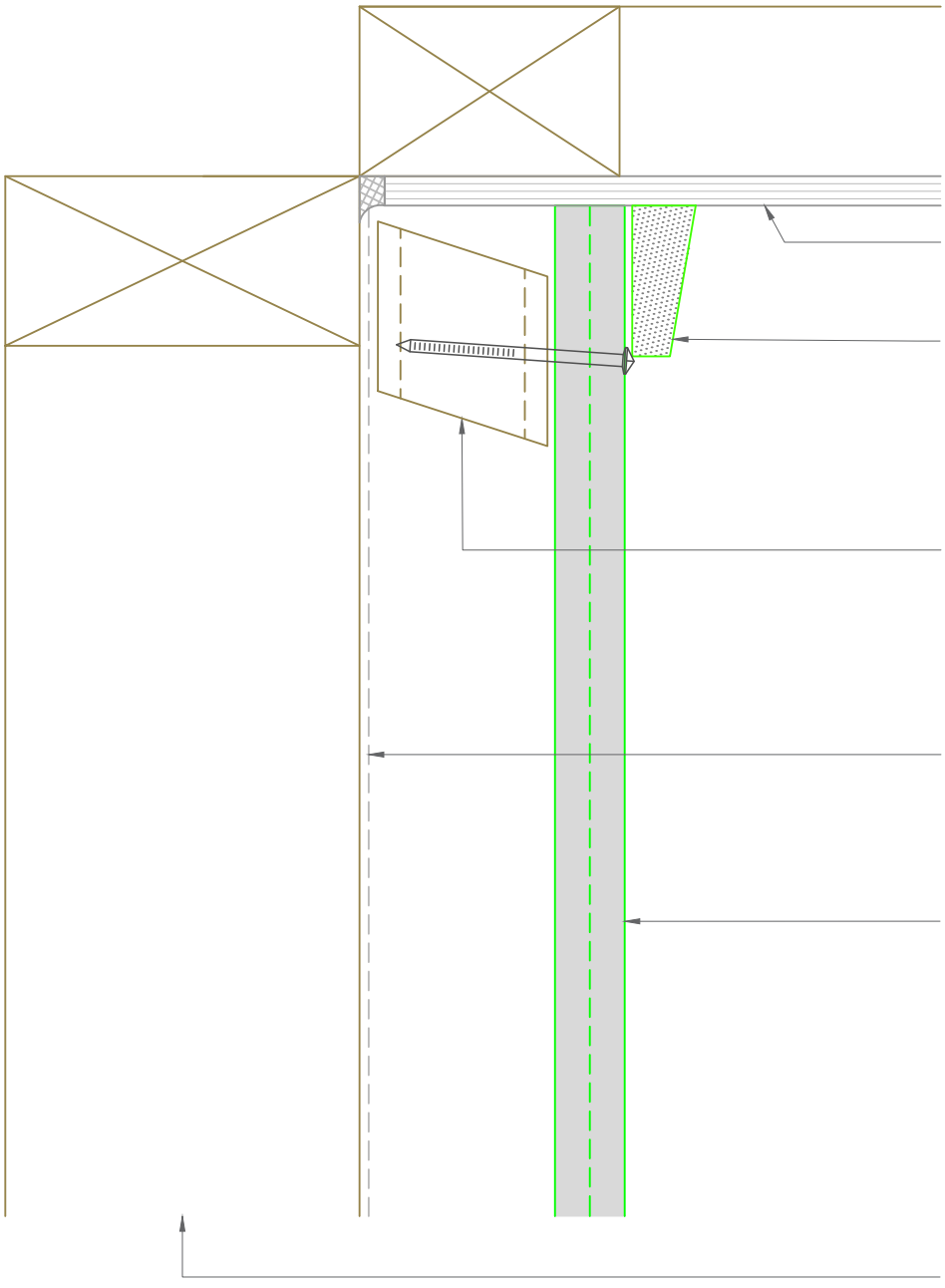
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Top Plate Soffit Detail

JV-F45-02

Scale: 1:2
Date: 12/02/2024

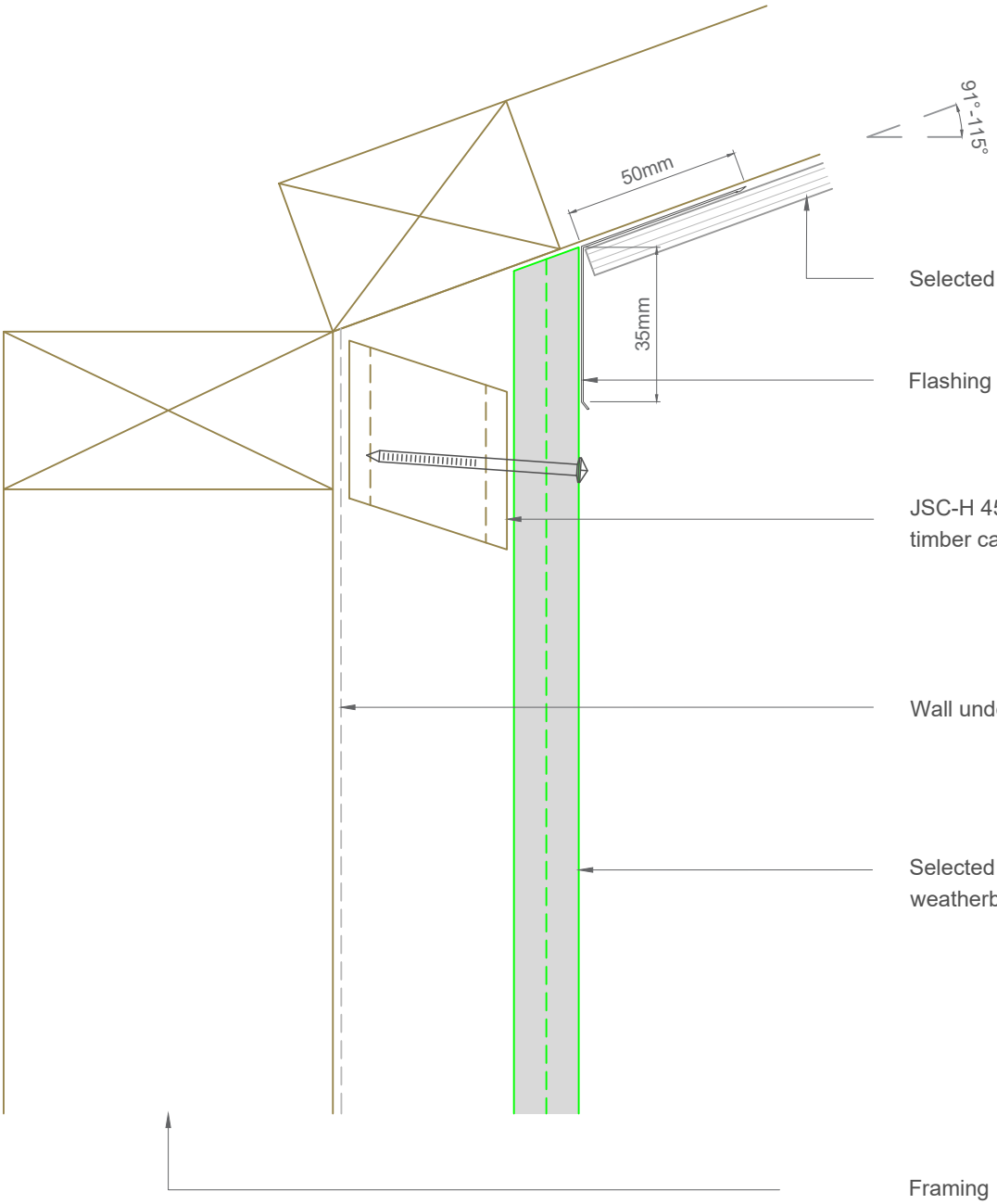
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Raking Soffit Detail

JV-F45-03

Scale: 1:2
Date: 12/02/2024

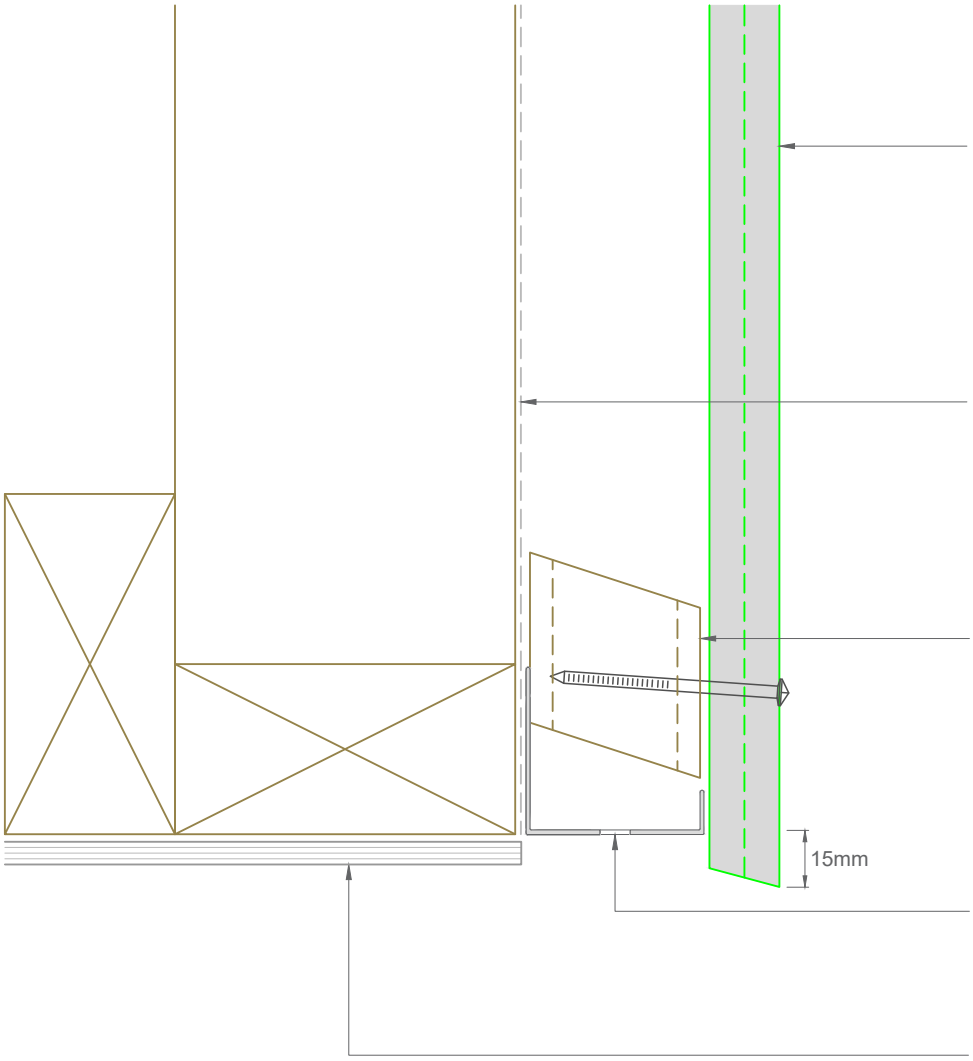
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Bottom Plate Soffit Detail

JV-F45-04

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Date: 12/02/2024

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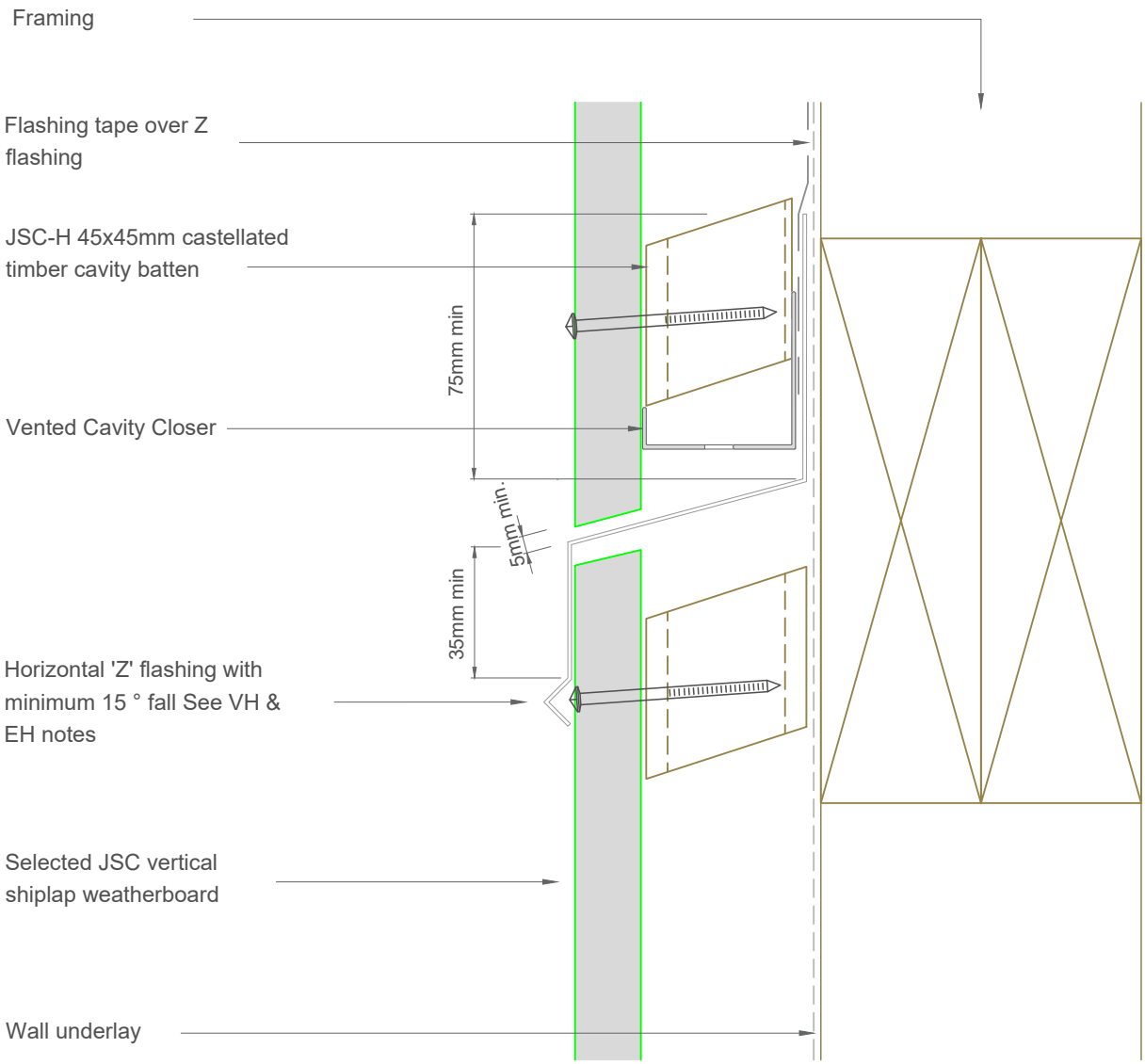
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Inter Storey Junction Detail

JV-F45-05

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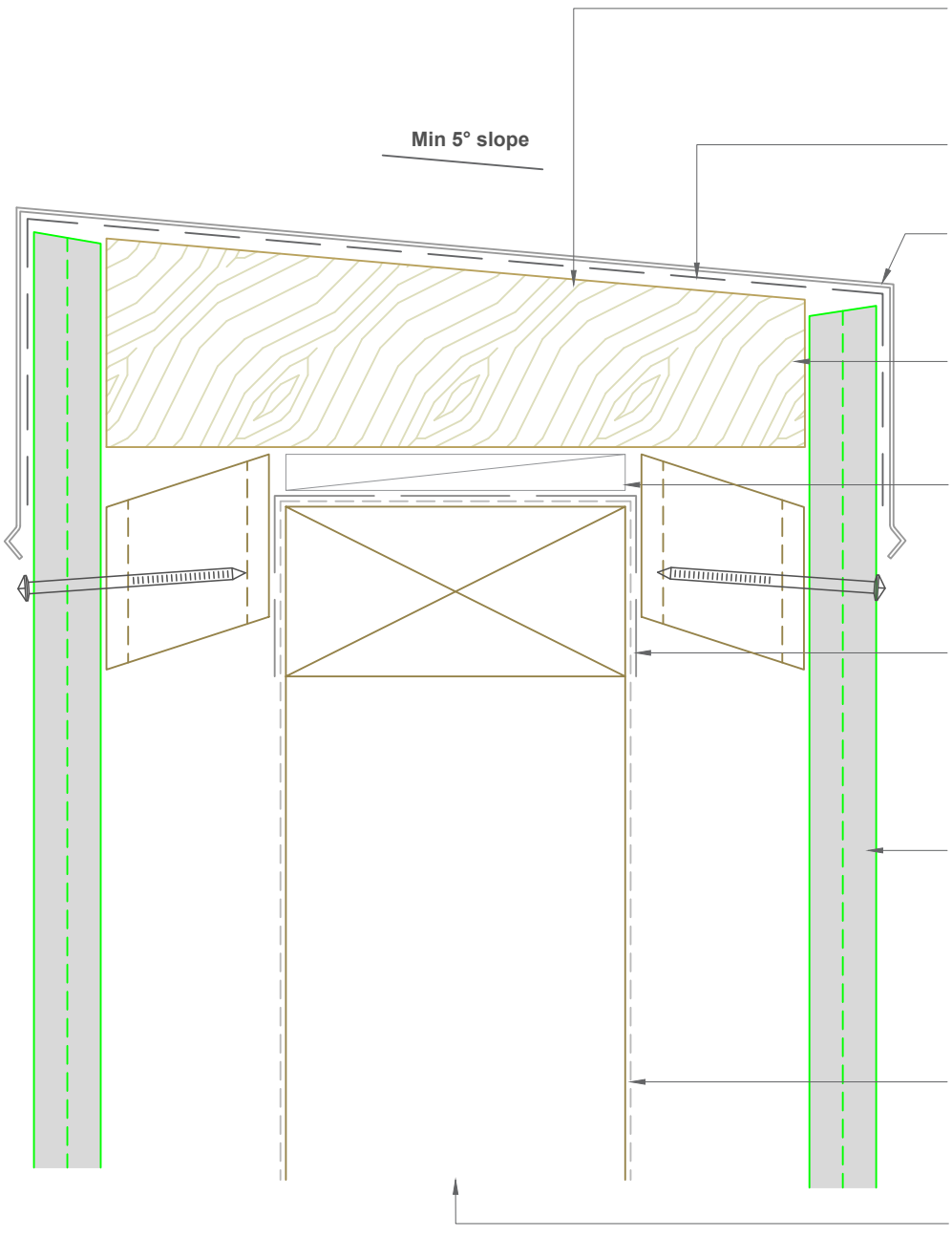
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H3.2 Treated packer to form slope

DPC to provide separation of metal capping and timber

Metal capping per NZBC/E2 Figure 10

JSC-H 45x45mm castellated timber cavity batten

Provide packer to ventilate between cavities

Flexible adhesive tape over air barrier as per the underlay manufacturer's specification

Selected JSC Vertical Shiplap Weatherboard

Wall Underlay

Framing

Note:- Parapet Design & installation should comply to NZBC/E2 Section 6

Note: *To be read in conjunction with complete JSC installation instructions* • *Details may be subject to change without notification*

Parapet Detail

JV-F45-06

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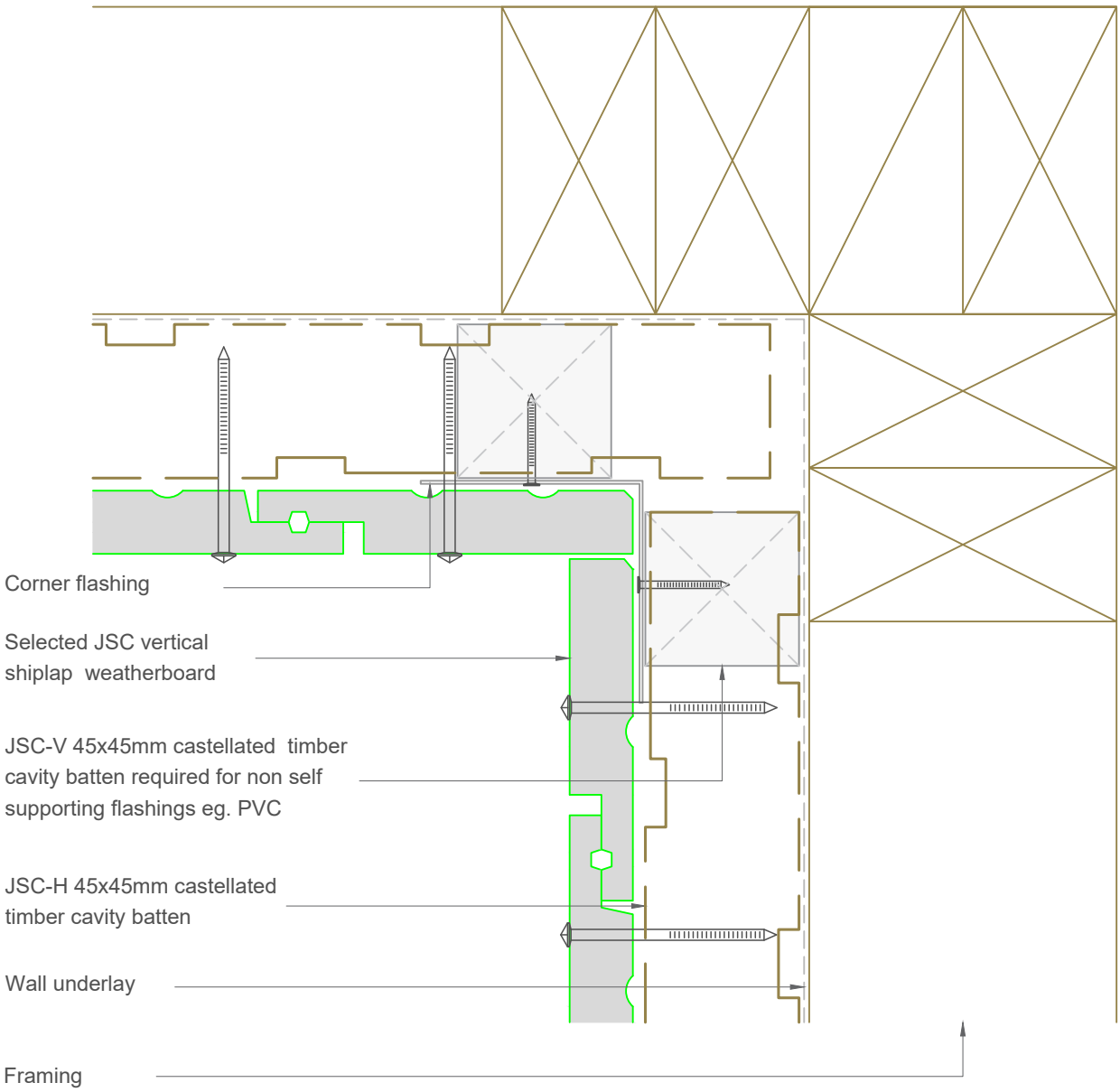
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Internal Corner Detail

JV-F45-10

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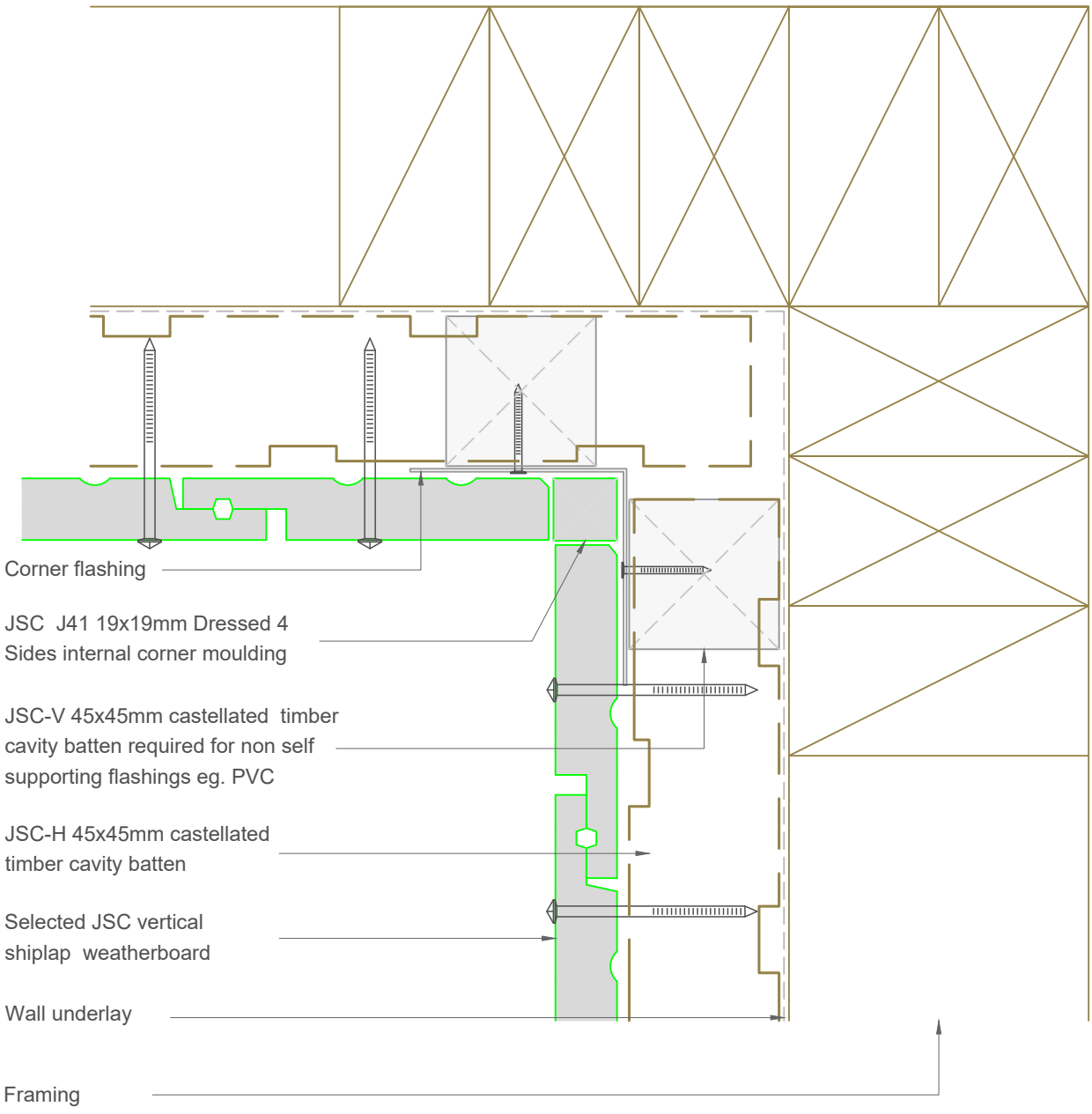
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Internal Corner Detail

JV-F45-11

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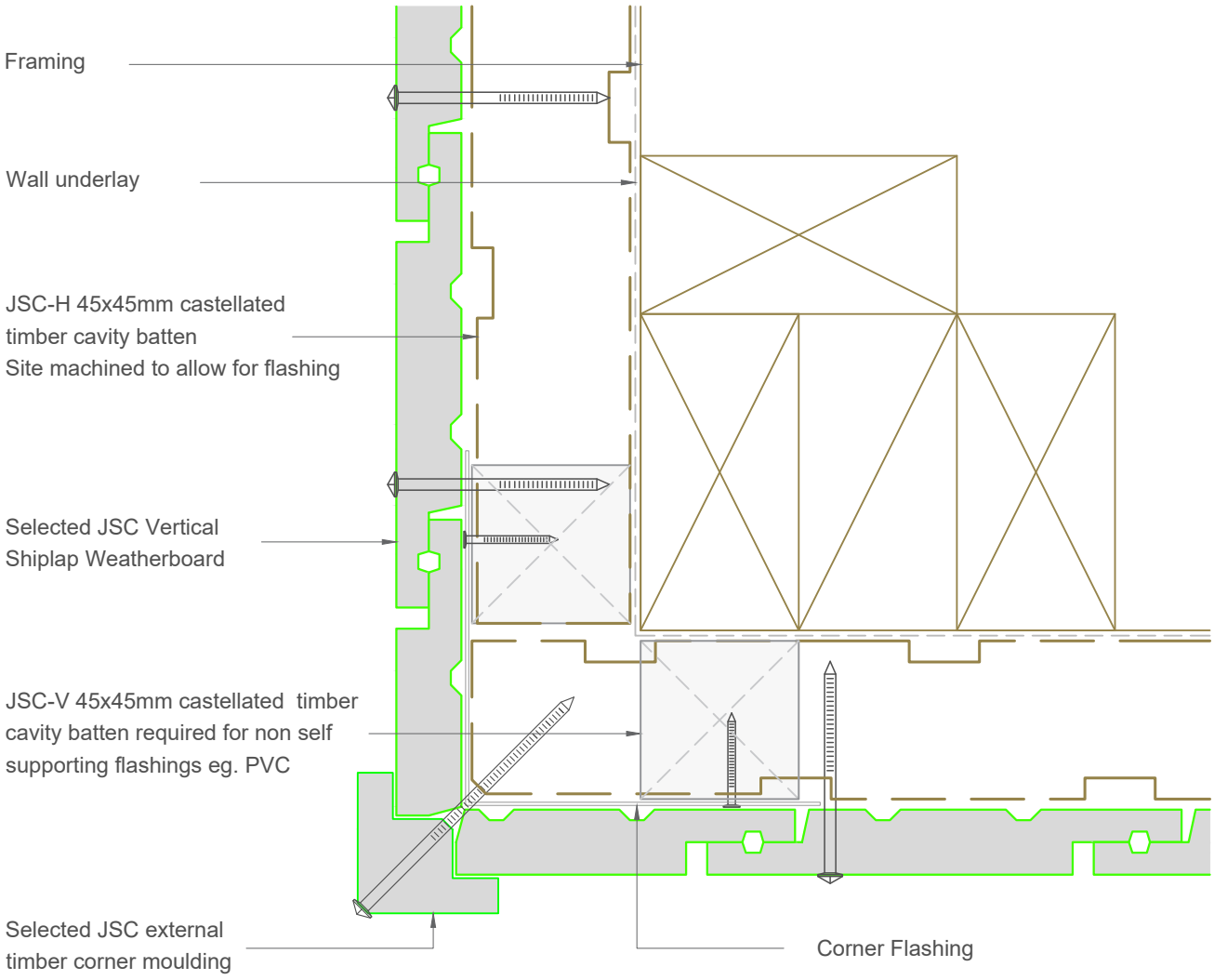
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External Corner Detail

JV-F45-13

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Web: www.jsctimber.co.nz

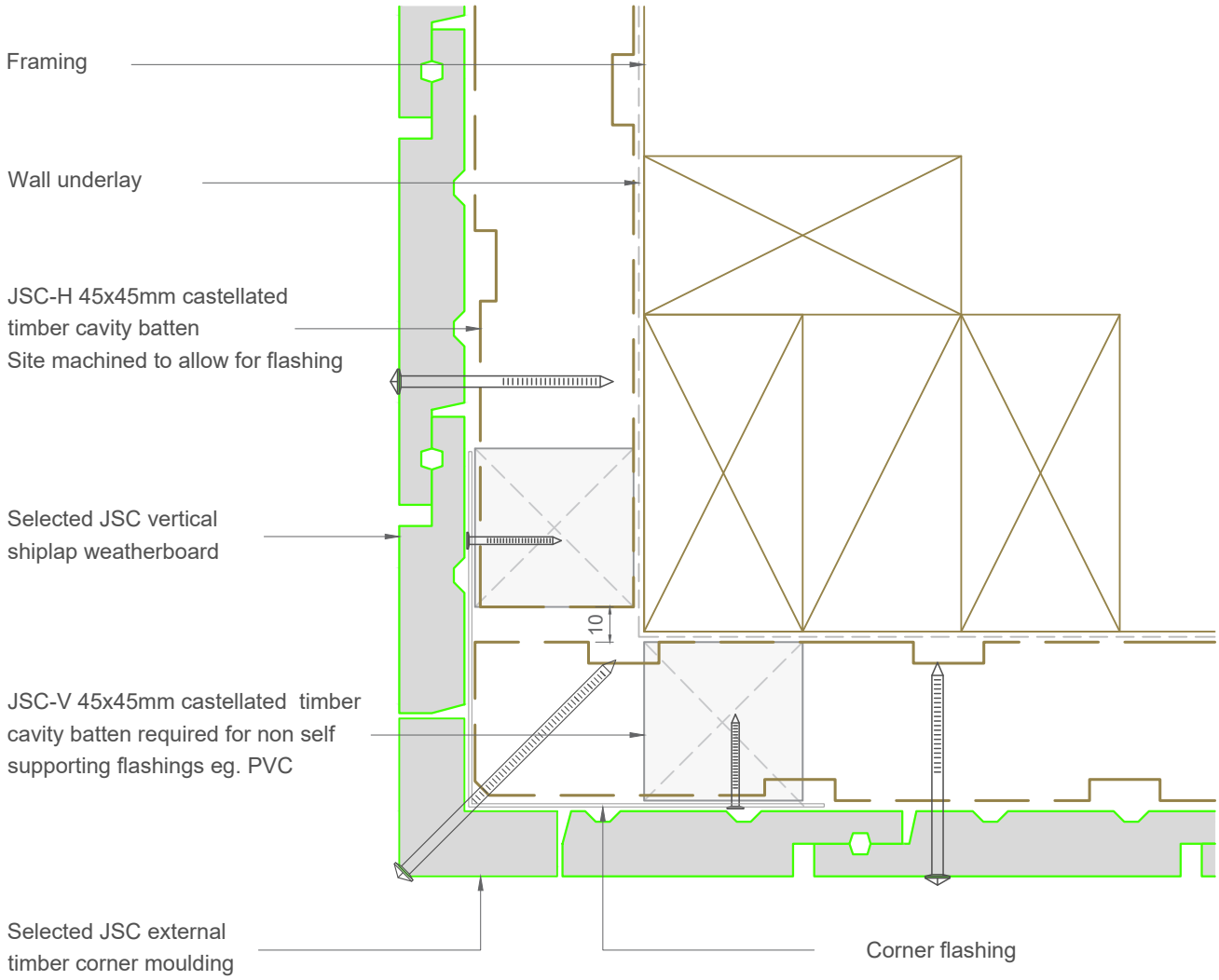
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External Corner Detail

JV-F45-14

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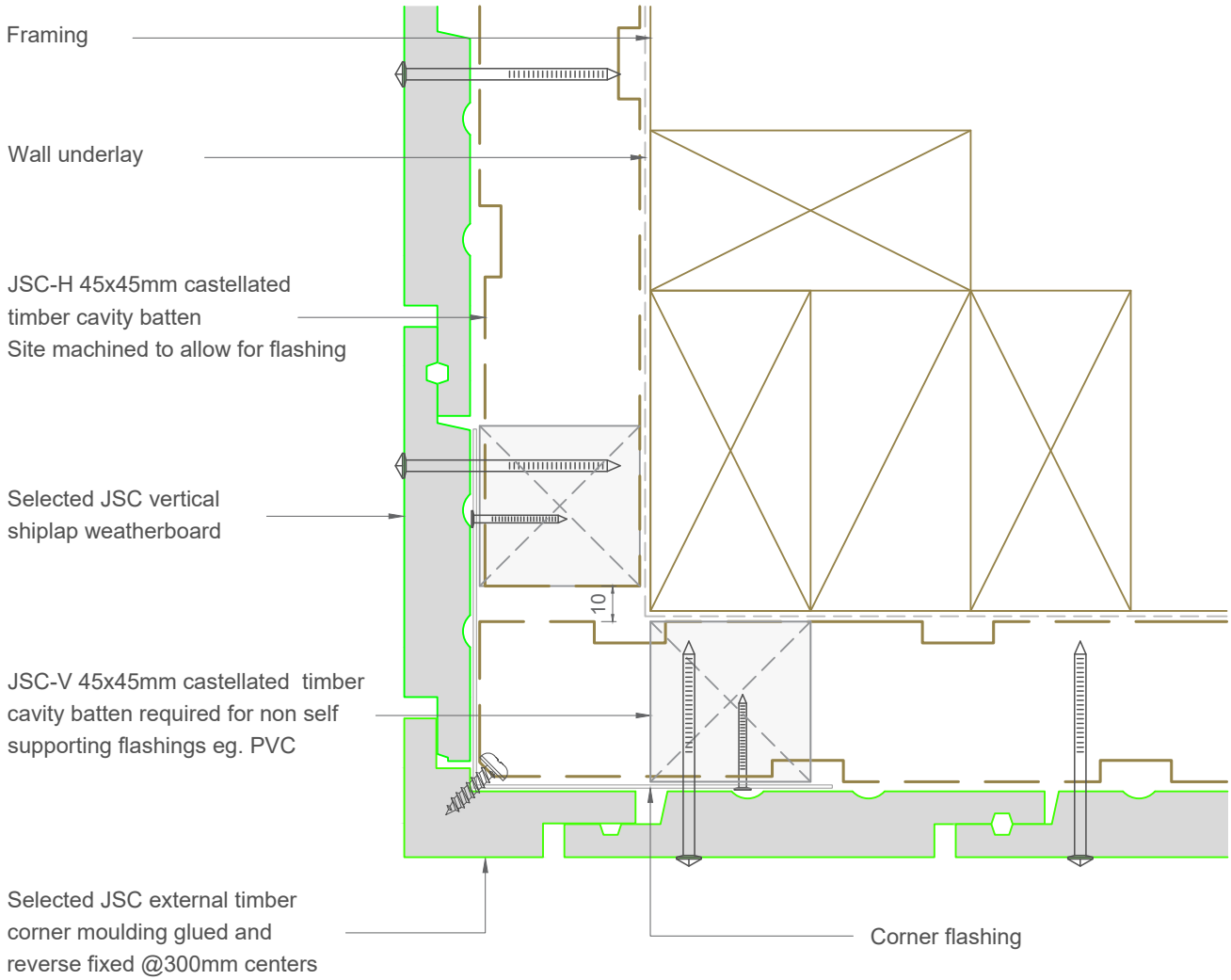
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External Corner Detail

JV-F45-16

Scale: 1:2
Date: 12/02/2024

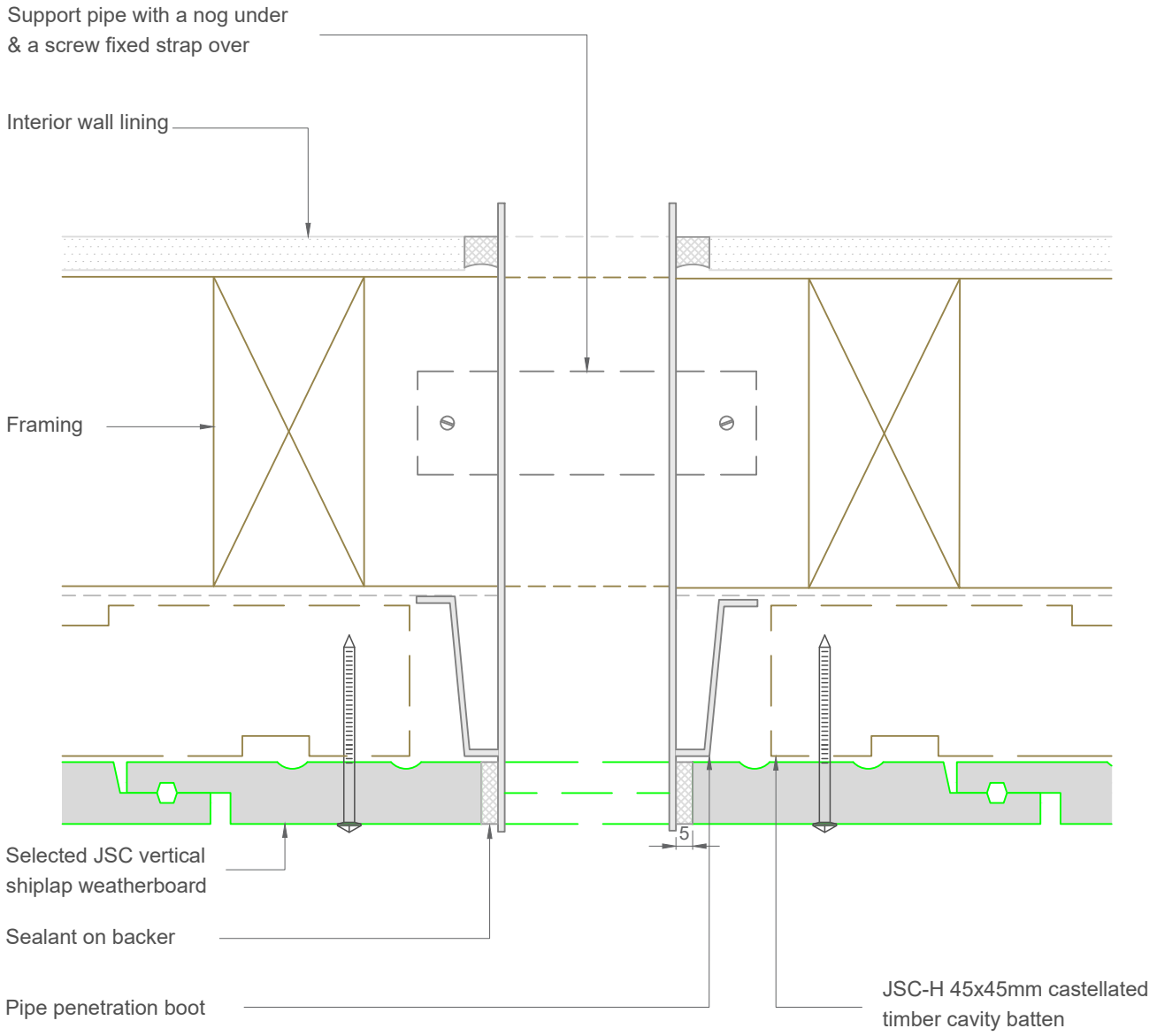
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Pipe Penetration Detail

JV-F45-21

Scale: 1:2
Date: 12/02/2024

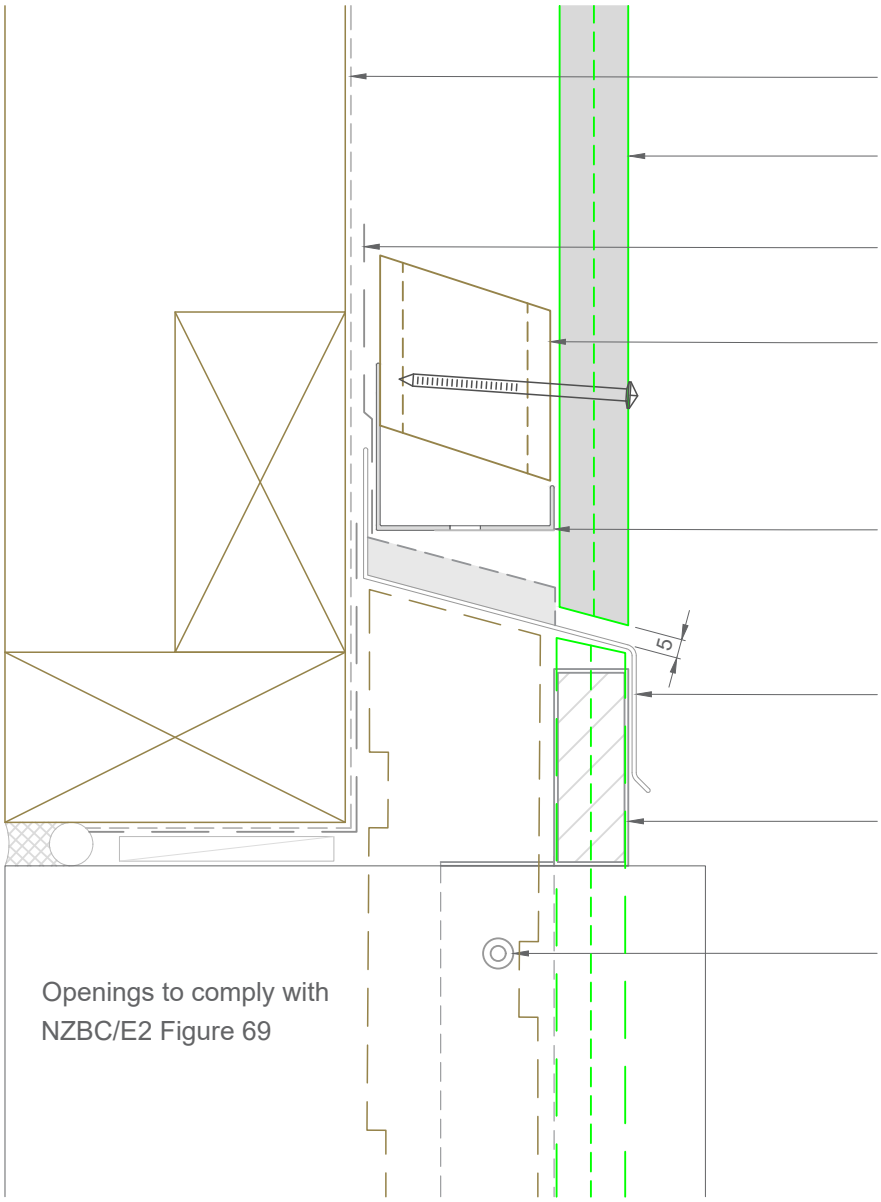
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Wall underlay

Selected JSC vertical shiplap weatherboard

Flashing tape over head flashing

JSC-H 45x45mm castellated timber cavity batten

Vented cavity closer slots positioned to give 15mm drip edge to cladding

Head flashing with 15° fall and stop ends. Seal to meterbox head flange

Meterbox head flange. Fill or fold ends to seal to jamb flange

Meterbox body with flanges riveted and sealed around perimeter

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Meterbox Head Detail

JV-F45-25

Scale: 1:2
Date: 12/02/2024

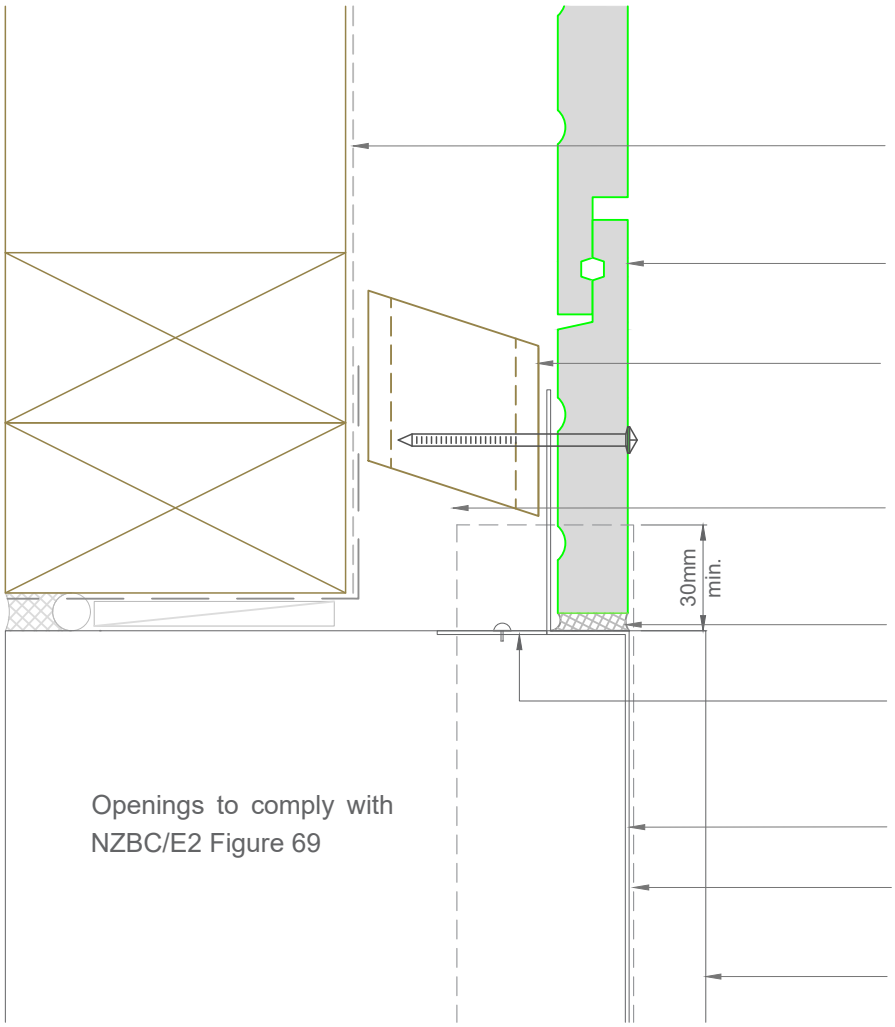
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Wall underlay

Selected JSC vertical shiplap weatherboard

JSC-H 45x45mm castellated timber cavity batten

Flexible flashing tape

Sealant on backer road

Meterbox jamb flange fixed and sealed to meterbox

Meterbox head flange (above)

Line of meterbox head flashing above

Meterbox body

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Meterbox Jamb Detail

JV-F45-26

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Date: 12/02/2024

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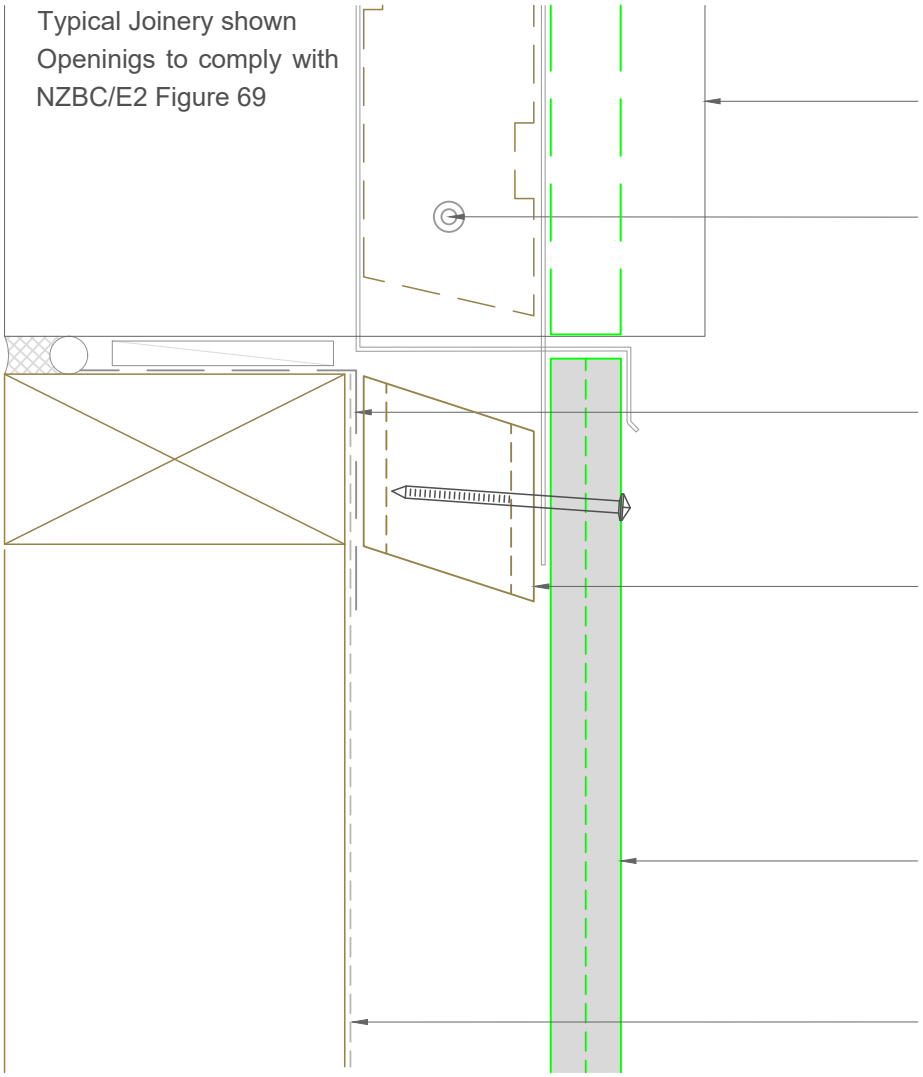
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Typical Joinery shown
Openinigs to comply with
NZBC/E2 Figure 69



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Meterbox Sill Detail

JV-F45-27

Scale: 1:2
Date: 12/02/2024

Email: TechHelp@jsctimber.co.nz
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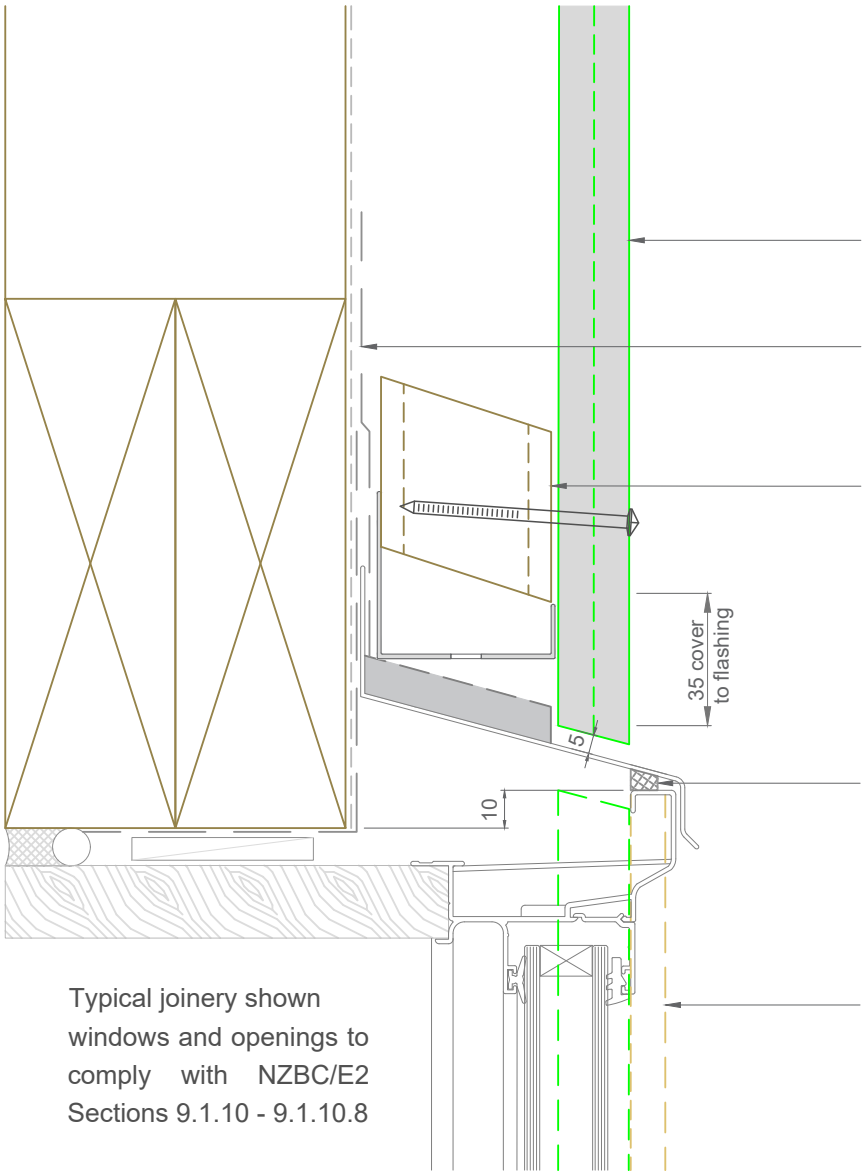
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Selected JSC vertical shiplap weatherboard

Flashing tape over head flashing

JSC-H 45x45mm castellated timber cavity batten

Head flashing with 15° fall and stop ends.Use sealant in very high and extra high wind zones

Line of jamb scriber

Typical joinery shown windows and openings to comply with NZBC/E2 Sections 9.1.10 - 9.1.10.8

Note: *To be read in conjunction with complete JSC installation instructions* • *Details may be subject to change without notification*

Window Head Detail

JV-F45-30

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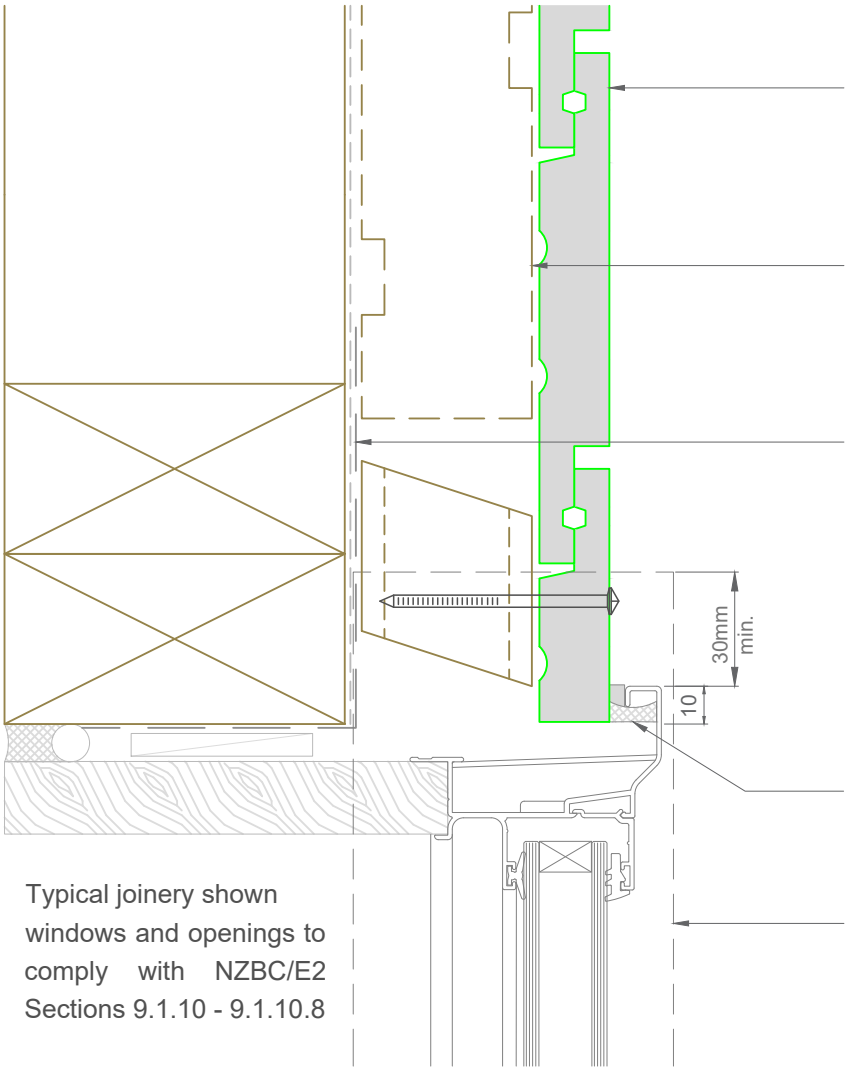
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Selected JSC vertical shiplap weatherboard

JSC-H 45x45mm castellated timber cavity batten

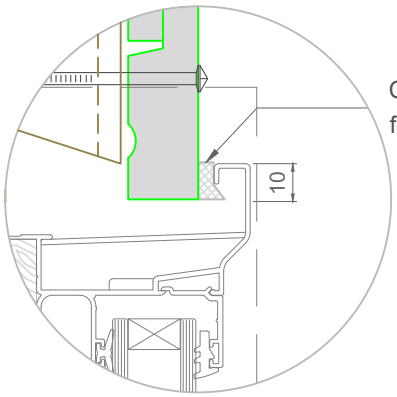
Flashing tape over head flashing

Compressible foam tape as a backer for sealant

Line of head flashing

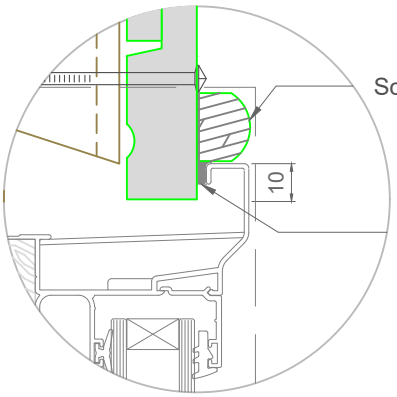
Typical joinery shown windows and openings to comply with NZBC/E2 Sections 9.1.10 - 9.1.10.8

Optional



Compressible foam tape seal

NB: Foam tape to be durable and compatible with weatherboard coating



Scriber

Sealant

NB: Scriber sealed to weatherboard using bead of compatible sealant

Note: *To be read in conjunction with complete JSC installation instructions* • *Details may be subject to change without notification*

Window Jamb Detail

JV-F45-31

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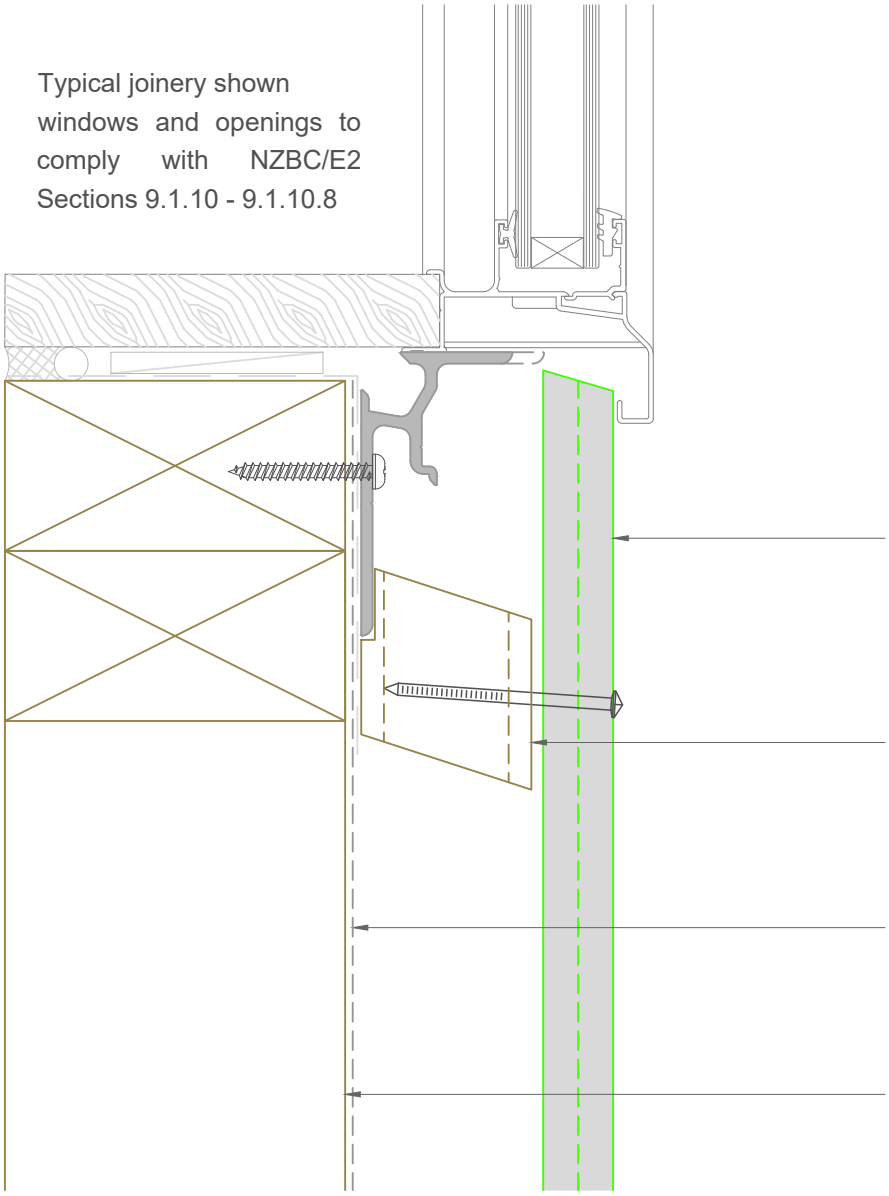
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Typical joinery shown windows and openings to comply with NZBC/E2 Sections 9.1.10 - 9.1.10.8



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Window Sill Detail

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Product Certificate

JSC VertiClad Cladding System

Certificate no: CMNZ30084
Version: N
Original issue date: 04 November 2019
Version date: 04 July 2024
Renewal Date: 20 July 2025

1. Certificate Holder Details

JSC PREMIUM ARCHITECTURAL & BUILDING SOLUTIONS

J.Scott and Company Limited
Trading as JSC
22 Sawmill Rd, Riverhead, Auckland 0892
TechHelp@jsc.co.nz
Tel: +64 9 412 2800
http://www.jsc.co.nz/

2. Product Certification Body

Global-Mark Pty Ltd
Trading as Global-Mark
57 Willis Street, Wellington, 6011
customer.service@global-mark.co.nz
+64 9 889 0622
www.global-mark.co.nz

Complaints: The complaints process for this certificate can be found here:
www.global-mark.co.nz/complaints

Global-Mark Managing Director.

Herve Michoux

3. Description of Building Method or Product

The JSC VertiClad Cladding System (the System) comprises: vertically fixed weatherboards installed over H3.2 treated timber castellated cavity battens to form either a 20mm cavity or a 45 mm cavity, fascia boards and moulding profiles.

JSC VertiClad Cladding System weatherboards are manufactured from the following materials; Western Red Cedar (Thuja Plicata), Alaskan Yellow Cedar (Cupressus nootkatensis), Radiata Pine – H3.2 (MicroPro® treated), Nordic Pine – H3.2 (MicroPro® Treated), Iroko (Milicia excelsa), TMT Amba, TMT Taiga RW, TMT Taiga WW, TMT Taxon or TMT Tuscan.

4. Intended use of Building Method or Product

The JSC VertiClad Cladding System is an external wall cladding installed over a 20 mm or 45 mm ventilated cavity.

5. New Zealand Building Code Provisions

The System if designed, used, installed and maintained in accordance with this Certificate, the system will meet or contribute to meeting the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2, B1.3.4 for the relevant physical conditions of B1.3.3 (a), (h), (j) and (q).

Clause B2 DURABILITY: Performance B2.3.1(b) and B2.3.2(b).

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2, E2.3.5, E2.3.6, E2.3.7.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

6. Conditions and Limitations of Use

1. The system is certified for timber-framed buildings:
    a. with walls designed in accordance with NZS3604:2011 Timber-framed buildings, as modified by Acceptable Solution B1/AS1 Amendment 20 and within the scope of Acceptable Solution E2/AS1, Third Edition including amendment 10 (5/11/2020) Paragraph 1.1, or of at least equivalent stiffness to the framing provisions of NZS3604:2011, and situated in Wind Zones (as defined in NZS 3604:2011) up to and including Extra High; or
    b. subject to specific engineering design in accordance with Verification MethodB1/VM1 Amendment 20 up to a maximum design differential ultimate limit state (ULS) wind pressure of 2.5 kPa, and

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CodeMark

Product Certificate

JSC VertiClad Cladding System

BC250172
Received by
Kapiti Coast District Council
07/04/2025

global-mark

Certificate no: CMNZ30084
Version: N
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Renewal Date: 20 July 2025

c. up to 10 m in height, and
d. with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5/11/2020) Table 2, and
e. situated:
    i. in all exposure zones (excluding microclimates) as defined in NZS3604:2011, Paragraph 4.2.4, and
    ii. more than 1m from a relevant boundary

2. The System shall be designed, used, installed and maintained in accordance the following sets of documents collectively referenced as the Applicable Technical Specification:
    a. JSC VertiClad - Vertical Shiplap Weatherboard Cladding - Installation and Specification Guide v3.5, Dated February 2024
    b. JSC VertiClad - Vertical Shiplap Weatherboards - Flexible Underlay 20mm Cavity Fix - Site Drawings v2.4, Dated 12/02/2024
    c. JSC VertiClad - Vertical Shiplap Weatherboards - Flexible Underlay 20mm Cavity Fix - Architectural Drawings v2.4, Dated 12/02/2024
    d. JSC VertiClad - Vertical Shiplap Weatherboard Cladding - 20mm Cavity on Rigid Underlay - Technical Drawings v1.2, Dated 12/02/2024
    e. JSC VertiClad - Vertical Shiplap Weatherboard Cladding - 45mm Cavity on Flexible Underlay - Technical Drawings v1.2, Dated 12/02/2024
    f. JSC VertiClad - Vertical Shiplap Weatherboard Cladding - 45mm Cavity on Rigid Underlay - Technical Drawings v1.2, Dated 12/02/2024
    g. JSC VertiClad System Installation Checklist - v1.3, Dated February 2024
    h. JSC Exterior Timber Weatherboard - Maintenance Guide v3.1, Dated August 2023
3. The System shall:
    a. be fixed over a ventilated cavity in conjunction with a flexible building underlay or rigid air barrier in accordance with the Applicable Technical Specification, and
    b. be installed vertically on vertical, flat surfaces, and
    c. use the components and board profiles as described in the Applicable Technical Specification (where these components are substituted with alternative products, these applications fall outside the scope of this certification), and
    d. incorporate joinery that meets the requirements of NZS 4211:2008 including Amendment 1 for the relevant Wind Zone or wind pressure.
4. Stainless steel fixings shall be used with TMT Amba, TMT Taiga RW, TMT Taiga WW, TMT Taxon and TMT Tuscan weatherboards.
5. The designer shall provide a signed Declaration for submission with the building consent application that the use of this product in the proposed building work falls within the intended used of the system as described in this certificate and that all design conditions of this certificate have been met.

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6. The installer shall supply a signed Declaration that the product has been installed in accordance with the installation conditions of this certificate, for consideration for issuing a Code Compliance Certificate (CCC).

7. Health and Safety Information

Standard industry safety practices and manufacturer safety requirements as detailed in the technical literature including the applicable SDS must be observed at all times.

8. Basis for Certification

The certification decision is based on independent technical review(s) of test report(s), engineering opinion(s) and other documented evidence(s), factory audit(s) and site review(s)

Code Clause	Compliance pathway	Evidence
Clause B1 STRUCTURE	Alternate solution based on NZS3604:2011 an comparison with E2/AS1	005, 006, 007, 008, 009, 010, 011 and 012
Clause B2 DURABILITY	Alternate solution based on expert judgement	001, 002, 005, 006, 007, 008, 009, 010, 011 and 012
Clause E2 EXTERNAL MOISTURE	Alternative solution based on verification method E2/VM1 test	003, 005, 006, 007, 008, 009, 010, 011 and 012
Clause F2 HAZARDOUS BUILDING MATERIALS	Alternate solution based on expert judgement	004, 005, 006, 007, 008, 009, 010, 011 and 012

9. Supporting Documentation for Certification

Rev	Author	Description	Date and/or Revision
001 *	JSC	JSC TMT Materials Compliance Evaluation	Rev1.7 dated 19/04/2024
002	SCION	DURABILITY AND POTENTIAL END-USES OF SOME TIMBER SPECIES IMPORTED INTO NEW ZEALAND	October 2017

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003 *	Façade Lab	Performance tests on JSC timber "Verticlad" vertical shiplap weatherboard cladding systems in accordance New Zealand Building Code E2/VM1	Test Report 13/03
004	JSC	JSC Cladding Systems SDS Index	V1.1, 03 March 2021
005	JSC	JSC VertiClad - Vertical Shiplap Weatherboard Cladding - Installation and Specification Guide	v3.5, Dated February 2024
006	JSC	JSC VertiClad - Vertical Shiplap Weatherboards Flexible Underlay 20mm Cavity Fix – Site Drawings	v2.4, Dated 12/02/2024
007	JSC	JSC VertiClad - Vertical Shiplap WeatherboardsFlexible Underlay 20mm Cavity Fix – Architectural Drawings	v2.4, Dated 12/02/2024
008	JSC	JSC VertiClad - Vertical Shiplap Weatherboard Cladding - 20mm Cavity on Rigid Underlay – Technical Drawings	v1.2, Dated 12/02/2024
009	JSC	JSC VertiClad - Vertical Shiplap Weatherboard Cladding - 45mm Cavity on Flexible Underlay – Technical Drawings	v1.2, Dated 12/02/2024
010	JSC	JSC VertiClad - Vertical Shiplap Weatherboard Cladding - 45mm Cavity on Rigid Underlay – Technical Drawings	v1.2, Dated 12/02/2024
011	JSC	VertiClad System Installation Checklist	v1.3, Dated February 2024
012	JSC	JSC Exterior Timber Weatherboard - Maintenance Guide	v3.1, Dated August 2023

* These documents were provided commercial in confidence and are not publicly available

10. Supporting Information About Description (Optional)

1. JSC VertiClad Cladding System weatherboards are profiled to NZS 3617:1979 and BRANZ BU 411 (April 2011) or JSC's specifications.
2. Weatherboards are supplied either raw or machine coated on all surfaces to JSC's specification with:
    a. one coat of exterior grade premium stain, or
    b. base coats of exterior grade premium primer & undercoat.
3. Refer to JSC VertiClad - Vertical Shiplap Weatherboard Cladding - Installation and Specification Guide v3.5, Dated February 2024 for additional information about the system description and options

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11. Supporting Information About Intended Use (Optional)

Nil

12. Supporting Information About Conditions and Limitations of Use (Optional)

Proprietary stain systems and proprietary paint systems have not been evaluated and are therefore outside the scope of this certification

Signatures
If the signature does not fit on the first page in the column on the left please include the relevant signatures here:
Nil

All CodeMark certificates that are current must be registered with MBIE. MBIE maintains a register of valid product certificates. Please find the register here.

If the certificate is not listed on this register or it appears as (SUSPENDED), it is not a valid CodeMark certificate and does not have to be accepted by a building consent authority as establishing compliance with the New Zealand Building Code.

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CodeMark CERTIFIED

INSTALLATION & SPECIFICATION GUIDE



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07/04/2025

JSC VertiClad

Vertical Shiplap Weatherboard Cladding

Version 3.5 | February 2024

JSC

PREMIUM ARCHITECTURAL
& BUILDING SOLUTIONS

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Cover image: Muriwai Surf Club | JASMAX

INTRODUCTION

JSC Vertical Shiplap Weatherboards offer a variety and versatility that complements any architectural style. They adapt equally well to bold expressive modernism or the well-defined criteria of period styling. Available in a wide range of standard, designer, or custom architectural profiles that offer unlimited architectural potential. Vertical Shiplap is a look that is currently re-defining the NZ coastal, urban and rural landscapes with random patterns that incorporate 8”, 6” and the retro 4” Mini Shiplap profiles.

GENERAL

This guide covers the recommendations for the correct scope of use, storage and handling, fixing, finishing and maintenance guidelines for JSC VertiClad Vertical Shiplap Weatherboard Cladding system.

JSC VertiClad is a cavity-based external wall cladding system comprising of:

- timber weatherboards finished with high quality exterior grade coating options
- H3.2 treated timber cavity battens to form either a 20mm cavity or a 45mm cavity
- fascia boards and moulding profiles

JSC weatherboards are available in a range of timber species and profiled to JSC specifications, consistent with NZS 3617 and BRANZ BU411.

This specification and installation guide covers the installation of JSC Vertical Shiplap weatherboards when fixed vertically over:

- **JSC-U 20 mm thick castellated cavity battens ; or**
- **JSC-H 45 mm thick castellated cavity battens**

For direct fix installation of JSC weatherboards refer to Acceptable Solutions E2/AS1.

BUILDING CODE REGULATIONS

The JSC VertiClad Vertical Shiplap Weatherboard System if designed and installed as per this literature, will meet the following provisions of the New Zealand Building Code (NZBC):

- **Clause B1 Structure:** Performance B1.3.1, B1.3.2, B1.3.4 for the relevant physical conditions of B1.3.3 (a), (h), (j), and (q)
- **Clause B2 Durability:** Performance B2.3.1(b) and B2.3.2(b)
- **Clause E2 External Moisture:** Performance E2.3.2, E2.3.5, E2.3.6 and E2.3.7
- **Clause F2 Hazardous Building Materials:** Performance F2.3.1

SCOPE AND LIMITATIONS OF USE

JSC VertiClad system must be installed by a suitably qualified and experienced trade person. Where Restricted Building Work (RBW) applied the installer shall be a Licensed Building Practitioner (LBP) or supervised by an LBP.

It is the specifier’s responsibility to ensure that the details in this specification are appropriate for the intended application and that additional detailing is obtained for a specific design or any areas that fall outside the scope of our VertiClad CodeMark certificate CMNZ30084.

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DESIGN ELEMENTS

STRUCTURE AND FRAMING

The substrate must be within the framing tolerances of NZS 3604 Section 2 and Table 2.1. Also refer to NZS 3604, Sections 8 and 11 – for specific requirements relating to support for timber weatherboard cladding.

Refer to Table 4 - Framing & Cavity Setout for more information. In all cases nogs/dwangs must be fitted flush between the studs.

WALL UNDERLAY

Wall underlay must comply with E2/AS1 Table 23. Alternatively, a wall underlay with a Product Certificate (CodeMark) or a BRANZ Appraisal are acceptable provided the conditions of use and scope comply.

CAVITY BATTENS

JSC-U 20 mm x 45 mm cavity battens are universal non-structural cavity battens that can be used both vertically and horizontally. Non-Structural Cavity battens must be fitted over the nogs and fixed at maximum 480mm centres.

JSC-H 45 mm x 45 mm & 70 mm x 45 mm cavity battens are structural cavity battens and allow additional options to create deeper window reveals and other design elements.

Refer to Table 4 - Framing & Cavity Setout for more information.

INTER-STORY JUNCTIONS

Inter-storey junctions in cladding are required for walls with a maximum of 7 meters in height or over two stories as per E2/AS1 Paragraph 9.1.9.4.

GROUND CLEARANCE

As per E2/AS1 Paragraph 9.1.3 and Table 18, at the ground level the cladding should

- Extend past the bottom plate on a concrete slab by 50 mm, and
- Finish a minimum of 100mm above paved surface or 175mm above unpaved surface.

CAVITY CLOSER/VERMIN PROOFING

Use cavity closer/vermin proofing in compliance with E2/AS1 Paragraph 9.1.8.3 and Figure 66. Install cavity closer/vermin-proofing at the base of all walls, open horizontal (or raking) junctions and over openings (windows, meters, etc). Length and width of cavity closer/vermin-proofing is to suit the cavity.

FLASHINGS

As per E2/AS1 Section 4.0

- Flashing material should comply with E2/AS1 Table 20 and meet the compatibility of E2/AS1 Table 21 and Table 22.
- Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings. Windows to comply with NZS 4211.
- Flashing materials for the flashings that are not easily replaceable should have an expected life longer than cladding typically 25–50 years.

Note: It is strongly recommended to use min 1.2mm thick aluminium flashing and install colour steel flashing only at an easily replaceable location. Provide adequate support for plastic flashings.

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NAIL FIXINGS

Annular grooved nails must be used to fix JSC VertiClad weatherboards. The nail length must allow a 35mm minimum embedment into the framing or structural cavity batten. JSC weatherboards must be pre-drilled with a slight (2°+) upward slope, 1 mm smaller than the nail shank to reduce the risk of moisture entry.

Oil/Stain Finish – Use annular grooved Rose Head, Pentagon Head or Flat head.

Paint Finish – Use annular grooved Jolt head, Countersunk or Rose Head.

TABLE 1 - NAIL FIXINGS

Specie	Nail Material
Western Red Cedar (Thuja plicata)	316 stainless steel or silicon bronze
Alaskan Yellow Cedar (Callitropsis nootkatensis)	316 stainless steel or silicon bronze
Iroko (Milicia excelsa / Milicia regia)	316 stainless steel or silicon bronze
Radiata Pine / Nordic Pine (Pinus radiata) (Pinus sylvestris)	316 stainless steel or silicon bronze or hot dipped galvanised
JSC TMT Thermally Modified Species	**Nail Material**
TMT Taiga (RW/WW)	Stainless steel only
TMT Taxon	Stainless steel only
TMT Tuscan	Stainless steel only
TMT Amba	Stainless steel only

Note: Refer to E2/AS1 Table 24 for the use of any alternative fixing of equivalent properties.

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SELECTION

JSC weatherboards are offered in a wide selection of species, sizes and profiles which offer infinite design flexibility and scope for innovation.

Factors like site location, wind zones, coatings, and local weather conditions must be considered to ensure that the selected weatherboard performs as intended.

WEATHERBOARDS

Selection of a suitable weatherboard type is an important step that influences the service life of the cladding. Some of the key things to consider while selecting weatherboards:

Species

The choice of timber specie is normally based on aesthetics, durability, workability, movement and stability, cost, coating choice, and availability.

See Table 3 - Weatherboard Species and Specification for the list of JSC range of cladding species. All species are carefully chosen to meet all the design needs.

Weatherboard profile

The choice of weatherboard profile predominately comes down to the aesthetics. All JSC weatherboards are profiled to JSC specifications and are compliant with NZS3617:2019 and BRANZ BU411 (April 2011).

JSC weatherboards are available in range of profiles. Custom weatherboards are also available on request to suit the building aesthetic.

Finishes

JSC weatherboards come in Bandsawn Face or Dressed Face.

A Band Sawn finish accentuates the natural texture of the timber and increases the effective surface area for different stains– resulting in a longer lasting coating.

A Dressed finish provides a smooth face that is preferable for painting. Dressed weatherboards will require sanding before coating with either paint or stain. Follow the sanding requirements of coating manufacturer specification.

CAVITY BATTEN

JSC cavity battens are made of H3.2 CCA treated Radiata Pine.

TABLE 2 - CAVITY BATTENS

Profile	Size	Description
Non-Structurally Fixed Cavity Batten		
JSC-U	20 × 45	18° degree bevelled edges and castellation on both faces
Structurally Fixed Cavity Batten		
JSC-H	45 × 45	18° degree bevelled edges and castellation on both faces
JSC-V	45 × 45	Square edges and castellation on both faces
JSC-H	70 × 45	18° degree bevelled edges and castellation on both faces
JSC-V	70 × 45	Square edges and castellation on both faces

TABLE 3 - WEATHERBOARD SPECIES AND SPECIFICATION

Specie	Width	Thickness	Length Spread	Grades	Surface Finish*
Western Red Cedar	Up to 250mm	18.5-39mm	Random & Select	PC 1, STK,FJ, and Engineered	Bandsawn & Dressed
Alaskan Yellow Cedar	Up to 150mm	22mm	Random	PC 1	Bandsawn
Radiata Pine/ Nordic Pine	Up to 200mm	20mm	Random	Clears 1	Bandsawn & Dressed
Iroko	Up to 150mm	21mm	Random	FAS	Bandsawn
JSC TMT - Thermally Modified Timber Species					
TMT Taiga (RW/ WW)	Up to 200mm	18.5mm	Random	STK	Bandsawn
TMT Taxon	Up to 200mm	18.5mm	Random	Clears	Bandsawn
TMT Tuscan	Up to 200mm	18.5mm	Random	Clears	Bandsawn
TMT Amba	Up to 200mm	18.5mm	Random	Clears	Bandsawn

Note: More species, grades, profiles, sizes, and select length options may be available on request.
* More surface finishes can be made available to meet the aesthetic requirements.

PRE-INSTALLATION

COATING

JSC weatherboards must be coated using an exterior grade premium coating. Coating should be selected and used according to the manufacturer's specification.

Weatherboard coating is done in two phases:

- Base coat(s) applied to all sides before installation; and
- Top Coat(s) applied after installation

Weatherboards can be supplied on site Pre-Finished i.e. a factory applied base coat(s) or raw. When supplied raw the base coat(s) are to be applied on site before installation.

Pre-Finished Weatherboards

JSC strongly recommends that a factory coating system is used, as the coating is applied in a controlled environment ensuring a premium finish on all four sides of the weatherboard. Factory coating will minimise weather-related delays, human error, and chances of contamination from construction dust and debris.

On-Site Coating

When weatherboards are delivered raw on site the base coat(s) are applied on site prior to installation.

At a minimum, coating must be carried out as per the instructions below:

- All 4 sides of the weatherboards must be stained or primed with exterior grade premium coating before installation according to the coating manufacturer's specification.

- During the installation all the cut ends must be coated twice.
- Top coat(s) of selected coated must be applied on all the visible areas of cladding. Refer to the Finishing section of the document for further info.

Note: Follow coating manufacturer specifications at all times.

DELIVERY, STORAGE, AND HANDLING

Correct handling and storage of JSC weatherboards is critical for best performance, ease of use and warranty compliance.

JSC products should be delivered dry, unmarked, and undamaged from freight and handling. All JSC products should be lifted off the truck by hoist or hand. All boards should be inspected upon delivery.

Note: Use of slings or chains must be avoided as they damage the timber.

Stack weatherboards horizontally in a dry area, clear of the ground by 100 mm and supported on dry, clean timber bearers at a maximum of 900 mm centres. Keep weatherboards always dry; either by storing within an enclosed building or use an additional weatherproof cover as a secondary protection to JSC packaging wrap if stored outside, but also ensure that there is sufficient airflow to avoid condensation. Avoid storing over standing water or vegetation.

Delivery should be timed to allow minimum time sitting on site, especially when weatherboards are in unfinished damp buildings or in an uncovered building allowing the chance of unwanted moisture uptake. Extra care must be taken to avoid damage to weatherboard edges and surfaces, especially during installation.

Note: Some coatings may require weatherboards to be separated or slip sheeted when in storage.

HEALTH AND SAFETY

When handling JSC products or using tools, use appropriate PPE; including but not limited to eye, ear and breathing protection for you and others who could be affected. Offcuts and sawdust of treated and/or coated timber are to be disposed of in accordance with local council requirements. Follow other manufacturer's advice on the use, handling and disposal of other products such as coatings and adhesives.

MOISTURE MANAGEMENT

The moisture content of the framing must be less than 20% at the time of weatherboard fixing. Immediately before installation, test the moisture content of the boards. Use a moisture meter to test 5% boards, but not less than 10 boards, in the centre of the length

If the boards show signs of dimensional swelling allow time for drying. Do not start fixing until 90% of the values obtained are within the range in NZS 3602 Table 4 at the time of installation. Ensure that at the time of cladding installation the battens moisture content is no greater than 20%

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INSTALLATION

JSC VertiClad System must be installed by a suitably qualified and experienced trades person. Where Restricted Building Work (RBW) applies the installer shall be a Licensed Building Practitioner (LBP) or supervised by an LBP.

PRIMARY STRUCTURE AND WALL UNDERLAY

Ensure that the substrate is straight and true. Wall underlay must be installed over thep framing directly under the cavity battens. The building wrap can be restrained from bulging into the drained cavity by applying polypropylene tape at 300 mm centres. Nogs/Dwangs shall be according to Table 4 - Framing & Cavity Setout. Trimmed openings are to be prepared as per E2/AS1 Paragraph 9.1.5.

Table 4 - Framing and Cavity Setout

Cavity Batten	Max Stud Spacing	Nogs Spacing	Battens Span
JSC- U 45×20	600mm	480mm	480mm
JSC- H 45×45	600mm	800mm (behind alternative batten)	400mm
JSC- H 70×45	600mm	n/a	480mm
JSC- V 45×45	600mm	800mm	600mm

CAVITY CONSTRUCTION

Non-Structural Cavity Battens

JSC-U 45 mm x 20 mm battens are fixed temporarily with 50 mm stainless steel clouts over the wall underlay and then firmly fixed by cladding fixings with a 35 mm minimum penetration into the wall framing studs as per E2/AS1 9.1.8.5.

Install JSC-U H3.2 treated castellated batten with 18°degree slope, sloping away from the wall underlay towards the back of the weatherboard ensuring water is shed away from the framing when installed horizontally.

Ensure cavity battens are spaced 10 mm from each other on ends/joints, internal and external corners and when parallel. For Very High (VH) and Extra High (EH) wind zones (as defined NZS 3604: 2011), a solid batten (non-castellated) is required down one significant side of the external corner to provide pressure isolation between elevations.

Structural Cavity Battens

The JSC 45mm castellated batten is outside the scope of E2/AS1, which is limited to a nominal 20 mm thick cavity battens. The 20 mm batten in E2/AS1 is a packer only, whereas the 45 mm x 45 mm or 70 mm x 45 mm battens become a structural wall component.

Horizontal structural cavity battens to fixed on wall framing permanently. Download JSC Structural cavity batten fixing guide for further information on fastenings and various layout options.

All accessory components including vermin proofing, cavity closures, back flashings and head flashings are designed to accommodate the cavity

FLASHINGS

Flashings at corners, doors, windows and wall intersections must be installed to prevent water from entering the cavity.

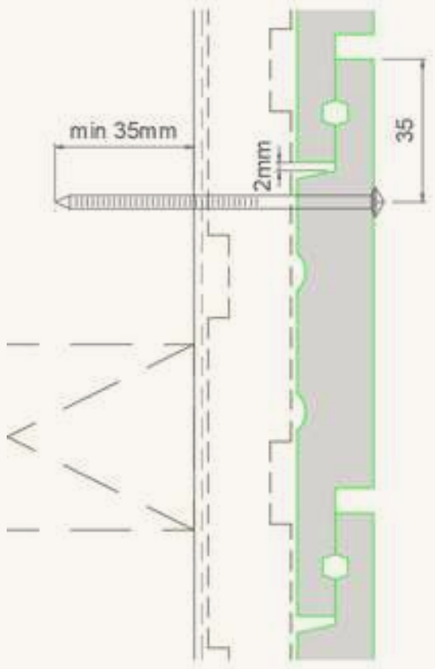


Figure 1 - Typical Vertical Shiplap Weatherboard Installation

Note: Where vertical weatherboards have an exposed bottom edge such as at the Bottom Plate, Windows Head, Inter Storey and Overhead Soffit junctions, the back of the boards should be cut with a 15-degree drip edge. The cut end should be coated upto 75-150 mm up from the back from the bottom edge. In the case of paint, the primer should be brushed thoroughly into the end cut and up the back and then should be top-coated wherever visually exposed - E.g. at the outside edge of the soffit.

These areas should be checked as part of every coating maintenance inspection.

WEATHERBOARD INSTALLATION

Before weatherboards are installed make sure

- Weatherboards are dry and free of any contamination before installation.
- Weatherboards have an envelope of exterior grade coating on all 4 sides, including cut ends.
- Optimisation of the board lengths is done to avoid any unnecessary wastage and joints.
- Any loose or bark encased knots or significant timber defects need to be removed during installation.
- Necessary flashings are installed.
- Back flashing is used behind the cladding at all corners to ensure weatherproofing of corners. Cavity closure is installed continuously around the bottom of the cavity.
- Openings in cavity closer/vermin-proofing are kept clear and unobstructed to maintain draining and venting of the cavity
- For windows and doors, head flashing stop ends are in place.

Using a laser or mechanical devices set-out all nailing accurately in straight lines. Align weather grooves to ensure there is a 2mm expansion gap between lapped boards. During installation, cut ends must be double sealed.

JSC weatherboards must be pre-drilled with a slight (2°+) upward slope, 1 mm smaller than the nail shank to reduce the risk of moisture entry.

As per E2/AS1 Table 24 single fix each weatherboard at 35 mm from the overlapping edge of the weatherboard to achieve a minimum of 35 mm fixing penetration into the framing.

NOTE: Scribers must be bedded in sealant to weatherboards for weatherproofing.

Optional Clinch Nails

40 mm x 2.0 mm grade 316 stainless steel may be used to retain hidden lap tongues of weatherboard profiles. Clinch nails are not a requirement of JSC or E2/AS1 and are an aide to installation only.

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FINISHING

Oiled/Stained Finish

- All cut ends and/or uncoated surfaces shall be double coated during installation to protect against moisture.
- Apply the top coat of selected stain as per the coating manufacturer's instructions.
- Finish the nail heads flush onto and not into the board surface.
- Do not 'overdrive' the nail head and crush the timber surface beneath and around the nail.

Paint Finish

- Remove all sharp edges to provide a radius to aid in the uniform paint finish.
- Prime all cut ends and bare timber surfaces twice with a premium alkyd primer.
- Nails are to be punched and the holes to be primed without delay.
- Fill holes with a suitable filler. Filled holes to be primed again and sanded once dry.
- Ensure the surface is clean and free from any contaminants before applying the top coats.
- Apply two top-coats allowing time for drying between coats.

Note: Sharp edges should be sanded to help paint film strength and primer at the ends should be thoroughly brushed into fully seal against moisture which may allow tannin through the primer and affect the topcoats. Follow the coating manufacturer specifications at all times.

QUALITY CHECK

On completion, visually inspect all sides of the building ensuring the cladding system is completely weathertight. The building owner should be advised of all maintenance requirements.

MAINTENANCE

Building owners are responsible for the maintenance of their JSC weatherboards. Annual inspections by a suitable person must be made to ensure that all aspects of the cladding remain in a weatherproof condition. Repair to damaged areas and maintenance where signs of deterioration are evident, must be addrepssed immediately. For further information refer to the latest JSC Cladding Maintenance Guide.

See BRANZ Good Practice Guide Timber Cladding 3rd edition for more information.

APPENDIX 1

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VERTICLAD SYSTEM COMPONENTS



Corner Flashing

- Minimum 30mm coverage past any butted joint
  - For low to high wind zones,use hemmed min 50×50; or unhemmed 75×75.
  - For extra high and very high wind zones, use hemmed 75×75; or unhemmed 100×100
- Materials to comply with E2/AS 1 of E2/AS1 Table 21 and Table 22.
- For PVC or other flexible materials ensure flashing maintains contact with the back of cladding if required use extra cavity batten



Head Flashing

- Must be a minimum upstand of 35mm, 75mm in EH wind zone
- In accordance with E2/AS1 Paragraph 9.1.10.4 or window manufacturer's instructions
- Usually supplied by joinery companies
- Refer to JSC Window Technical details

Flat Back Flashing

- Recommended 100mm wide with minimum 30mm coverage from any butt joint
- Materials to comply with E2/AS1 Table 20
- For PVC or other flexible materials ensure flashing maintains contact with the back of cladding if required use extra cavity batten



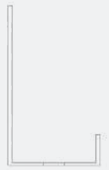
Z Flashing

- Must have a minimum upstand of 75mm, in EH wind zones use hemmed flashings
- In accordance with E2/AS1 Paragraph 4.6.1.7
- Refer to JSC Horizontal Joint technical detail



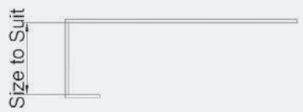
Cap Flashing

- Must be in accordance with E2/AS1 Paragraph 6.4
- Refer to JSC Parapet technical detail



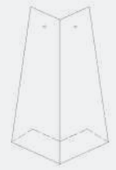
Cavity Closer

- Size to suit cavity
- Materials to comply with E2/AS1 Paragraph 9.1.8.3; or
- Covered by CodeMark or a BRANZ Appraisal
- Minimum vent 1000mm² / linear meter



J Mould

- 65mm X thickness of the weatherboard
- Materials to comply with E2/AS1 Table 20 or covered by CodeMark or a BRANZ Appraisal



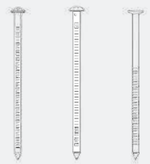
Corner Soakers (External Corners)

- Materials
  - Stainless steel Copper
  - Aluminium + Powder Coated
  - Galvanized + Painted on all sides
- Materials to be in accordance with E2/AS1 Paragraph 4.3.2 to 4.3.8



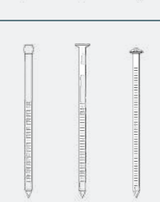
Flat Soakers (Scarf or Splay Joint)

- Materials - Stainless steel; Silicone Bronze; Aluminium; Galvanized
- Materials to be in accordance with E2/AS1 Paragraph 4.3.2 to 4.3.8



Weatherboard Fixings - Stain Finish

- Materials to comply with E2/AS1 Table 21 and Table 22
- Nail length and position per E2/AS1 Table 24
- Stainless steel or Silicone bronze Annular grooved Rose Head, Pentagon Head and Flat Head



Weatherboard Fixings - Paint Finish

- Materials to comply with E2/AS1 Table 21 and Table 22
- Nail length and position per E2/AS1 Table 24
- Stainless steel or Silicone bronze Annular grooved Jolt Head, Countersunk and Rose Head



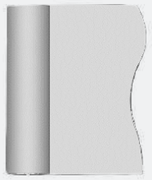
Clouts

- Materials to comply with E2/AS1 Table 21 and Table 22
- Nail length and position per E2/AS1 Table 24
- Stainless steel or Silicone bronze Annular grooved Jolt Head, Countersunk and Rose Head



Other Fixings

- Any other fixing shall comply with NZS 3604 or other relevant documents



Wall Underlay

- To comply with E2/AS1 Table 23 or
- Wall underlays covered by CodeMark or a BRANZ Appraisal used within the scope



Sealant

- To comply with E2/AS1 Section 9.1.6
- To be compatible with coating and other elements



Rigid Air Barrier

- To comply with E2/AS1 Table 23 or
- Covered by CodeMark or a BRANZ Appraisal used within the scope
- Installed and handled per manufacturers specification



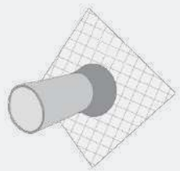
Flashing Tape

- To comply with E2/AS1 Paragraph 4.3.11 or
- Product with a CodeMark or a BRANZ Appraisal used within the scope
- To be compatible with wall underlay



Meter Box

- Recommended to be in a sheltered location
- Refer to JSC Meter Box Technical details



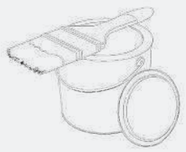
Pipe Penetration Boot

- To comply with E2/AS1 Paragraph 9.1.9.3; or
- Covered by CodeMark or a BRANZ Appraisal used within the scope
- To be installed per manufacturers specifications



Window Joinery

- To be in installed accordance with E2/AS1 Paragraph 9.1.10 and NZS 4211



Coating

- Should be suitable to use as external cladding coating
- All weatherboards are recommended to be delivered to site with one coat of selected coating on all four sides
- Coat the cut ends with two coats wet on wet
- Subsequent coats are done after the installation
- Follow the manufacturers specifications at all times

APPENDIX 2

EXTERNAL REFERENCE

This document must be read in conjunction with:

- MBIE [January 2017] Acceptable Solutions and Verification Methods for New Zealand Building Code (NZ Building Code) Clause E2 External Moisture (refer to www.building.govt.nz).
- Department of Building and Housing (DBH) June 2006. Constructing Cavities for Wall Claddings (refer to www.building.govt.nz).
- BRANZ Bulletin BU468 [December 2005] Fixing Timber Weatherboards (refer to www.branz.co.nz).
- BRANZ [May 2015] Good Practice Guide: Timber Cladding (refer to www.branz.co.nz).
- BRANZ Bulletin BU582 [April 2015] Structurally Fixed Cavity Battens (refer to www.branz.co.nz)
- BRANZ Build 173 – Coatings for Timber Weatherboards (refer to www.branz.co.nz)

Disclaimer: Designer or specifier needs to specify themselves for using any third-party accessories with our cladding system. We are not liable for the installation of any component or accessory not supplied by JSC. For use of any particular component please refer back to our specifically detailed instructions in APPENDIX 1 of this document or our Technical Installation details. If unsure, please seek expert advice.

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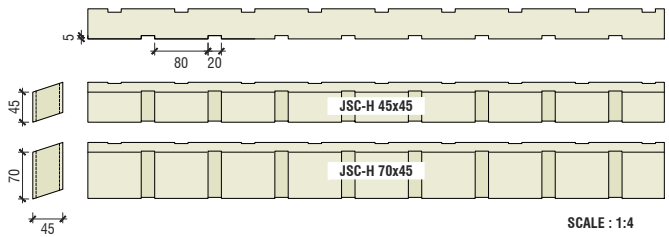
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HORIZONTAL STRUCTURAL CAVITY BATTENS FIXING



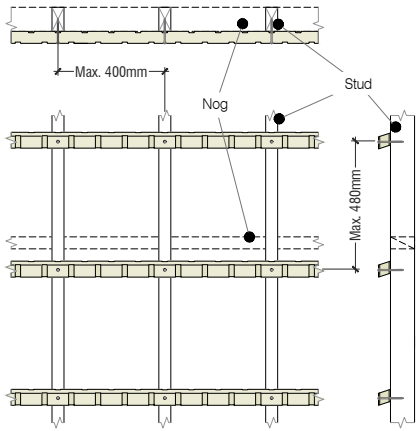
SCALE : 1:4

	Max. Stud Spacing	Nog Spacing	Cavity Batten Spacing	Wind Zones	Fixing Tension Required	Suitable *Fixing	Fixing Span
H1	400mm	Not required to be supported by a nog	480mm	up to Very High	0.5 kN/m	1,2,3	400mm over the studs
				Extra High	0.6 kN/m	1,2,3	
H2	600mm	800mm Alternating nogs behind every 2nd cavity batten	400mm	up to Very High	0.7 kN/m	1,2,3	300mm when nogs behind and 600mm when no nog behind
				Extra High	0.9 kN/m	2,3	
H3	600mm	Not required to be supported by a nog	480mm	up to Very High	0.7 kN/m	1,2,3	600mm over the studs
				Extra High	0.9 kN/m	2,3	

*Refer to Fixings

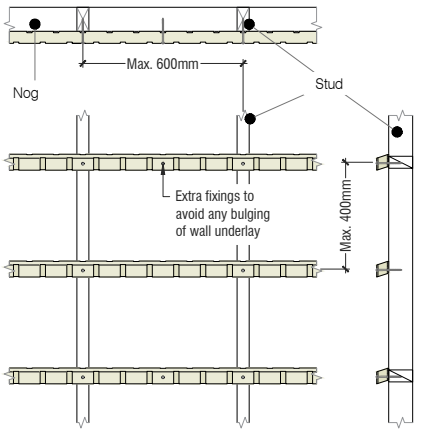
H1. JSC-H 45x45mm Cavity Batten

Studs @ 400mm | CB @ 480mm max.
In this scenario Cavity Battens are not required to be supported by a nog



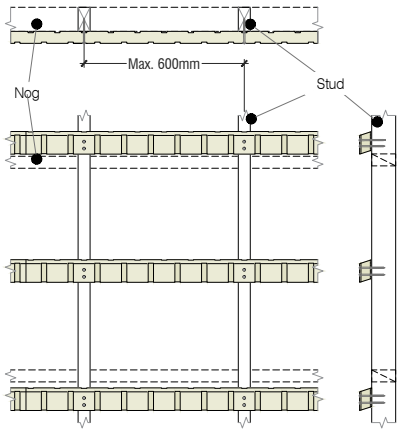
H2. JSC-H 45x45mm Cavity Batten

Studs @ 600mm | CB @ 400mm max.
Alternating nogs behind every second cavity batten



H3. JSC-H 70x45mm Cavity Batten

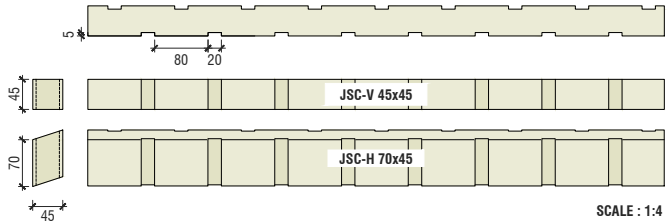
Studs @ 600mm | CB @ 480mm max.
In this scenario Cavity Battens are not required to be supported by a nog



SCALE : 1:10

VERTICAL STRUCTURAL CAVITY BATTENS FIXING

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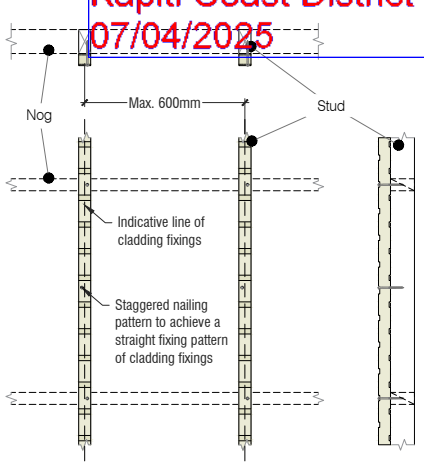
SCALE : 1:4

	Stud Spacing	Max. Nog Spacing	Max. Cavity Batten Spacing	Wind Zones	Fixing Tension Required	Fixing Span for *fixings	
						1	2 & 3
V1	600mm	No specific requirement for nogs	600mm	up to Very High	1.8kN/m	400mm	600mm
				Extra High	2.2 kN/m	300mm	500mm
V2	400mm	400mm	600mm Every second batten over studs	up to Very High	1.8kN/m	400mm	600mm
				Extra High	2.2 kN/m	N/A	400mm
V3	As per NZS 3604	600mm	600mm	up to Very High	0.7 kN/m	600mm	600mm
				Extra High	0.9 kN/m	N/A	600mm**

*Refer to Fixings
**Only for fixing type 3

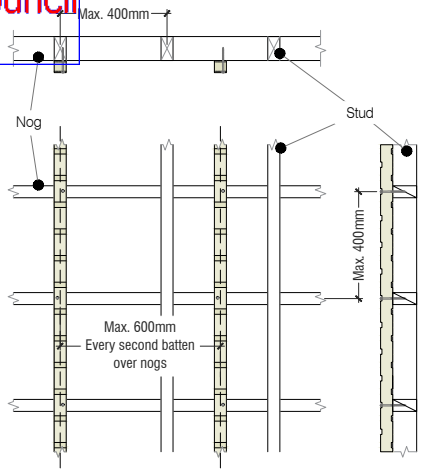
V1. JSC-V 45x45mm Cavity Batten

Studs @ 600mm | CB @ 600mm
No specific requirement for nogs



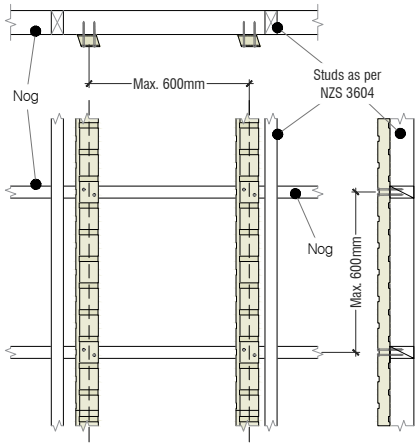
V2. JSC-V 45x45mm Cavity Batten

Studs @ 400mm | CB @ 600mm | Nogs @ 400mm
Every second CB fixed over studs



V3. JSC-H 70x45mm Cavity Batten

Nogs @ 600mm | CB @ 600mm
Studs as per NZS 3604



SCALE : 1:10

FIXINGS:

1. Single 90 x 3.15 Stainless Steel Annular grooved gun nail
2. Single 75 x 10g or 90 x 10g Wood screw
3. Double 90 x 3.15 Stainless Steel Annular grooved gun nail

DETAIL NOTES:

1. Cavity battens are profiled to JSC Specifications and are treated to H3.2 CCA as per NZS 3604
2. Wall Underlay and other building components are not shown to provide more clarity
3. Framing must be as per NZS 3604 or fit for purpose and other building elements may need to be accommodated
4. JSC structural cavity battens have not been evaluated for installation with other cladding types. The structural cavity battens are designed as an addition to the structural frame and their only function is to support the weatherboards.
5. Custom setup options may be available. Contact us to discuss your design requirements
6. Visit www.jsc.co.nz for weatherboard installation literature

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CodeMark CERTIFIED

TYPE
CAVITY BATTEN FIXING GUIDE

NAME
JSC STRUCTURAL CAVITY BATTEN FIXING TO TIMBER FRAMING

- TO BE READ IN CONJUNCTION WITH COMPLETE JSC CLADDING SYSTEM LITERATURE
- DETAILS MAY BE SUBJECT CHANGE WITHOUT NOTICE

DRAWING SCALE	ISSUE DATE
1:4 & 1:10	01/11/2023
DRAWING NUMBER	VERSION
JSC 45CB FIXING GUIDE	2.4

4231HS James Hardie® Stria™ Cladding

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SUPPORTING DOCUMENTS

Stria Cladding Horizontal Installation BRANZ Appraisal 1224

Ref 54838. Uploaded 30 Jul 2024

Purpose: Performance

Stria Cladding Horizontal Technical Specification on timber cavity batten - June 2024

Ref 94506. Uploaded 30 Jul 2024

Purpose: Installation

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BRANZ Appraised
Appraisal No. 1224 [2022]

STRIA™ CLADDING HORIZONTAL



Appraisal No. 1224 (2022)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Stria™ Cladding Horizontal is a cavity-based fibre cement wall cladding. It is designed to be used as an external wall cladding for residential and light commercial type buildings where domestic construction techniques are used.

Scope

2.1 Stria™ Cladding Horizontal installed over Hardie™ CLD™ Structural Cavity Battens has been appraised as an external wall cladding for buildings between 0 and 10 m high within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.2 Stria™ Cladding Horizontal installed over timber cavity battens has been appraised for weathertightness and structural wind loading when used as an external horizontally fixed wall cladding for buildings between 0 and 25 m high within the following scope:

- buildings with a building height not exceeding 25 m; and,
- constructed with timber framing complying with the NZBC; and,
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 3.2 kPa where studs are at maximum 400 mm centres; and,
- with inter-storey deflections designed for and up to height/180 of horizontal in-plane movement during seismic serviceable limit state (SLS) events (based on a 3 m inter-storey height); and,
- constructed with timber framing subject to specific engineering design; and,
- when fixed over James Hardie RAB™ Board rigid air barrier.

2.3 Stria™ Cladding Horizontal must only be installed horizontally on vertical, flat surfaces.

2.4 Stria™ Cladding Horizontal is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *(Note: The Appraisal of Stria™ Cladding Horizontal relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or design wind pressure.)*

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Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Stria™ Cladding Horizontal, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:**

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Stria™ Cladding Horizontal meets the requirements for loads arising from self-weight, wind, impact and creep [i.e. B1.3.3 (a), (h), (j) and (q)]. See Paragraphs 9.1-9.3.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years, B2.3.1 (c) 5 years and B2.3.2. Stria™ Cladding Horizontal meets these requirements. See Paragraphs 10.1-10.4.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Stria™ Cladding Horizontal meets this requirement. See Paragraphs 14.1-14.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Stria™ Cladding Horizontal meets this requirement.

Technical Specification

Stria™ Cladding panels

4.1 Stria™ Cladding panels are 14 mm thick and are available in 325 or 405 mm widths and 4,200 mm long. The panels are factory sealed on the front face and all edges with a manila white colour primer.

4.2 Stria™ Cladding panels are manufactured from a reduced density cellulose fibre cement formulation. The panels are formed, cut to length and then cured by high-pressure autoclaving. Stria™ Cladding panels are manufactured to meet the requirements of AS/NZS 2908.2 and is identified by the name 'Stria™ Cladding' printed on the back of the panels.

Accessories

4.3 Accessories used with Stria™ Cladding Horizontal, which are supplied by James Hardie New Zealand Limited are:

- **Hardie™ CLD™ Structural Cavity Battens** - 19 mm thick fibre cement cavity battens to be installed over a flexible or rigid wall underlay. They are 19 mm thick by 70 mm wide and 2,450 mm long.
- **Hardie™ 14 mm internal corner flashing** – a 90° anodised aluminium extrusion available in 3,000 mm lengths.
- **Hardie™ 14 mm external box corner** - an anodised aluminium extrusion used to create external corners, available in 2,700 mm and 4,000 mm lengths.
- **Hardie™ 14 mm aluminium window jamb flashing** - an aluminium moulding used beside window openings to end butt the Stria™ Cladding Horizontal, available in 3,000 mm lengths.
- **Hardie™ 28 mm aluminium cavity closer** - an aluminium moulding used as vermin proofing, available in 3,000 mm lengths.
- **Hardie™ 9 mm panel aluminium external box corner** - a box corner mould to form the external joints, etch-primed and available in 2,450, 2,750, 3,000 and 4,000 mm lengths.
- **uPVC vent strip** – a uPVC moulding used as vermin proofing, available in 3,000 mm lengths.
- **Hardie™ 14 mm trimline joint flashing** - an etch-primed aluminium extrusion used behind the cladding at vertical joints, available in 3,000 mm lengths.
- **Trimline horizontal jointer** - an aluminium jointer used to cover the butt joint of Hardie™ 14 mm trimline joint flashing, available in 100 mm lengths.
- **Hardie™ 14 mm vertical joint flashing** - an etch-primed aluminium extrusion used behind the cladding at vertical joints, available in 3,000 mm lengths.
- **Trimline external and internal corner jointers** - aluminium extrusions which join trimline joint flashings at external and internal corners.

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- **Fixings for Stria™ Cladding panels to timber cavity battens** - Hardie™ Flex 75 x 3.15 mm stainless steel or hot-dip galvanised nails.
- **HomeRAB™ Pre-Cladding** - 4.5 mm thick fibre cement rigid wall underlay, 1,200 mm wide and available in 2,450 or 2,750 mm lengths.
- **RAB™ Board** - 6 or 9 mm thick fibre cement rigid wall underlay, 1,200 mm wide and available in 2,450, 2,750 or 3,000 mm lengths.

4.4 Accessories used with Stria™ Cladding Horizontal, which are supplied by the building contractor are:

- **Timber cavity battens** - nominal 50 mm wide by 25 mm thick (minimum finished size of 45 mm wide by 18 mm thick) timber treated to Hazard Class H3.1.
- **Fixings for timber cavity battens to timber frame** - 40 x 2.8 mm flat head hot-dip galvanised nails.
- **Fixings for Stria™ Cladding panels to timber cavity battens over flexible underlay** - 65 x 2.87 mm 'D' head or RounDrive stainless steel or hot-dip galvanised nails.
- **Fixings for Stria™ Cladding panels to timber cavity battens over rigid underlay** – 75 x 3.06 mm 'D' head or 75 x 3.15 mm RounDrive stainless steel or hot-dip galvanised nails.
- **Fixings for Hardie™ CLD™ Structural Cavity Battens to timber frame** - 65 x 2.87 mm RounDrive ring shank stainless steel or hot-dip galvanised nails.
- **Fixings for Stria™ Cladding panels to Hardie™ CLD™ Structural Cavity Battens** - 30 x 1.6 mm stainless steel C Series brad nails.

[Note: Stainless steel fixings must be Grade 316 and hot-dip galvanising must comply with AS/NZS 4680].

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- **Flexible wall underlay** – building paper complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
- **Flexible wall underlay support** – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible wall underlay in place and preventing bulging of the bulk insulation into the drainage cavity. *(Note: Mesh and wire galvanising must comply with AS/NZS 4534.)*
- **Rigid wall underlay** – plywood or fibre cement panel complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal or CodeMark for use as a rigid air barrier system.
- **Flexible sill, head and jamb flashing tape** - flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- **Joinery head flashings** - extruded or folded from aluminium or galvanised steel to suit the window or door trim opening. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for durability requirements.
- **Window and door trim cavity air seal** - air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- **Adhesive** - Sikaflex 11FC or Bostik Seal "N" Flex polyurethane adhesive for applying between the panels and battens.
- **Flexible sealant** - sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.

Paint System Specification

4.5 Paint systems are not supplied by James Hardie New Zealand Limited and have not been assessed, therefore they are outside the scope of this Appraisal.

4.6 All exposed faces, including top edges at sills and all bottom edges of Stria™ Cladding panels and accessories must be finished with a latex exterior paint system complying with any of Parts 7, 8, 9, or 10 of AS 3730 within 90 days of installation.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Handling and Storage

5.1 Handling and storage of all materials supplied by James Hardie New Zealand Limited or the building contractor, whether on-site or off-site, is under the control of the building contractor. Stria™ Cladding panels must be stacked flat, off the ground and supported on a level platform. They must be kept dry at all times either by storing under cover or providing waterproof covers to the stack. Care must be taken to avoid damage to edges, ends and surfaces. Panels must always be carried on edge.

5.2 Accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Stria™ Cladding - Timber Cavity Batten Technical Specification, August 2022.
- Stria™ Cladding - CLD™ Structural Cavity Batten Technical Specification, August 2022.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

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Design Information

Framing

Timber Treatment

7.1 Timber wall framing behind Stria™ Cladding Horizontal must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

7.2 Timber framing must comply with NZS 3604 for buildings or parts of a building within the scope limitations of NZS 3604. Buildings or parts of a building outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. Studs must be at maximum 600 mm centres. Nogs/dwangs must be fitted flush between the studs at maximum 800 mm centres (for studs at 600 mm centres) or maximum 1,200 mm centres (for studs at 400 mm centres).

7.3 The moisture content of the timber framing must not exceed 24% at the time of the cladding installation. *(Note: If Stria™ Cladding Horizontal is fixed to framing with a moisture content of greater than 24%, problems may occur at a later date due to excessive timber shrinkage.)*

General

8.1 When Stria™ Cladding Horizontal is used for specifically designed buildings up to 3.2 kPa ULS wind pressure, only the weathertightness and structural aspects of the cladding are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.

8.2 At ground level, the bottom edge of Stria™ Cladding Horizontal must be kept clear of paved surfaces, such as footpaths, by a minimum of 100 mm and unpaved surfaces by 175 mm in accordance with NZBC Acceptable Solution E2/AS1, Table 18. The ground clearances to finished floor levels as set out in NZS 3604 must be adhered to.

8.3 At balcony, deck or low pitch roof/wall junctions, the bottom edge of Stria™ Cladding Horizontal must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 50 mm.

8.4 Punchings in the cavity vent strip provide a minimum ventilation opening area of 1,000 mm^2 per lineal metre of wall.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

8.5 All external walls of buildings must have barriers to airflow in the form of flexible wall underlays and interior linings with all joints stopped for Wind Zones up to, and including, Very High, and rigid wall underlays for buildings in the Extra High Wind Zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure.

8.6 All external walls of buildings must have barriers to airflow in the form of 9 mm thick RAB™ Board when used on buildings between 10-25 m high or situated in specific design wind pressures over a maximum differential ULS of 1.5 kPa.

8.7 Unlined gables and walls must incorporate either RAB™ Board, a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid wall underlays are used, the panel fixing lengths must be increased by a minimum of the thickness of the underlay.

8.8 Where cladding penetrations are wider than the cavity batten spacing, allowance must be made for airflow between adjacent cavities by leaving a minimum gap of 10 mm between the bottom of the vertical cavity batten and the flashing to the opening.

8.9 Where Stria™ Cladding Horizontal abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Inter-storey Junctions

8.10 Inter-storey drained joints must be constructed in accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 m in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4 b). For buildings more than 10 m high, a drained horizontal joint must be provided at each floor to accommodate the inter-storey deflections.

Structure

Mass

9.1 The mass of Stria™ Cladding Horizontal is 16 kg/m^2 at equilibrium moisture content (EMC). Stria™ Cladding Horizontal is therefore considered a light wall cladding in terms of NZS 3604.

Impact Resistance

9.2 Stria™ Cladding Horizontal will resist impacts likely to be encountered in normal residential use. The likelihood of impact damage to the cladding when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers provided for vulnerable areas.

Wind Zones

9.3 Stria™ Cladding Horizontal, when installed over Hardie™ CLD™ Structural Cavity Battens, is suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High where buildings are designed to meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, or up to 2.5 kPa ULS wind pressure where buildings are specifically designed.

9.4 Stria™ Cladding Horizontal, when installed over timber cavity battens, is suitable for use in buildings up to 25 m high situated in specific design wind pressures up to maximum design differential ULS of 3.2 kPa, where studs are at maximum 400 mm centres.

Inter-storey Deflections

9.5 Stria™ Cladding Horizontal, installed in conjunction with RAB™ Board, is suitable to resist inter-storey deflections. When installed in accordance with the Technical Literature, Stria™ Cladding Horizontal, in conjunction with RAB™ Board, is capable of withstanding SLS deflections up to height/180.

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Durability

10.1 Stria™ Cladding Horizontal meets the performance requirements of NZBC Clause B2.3.1 (b) 15 years for the Stria™ Cladding panels, flashings and cavity system, and the performance requirements of NZBC Clause B2.3.1 (c) 5 years for the exterior paint system.

Serviceable Life

10.2 Stria™ Cladding Horizontal installations are expected to have a serviceable life of at least 50 years provided the paint coating system is maintained in accordance with this Appraisal to ensure the Stria™ Cladding panels and fixings remain dry in service. Stria™ Cladding Horizontal must be painted within 90 days of fixing.

10.3 Coastal locations can be very corrosive to fasteners, especially locations within distances of up to 500 m from the sea including harbours, or 100 m from tidal estuaries and sheltered inlets, and otherwise as shown in NZS 3604, Figure 4.2. These coastal locations are defined in NZS 3604 as Zone D. To achieve a 50 year serviceable life in Zone D, Stria™ Cladding Horizontal must be fixed with stainless steel fasteners. Fasteners outside Zone D may be hot-dip galvanised steel.

10.4 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmospheres into aggressive environments for fasteners. The fixing of Stria™ Cladding Horizontal in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

11.1 Regular maintenance is essential for Stria™ Cladding Horizontal installations to continue to meet the NZBC durability performance provision and to maximise its serviceable life, refer to the Technical Literature.

11.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the paint coating system, flashings and any sealed joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant and paint coatings must be repaired in accordance with the sealant or paint coating manufacturer's instructions.

11.3 Regular cleaning (at least annually) of the paint coating surface is recommended to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Paint systems must be recoated at approximately 7-15 yearly intervals in accordance with the paint manufacturer's instructions.

11.4 Minimum ground clearances as set out in this Appraisal must be maintained at all times during the life of the cladding. *[Note: Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of Stria™ Cladding Horizontal.]*

Prevention of Fire Occurring

12.1 Stria™ Cladding panels are considered a non-combustible material and need not be separated from heat sources such as fireplaces, heating appliances and chimneys. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

Fire Affecting Areas Beyond the Fire Source

Vertical Fire Spread - Buildings 10 m in height or less

13.1 When the system is used in buildings 10 m or less in height, NZBC Functional Requirement C3.2 identifies that external vertical fire spread to upper floors only needs be considered for buildings with a building height greater than 10 m.

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Vertical Fire Spread - Buildings greater than 10 m in height

13.2 Stria™ Cladding Horizontal can form part of an external wall cladding system designed to meet Vertical Fire Spread requirements. This has not been assessed by this Appraisal and is outside its scope. Specific Fire Engineering Design is required for each building over 10 m in height to ensure the Stria™ Cladding Horizontal and the External Wall Cladding System will meet the requirements of NZBC Acceptable Solution C/AS2, Section 5.8 or NZBC Verification Method C/VM2, Section 4.6. The following information is provided to support the Specific Engineering Design.

13.3 Stria™ Cladding Horizontal, as part of the James Hardie External Cladding System, has been tested to NFPA 285 and has passed the test criteria.

13.4 The components listed in Table 1 form a part of the James Hardie External Cladding System and have been tested and achieved the listed classifications.

Table 1: Components of the Stria™ Cladding Horizontal system

Component	Test Method	Result
Stria™ Cladding panels	AS/NZS 3837:1998	Pass Type A
Joinery and joint flashings and mouldings	Aluminium as defined in C/AS2 definitions	Non-combustible
James Hardie Rigid Air Barrier (RAB™ Board)	AS/NZS 3837:1998	Pass Type A
Flexible sill, head and jamb flashing tape	-	-
Timber cavity battens	Component of NFPA 285 test	Pass
Fixings	Steel as defined in C/AS2 definitions	Non-combustible
Air seals and sealants	-	-

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Horizontal Fire Spread

13.5 Stria™ Cladding panels have a peak heat release rate of less than 100 kw/m^2 and a total heat released of less than 25 MJ/m^2. Testing was carried out as per Paragraph 5.4 of NZBC Acceptable Solution C/AS1 and Paragraph 5.8.1 of NZBC Acceptable Solution C/AS2, achieving a Type A performance.

External Moisture

14.1 Stria™ Cladding Horizontal, when installed in accordance with this Appraisal and the Technical Literature, will prevent the penetration of moisture that could cause undue dampness or damage to building elements.

14.2 The cavity must be sealed off from the roof and subfloor space to meet code compliance with NZBC Clause E2.3.5.

14.3 Stria™ Cladding Horizontal allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with NZBC Clause E2.3.6.

14.4 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.

14.5 The use of Stria™ Cladding Horizontal where there is a designed cavity drainage path for moisture that penetrates the cladding does not reduce the requirement for junctions, penetrations, etc. to remain weather-resistant.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Internal Moisture

15.1 Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

15.2 Stria™ Cladding Horizontal is not a barrier to the passage of water vapour, and when installed in accordance with the Technical Literature and this Appraisal, will not create or increase the risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirement

16.1 All design and building work must be carried out in accordance with the Stria™ Cladding Horizontal Technical Literature and this Appraisal by competent and experienced tradespersons conversant with Stria™ Cladding Horizontal. Where the work involves Restricted Building Work (RBW), this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

System Installation

Wall Underlay and Flexible Sill and Jamb Tape Installation

17.1 The selected wall underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Stria™ Cladding Horizontal system. Flexible wall underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Rigid wall underlays must be installed in accordance with the instructions of the manufacturer and the Technical Literature. Particular attention must be paid to the installation of the wall underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

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17.2 Where studs are at greater than 400 mm centres and a flexible wall underlay is being used, a building underlay support must be installed in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

RAB™ Board

17.3 RAB™ Board must be installed in accordance with the Technical Literature and BRANZ Appraisal No. 611 James Hardie Rigid Air Barriers.

Timber Cavity Battens

17.4 Cavity battens must be installed vertically over the wall underlay to the wall studs at maximum 600 mm centres where the studs are at 600 mm centres or at 400 mm centres when studs are at 400 mm centres. The battens must be temporarily fixed in place with 40 x 2.8 mm or longer nails at maximum 800 mm centres. Where a rigid wall underlay is used, the length of the fixing must be increased by a minimum of the thickness of the underlay.

Stria™ Cladding Horizontal Installation

17.5 Stria™ Cladding panels may be cut on-site by power saw. Holes and cut-outs may be formed by drilling a number of holes around the perimeter of the opening required and tapping out the centre with a hammer, or by using a hole saw.

17.6 Stria™ Cladding panels must be kept dry prior to installation. Before the panels are installed, cut ends exposed to the exterior such as at aluminium box corners or internal corners must be sealed with an acrylic sealer to reduce the absorbency of the fibre cement.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

17.7 Before the panels are installed, the corner detail must be prepared to suit the selected option, e.g. external box corner. The necessary flashings, including window flashings, must be installed before commencing the fixing of the Stria™ Cladding panels.

17.8 Stria™ Cladding panels must be installed starting at the bottom of the wall. The bottom course of panels must overhang the bottom plate by a minimum of 50 mm.

17.9 The first course of panels must be full length, i.e. 4,200 mm and commence from an external corner. Jointing of Stria™ Cladding panels is made over cavity battens using the vertical trimline joint flashing or vertical joint flashing. A bead of sealant must be applied to the end of the panel before butting it to the jointer.

17.10 Stria™ Cladding panel laps are pre-determined by the machined joint detail. Window and door joinery should be designed so as near to a full panel as possible will finish over the joinery.

17.11 Fixings for Stria™ Cladding Horizontal must be in accordance with Paragraph 10.3 and the Technical Literature. Nails must be punched a maximum of 2 mm below the surface of the panel and be no closer than 12 mm to the end of the panel.

Aluminium Joinery Installation

17.12 Aluminium joinery and associated head and sill flashings must be installed by the building contractor in accordance with the Technical Literature. An 8 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

17.13 After installing the window and door joinery, the panel recess at the window jamb must be filled with flexible sealant. Planted sills and scribers may also be installed in accordance with the Technical Literature to provide additional weatherproofing for the joinery/panel junction.

Finishing

17.14 All punched fixings must be filled. The paint coating manufacturer's instructions must be followed at all times for application of the paint finish. Stria™ Cladding Horizontal must be clean and dry before commencing painting.

Inspections

17.15 The Technical Literature must be referred to during the inspection of Stria™ Cladding Horizontal installations.

Health and Safety

18.1 Cutting of Stria™ Cladding panels must be carried out in well ventilated areas, and a dust mask and eye protection must be worn.

18.2 When power tools are used for cutting, grinding or forming holes, health and safety measures as set out in the Technical Literature must be observed to minimise the amount of dust generated.

18.3 Safe use and handling procedures for Stria™ Cladding panels and the components that make up the cladding system are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

19.1 Uniform wind face load tests to simulate wind pressures on Stria™ Cladding Horizontal were carried out by a James Hardie Australia Pty Ltd NATA accredited laboratory. The testing determined design wind suction pressures, and by comparing these pressures with the NZS 3604 and AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber-framed walls. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

19.2 Stria™ Cladding Horizontal has been tested by a James Hardie Australia Pty Ltd NATA accredited laboratory in accordance with AS/NZS 2908.2 and ISO 8336. The testing covered: soak-dry, bending strength, warm water soaking, heat/rain, freeze/thaw and apparent density. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

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19.3 Cone calorimeter testing to determine the peak rate of heat release and total heat release of Stria™ Cladding Horizontal was completed by BRANZ. The testing was carried out in accordance with AS/NZS 3837.

19.4 BRANZ expert opinion on NZBC C3 code compliance for Stria™ Cladding Horizontal was based on NFPA 285 testing by Intertek Group plc on specimens assembled containing the James Hardie External Cladding System.

19.5 BRANZ expert opinion on NZBC E2 code compliance for Stria™ Cladding Horizontal was based on E2/VM2 [BRANZ EM7] testing and evaluation of all details within the scope and as stated within this Appraisal.

Other Investigations

20.1 Weathertightness, structural, fire and durability opinions have been provided by BRANZ technical experts.

20.2 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

20.3 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of Stria™ Cladding Horizontal has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of CodeMark Certificate GM-CM30109-RevA covering quality aspects with the cladding.

21.2 The quality of materials, components and accessories supplied by James Hardie New Zealand Limited is the responsibility of James Hardie New Zealand Limited. The quality control system of James Hardie New Zealand Limited has been assessed and registered as meeting the requirements of ISO 9001.

21.3 Quality on-site is the responsibility of the builder or contractor.

21.4 Designers are responsible for the building design and building contractors are responsible for the quality of installation of the Stria™ Cladding Horizontal in accordance with the instructions of James Hardie New Zealand Limited.

21.5 Building owners are responsible for the maintenance of Stria™ Cladding Horizontal in accordance with the instructions of James Hardie New Zealand Limited.

Sources of Information

- AS 3730 Guide to the properties of paints for buildings.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 2908.2:2000 Cellulose-cement products - Flat sheet.
- AS/NZS 3837:1998 Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.
- AS/NZS 4534:1998 Zinc and zinc/aluminium-alloy coatings on steel wire.
- AS/NZS 4680:2006 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles.
- BRANZ Appraisal No. 611 James Hardie Rigid Air Barriers.
- BRANZ EM7 Performance of mid-rise cladding systems.
- ISO 5660.1:2002 Heat release rate (cone calorimeter method).
- ISO 8336:2009 Fibre-cement flat sheets - Product specification and test methods.
- NZS 3603:1993 Timber Structures Standard.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4211:2008 Specification for performance of windows.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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BRANZ

In the opinion of BRANZ, Stria™ Cladding Horizontal is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to James Hardie New Zealand Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. James Hardie New Zealand Limited:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by James Hardie New Zealand Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to James Hardie New Zealand Limited or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
31 August 2022

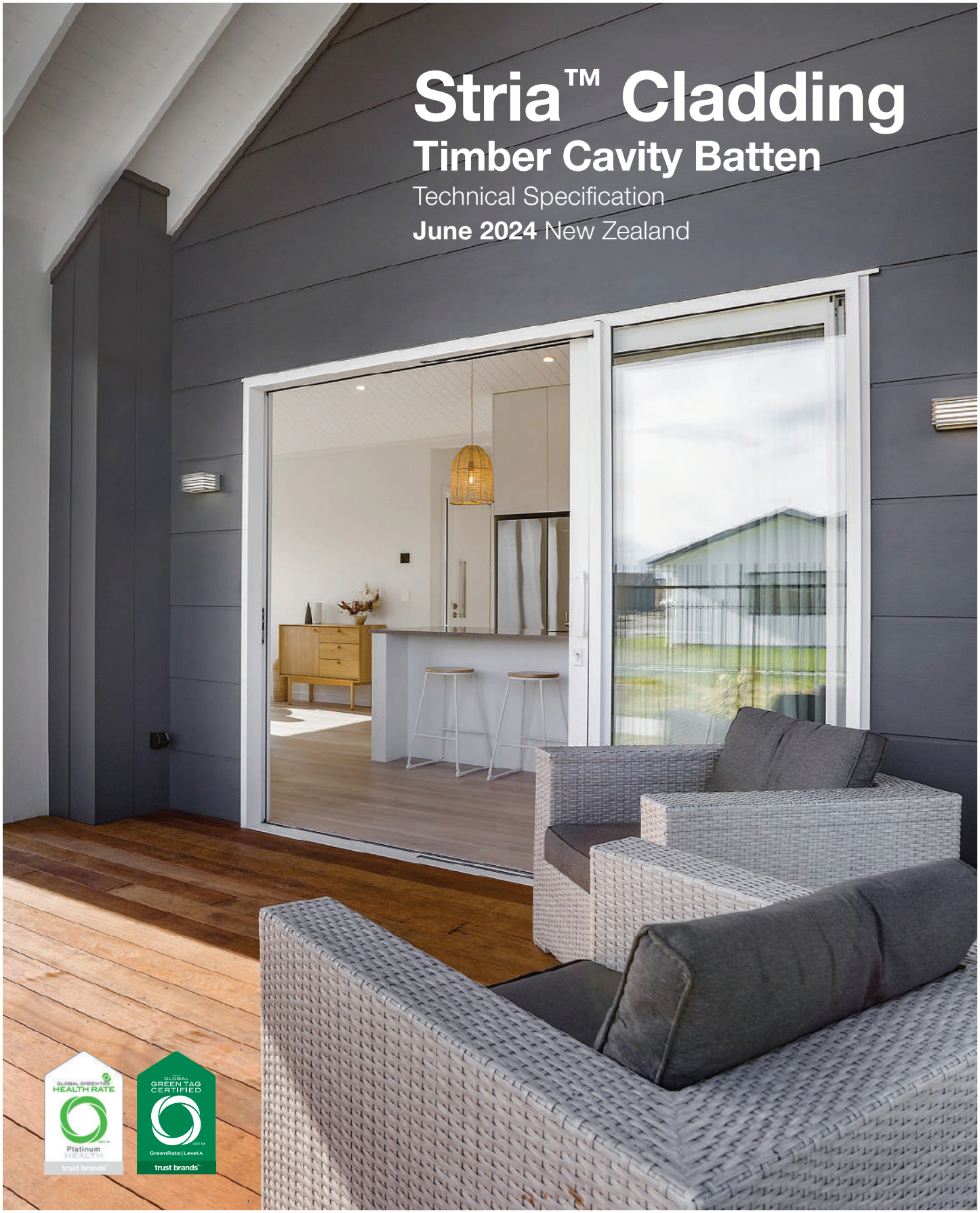
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JamesHardie™

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Stria™ Cladding

Timber Cavity Batten

Technical Specification

June 2024 New Zealand



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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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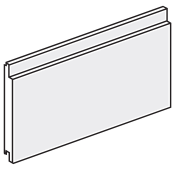
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1 Product Overview

1.1 Product Information

Stria™ Cladding installed as per this specification gives a panelised appearance on building facades. Stria™ Cladding can be fixed to timber framed external walls. A wide range of colours can be used, varying from light to dark.

Table 1

Stria™ Cladding information					
Product	**Description**	**Size (mm)**			**Code**
		Thickness	**Length**	**Width**	
	**Stria™ Cladding** A 14mm profiled panel for expressed jointed residential facades. Factory sealed on all six sides. Each panel has a manila white colour primer applied on its face, which accepts a wide range of paint finishes.	14	4200	405 325	**404263** **404063**
		14	3000	405 325	**405505** **405504**

The product is easily identified by the name 'Stria™ Cladding' printed on the back of the panels.

Note: All dimensions and masses provided are approximate only and subject to manufacturing tolerances. Stria™ Cladding has a mass of 16kg/m^2 at EMC. Stria™ Cladding is defined as a Light Weight Wall Cladding (not exceeding 30kg/m^2) as per NZS 3604.

1.2 Manufacturing and Classification

Stria™ Cladding is an advanced lightweight cement composite cladding manufactured using James Hardie formulation. Basic composition is Portland cement, ground sand, cellulose fibre and water, proprietary additives.

Stria™ Cladding is manufactured in Australia to the Australian/New Zealand Standard AS/NZS 2908.2 ‘Cellulose-Cement Products’ (ISO 8336 ‘Fibre-Cement Flat Sheet’).

Stria™ Cladding 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** or Ask James Hardie on **0800 808 868.**

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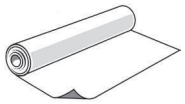
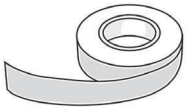
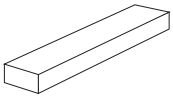
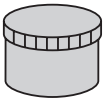
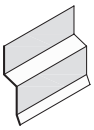
1.3 Components and Accessories

Table 2

Accessories/tools supplied by James Hardie			
Accessories	**Description**	**Size/Quantity**	**Code**
	**Vertical Joint Flashing** Aluminium extrusion used behind cladding at vertical joints.	3000mm long	**305507**
	**Hardie™ 14mm Trimline Joint Flashing** Aluminium extrusion used behind cladding at vertical and horizontal joints.	3000mm long	**305827**
	**Trimline Horizontal Jointer** A jointer to cover the horizontal butt joint of Hardie™ 14mm Trimline Joint Flashing	100mm long	**305871**
	**Trimline Hardie™ 14mm External Corner Jointer** Joins Hardie™ 14mm Trimline Joint Flashing at an external corner		**305870**
	**Trimline Internal Corner Jointer** Joins Hardie™ 14mm Trimline Joint Flashing at an internal corner		**305872**
	**Hardie™ 14mm Internal Corner Flashing** Anodised aluminium extrusion used to create internal corners.	3000mm long	**304871**
	**Hardie™ 14mm External Box Corner** Anodised aluminium extrusion used to create external corners.	3000mm long 4000mm long	**306261** **305823**
	**Aluminium Window Jamb Flashing** Aluminium moulding used beside window opening to end butt the Stria™ Cladding.	3000mm long	**305430**
	**Hardie™ 28mm Aluminium Cavity Closure** Aluminium moulding used as vermin proofing.	3000mm long	**305431**
	**Hardie™ 9mm 2450mm long Aluminium External Box Corner** A box corner mould to form the external joints. 9mm etch primed.	2450mm long 2750mm long 3000mm long 4000mm long	**304509** **304510** **305150** **305808**
	**uPVC Vent Strip** PVC moulding used as vermin proofing.	3000mm long	**302490**
Tools			
	**Hardie™ Blade Saw Blade** Diamond tip fibre cement circular saw blade. Spacers not included.	184mm 254mm	**300660** **303375**

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Table 3

Accessories/Tools not supplied by James Hardie	
James Hardie recommends the following products for use in conjunction with Stria™ Cladding, HomeRAB™ Pre-Cladding and RAB™ Board. James Hardie does not supply these products and does not provide a warranty for their use. Please contact component manufacturer for information on their warranties and further information on their products.	
Product	**Description**
	**Flexible underlay** Must comply with Table 23 of E2/AS1.
	**Flexible Window Opening Flashing Tape** A flexible self-adhesive tape used in preparation of a window. Refer to the window installation section in this manual for more information. e.g. Protecto® or Super-stick building tape® by Marshall Innovation or 3M™ All Weather Flashing Tape 8067 by 3M™ Marshall Innovation: 0800 776 9727 3M™ 0800 474 787
	**Flexible Sealant** Required to seal the vertical joints. Bostik® Seal N Flex-1™, Sikaflex® AT Facade, Sikaflex® MS or similar.
	**65 x 2.87mm 'D' head nail or 60 x 2.87 RounDrive nail** (hot dipped galvanised/stainless steel) For fixing Stria™ Cladding.
	**40 x 2.8mm or longer Hardie™ Flex nail.** For fixing timber cavity battens and aluminium flashings.
	**75 x 3.06mm 'D' head nail or 75 x 3.15 RounDrive nail** (hot dipped galvanised or ring shank stainless steel) For fixing Stria™ Cladding.
	**Timber cavity batten** H3.1 minimum treated Timber cavity batten the cladding is fixed over.
	**Exterior grade filler** CRC® ADOS® Builders Fill or similar two part filler to fill over nail holes
	**Head flashing** Required over window heads to be supplied by window installer. Material must comply with Table 20 and 21 of E2/AS1.
	**Penetration Seal** Thermakraft™: 0800 806 595 Marshall Innovations: 0800 776 9727

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2 Application and Scope

2.1 Application

Stria™ Cladding can be fixed to either timber or lightweight steel-framed external walls.

For fixing to a steel frame. Ask James Hardie™ on 0800 808 868 for specific requirements, or refer to the Steel Frame Technical Supplement by James Hardie about the installation of Stria™ Cladding to steel frame.

Specifiers

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.

Installers

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. All the details provided in this document must be read in conjunction with the project specification.

Make sure your information is up to date

When specifying or installing 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.

2.2 Scope

This specification covers the installation of Stria™ Cladding within the following scope:

- The Stria™ Cladding must be installed horizontally
- An external wall structure that complies with the NZBC for an existing building or new building where the designer and/or installer has established that the external wall frame is suitable for the cladding installation
- In all wind zones up to a design wind pressure of 3.2kPa (ULS) up to 25m of the building height. In wind zones greater than Very High (VH), a rigid air barrier must be used

Note: Refer to Stria™ Cladding CLD™ Structural Cavity Batten technical specification when fixing to CLD Structural Cavity Battens.

2.3 Details

Various typical Stria™ Cladding construction details are provided within this document. These details are available in dwg, dxf, jpg and pdf file format and can be downloaded from our website at **www.jameshardie.co.nz**.

Note: All dimensions shown are in millimetres unless noted otherwise.

2.4 Specific Design

For use of the Stria™ Cladding on specific design projects, the designer, architect or engineer must ensure that all clauses of NZBC have been considered and a specific design has been undertaken for the areas which fall outside the scope of this literature.

3 Compliance

Stria™ Cladding installed in accordance with this specification has been tested to demonstrate compliance with clauses E2, B1, B2 and F2 of the NZBC.

When installed in accordance with the conditions of CodeMark number GM-CM30109 Stria™ Cladding complies with all relevant requirements of the NZBC. Please refer to www.building.govt.nz for a copy of the certificate.

CodeMark
CMNZ30109

Stria™ Cladding Timber Cavity Batten Installation has a BRANZ Appraisal number 1224 (2022) to demonstrate compliance with the requirements of the NZBC. Please refer to our website **www.jameshardie.co.nz** for a copy of the BRANZ appraisal.

BRANZ Appraised
Appraisal No.1224 [2022]

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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. For applications outside the scope of this literature and details, which are not provided herein, the architect, designer or engineer must undertake specific design and it should be ensured that the intent of their design meets the requirements of the NZBC.

All New Zealand Standards referenced in this manual are current editions and must be complied with.

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

4.2 Clearances

The clearance between the bottom edge of the cladding and paved/unpaved ground of cladding must comply with section 9.1.3 of E2/AS1. The finished floor must also comply with these requirements. These clearances must be maintained throughout the life of the building.

Stria™ Cladding must overhang the bottom plate by a minimum of 50mm as required by E2/AS1.

Stria™ Cladding must maintain a minimum clearance of 100mm from paved ground, and 175mm from unpaved ground. On roofs and decks, the minimum clearance must be 50mm.

Do not install external cladding such that it may remain in contact with water or ground. Refer to Figures 3 and 4.

4.3 Moisture Management

It is the responsibility of the specifier to identify moisture related risks associated with any particular building design.

Wall construction design must effectively manage moisture, considering both interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration. The buildings should also be ventilated sufficiently to control moisture accumulation due to condensation, especially in artificially cooled/heated buildings.

Walls shall include those provisions as required by External Moisture Clause E2/AS1 of NZBC. In addition, all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashings for waterproofing. Other materials, components and installation methods used to manage moisture in external walls, must comply with the requirements of relevant standards and the NZBC. For further guidance on designing for weathertightness, refer to BRANZ Ltd. and the Ministry of Business Innovation and Employment (MBIE) updates on the following websites respectively, **www.branz.co.nz** and **www.building.govt.nz.**

In addition, the following issues must also be considered:

- Sealant must be applied where detailed in this literature
- For buildings within the scope of E2/AS1, a drained horizontal joint must be provided after two floors as a minimum. For buildings more than 10m high, a drained horizontal joint must be provided at each floor to accommodate the interstory deflection
- The installation of smoke chimneys, pipe penetrations and other fixtures etc. must not track moisture into the wall or restrict the drainage of moisture to the exterior

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4.4 Structure

4.4.1 Timber Framing

Timber framed buildings must either be in accordance with NZS 3604 (Timber-framed buildings) or designed as per specific engineering design. (SED)

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 etc.

4.4.2 Dimensions

A 90 x 45mm minimum framing size is required.

4.4.3 Structural Grade

Timber grade used must be in accordance with timber grades specified in NZS 3604.

4.4.4 Durability

As per the requirements of the NZS 3602 (Timber and Wood-Based Products for use in Buildings) the timber framing used for external frames must be treated to H1.2 as a minimum. Higher treatments may be used may be used but check the compatibility of other materials to be used with the treatment.

Refer to Clause B2/AS1 for further information regarding the durability of building materials. Framing must be handled and installed in accordance with project technical specifications. Framing must meet the allowable moisture contents as per the NZS 3602.

4.5 Wind Pressures

Stria™ Cladding is suitable for use in all wind zones in New Zealand up to and including EH as defined in NZS 3604.

Stria™ Cladding is also suitable in specific design projects up to wind pressures of 3.2kPa ULS.

4.6 Structural Bracing

Stria™ Cladding installed as per this specification cannot be used to achieve any structural bracing. However, bracing can be achieved by using HomeRAB™ Pre-Cladding/RAB™ Board installed direct to framing instead of a flexible underlay or by using Villaboard™ Lining bracing system on the internal face of the wall. Refer to the Bracing Design Manual by James Hardie for further information.

4.7 Energy Efficiency

External walls constructed as per this technical specification, using Stria™ Cladding must use suitable bulk insulation to meet the minimum thermal insulation requirements as per Clause H1/AS1 'Energy Efficiency' of the NZBC.

4.8 Fire Rated Walls

Stria™ Cladding when fixed over timber cavity battens to external walls can achieve fire ratings up to 60/60/60 to comply with Clause C/AS1 of the NZBC when the walls are constructed in accordance with the current Fire and Acoustic Design Manual by James Hardie. Nogs in fire rated walls must be at 800mm centres maximum.

Nogs in fire rated walls must be at 800mm centres maximum.

Stria™ Cladding is classified as a 'non-combustible' material suitable for use on walls close to a boundary.

4.9 Control of External Fire Spread

Stria™ Cladding material is classified as 'Type-A' as per Table C1.3 when tested to the requirements of Appendix C7.1.1 (b) of C/AS2 of the NZBC and is suitable for use where 'Non-Combustible Material' or ' Limited Combustibility Material' is required for 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, a horizontal flashed joint must be provided to block the top of lower cavity at intervals of no greater than 3.5m vertical height
- On buildings greater than 10m in height a RAB™ Board must be used

4.10 Durability

Stria™ Cladding installed and maintained as per this technical specification will meet the durability requirement for cladding as per the NZBC clause B2 Durability.

Stria™ Cladding is resistant to permanent moisture induced deterioration (rotting) and meets the requirements of the following tests in accordance with the AS/NZS 2908.2:

- Heat Rain (Clause 6.5)
- Water Permeability (Clause 8.2.2)
- Warm Water (Clause 8.2.4)
- Soak Dry (Clause 8.2.5)

4.11 Alpine Regions

In regions subject to freeze/thaw conditions, Stria™ Cladding, must not be in direct contact with snow or ice build up for extended periods, e.g. external walls in alpine regions must be protected where snowdrifts over winter are expected.

These products have been tested in accordance with AS/NZS 2908.2 Clause 8.2.3.

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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's instructions and best practices to reduce or limit the release of dust.

If using a dust mask or respirator, use an AS/NZS 1716 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)

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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..

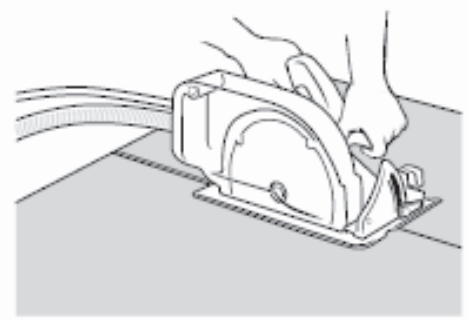
When cutting Stria™ Cladding:

- ✓ 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.

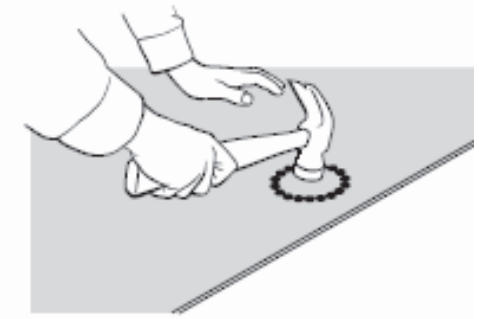
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Working Instructions



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 Stria™ Cladding

- ✗ 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 planked products to avoid damaging the edges/corners

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6 Installation

Stria™ Cladding is installed horizontally using the cavity construction method as per the details and information published in this document. Stria™ Cladding panels are 325 or 405mm wide and are installed with a 25mm nominal lap over the next panel. Considering the installation and machining variations, the effective cover for Stria™ Cladding can vary between 300 to 302mm or 380 to 382mm respectively.

Stria™ Cladding must be kept under cover whilst in storage or at sites and they must be dry at the time of their installation. All site cut panel edges must be sealed with Dulux® 1 Step, Resene® Quick Dry, Taubmans® Underproof Acrylic Primer Undercoat or similar sealer compatible with the finish coat before installation.

Stria™ Cladding must be fully supported and fixed through timber cavity battens. Ensure that cladding is hard against the battens to avoid drumminess before fixing.

To achieve best aesthetic results it is recommended to position vertical jointer by the corner of openings or coinciding with the centre line of openings. Refer to Figure 2.

This technical specification only covers the horizontal installation of Stria™ Cladding. For vertical installation refer to the Stria™ Cladding vertical installation technical specification.

6.1 Fastener

6.1.1 Fastener – Size and Layout

Stria™ Cladding must be fixed to framing using the fixings as specified in Tables 4 and 5 and follow the edge distance required for nails as shown in the details. Refer to Figure 6.

When using rigid air barrier like HomeRAB™ Pre-Cladding or RAB™ Board, the cladding fixing nails must be increased in length equal to the thickness of the rigid air barrier.

Table 4

Stria™ Cladding 405mm

Cavity Construction	Wind Zone	Fixing	Fastener Type
Over flexible underlay	Up to and including VH wind zone	Fix a nail at 100mm from top edge and 100mm from bottom edge/per board/per stud. **Refer to Figure 6.**	65 x 2.87mm D head or 65 x 2.87mm RounDrive ring shank nails
Over HomeRAB™ Pre-Cladding/RAB™ Board	Up to and including VH wind zone	Fix a nail at 100mm from top edge and 100mm from bottom edge/per board/per stud. **Refer to Figure 6**.	75 x 3.06mm D head or 75 x 3.15mm RounDrive ring shank nails
Over RAB™ Board	Above VH wind zone up to 3.2kPa (ULS) wind pressures with stud spacing at 400mm centres		

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Table 5

Stria™ Cladding 325mm

Cavity Construction	Wind Zone	Fixing	Fastener Type
Over flexible underlay	Up to and including VH wind zone	Fix a nail at 80mm from top edge and 80mm from bottom edge/per board/ per stud. **Refer to Figure 6.**	65 x 2.87mm D head or 65 x 2.87mm RounDrive ring shank nails
Over HomeRAB™ Pre-Cladding/RAB™ Board	Up to and including VH wind zone	Fix a nail at 80mm from top edge and 80mm from bottom edge/per board/ per stud. **Refer to Figure 6.**	75 x 3.06mm D head or 75 x 3.15mm RounDrive ring shank nails
Over RAB™ Board	Above VH wind zone up to 3.2kPa (uls) wind pressures with stud spacing at 400mm centres		

- When fixing the panels using nail guns, refer to the nail gun manufacturer for information about nails and the type of nail gun to be used
- Stud width of 70mm min required when using a vertical joint flashing. Refer Figure 8
- D head nails - finish nails 2mm below panel surface
- RounDrive nails - finish nails flush with panel surface

For other fixing options Ask James Hardie™ on **0800 808 868.**

6.1.2 Fastener Durability

Fasteners must meet the minimum durability requirements of the NZBC. NZS 3604 specifies the requirements for fixing material to be used in relation to exposure conditions and are summarised in Table 6. Fasteners must be fully compatible with the other materials that they are to be in contact with, to ensure the durability of the complete assembly.

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.

Table 6

Exposure conditions and nail selection prescribed by NZS 3604		
Zone	**Application**	
D (Sea Spray) * Geothermal hot spots	General	Stainless Steel 304/316
	Fire	
	Bracing	
*C and B	General	Hot Dip Galvanised**
	Fire	
	Bracing	

* Zone C areas where local knowledge dictates that increased durability is required, appropriate selection shall be made Microclimate conditions as detailed in NZS 3604, Paragraph 4.2.4 require SED.

**Hot dip galvanised must comply with AS/NZS 4680.

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6.2 Framing

Stria™ Cladding can be fixed either to a timber-frame or steel-frame.

For fixing to a steel frame Ask James Hardie™ on **0800 808 868** for specific requirements.

6.2.1 Frame Construction

Use of timber framing must be in accordance with NZS 3604 and the framing manufacturer's specifications. The framing must be rigid and not rely on the cladding for stability. Timber framing sizes and its set-out must comply with NZS 3604 and as specified in this technical specification.

The following framing is required:

- Studs must be provided at 600mm centres maximum up to VH wind zone
- Nogs must be provided as per framing requirements. For fire rated walls, the nogs must be provided at 800mm centres
- For EH and specific design projects exposed to wind pressures up to 3.2kPa, pressures more than 1.5kPa, the stud spacing must be closed to 400mm centres

In case of gable and trusses sitting on top plates of 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.

6.2.2 Special Framing Requirements

The following are special framing requirements for both timber and steel framing:

- Double studs are required at internal corners, refer Figure 12
- Extra packers maybe required at external corners

6.2.3 Tolerances

In order to achieve the required performance and an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances shall comply with Table 2.1 of NZS 3604 and the manufacturer's specifications. All framing shall be made flush.

Also refer to MBIE guidance to tolerances , materials and workmanship etc. at www.building.govt.nz

6.3 Flexible Underlay or HomeRAB™ Pre-Cladding

Flexible underlay/rigid air barrier eg. HomeRAB™ Pre-Cladding must be provided as per the requirements of External Moisture Clause E2 of the NZBC. The flexible underlay selected for use must comply with Table 23 of E2/AS1.

The flexible underlay must be fixed in accordance with section 9.1.7 E2/AS1 and underlay manufacturer's recommendations.

Walls which are not lined on the inside face e.g. garage walls or gable ends must include a rigid sheathing or an air barrier behind the cladding which complies with Table 23 of E2/AS1. HomeRAB™ Pre-Cladding complies with these requirements and is suitable for use in this situation. It must be installed in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual.

6.4 Intermediate Support for Flexible Underlays

Where studs are at 600mm centres an intermediate means of restraining the flexible underlay and insulation from bulging into the cavity shall be installed. An acceptable method to achieve this is using one of the following options:

- intermediate cavity batten between the studs; or
- 75mm galvanised mesh; or
- polypropylene tape at 300mm centres fixed horizontally and drawn taut

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No intermediate supports are required:

- when studs are spaced at 400mm centres; or
- when rigid air barriers instead of flexible underlays are used

6.5 Rigid Air Barrier and RAB™ Board

With EH wind zone or for specific design wind zone, a rigid air barrier e.g. RAB™ Board must be used instead of flexible underlay as per E2/AS1 clause 9.1.7.2.

RAB™ Board must also be used in buildings that are higher than 10m.

To achieve temporary weathertightness using HomeRAB™ Pre-Cladding/RAB™ Board, windows/doors need to be installed with required flashing tapes and seals etc. Refer to the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual for information regarding its installation and to achieve temporary weathertightness.

6.6 Flashings

All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to Stria™ Cladding installation. Refer to moisture management requirements in Clause 2.5. The flexible underlay/rigid air barrier must be appropriately incorporated with penetration and junction flashings using flashing tapes. Materials must be lapped in such a way that water tracks down to the exterior on the face of flexible underlay or rigid air barrier. James Hardie will assume no responsibility for water infiltration within the wall due to poor installation of flashings or flexible underlay.

The selected flashing materials must comply with the durability requirements of the NZBC. For information refer to Table 20 of E2/AS1.

When using HomeRAB™ Pre-Cladding/RAB™ Board the entire framing around openings must be protected with a flashing tape. The tape must be finished over the face of the rigid air barrier. Refer to HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual for further information.

6.7 Cavity Closure/Vent Strip

The Hardie™ 28mm Aluminium Cavity Closure or uPVC cavity vent strip must be installed at the bottom of all walls and above all openings constructed using the drained and ventilated cavity construction method. It is important that the openings in the cavity closure/vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities. Hardie™ 28mm cavity closure/vent strip has an opening area of 1000mm^2/m length.

6.8 Cavity Battens

Stria™ Cladding must be installed on a cavity. The battens provide ventilation and drainage between the frame and the panel and are considered a “packer” only in this specification.

The timber cavity battens must be minimum H3.1 treated in accordance with NZS 3640 (Chemical preservation of rough and sawn timber) to comply with the durability requirements of B2/AS1.

Cavity battens must comply with E2/AS1 and:

- be minimum 18mm thick
- be as wide as the width of studs
- fixed vertically to studs
- must be fixed by the cladding fixings to the main framing over the flexible underlay. Therefore until claddings are fixed the battens only need to be tacked to framing by 40 x 2.8mm or longer nails at 800mm centres

6.9 Joints

6.9.1 Vertical Joint

Stria™ Cladding can be jointed using a trimline joint flashing or a vertical joint flashing. Refer to Figures 7 to 8.

A single stud is required when using trimline joint flashing. Refer to Figure 7. Double studs are required when using vertical joint flashing. Refer Figure 8.

6.9.2 Horizontal Joint

Stria™ Cladding panels are lapped over each other as per Figure 6. There is a 23-25mm lap between the two panels. Ensure that Stria™ Cladding panels are securely interlocked before nailing. Stria™ Cladding can run continuous over floor joists without any horizontal joint when LVL timber floor joists or an engineered joist are used. Refer to Figure 25.

When an engineered joist or LVL joist is not used, a horizontal joint or a movement joint must be formed at floor joist, refer to Figures 26, 32 and 41.

6.9.3 Drainage Joint

After every two floors a horizontal drainage joint flashing is required, refer to Figure 32 and 41.

For buildings higher than 3 storey, from a vertical fire spread safety perspective, a horizontal drainage joint is required at each floor.

6.9.4 External Corner Joint

An external box corner flashing is used to fix the external corners, refer to Figures 9 and 11.

Alternatively a Hardie™ Axent™ Trim external boxed corner can also be formed.

Note: All vertically installed joint mouldings to be fixed at 400mm centres both sides.

6.9.5 Internal Corner Joint

Hardie™ 14mm internal corner flashing is to be used to form an internal corner joint, refer to Figure 12. An extra stud is required in internal corners.

Note: All vertically installed joint mouldings to be fixed at 400mm centres both sides.

6.10 Junctions and Penetrations

Refer to Clause 4.3 of this specification for moisture management requirements. All windows and doors must be detailed as per the requirements of this specification. James Hardie has developed the window details for Stria™ Cladding which meet the requirements of E2 External Moisture, an approved document of the NZBC. Refer to Figures 15 to 34.

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7 Finishes

7.1 Preparation

The D head nail must be finished 2mm below the cladding surface. The nail holes must be filled with an exterior grade two part builders fill, ie. CRC® ADOS® Builders Fill or similar two part external grade filler. The RounDrive nail heads must finish flush with cladding surface.

7.2 Painting

Stria™ Cladding is pre-primed and is suitable for site applied acrylic paints.

In order to seal cut edges or sanded patches, Dulux® 1 Step, Resene® Quick Dry, Taubmans® Underproof Acrylic Primer Undercoat or a similar product should be applied. The primer should be compatible with the paint to be used.

Painting of Stria™ Cladding is mandatory to meet the durability requirements of the NZBC and 25 year James Hardie product warranty. Stria™ Cladding must be dry and free of any dust or grime before painting. The cladding must be painted within 90 days of installation. All exposed faces, including the top edges under the sills and bottom edges of Stria™ Cladding and accessories must be finished with an exterior paint system. There is no restriction on the LRV of paint to be applied on the Stria™ Cladding.

James Hardie recommends a minimum of two coats of exterior grade acrylic paint. Follow the paint manufacturer's recommendations to prepare the surface and to adequately cover and conceal the cladding fixings.

For the best aesthetic results a low sheen paint is recommended.

7.3 Flexible Sealant

Sealant used must comply with the relevant requirements of the NZBC. Their application and usage must be in accordance with the manufacturer's instructions. Check with the sealant manufacturer prior to coating over sealant. Some sealant manufacturers do not recommend coating over their product.

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8 Care and Maintenance

The extent and nature of maintenance required will depend on the geographical location and exposure of the building. It is the responsibility of the specifier to determine normal maintenance requirements to maintain the effectiveness of the cladding.

As a guide, it is recommended that the 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
- Regular inspection and repair if necessary of the cladding joints, sealants, nail head fillers
- Cleaning out gutters, down pipes and overflow pipes as required
- Pruning back vegetation which is close to or touching the Stria™ Cladding as well as ensuring the NZBC ground clearance requirements are maintained, especially where gardens are concerned
- The clearance between the bottom edge of the Stria™ Cladding and the finished/unfinished ground must always be maintained

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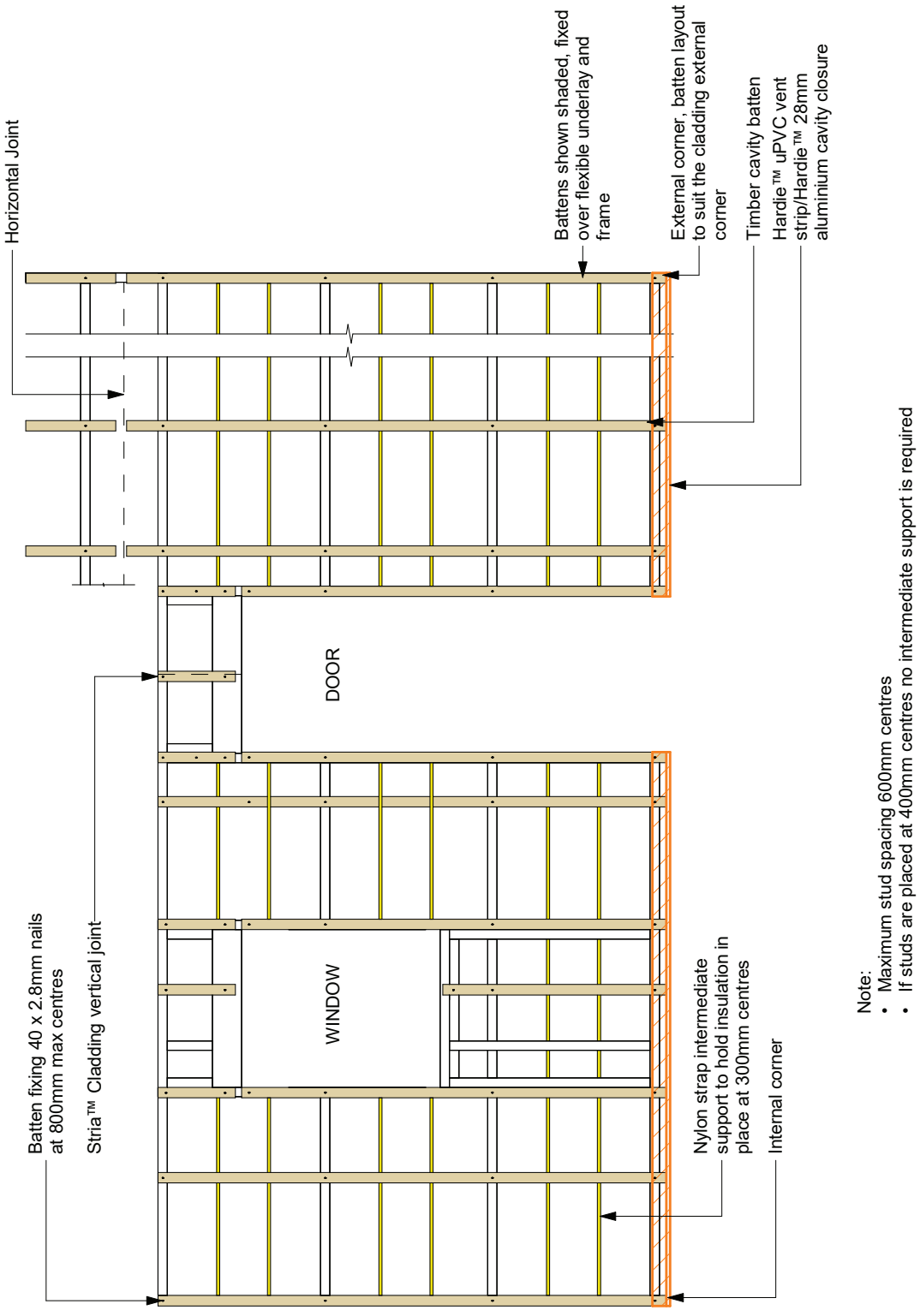
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For all meter box details please visit our website at **www.jameshardie.co.nz** or Ask James Hardie on **0800 808 868**.

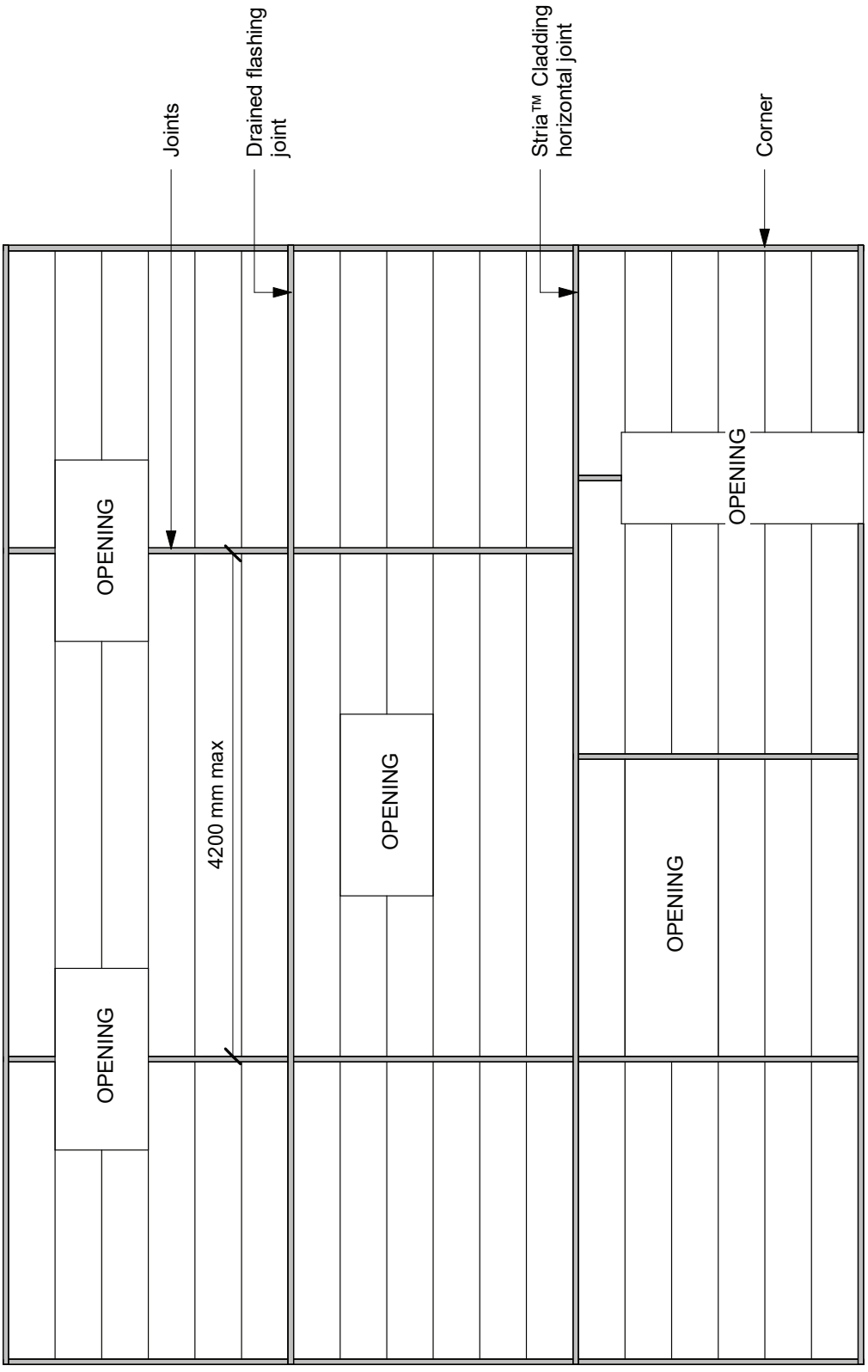
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Figure 1: Stria™ Cladding layout



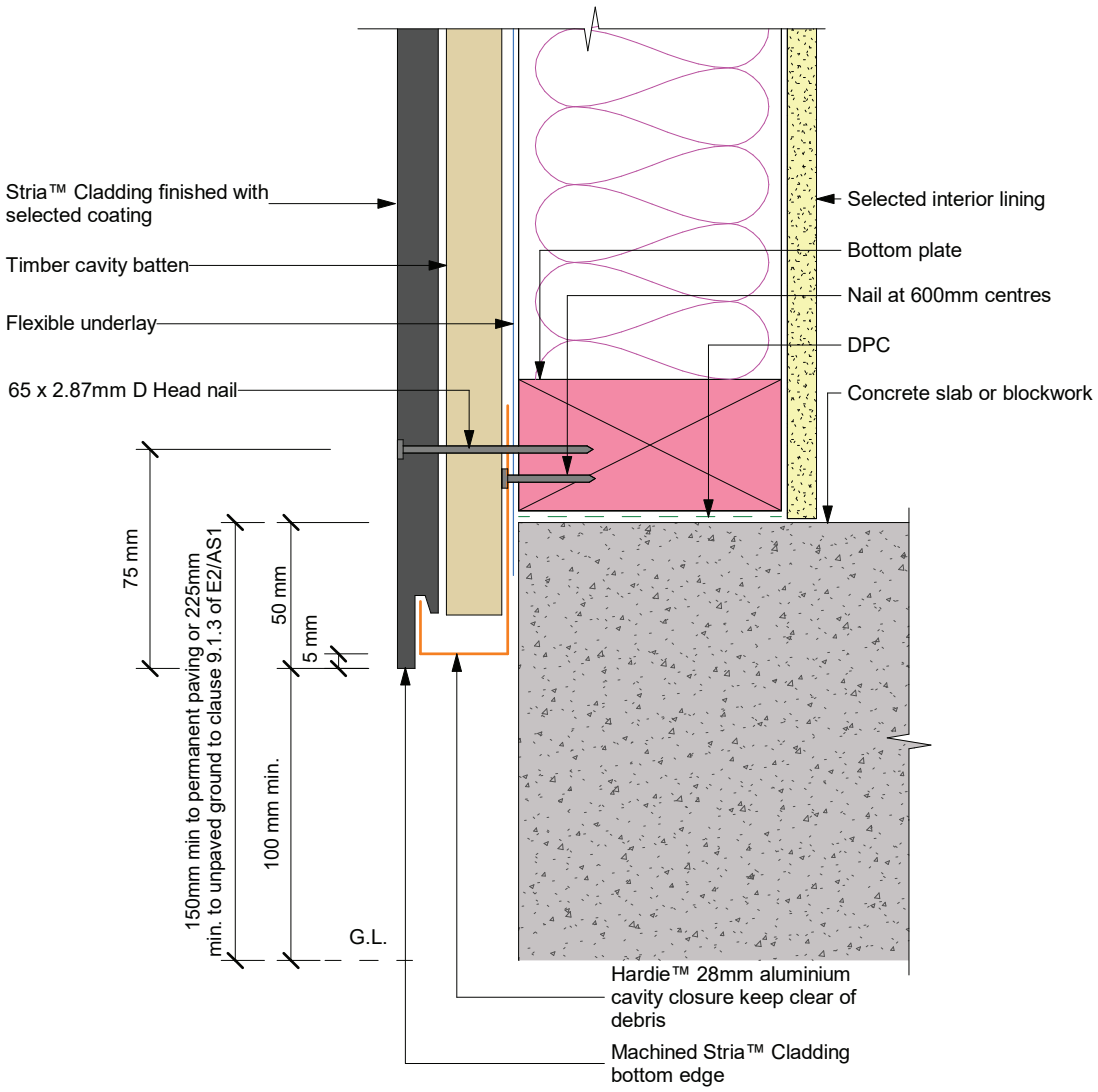
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Figure 2: Vertical joint layout



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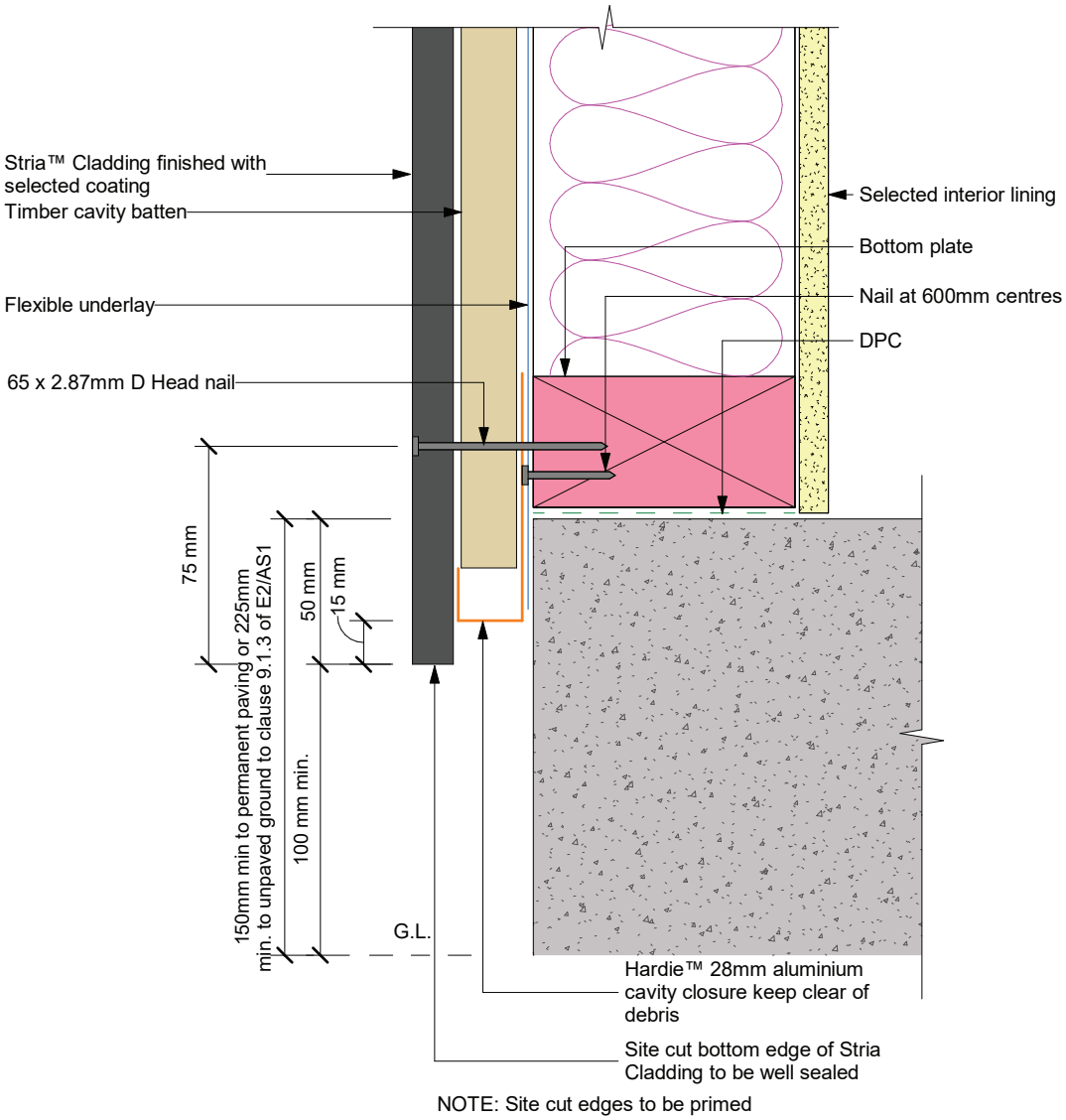
Figure 3: Foundation detail – option 1



Note: Site cut edges to be primed

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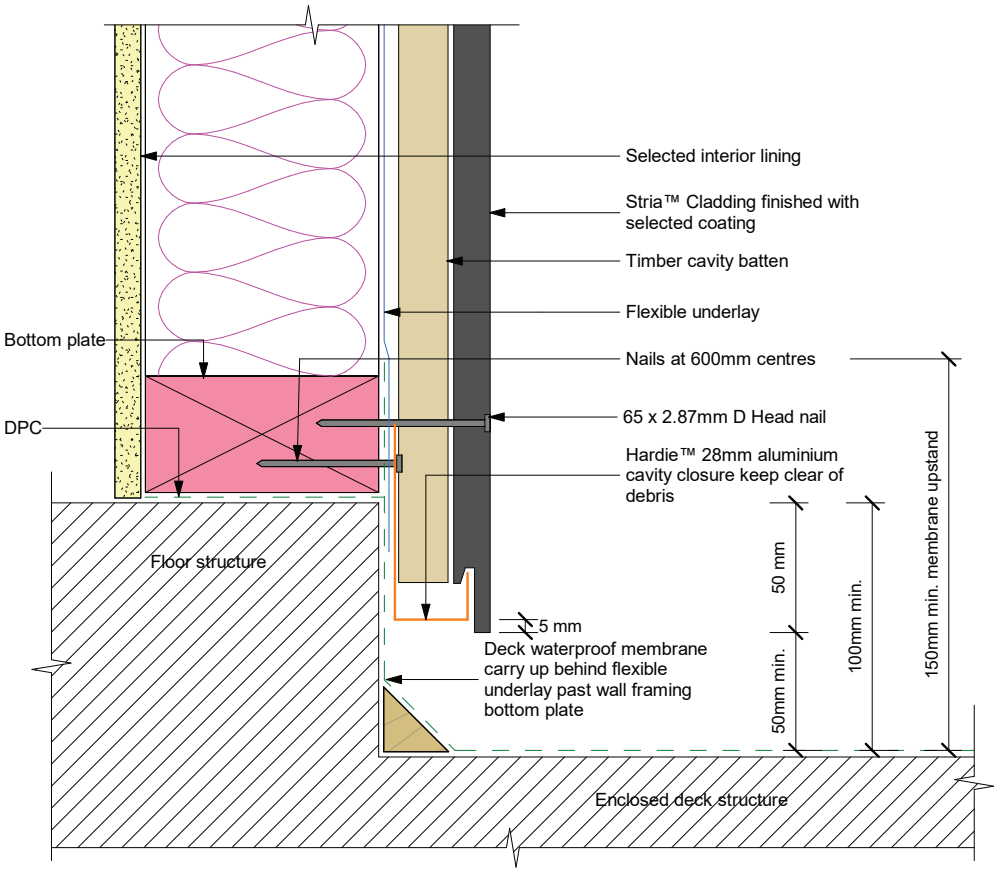
Figure 4: Foundation detail – option 2



NOTE: Site cut edges to be primed

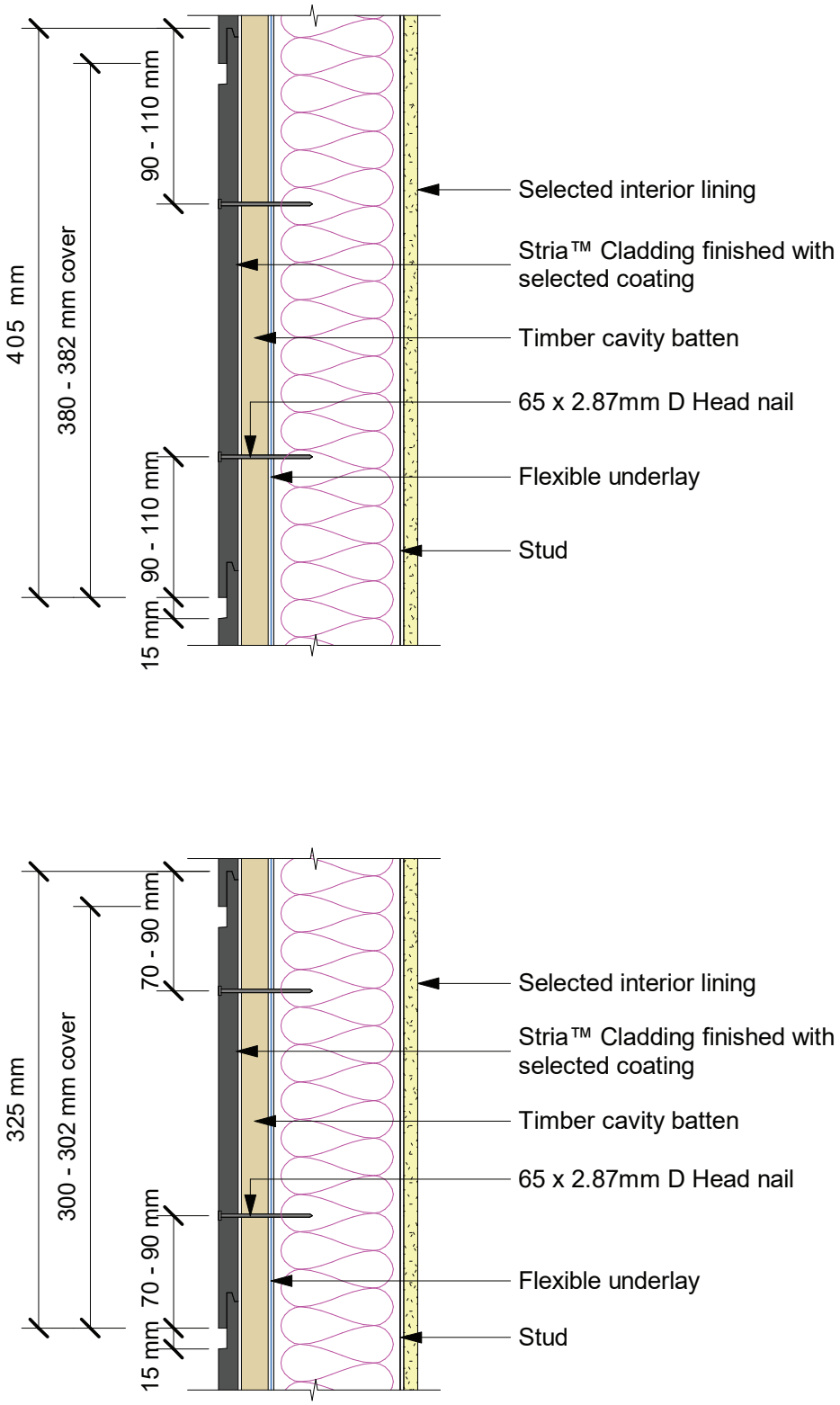
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Figure 5: Enclosed deck



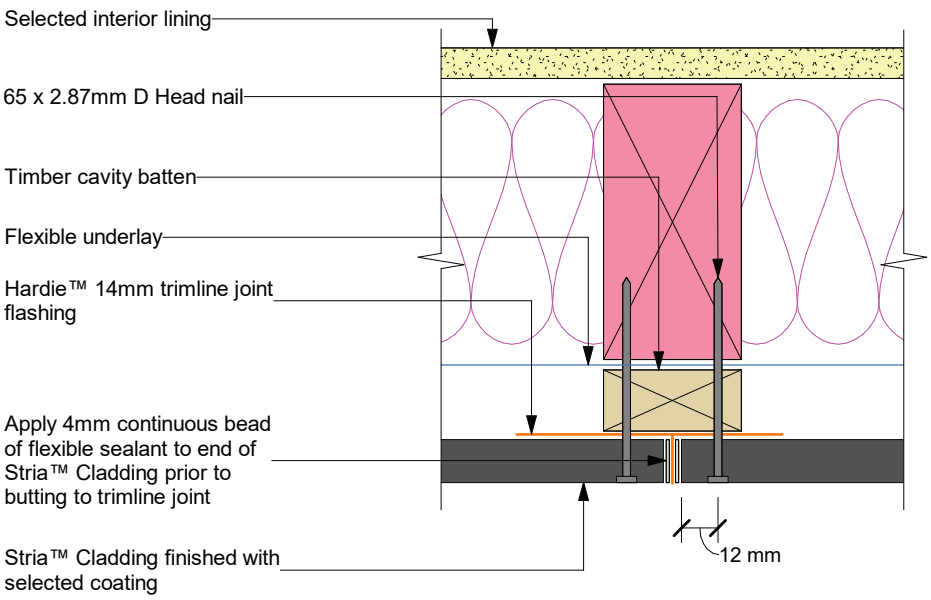
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Figure 6: Fixing Detail

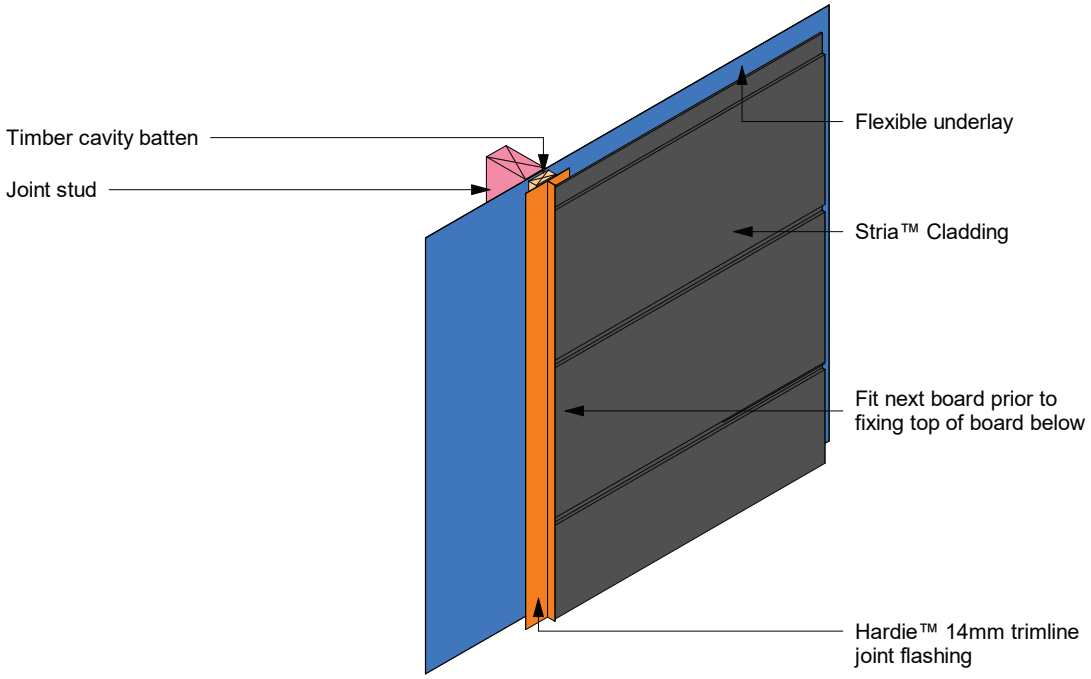


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Figure 7: Vertical trimline joint flashing option

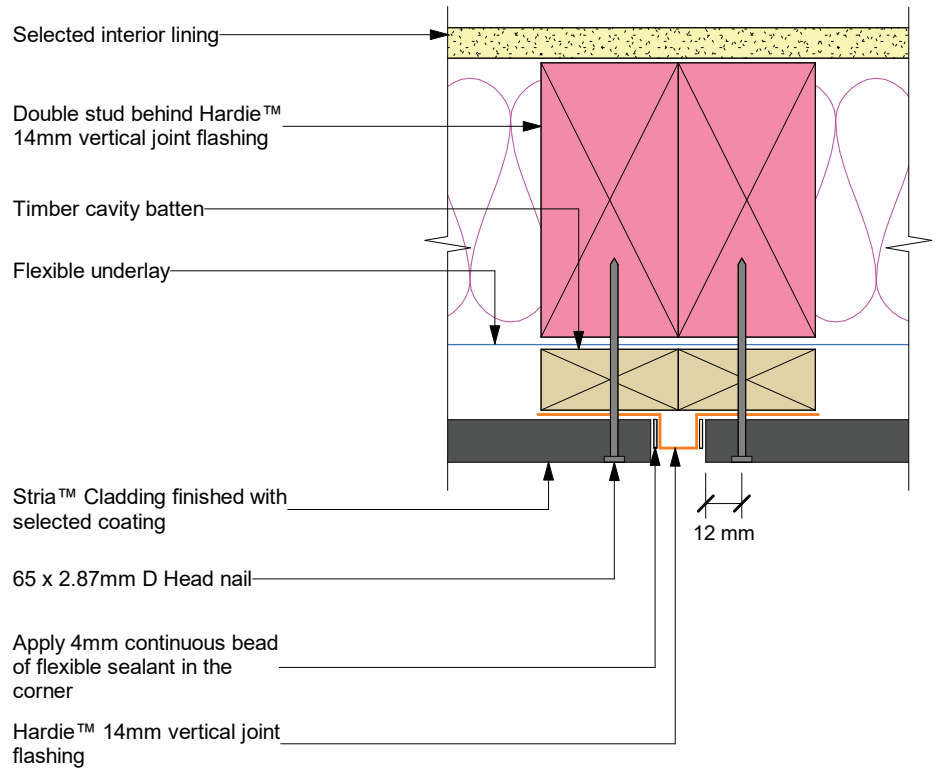


Note: Site cut edges to be primed

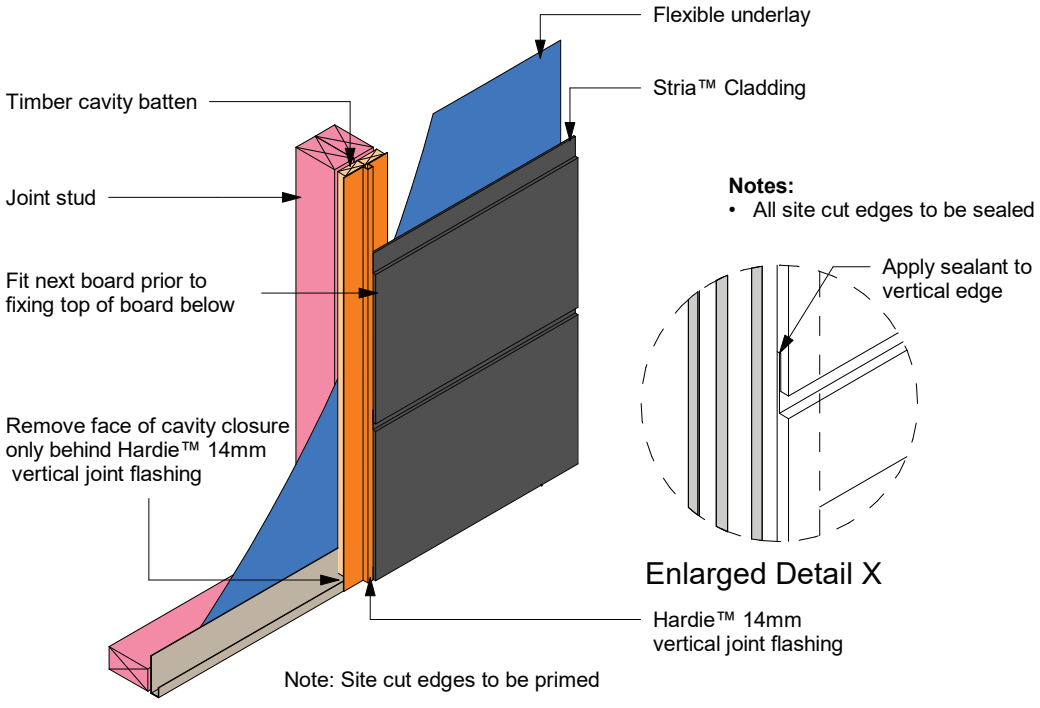


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Figure 8: Vertical joint flashing option



Note: Site cut edges to be primed

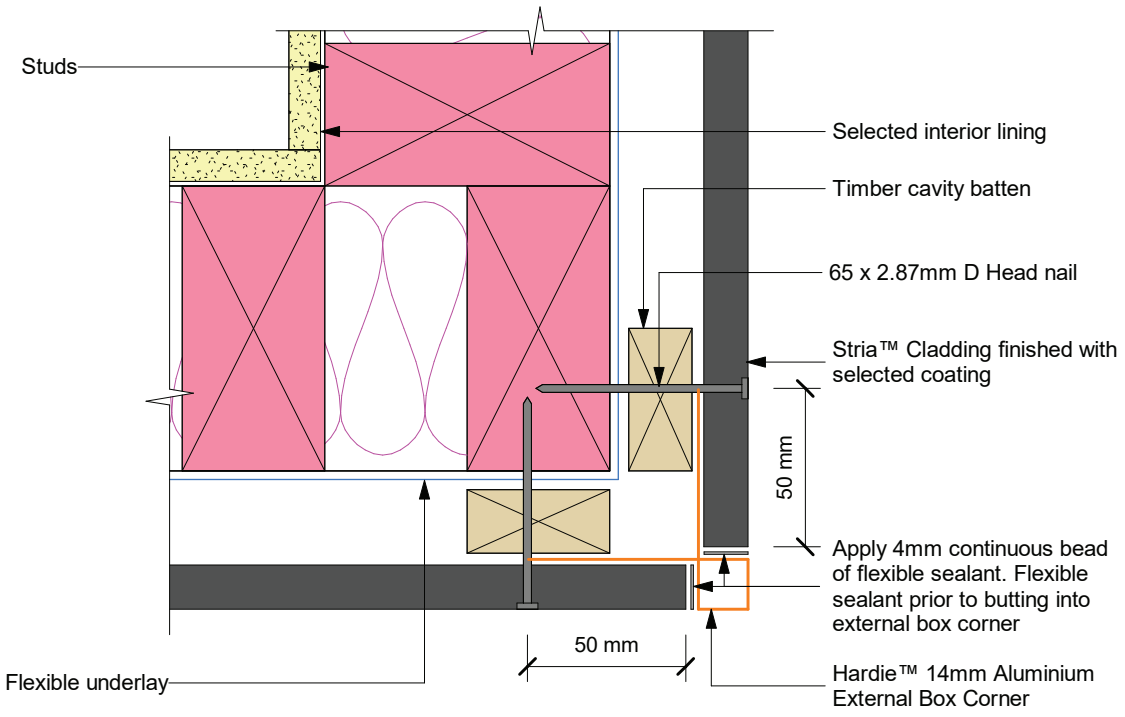


Note: Site cut edges to be primed

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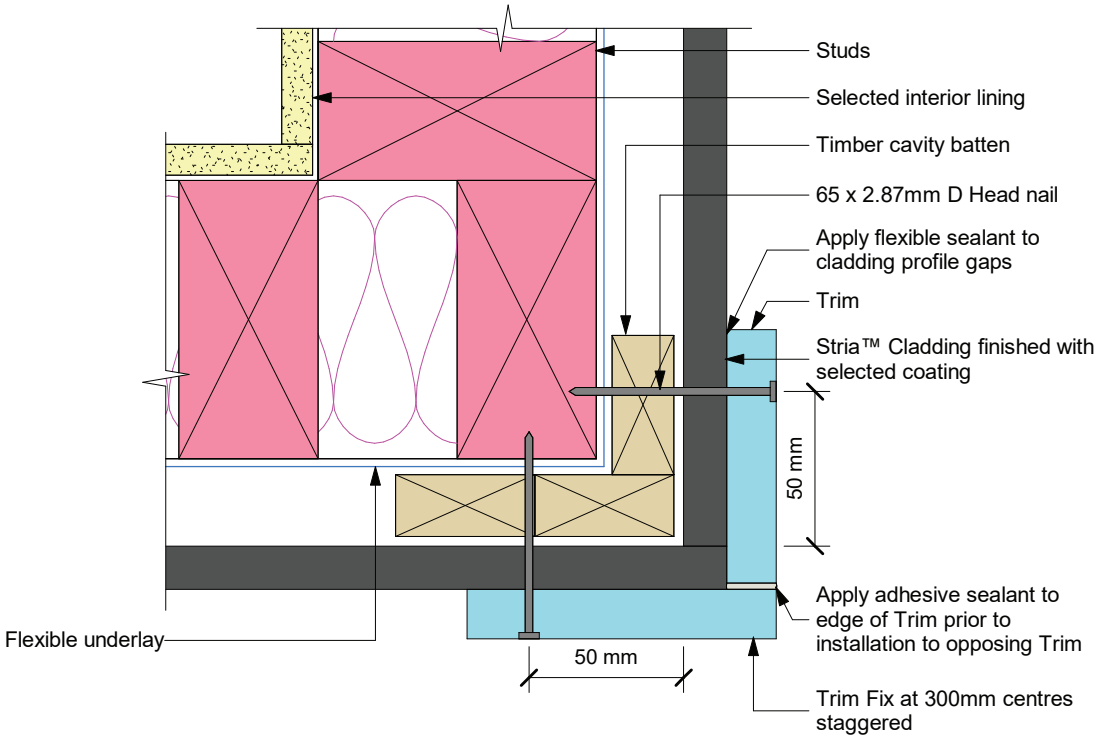
Figure 9: External aluminium box corner

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Note: Site cut edges to be primed

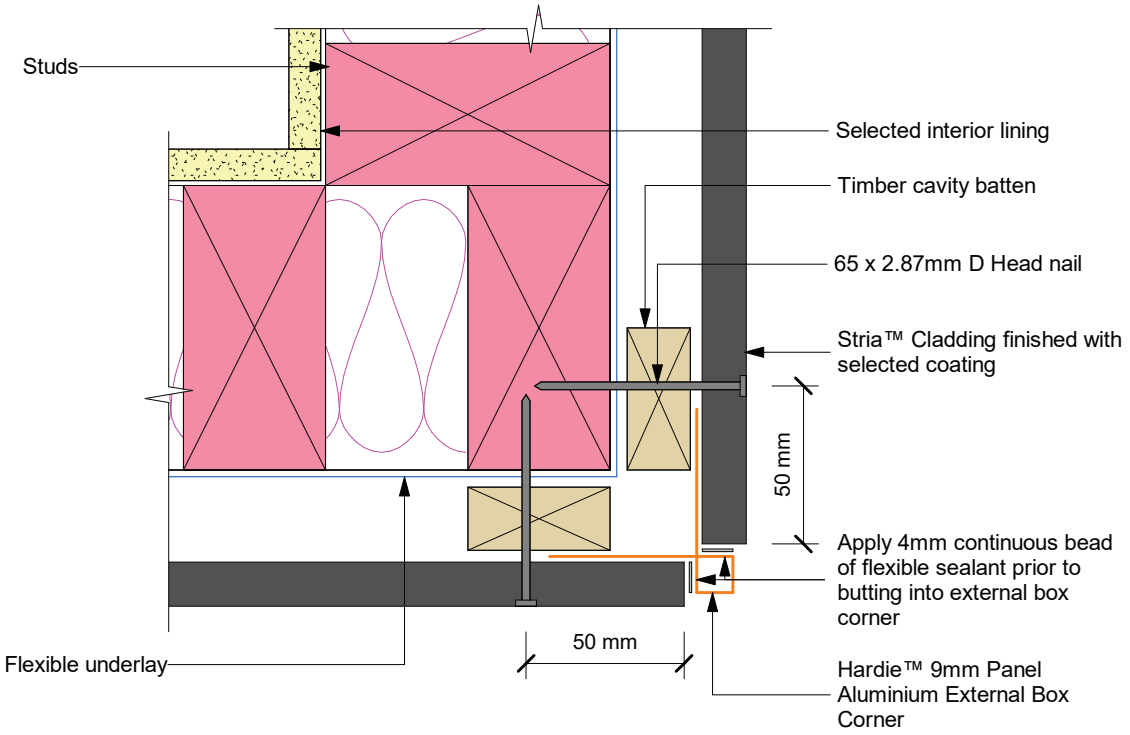
Figure 10: External trim box corner



Note: Site cut edges to be primed

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Figure 11: External aluminium radius box corner



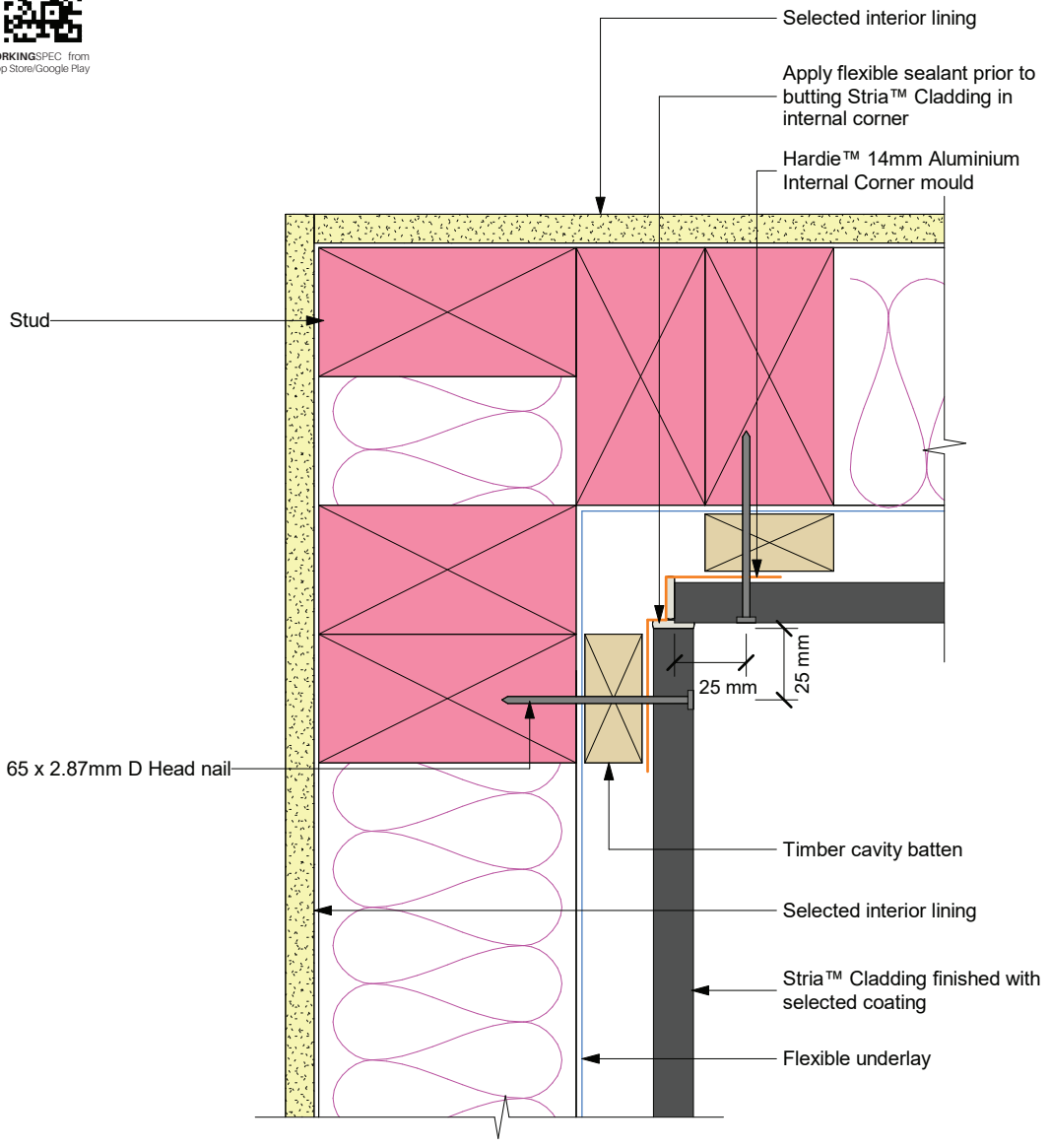
Note: Site cut edges to be primed

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Figure 12: Internal aluminium corner

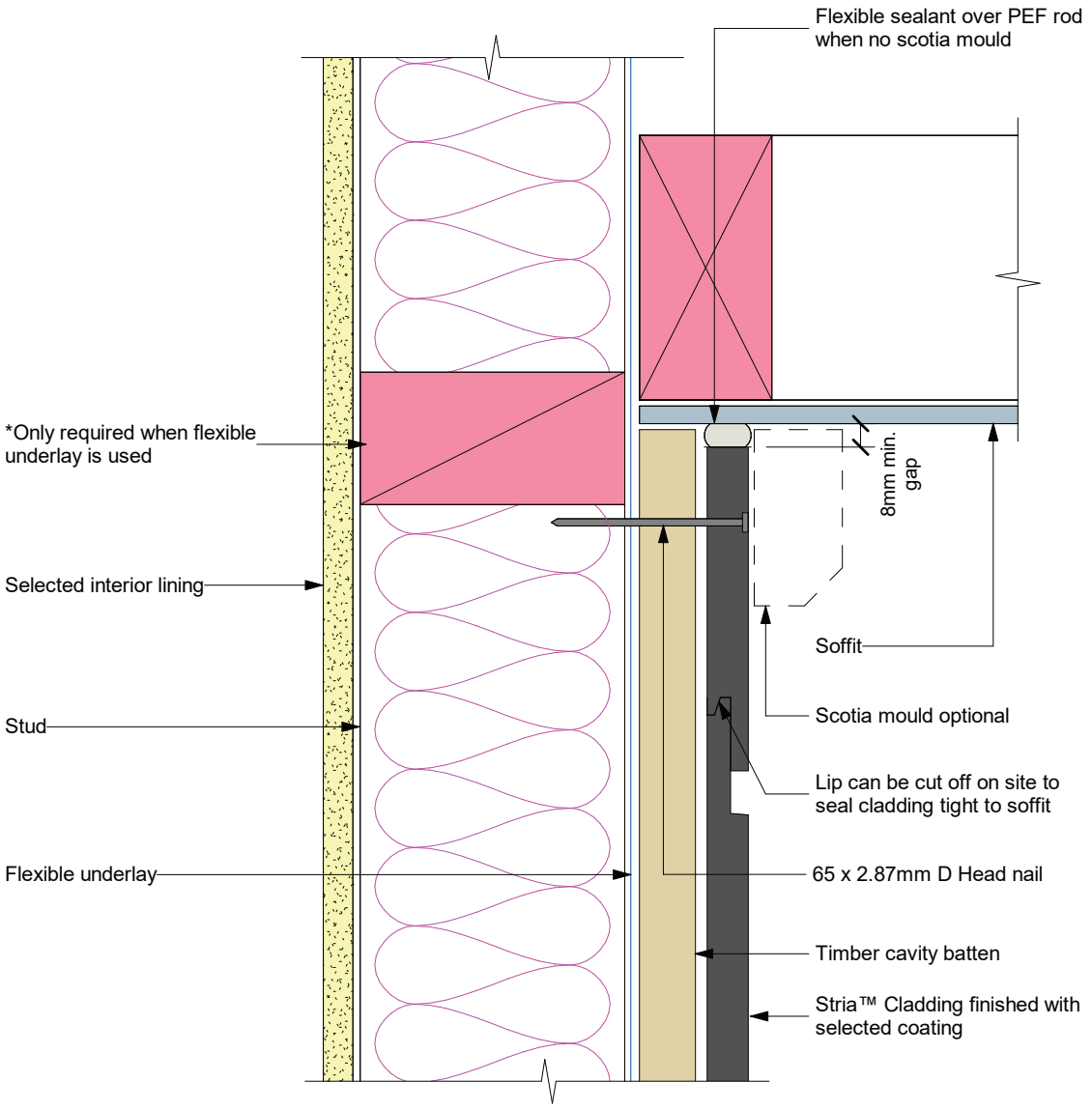
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Note: Site cut edges to be primed

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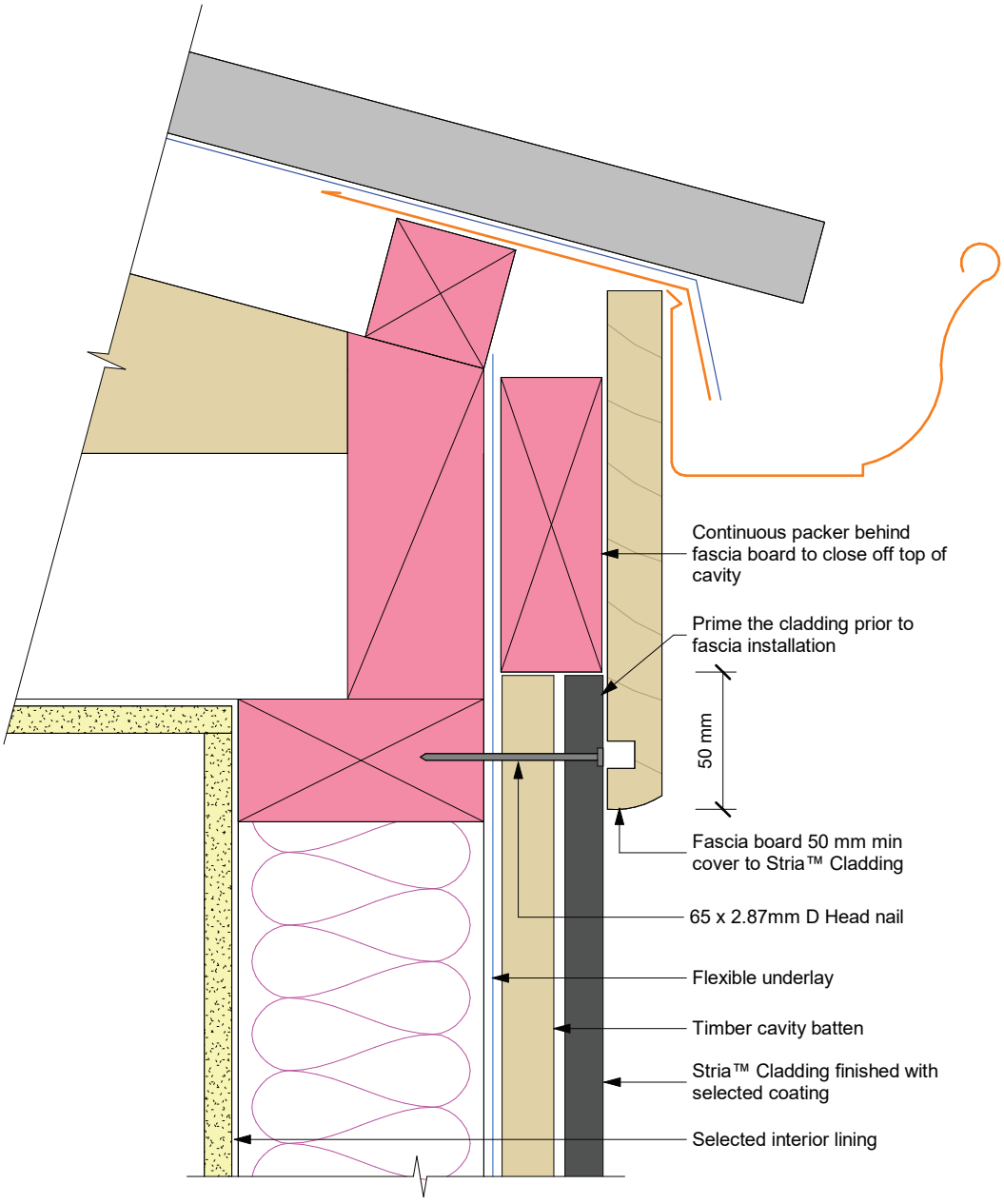
Figure 13: Soffit detail



Note: Site cut edges to be primed

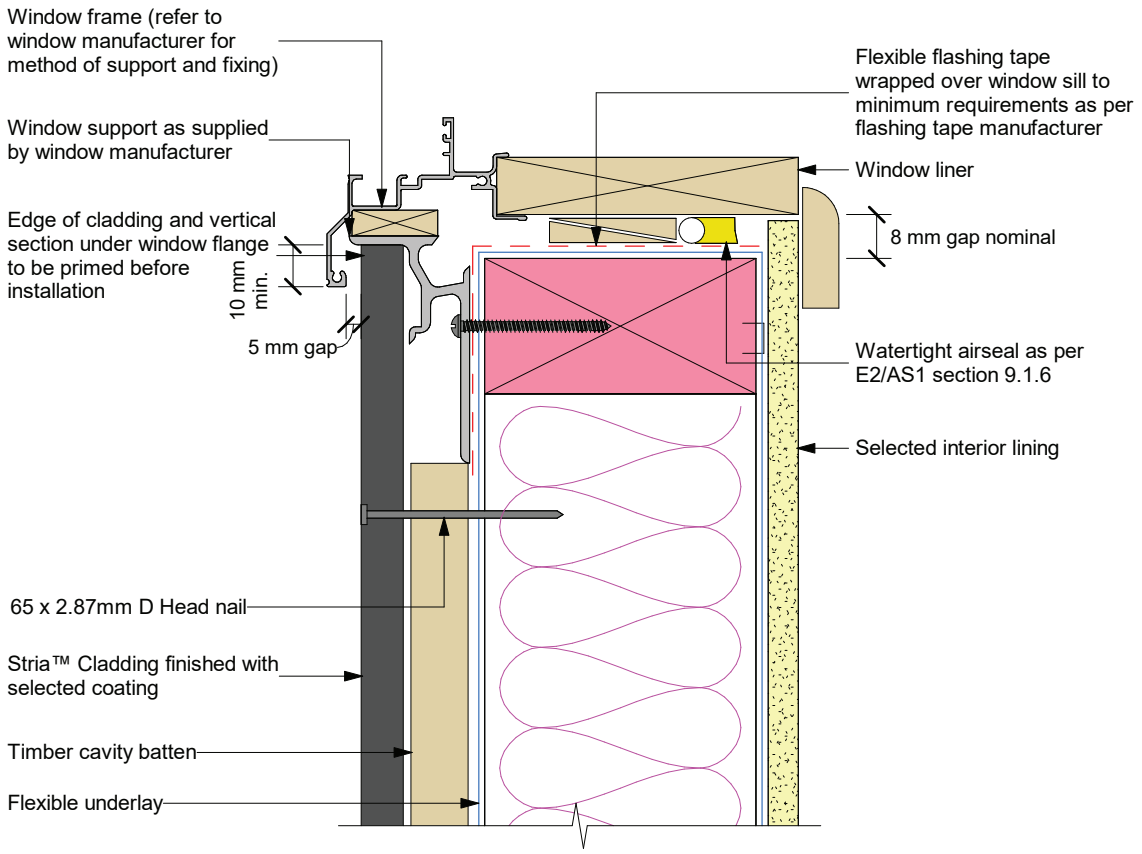
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Figure 14: Nil soffit detail



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Figure 15: Window sill

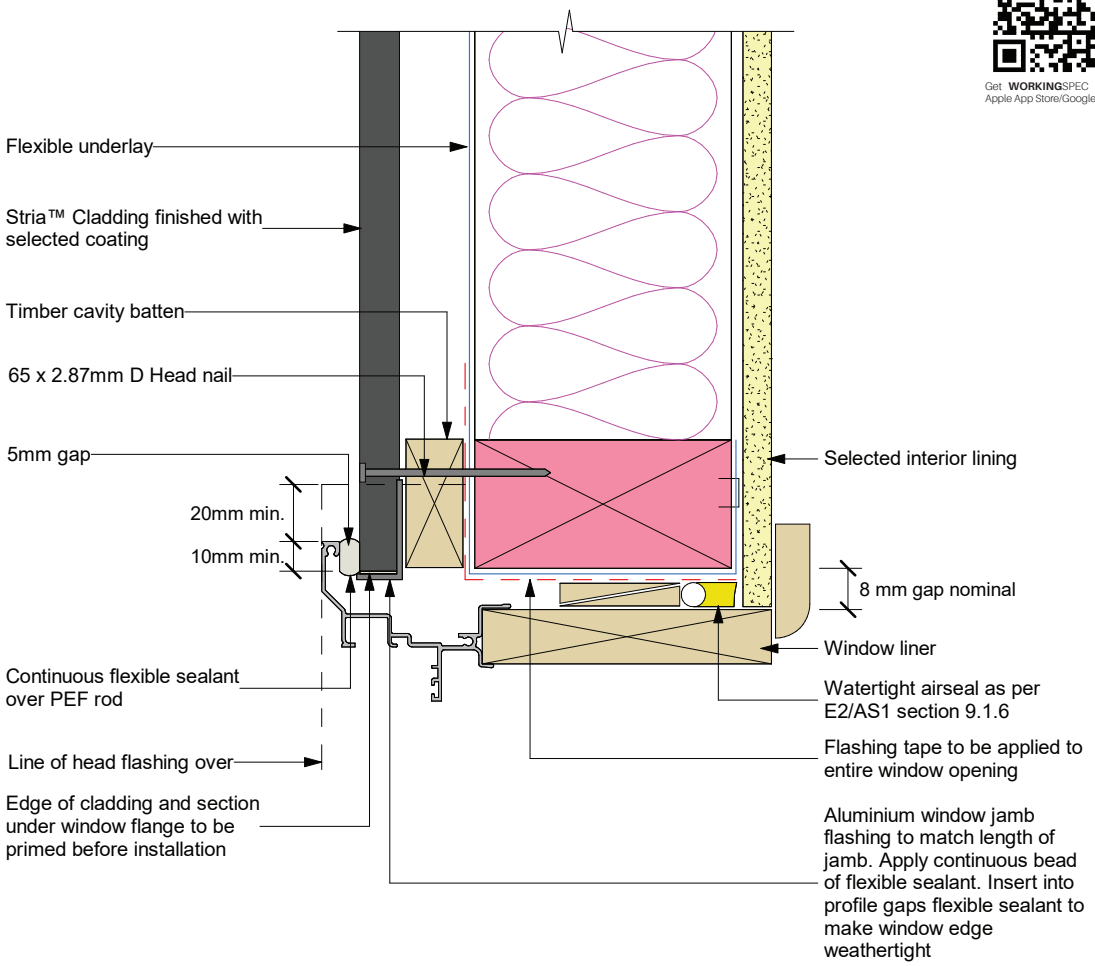


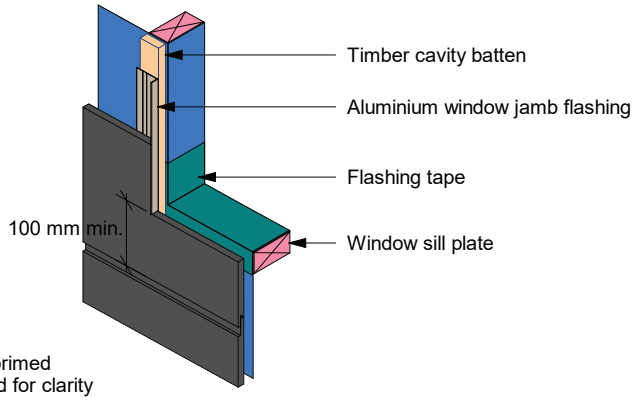
Note: Site cut edges to primed

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Figure 16: Window jamb

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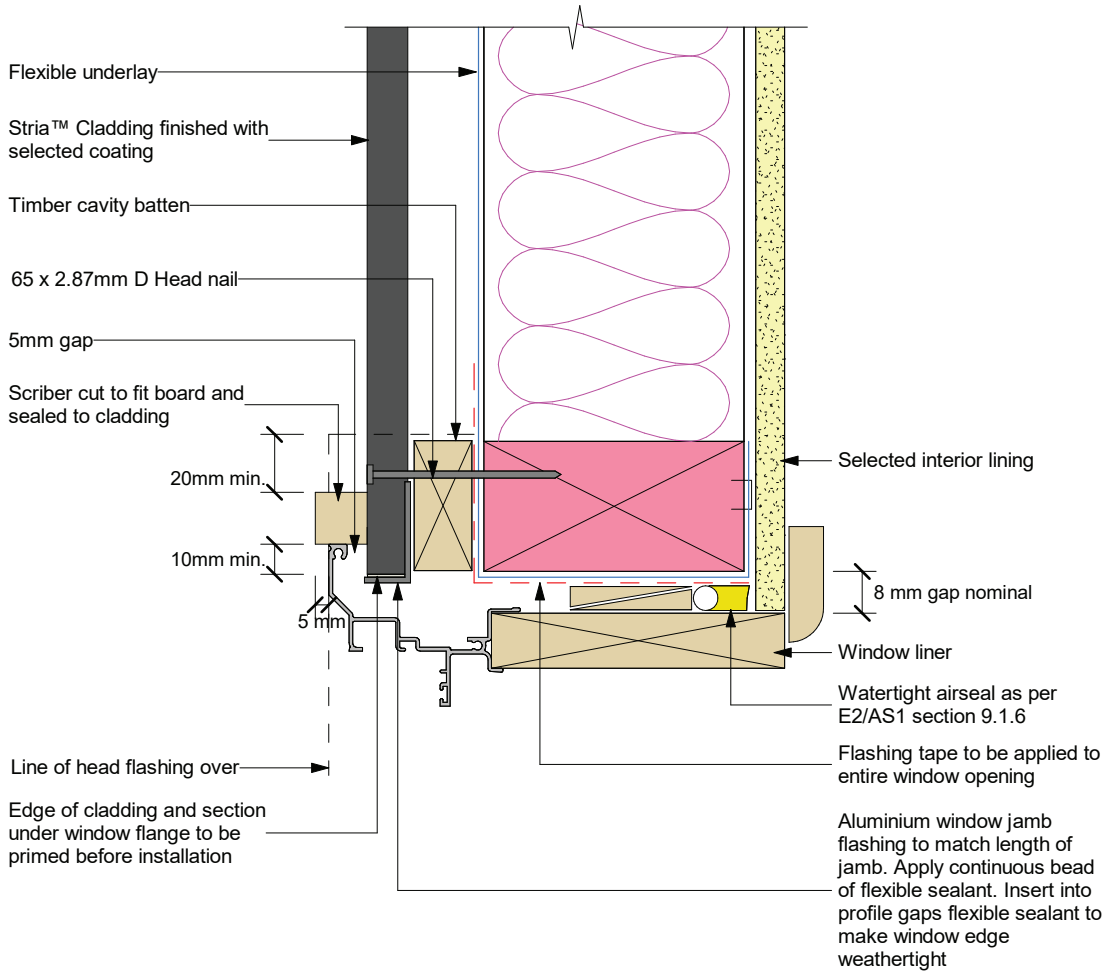




Note:
1. Site cut edges to be primed
2. Window frame omitted for clarity

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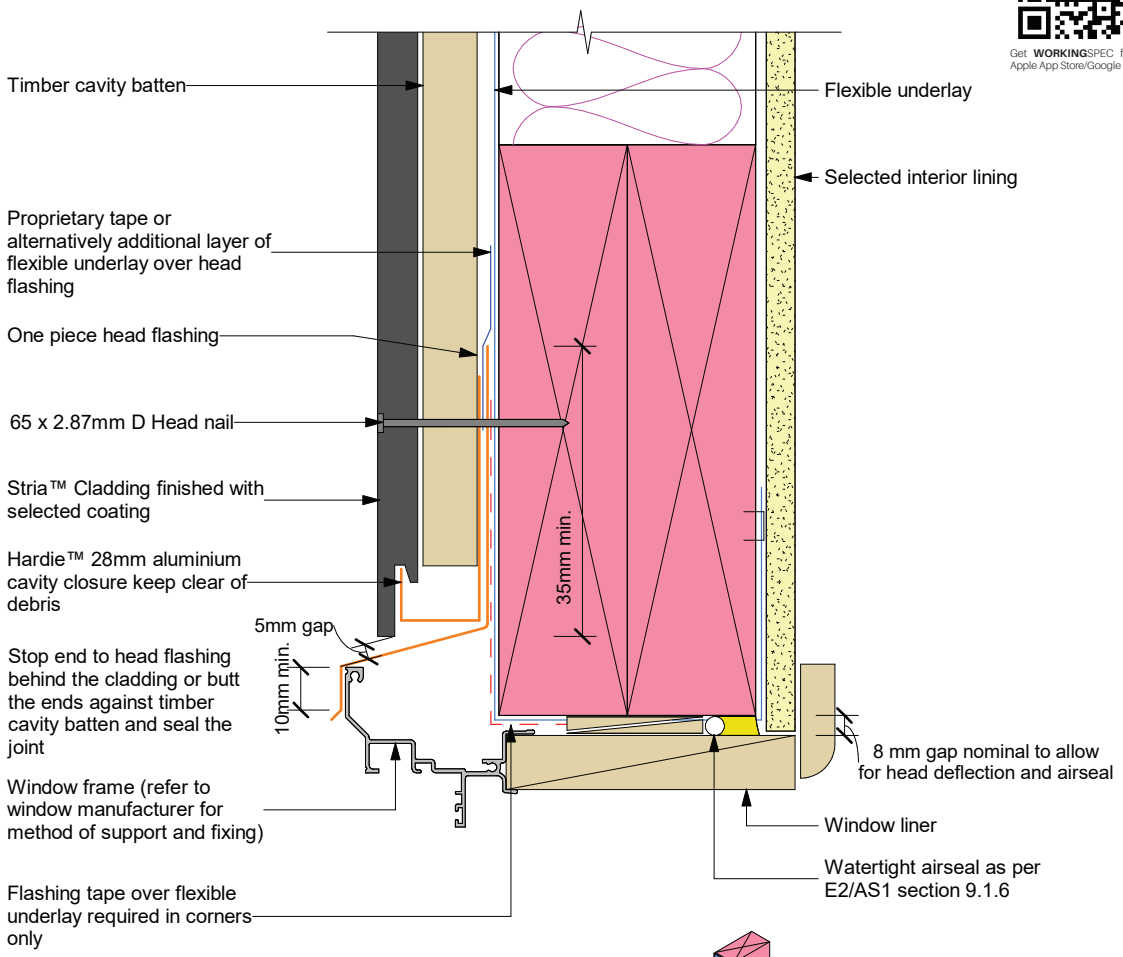
Figure 17: Window jamb with scriber



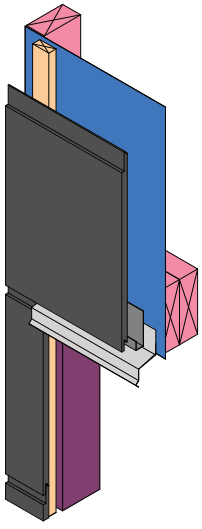
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Figure 18: Window head with cladding across head flashing

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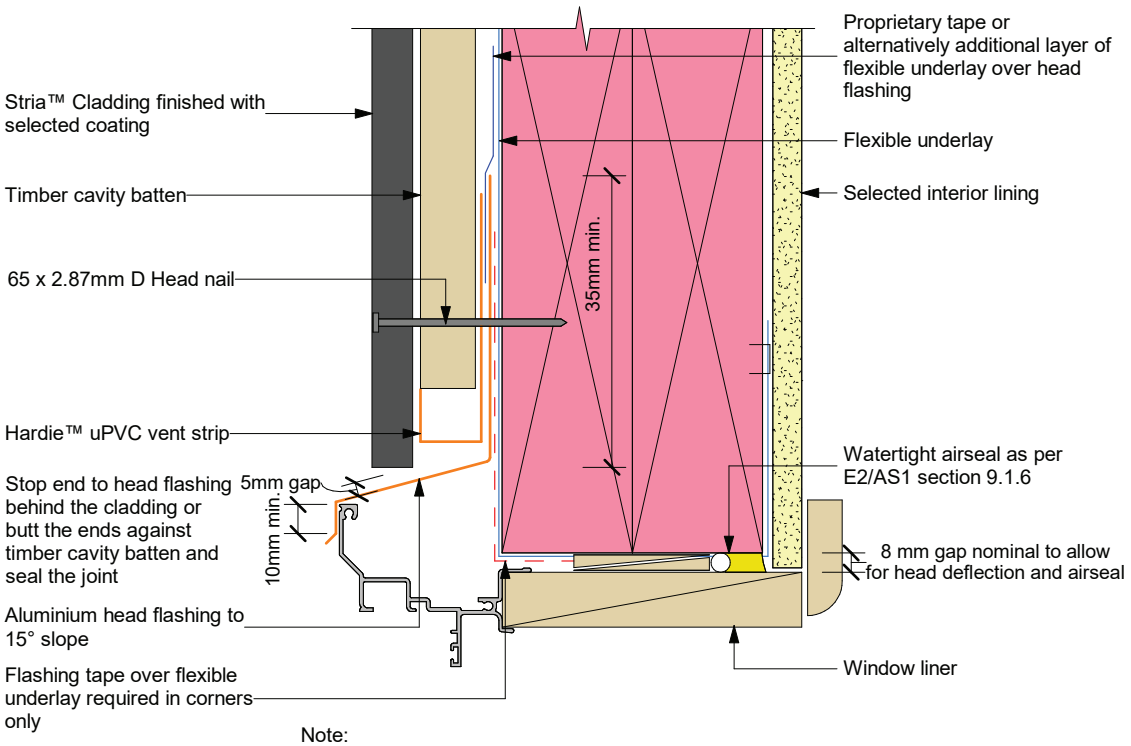


Note:
- Site cut edges to be primed
- Sealant must be installed between head flashing and window flange in VH and above wind zones. Refer to Figure 71 of E2/AS1

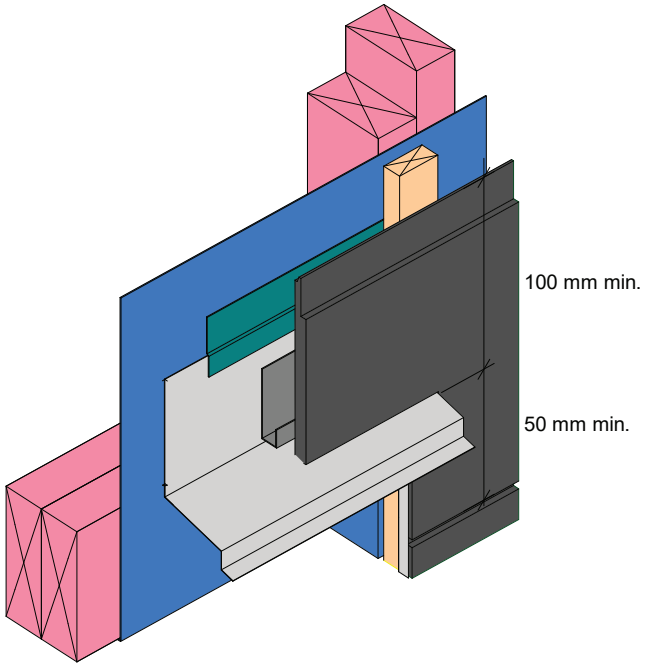


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Figure 19: Window head with cladding cut around

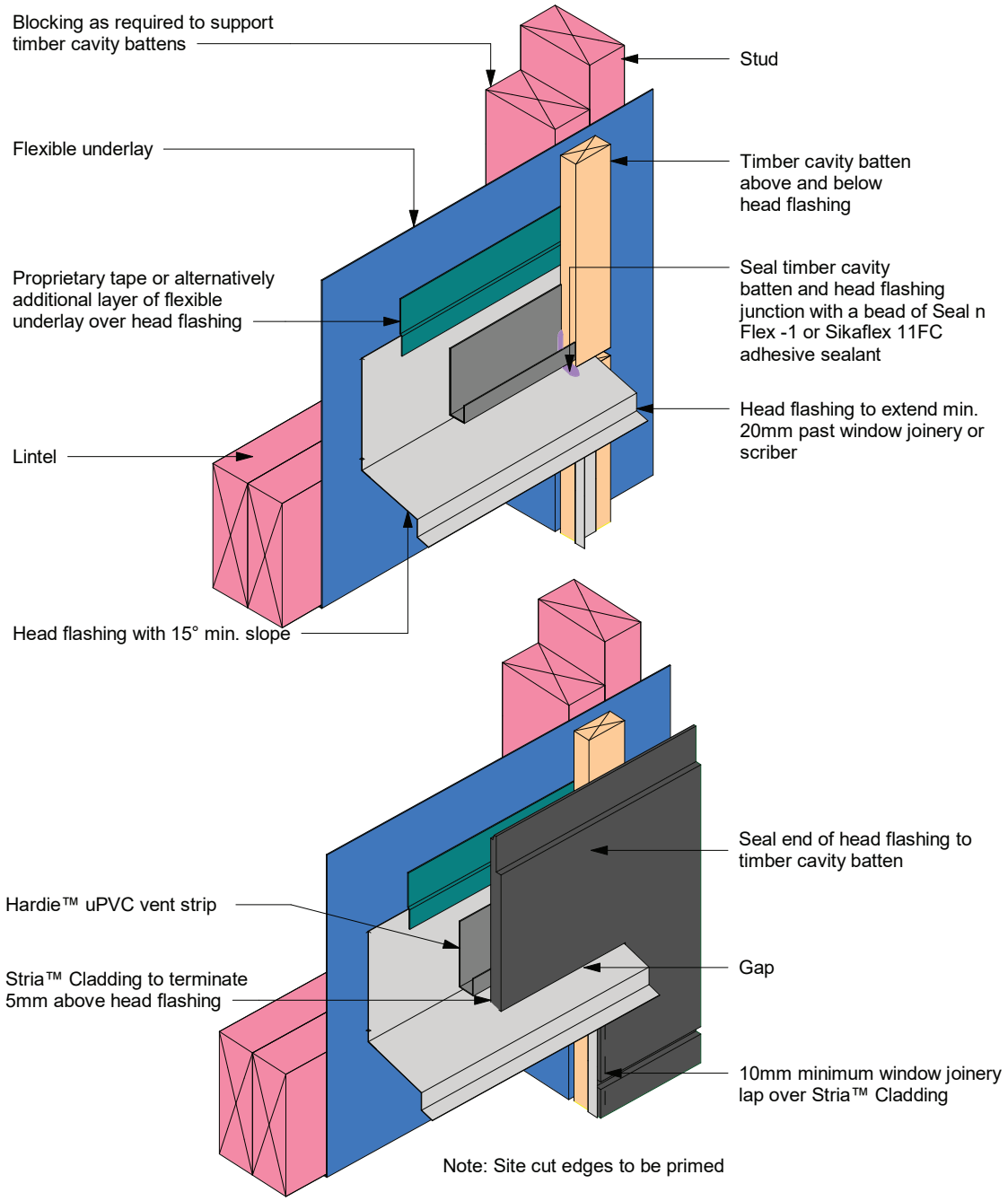


Note:
- Site cut edges to be primed
- Sealant must be installed between head flashing and window flange in VH and above wind zones. Refer to Figure 71 of E2/AS1



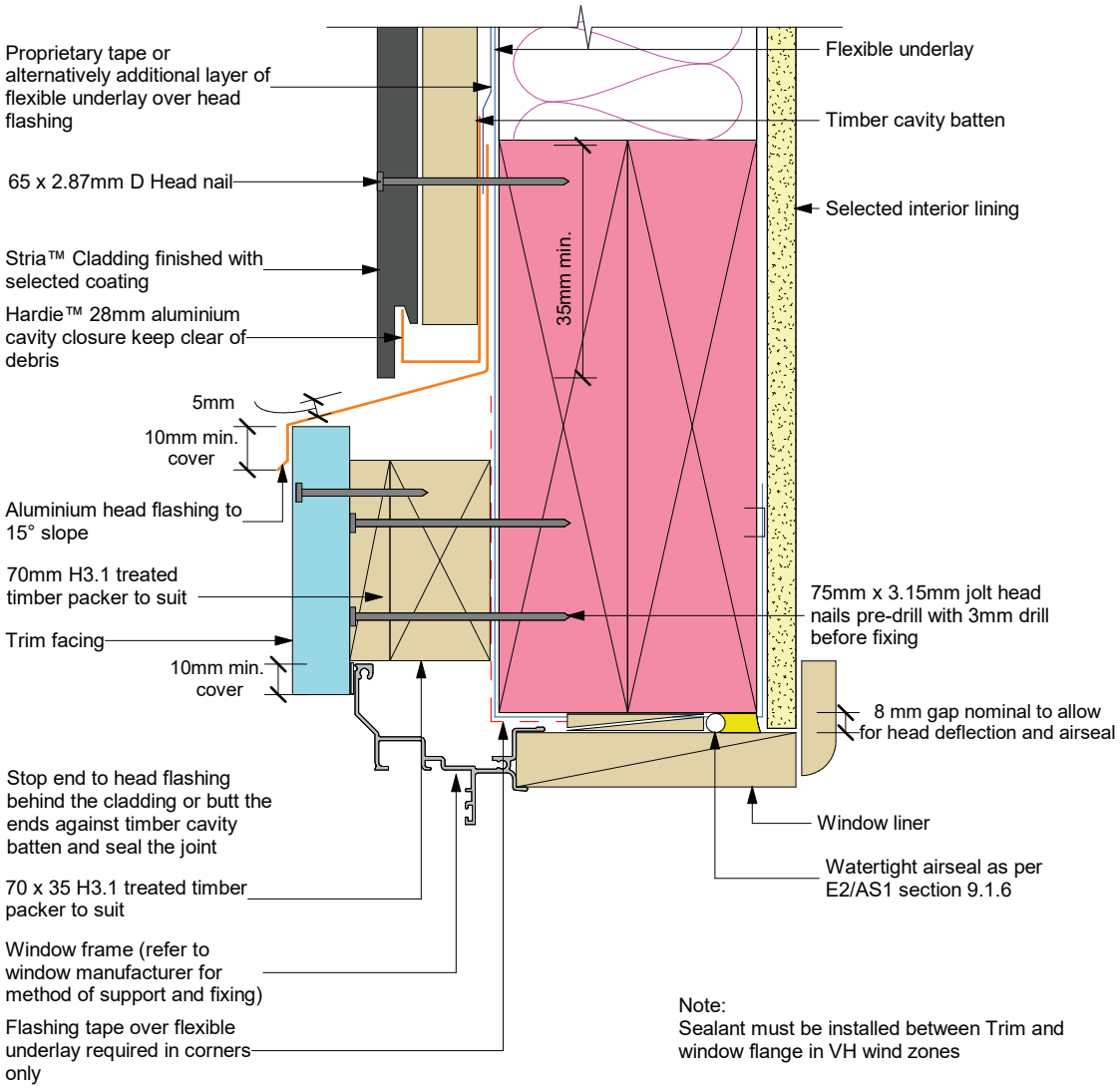
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Figure 20: Window head stop end



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Figure 21: Window head with facings



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Figure 22: Window jamb with facings

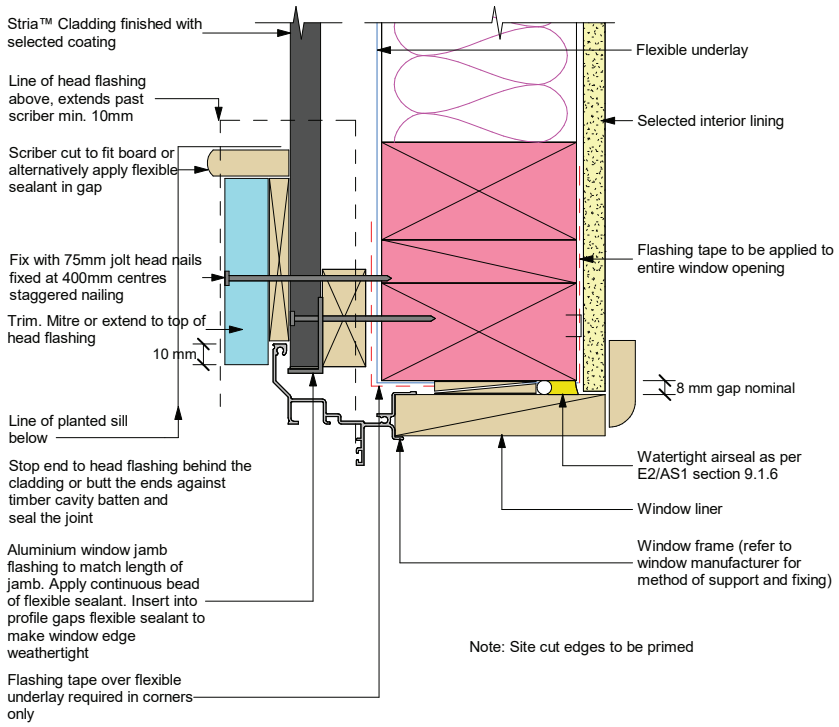
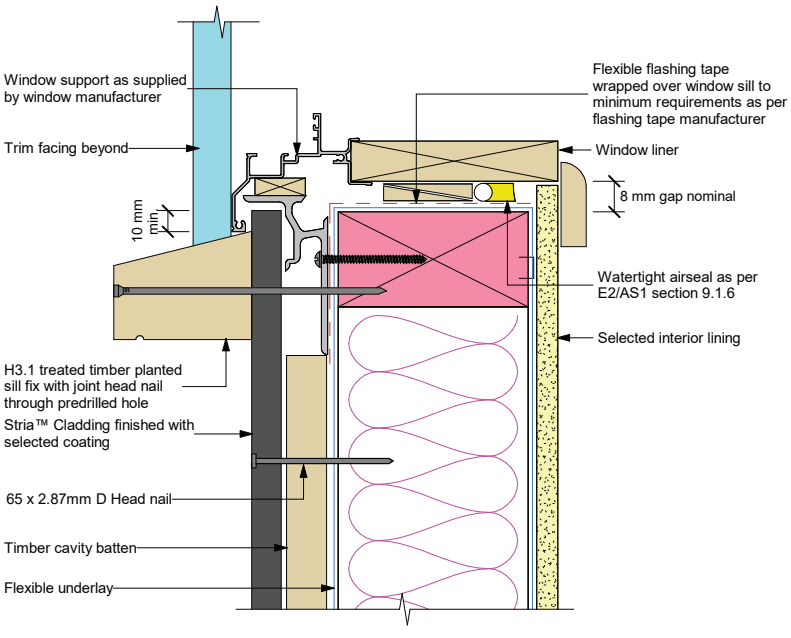
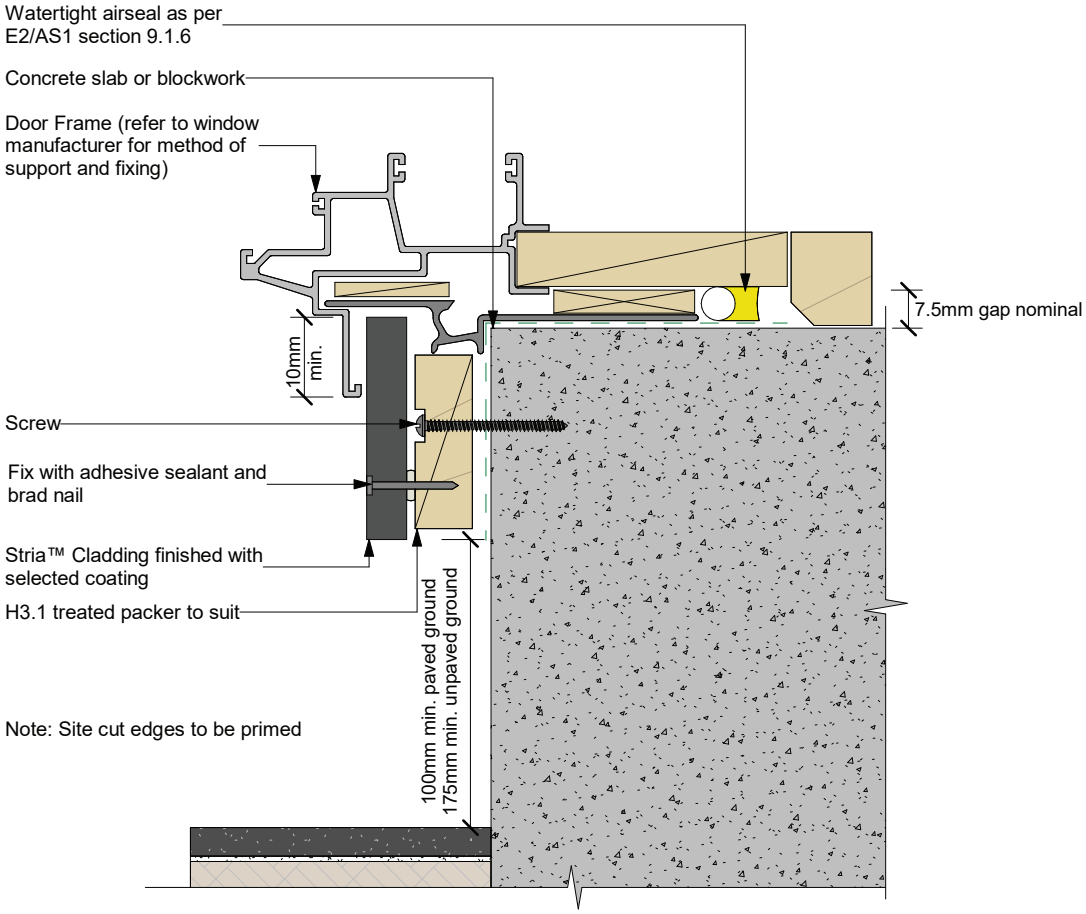


Figure 23: Window jamb with facings



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Figure 24: Door sill support detail

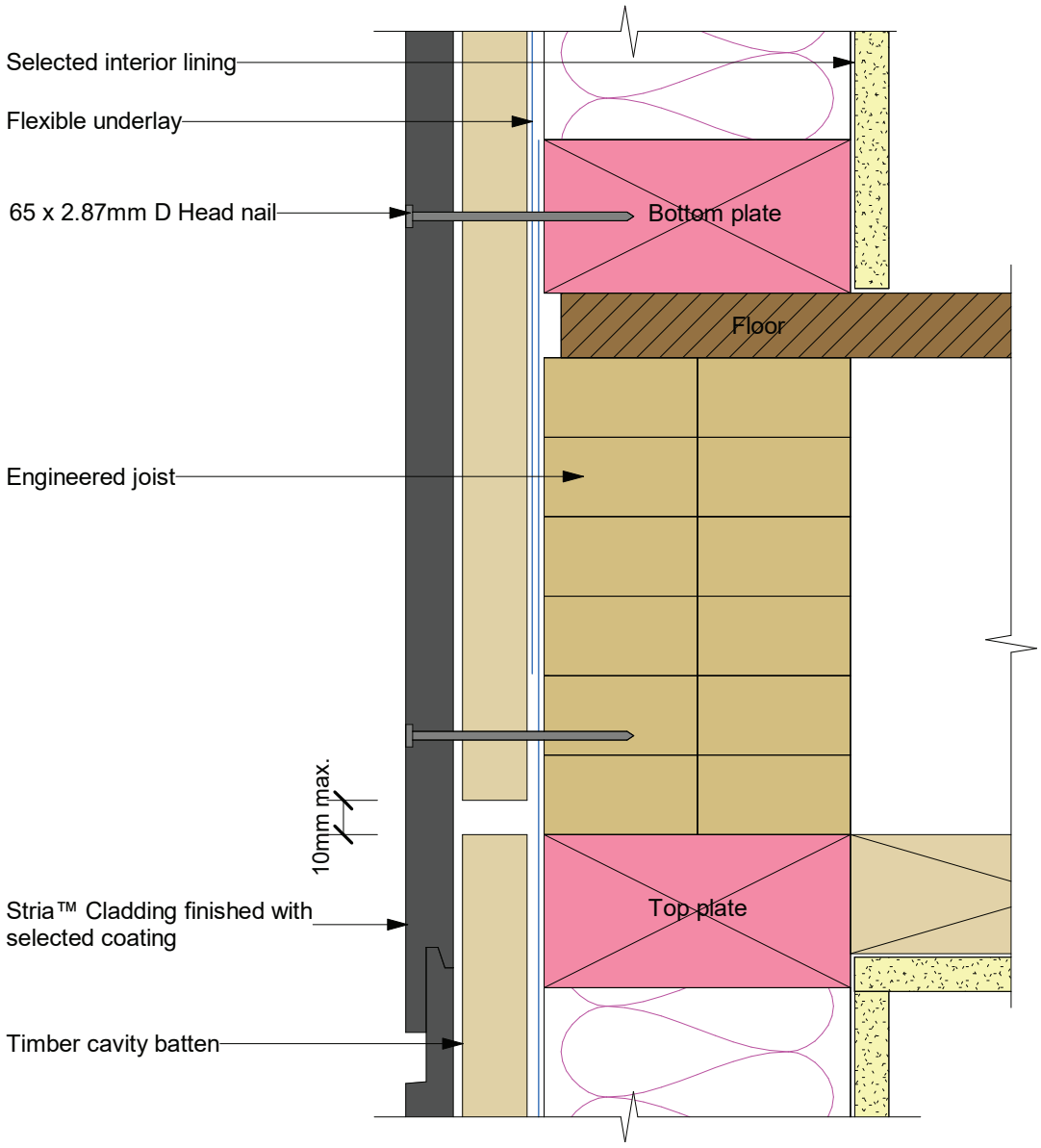


Refer to the manufacturer or supplier for technical information for these materials

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

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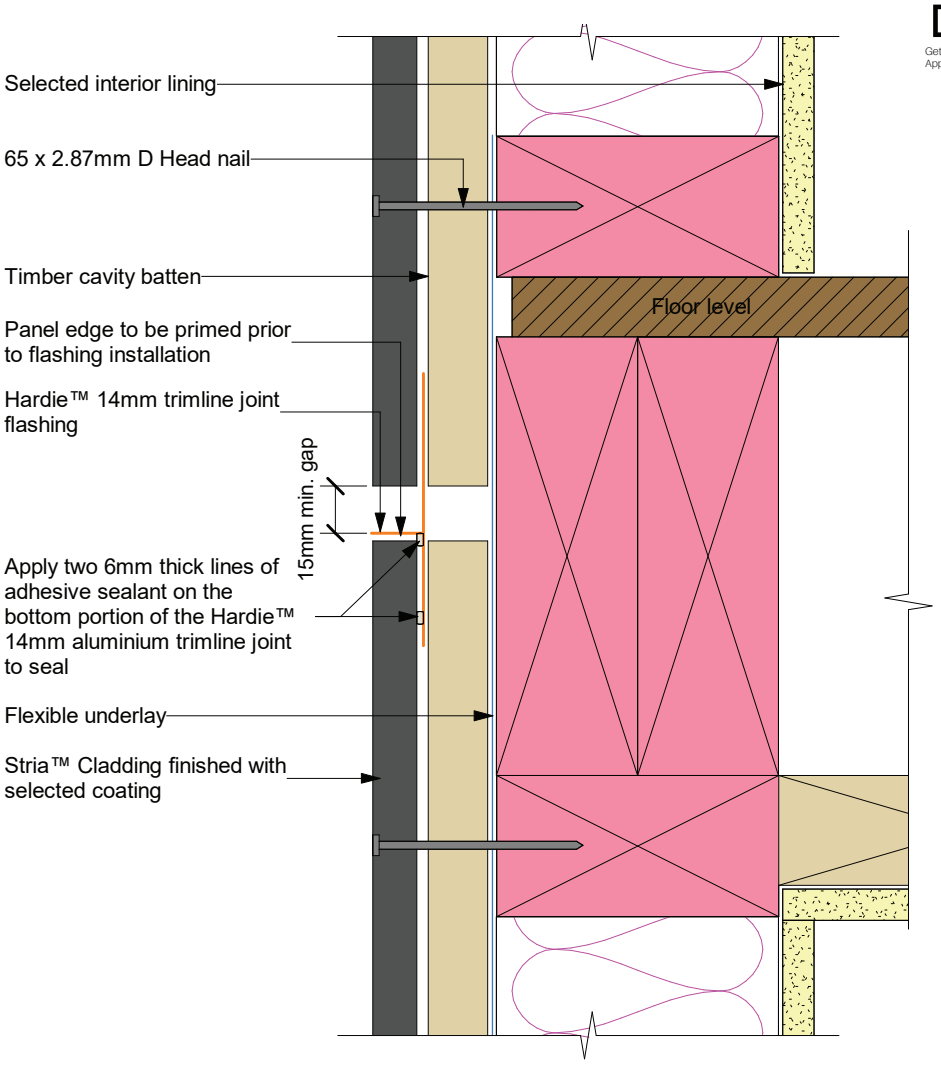
Figure 25: Continous cladding over floor joist



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Figure 26: Trimline Horizontal joint at floor joist level

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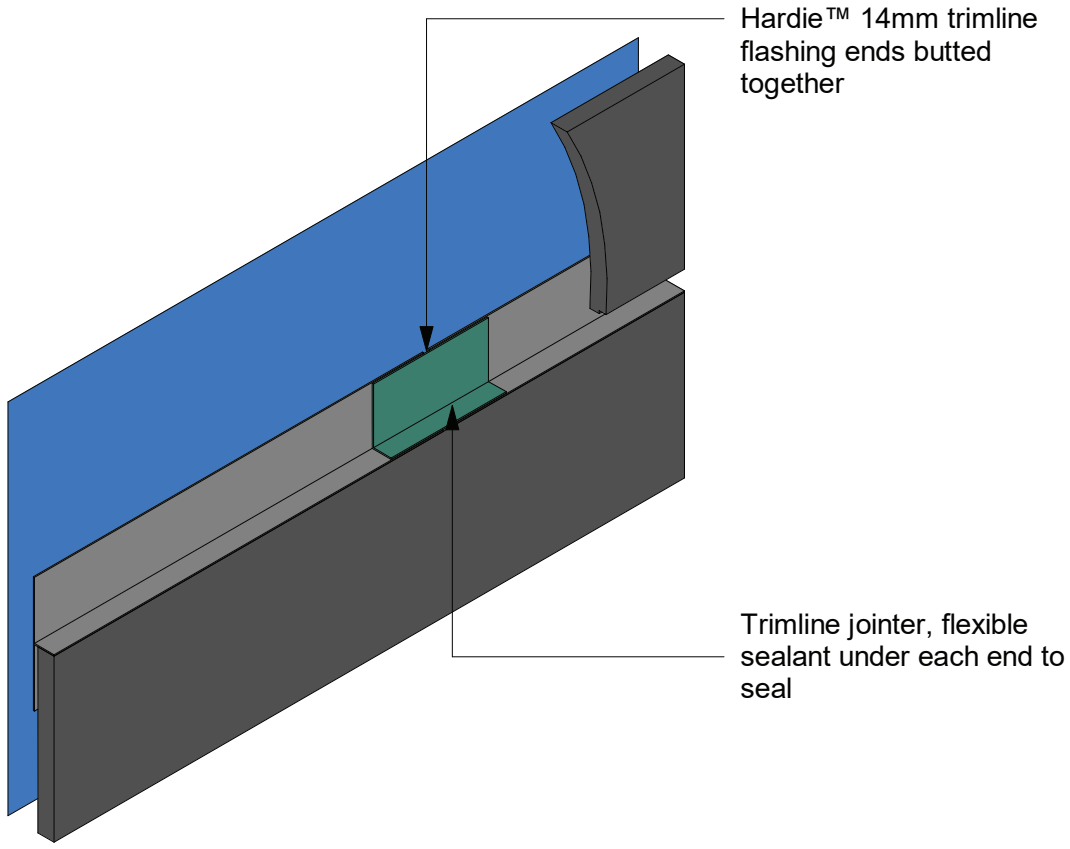
STEP 1
- Check fixing centres and edge distances

STEP 2
- The flashing to be placed in the centre of the floor joists. Do not fix cavity battens or cladding into floor joists

Notes:
- Hardie™ 14mm aluminium trimline joint, take care to ensure continuous seal is formed between panel and the trimline joint
- Trimline horizontal jointer 'L' shaped flashing will be required over the butt joint of the Stria aluminium trimline joint
- Site cut edges to be primed

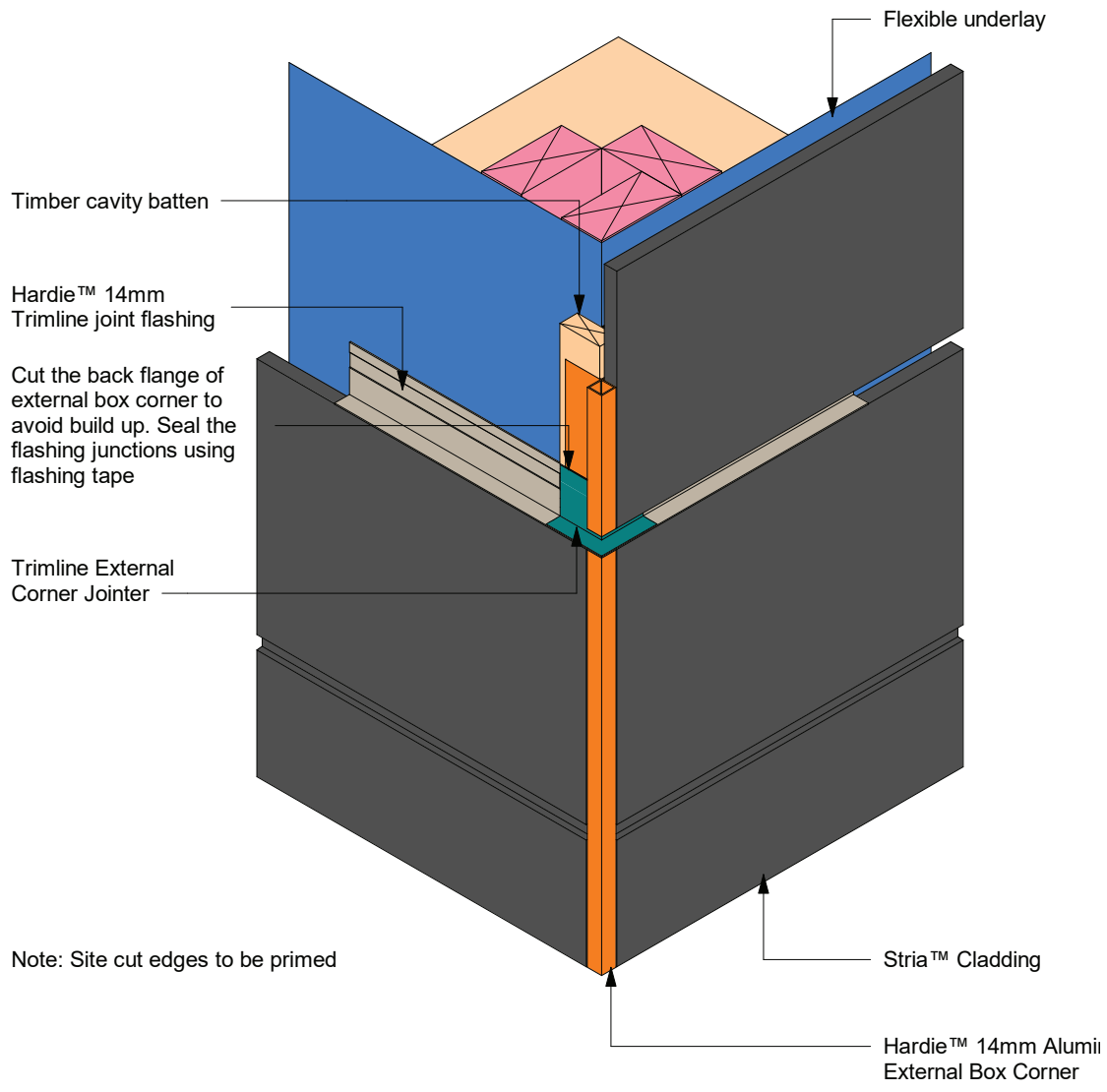
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Figure 27: Trimline joint flashing



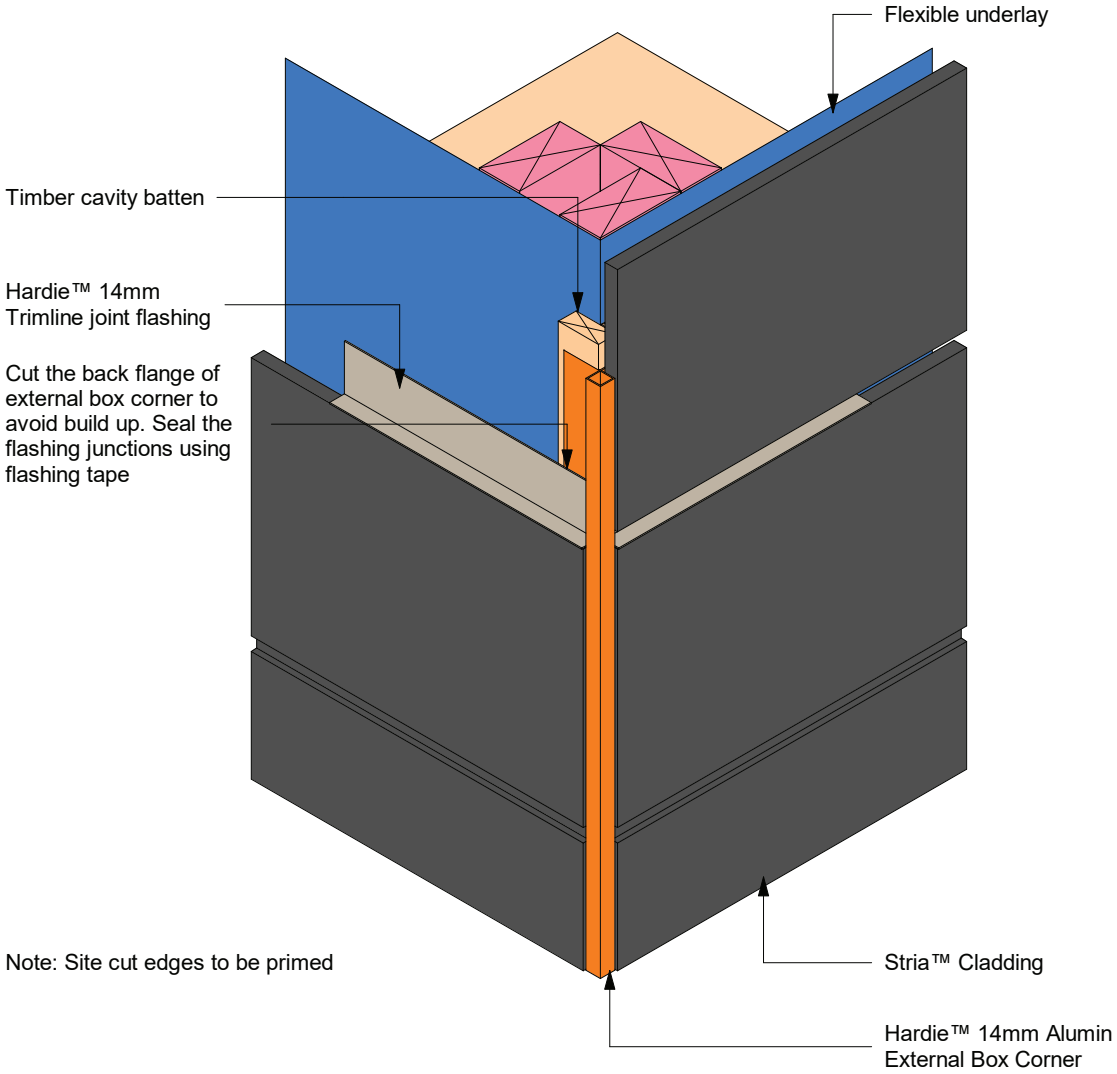
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Figure 28: Trimline joint flashing at external corner Option A



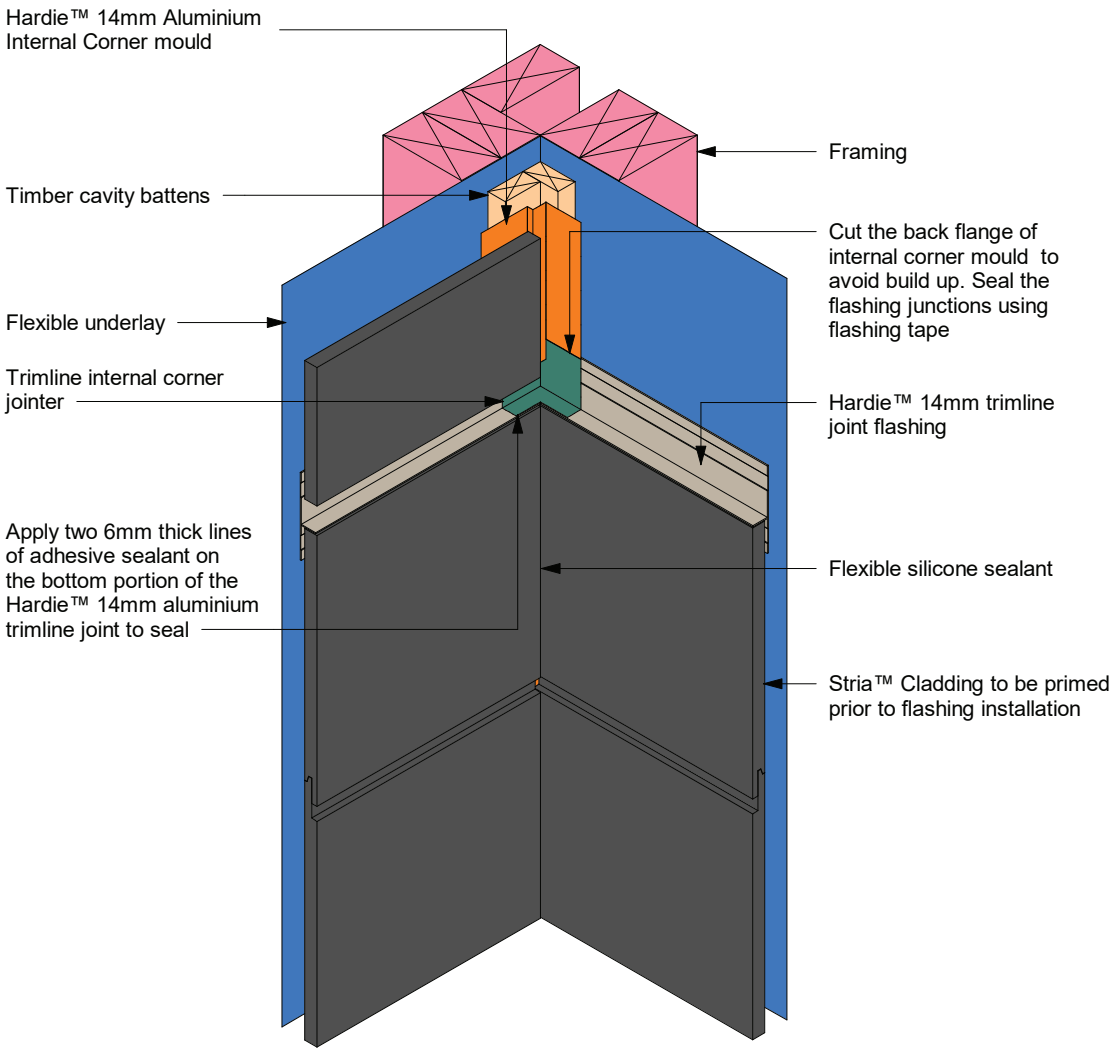
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Figure 29: Trimline joint flashing at external corner



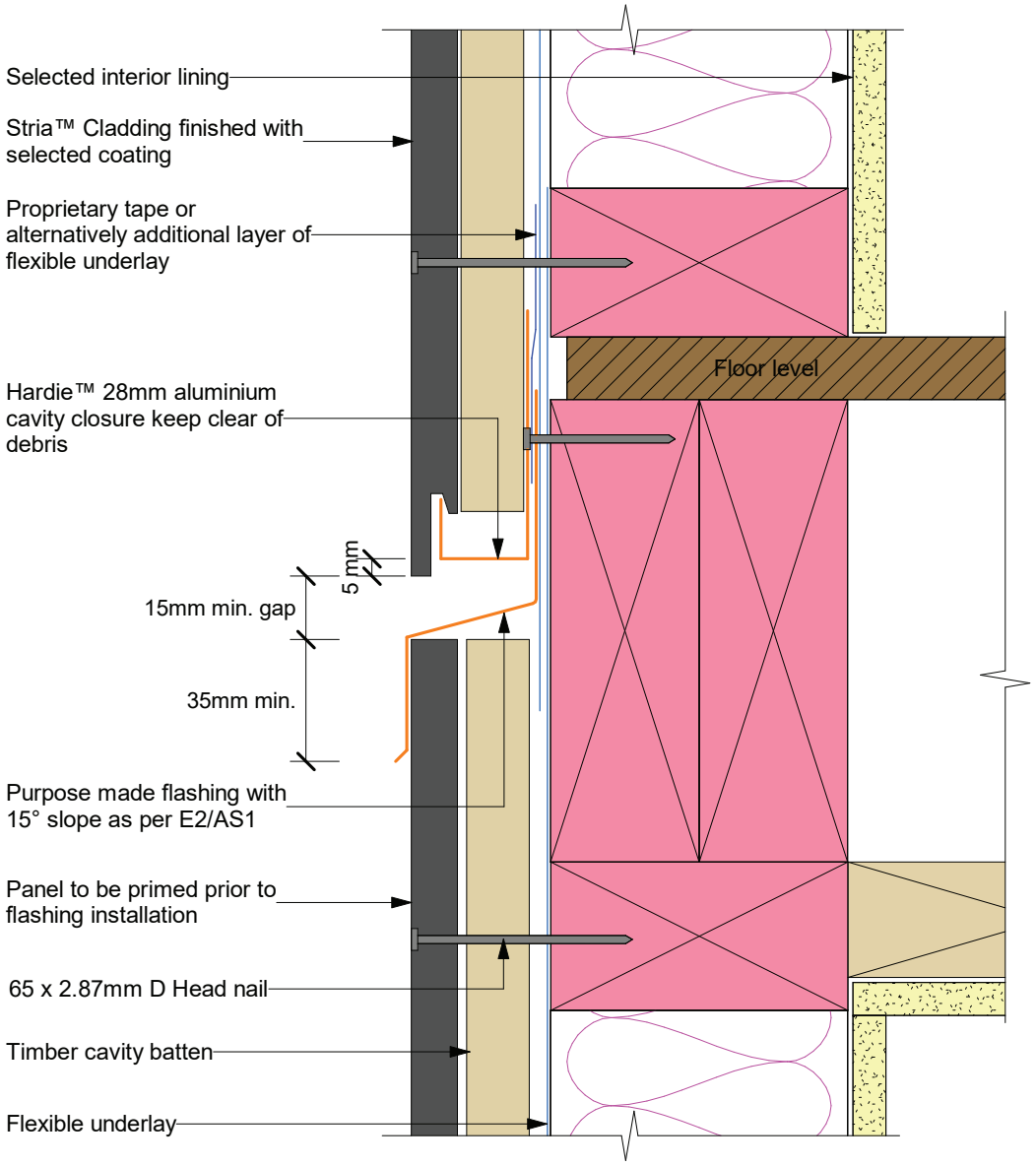
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Figure 30: Trimline joint flashing at internal corner



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Figure 31: Drained flashing joint at floor level



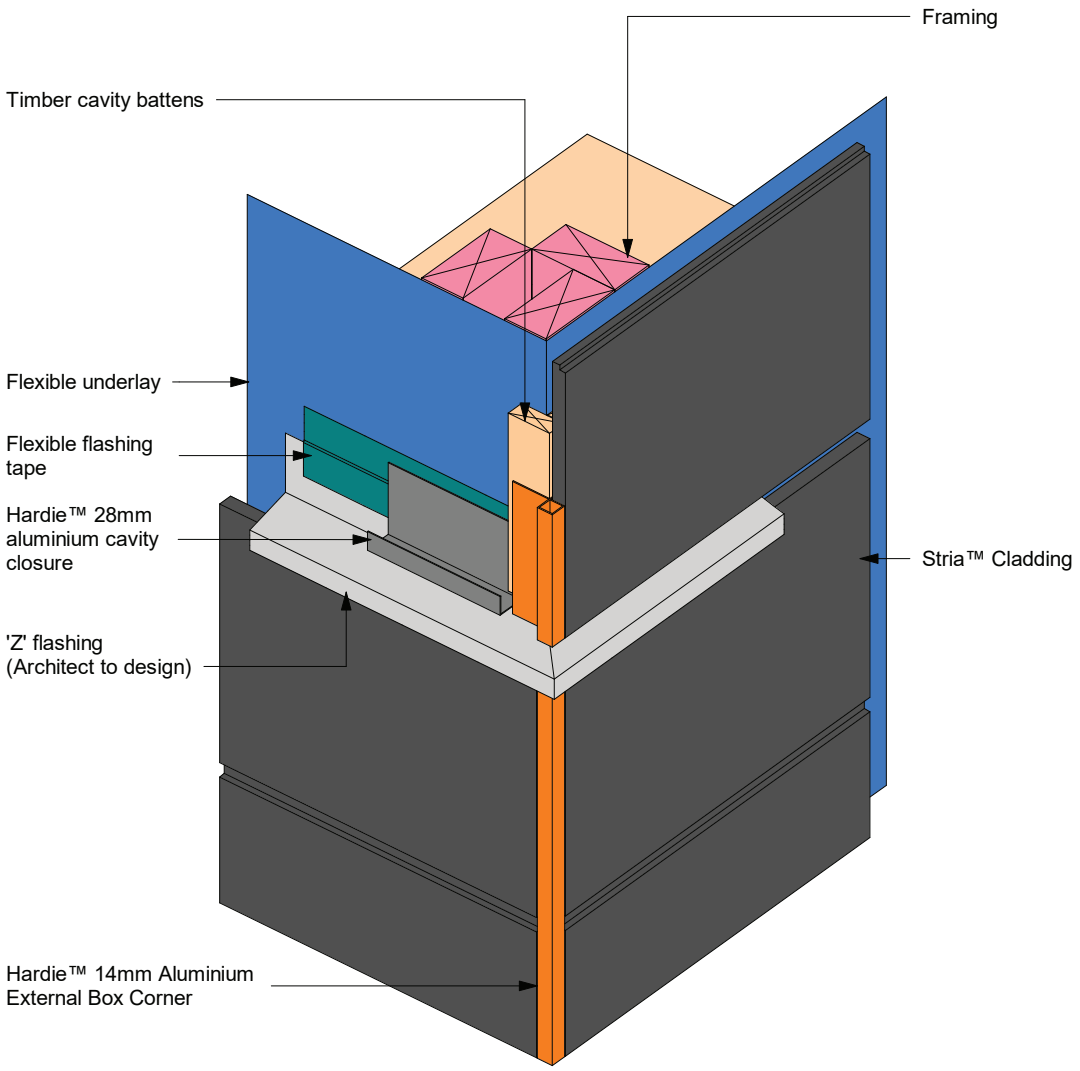
STEP 1
- Check architect's plans for the type of flashing to be used

STEP 2
- Check fixing centres and edge distances
- If top fixings are to be hidden by the Z flashing they will need to be fixed and sealed before the flashing is installed
- Cut edges need to be primed

STEP 3
- The flashing to be placed in the centre of the floor joists. Do not fix timber cavity battens or cladding into floor joists
- This detail is required to limit cavities to a maximum of 2 stories or 7 metres. Refer to E2/AS1 clause 9.1.9.4

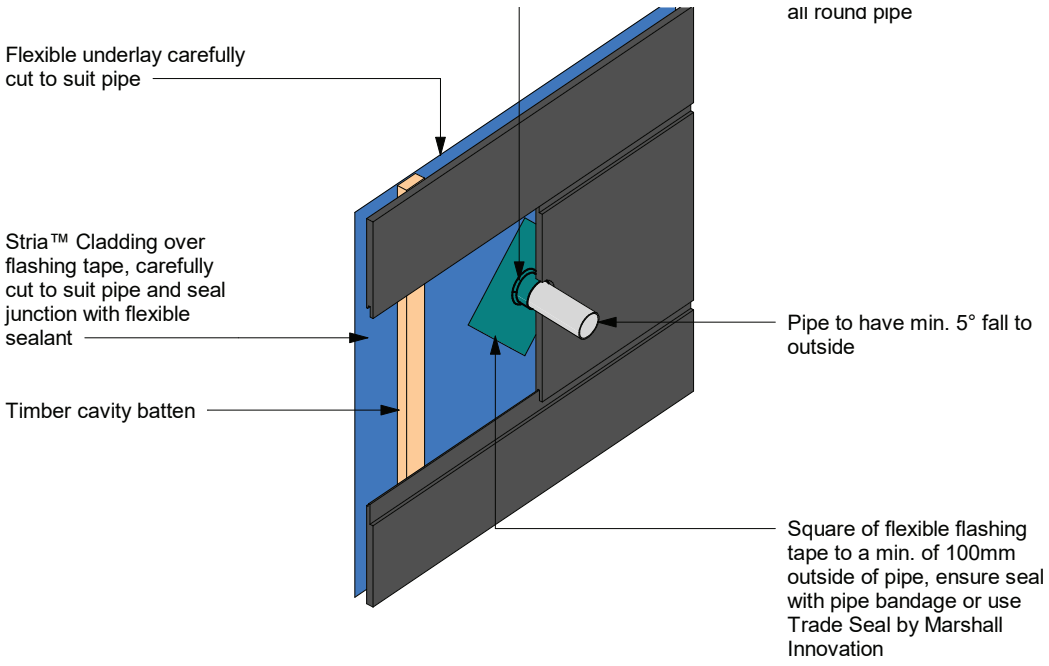
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Figure 32: Drained flashing joint at external corner



Note: Site cut edges to be primed

Figure 33: Pipe penetration

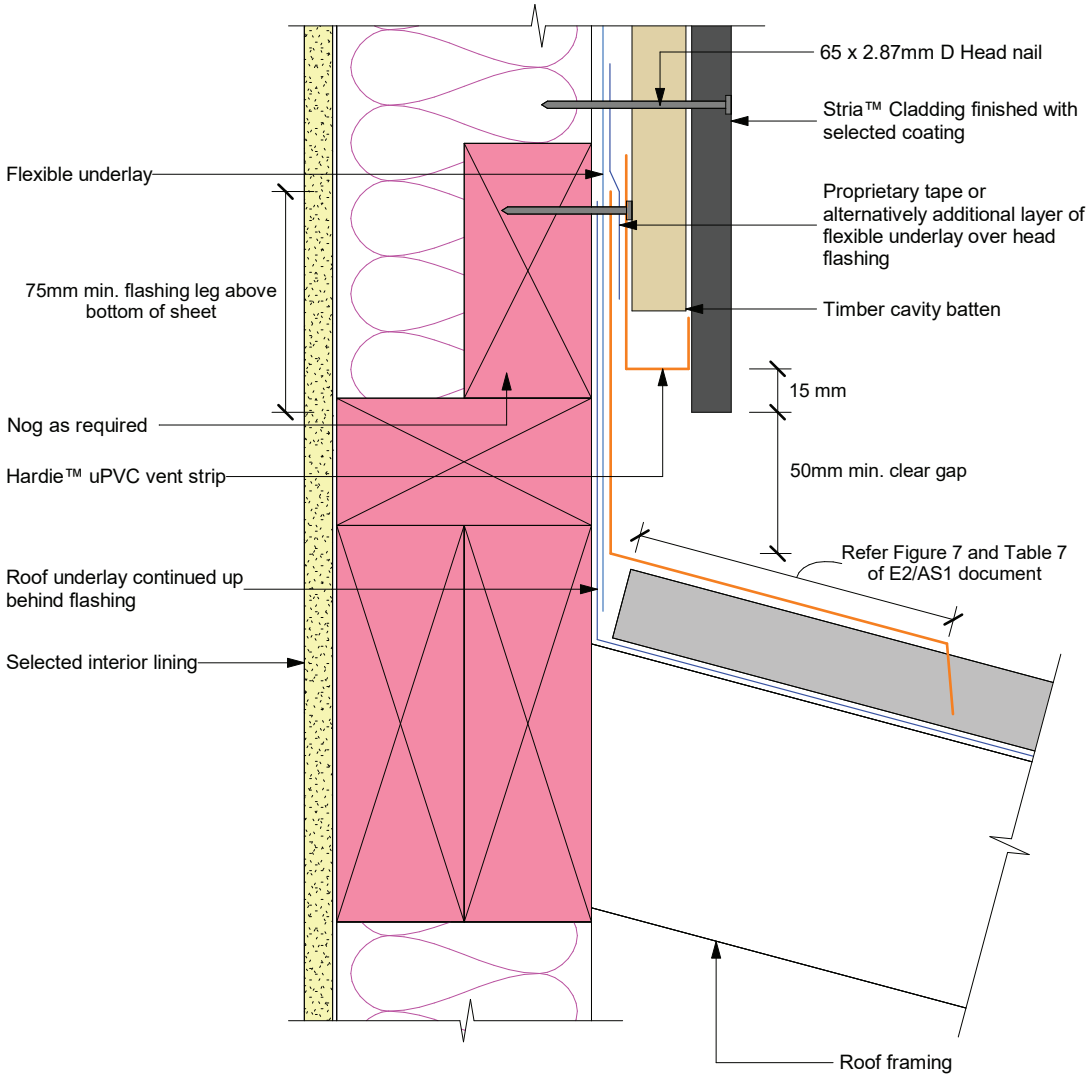


Note: Site cut edges to be primed

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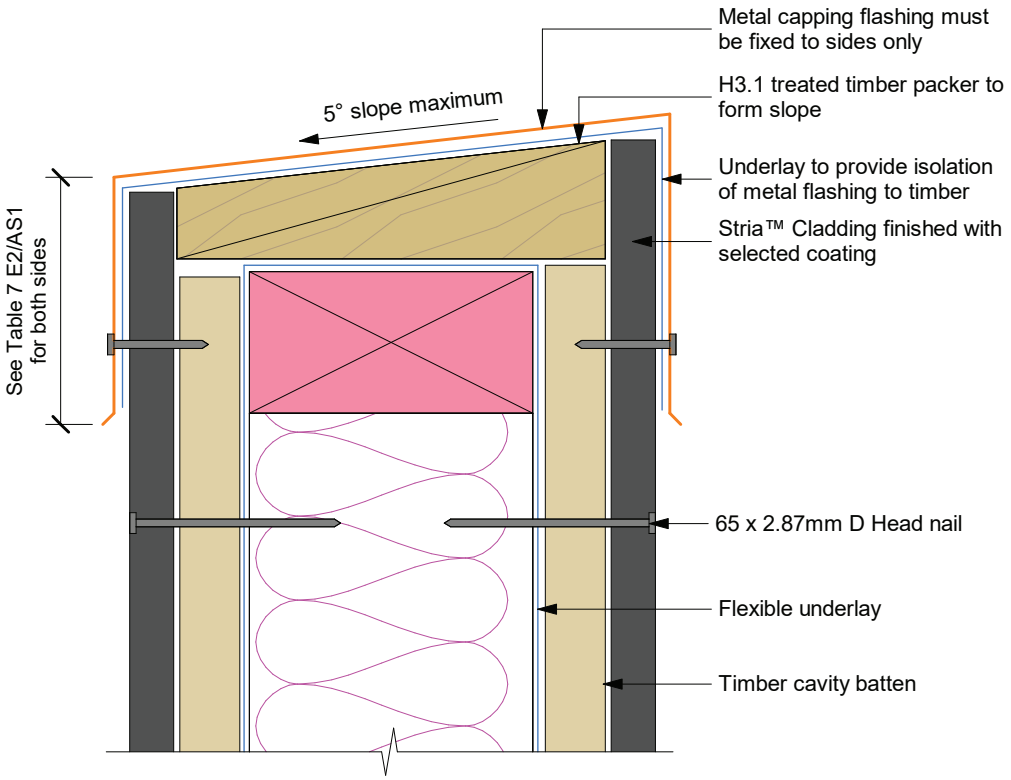
Figure 34: Apron Flashing Detail



Notes:

- When 50 year durability for flashing is required refer to Table 20 NZBC E2/AS1 document
- Site cut edges to be primed

Figure 35: Parapet flashing

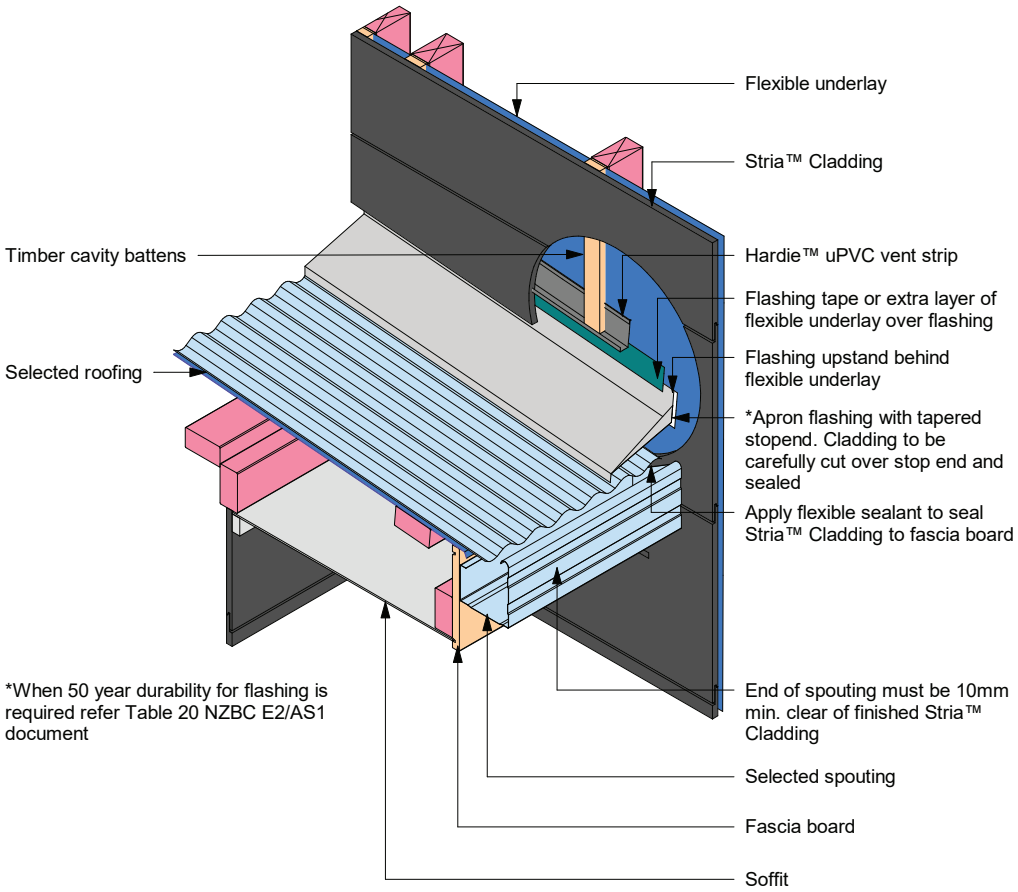


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Figure 36: Roof to wall junction detail

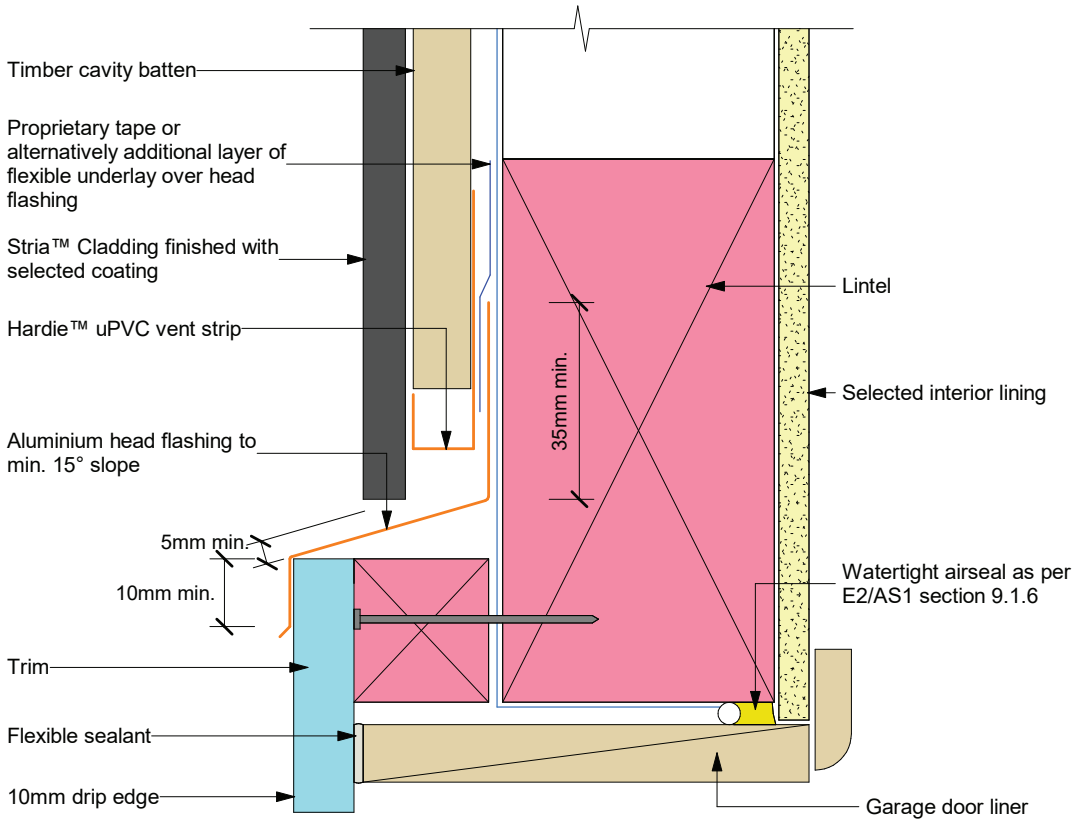
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Note: Site cut edges to be primed

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Figure 37: Garage door head

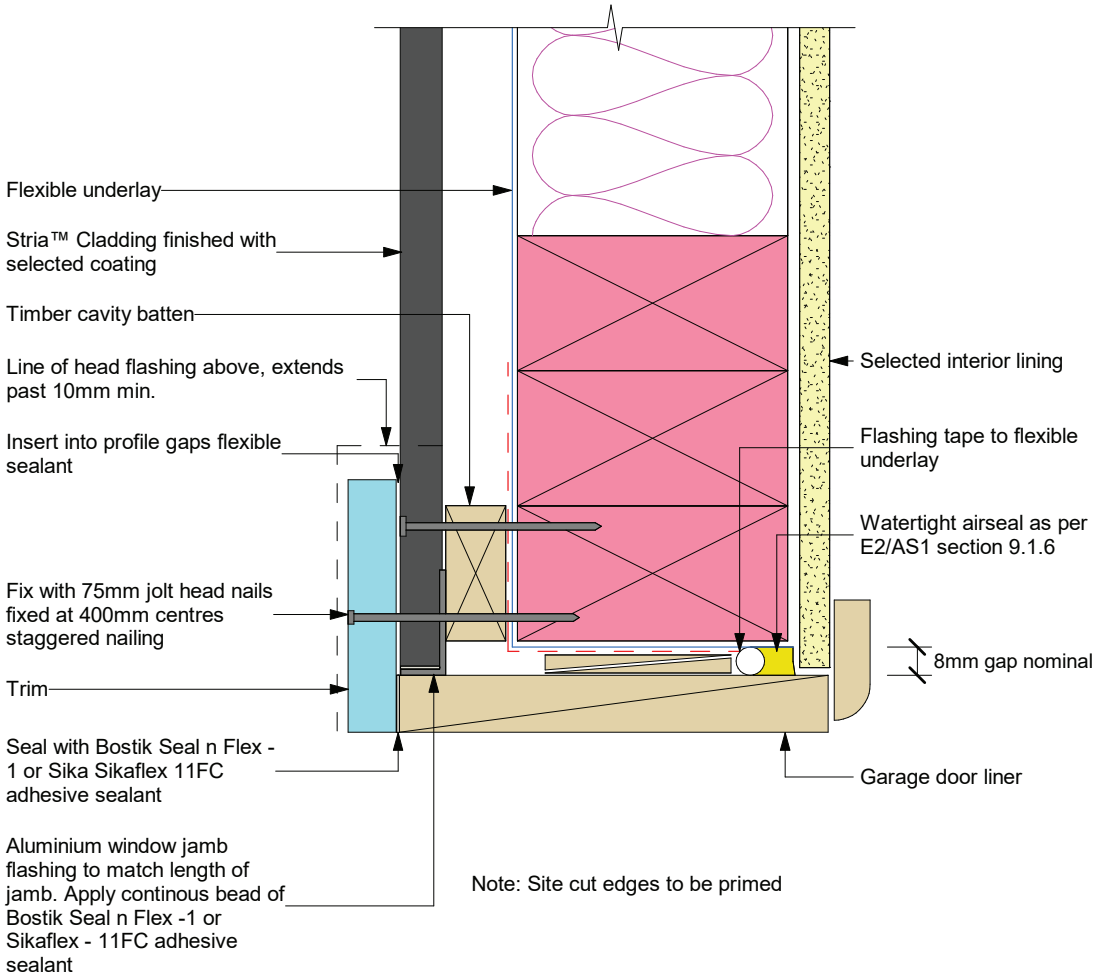


- Sealant must be applied between head flashing and Trim in VH wind zones
- Site cut edges to be primed

For all meter box details please visit our website at **www.jameshardie.co.nz** or Ask James Hardie on **0800 808 868.**

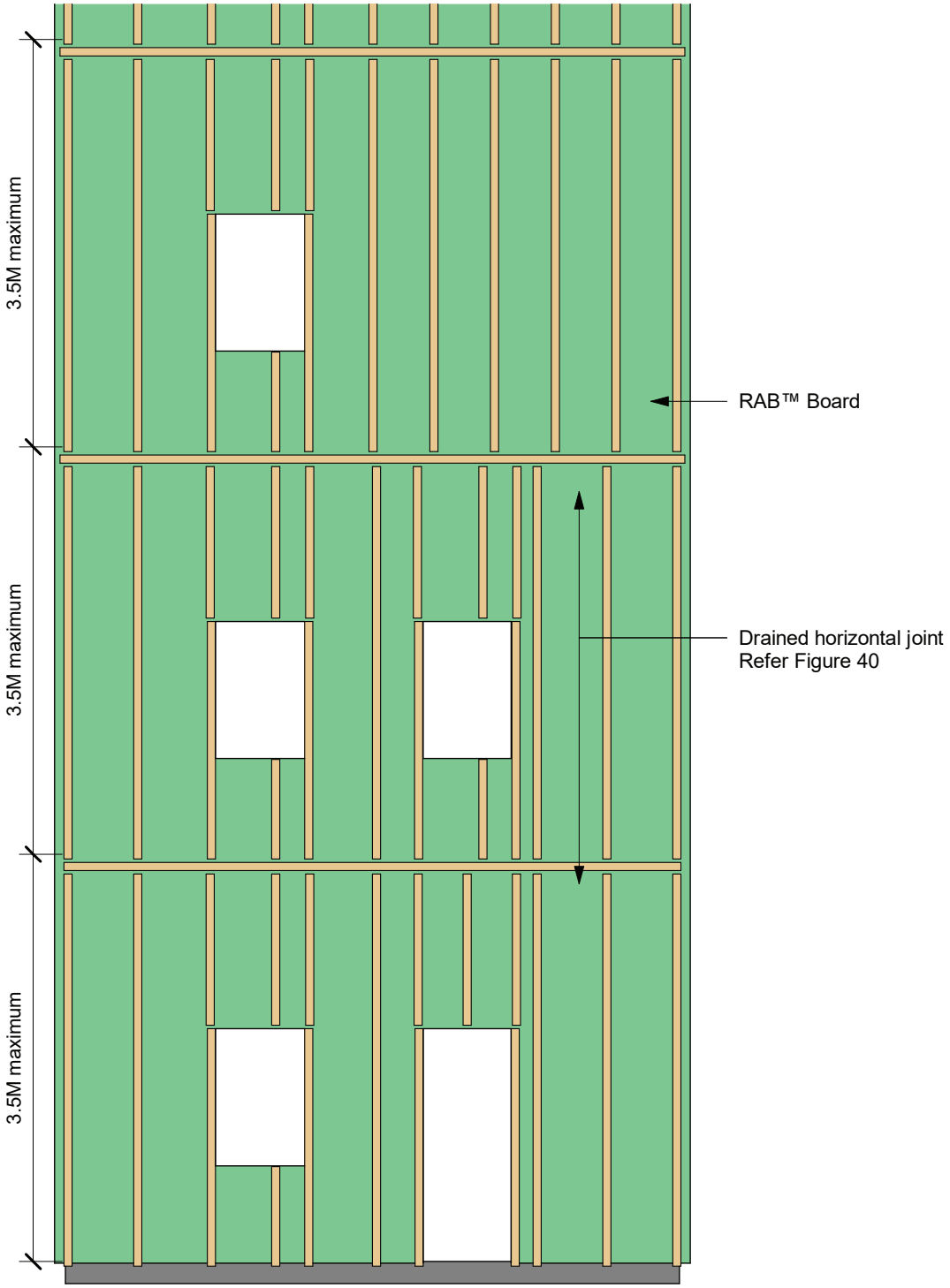
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Figure 38: Garage door jamb



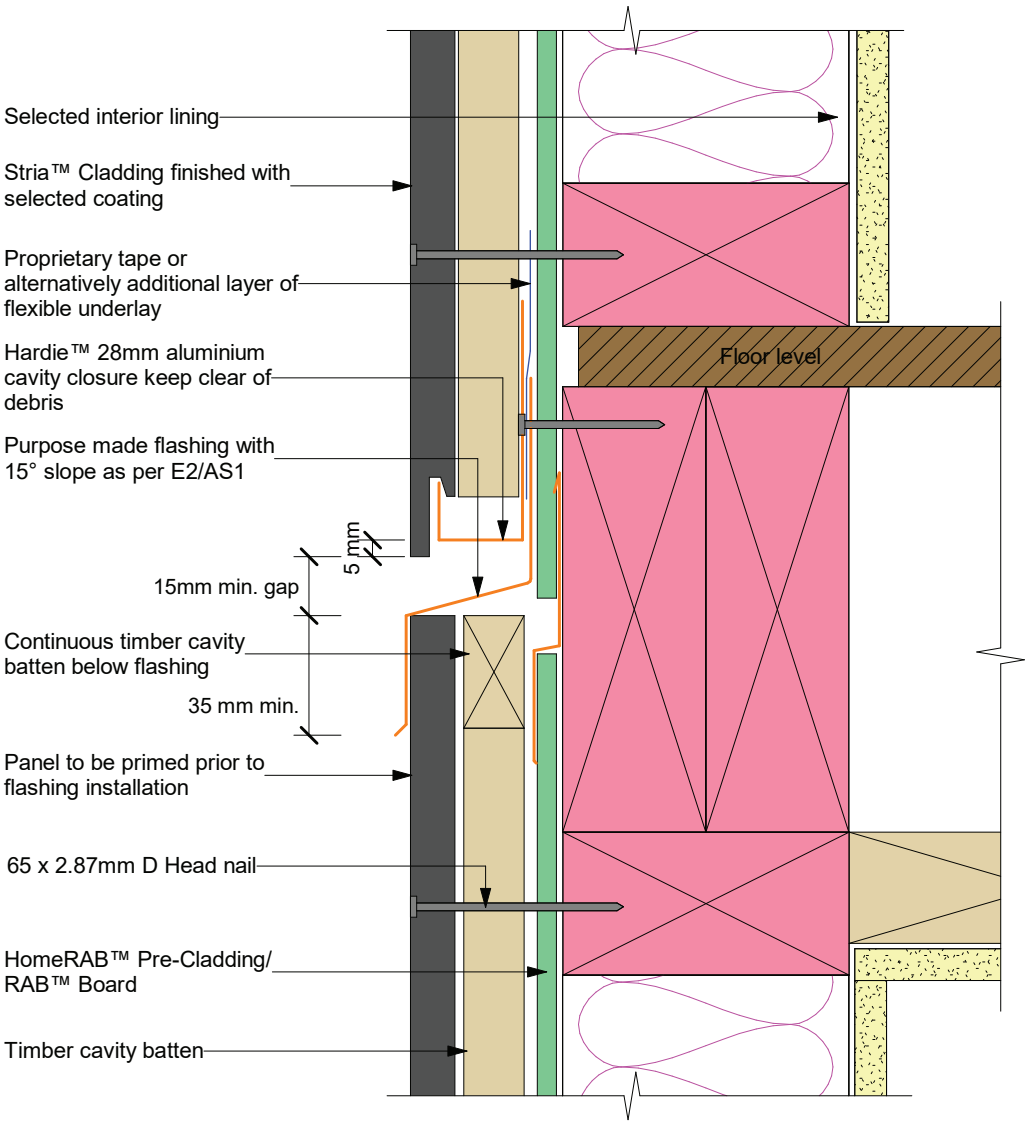
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Figure 39: Cavity batten setout building height over 10m



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Figure 40: Cavity fire barrier for heights over 10m



STEP 1
- Check architect's plans for the type of flashing to be used

STEP 2
- Check fixing centres and edge distances
- If top fixings are to be hidden by the Z flashing they will need to be fixed and sealed before the flashing is installed
- Cut edges need to be primed

STEP 3
- The flashing to be placed in the centre of the floor joists
- This detail is required to limit cavities to a maximum of 2 stories or 7 metres. Refer to E2/AS1 clause 9.1.9.4

Stria™ Cladding

JamesHardie™

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Product Warranty

James Hardie New Zealand Limited ("James Hardie") warrants for a period of 25 years from the date of purchase that the Stria™ Cladding (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

Conditions of Warranty:

The warranty is strictly subject to the following conditions:

a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;

b) this warranty is not transferable;

c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;

d) the project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards;

e) the claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;

f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);

g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;

h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

Disclaimer: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested/assessed the performance of the Stria™ Cladding when installed in accordance with the Stria™ Cladding Timber Cavity Installation technical specification, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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4311RI Roofing Industries Profiled Metal Roofing

Roofing Industries
+64 09 4144585
office@roof.co.nz
www.roof.co.nz

SUPPORTING DOCUMENTS

Magnaflow Compliance Data Sheet

Ref 101979. Uploaded 6 Nov 2024

Purpose: Performance, Environmental

Multirib - Compliance Statement

Ref 91781. Uploaded 14 Jun 2024

Purpose: Performance

Multirib - Profile Technical Summary

Ref 11443. Uploaded 14 Jun 2024

Purpose: Performance, Installation

Roofing Industries Maintenance for Metal Roofing and Cladding 2021

Ref 52458. Uploaded 14 Jun 2024

Purpose: Maintenance

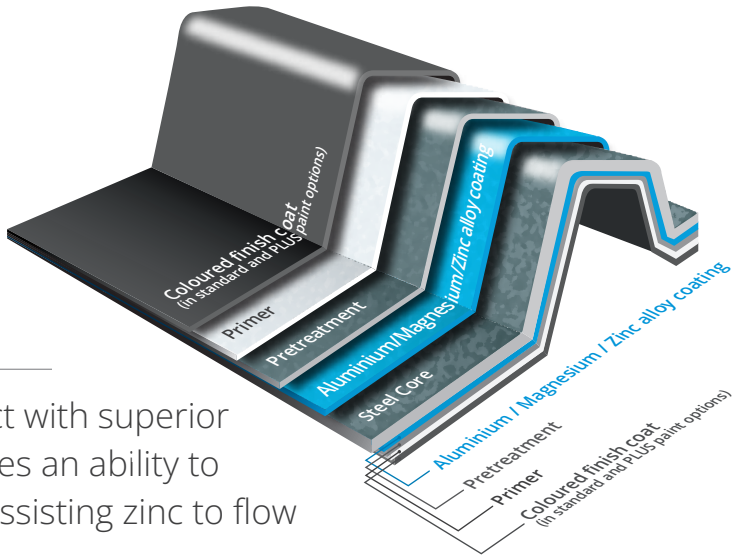
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BUILDING PRODUCT INFORMATION SHEET - CLASS 1

MagnaFlow™

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Description

MagnaFlow™

A highly durable and formable AM product with superior corrosion resistance, MagnaFlow possesses an ability to 'self-heal' due to magnesium in the alloy assisting zinc to flow and protect cut edges.

Conforms to AS/NZS 2728:2013.
Complies with Building Code B2 Durability Clause B.2.3.1(b) and (c) by meeting the required minimum performance standards. Not subject to any warning or ban under Section 26 of the Building Act 2004.

Substrate	Hot-dipped Aluminium / Magnesium / Zinc alloy coated steel coil.
Pre-treatment	Corrosion resistant conversion coating.
Primer coat	A flexible corrosion resistant primer on both sides.
Finish coat	Two options are available: Standard: A flexible exterior acrylic or modified polyester coating. PLUS: Chemically resistant thermosetting waterborne acrylic.
Backing coat	Grey polyester wash coat. Double sided finish coat option available.

Recommended end uses

ColorCote® MagnaFlow™ is suitable for exterior and interior uses in ISO 9223:2012 Environmental Categories 1–4 for: Roofing and Roofing Accessories, Wall Cladding, Rainwater Goods. If MagnaFlow is to be used in Environmental category 5, then this must be discussed and pre-approved by Pacific Coilcoaters.

Product Range Options:

- **Strippable film: ColorCote MagnaFlow** can be supplied with an optional strippable protective film.
- **Width and thickness availability** **Width**. 273mm to 1221mm. **Thickness.** 0.40mm. 0.50mm, and 0.55mm.

PLEASE NOTE: This Product Information Sheet does not warrant MagnaFlow for all purposes. Please make use of the Warranty Enquiry Form on the ColorCote website www.colorcote.co.nz

Manufactured in Aotearoa New Zealand from local and imported materials.

ColorCote® is a registered trademark of Fletcher Steel Ltd. MagnaFlow™ is a trademark of Fletcher Steel Ltd.
NZBN 9429037626563. Pacific Coilcoaters is a trading division of Fletcher Steel Limited, a Fletcher Building Limited business. 968 Great South Road, Penrose, Auckland 1061. www.colorcote.co.nz

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Product attributes

Property	Test & Evaluation Methods, Standards Employed	Results
Adhesion		
Reverse Impact	AS/NZS 2728:2013 (App. E)	≥10 Joules
T-bend	AS/NZS 2728:2013 (App. F)	Maximum 6T
Specular Gloss		
60˚ meter	ASTM D523-14	Nominal 25 ±10 units, low gloss option available on some colours
Painted film hardness		
Pencil	AS/NZS 1580.405.1	HB or harder
Solvent Resistance	ASTM D5402-15	Exceeds 50 double rubs
Scratch Resistance	ASTM D5178-13	Needle carrying 2000g. No marking evident
Resistance to corrosion		
Salt spray	AS/NZS 1580.481.1.9, AS/NZS 2728:2013	Meets the requirements of Sections 2.10, and Table 2.6 of AS/NZS 2728:2013
Outdoor Exposure (Rainfall Washed)	AS/NZS 1580.481.1.9, AS/NZS 2728:2013	Meets the requirements of Sections 2.8, and Table 2.3 of AS/NZS 2728:2013
Resistance to colour fade		
QUV (2000hrs)	AS/NZS 1580.601.4, AS/NZS 2728:2013	Meets the requirements of Sections 2.8, and Table 2.4 of AS/NZS 2728:2013
Outdoor Exposure (Rainfall Washed)	AS/NZS 1580.601.4, AS/NZS 2728:2013	Meets the requirements of Sections 2.8, and Table 2.4 of AS/NZS 2728:2013
Resistance to humidity		
Cleveland (500 hours)	AS/NZS 1580.408.4, AS/NZS 1580.481.1.9	Meets the requirements of Sections 2.9, and Table 2.5 of AS/NZS 2728:2013
Resistance to fire		
Exposure	ISO 5660:2002	Group 1-S. Complies with the the NZBC paragraph A1.3

For information regarding specific standards of Test Evaluations, please contact ColorCote on 0800 279 979 or email enquiries@colorcote.co.nz

Please refer to The NZ Metal Roofing Manufacturers' Code of Practice for comprehensive installation and rollforming recommendations. For further general information including recommended areas of use, performance, storage, site practice, fastenings, and maintenance, please refer to the MagnaFlow™ Technical Information bulletin.

PLEASE NOTE: This Product Information Sheet does not warrant MagnaFlow for all purposes. Please make use of the Warranty Enquiry Form on the ColorCote website www.colorcote.co.nz

Manufactured in Aotearoa New Zealand from local and imported materials.

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Pacific COILCOATERS

Tekton Consulting
Tekton Group Ltd, PO Box 45045, Lower Hutt 5042, ph: +64 27 2300120

Compliance with the Building Code for E2 External Moisture

for

Multirib™ Roof and Wall Cladding

Includes

Multirib™ Reverse Run Wall Cladding

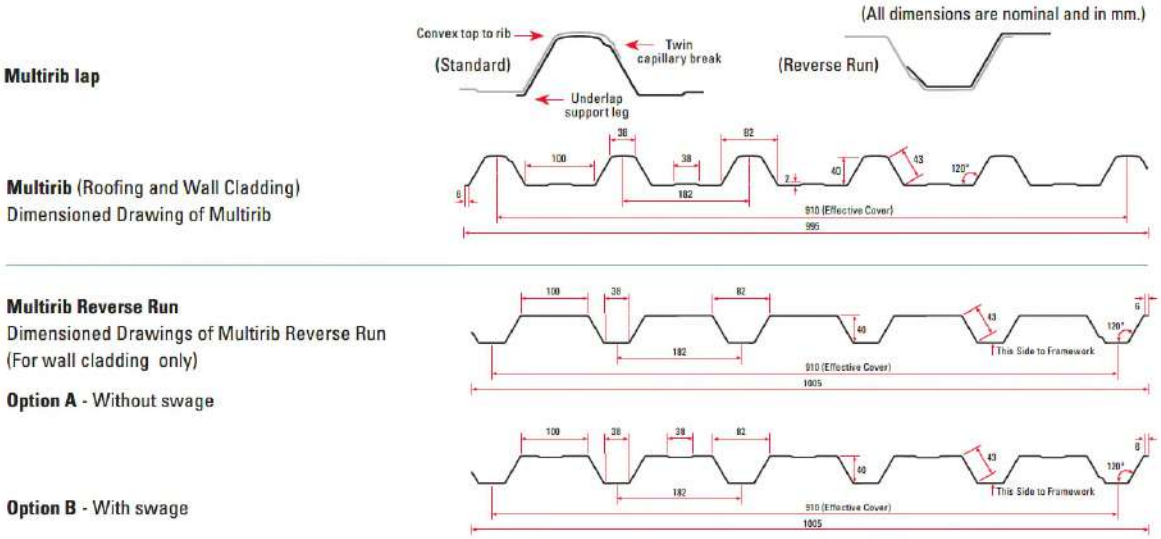
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Executive Summary

This report presents arguments supporting the use of **Multirib™** profile as roofing and vertically and horizontally fixed wall cladding, and **Multirib™ Reverse Run wall cladding**, complying with the requirements of the Building Code regarding E2 External Moisture.

Background

Multirib™ is an asymmetric trapezoidal profile roofing and cladding.



Acceptable Solution E2/AS1[i] provides for trapezoidal profile roofing with a minimum crest height of 19 mm and 210 mm maximum between crests.

It also provides for metal cladding of corrugate or trapezoidal profiles to be used as wall cladding when fixed vertically (Risk Score 0- 6 Corrugated and symmetrical trapezoidal; Risk Score 7-20 Corrugated only). It also allows horizontal fixing over a drained and ventilated cavity. It does not provide for vertical fixing on cavity. Vertical fixing on cavity is not provided for because solid cavity battens would compromise the ventilation and drainage of the cavity. However, using castellated or ventilated battens (as an alternative solution) overcomes this and is widely accepted.

Compliance with the Building code Clause E2 External Moisture for different profiles and use in alternative applications requires analysis of the profile and its use in those applications.

Multirib™ profile and E2/AS1

Acceptable Solution E2/AS1 covers a range of profiles:

> **8.4.4 Profiles**
> Profiles covered in this Acceptable Solution are shown in Figure 38, and consist of:
> a) **Corrugated** – curved with a crest height of 16.5 mm minimum,
> b) **Trapezoidal** – symmetrical or asymmetrical with a minimum crest height of 19 mm, and for asymmetrical a flat or lightly profiled pan width of 210 mm maximum between crests, and
> c) **Trough profile** – with vertical ribs at a minimum height of 38 mm, and flat or lightly profiled pans of 210 mm maximum between crests.

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E2/AS1 para 8.4.4	Multirib™		Multirib™ Reverse Run	
minimum crest height of 19 mm	40 mm	Complies	40 mm	Complies
pan width of 210 mm maximum between crests	100 mm	Complies	38 mm	Complies

It also applies to particular grades of material:

> **8.4.3.2 Steel**
> Materials for the manufacture of profiled steel roof cladding shall:
> a) have a BMT of 0.4 mm minimum
> b) be grade G550, or G300 for rolled, crimped, or trough profile roofing
> c) be selected for corrosion protection according to the intended exposure zone as shown in Table 20.

(The same requirements are repeated for profiled steel cladding, in para 9.6.3.2)

E2/AS1 paras 8.4.3.2/9.6.3.2	Multirib™	
BMT 0.4 mm minimum	0.40 or 0.55 mm	Complies
Grade G550 or G300	G550	Complies
be selected for corrosion protection according to the intended exposure zone……	Various coating options available.	Complies

The **Multirib™**profile meets the characteristics specified in E2/AS1 in all respects for roofing.

This report examines how compliance with performance requirements of clause E2 External Moisture of the Building Code could be argued for **Multirib™** and **Multirib™ Reverse Run** as an alternative solution for use in wall cladding situations outside the limitations of E2/AS1.

The relevant Building Code requirement is cl E2.3.2:

> E2.3.2 Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to building elements, or both.

Analysis

Roofing

For roofing, the acceptable solution E2/AS1 provides for trapezoidal profile roofing limited to those with a minimum crest height of 19 mm and crest spacing of 210 mm maximum.

The **Multirib™** profile meets the characteristics specified in E2/AS1 in all respects.

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Wall Cladding

The Acceptable Solution provides insight into the perceived risks associated with the profile type and differentiates risk on the basis of the profile. It differentiates between trapezoidal profiles (which provide a flat area in contact at the point of fixing) and corrugated profiles, and also between symmetrical and asymmetrical trapezoidal profiles.

This analysis compares **Multirib™** with the characteristics of corrugated and trapezoidal profiles with respect to the building physics behind these profiles installed vertically directly to the framing as wall cladding.

It considers

- comparative likelihood of ingress of external moisture
- mechanisms for drainage and ventilation
- the characteristics of underlay between the profile and timber framing

Ingress of moisture behind the cladding:

The **Multirib™** profile is no more likely to allow penetration of external moisture than a corrugated profile. Penetration can be considered under three scenarios:

Penetrations – such as windows etc. Flashing details etc are no more complex for **Multirib™** than they are for corrugated or other trapezoidal profiles.

Profile sidelaps – this can be discounted as the channels do not run with any significant depth of water (unlike, potentially, a roofing application). The side lap incorporates a capillary break that provides a drainage path down the lap joint for moisture. In the unlikely event that external moisture did migrate to the underlay, the underlay characteristics are such that the framing is protected.

Fixings – wall claddings are typically fixed through the pan of the profile. **Multirib™** is fixed with screws using wafer TEK screws with an EPDM washer. The risk of water penetration is mitigated by the EPDM washers.

There is no reason to believe **Multirib™** is any more likely to allow the ingress of external moisture than corrugate, which is allowed as an acceptable solution.

Mechanisms for drainage and ventilation

Ventilation and drainage generally are provided by the cavities formed by the **Multirib™** profile. The cross-sectional area of each void formed by the profile against underlay or RAB is approximately 2400mm2, compared with a void of 685mm2 for a standard corrugated profile. (For **Multirib™ Reverse Run** the cross sectional rea of the void is even greater, at 4880 mm2). So **Multirib™** and **Multirib™ Reverse Run** provide drainage and ventilation well in excess of that provided by a standard corrugated profile.

Characteristics of the Cladding/Fixing interface

When a profile is direct fixed there is direct contact between the profile and the building underlay or RAB. The area of this contact is greater for a trapezoidal profile or a trough

profile than it is for a corrugate profile. For **Multirib™** the width of profile in contact with the fixing framing is about 100 mm. For **Multirib™ Reverse Run** the width of profile in contact with the fixing framing is about 38 mm.

There is also direct contact between the underlay and the fixing framing. The issue is whether moisture is likely to migrate to and be retained within the underlay or RAB where the profile is fixed to the framing, and what the effect of that moisture would be.

Ideally, the underlay/RAB should:

a) have a high resistance to liquid water – to minimise passage of liquid water through the underlay, and

b) be highly permeable to water vapour – to facilitate the diffusion of water from the underlay over time, minimising moisture gain by the fixing framing timbers.

NZS2295[ii] provides some insights into the appropriate characteristics of underlays. For direct fixing non-absorbent cladding on timber it specifies Type W2 (Heavy Kraft) or W4 (Absorbent Synthetic) underlay. It does not limit the "non-absorbent cladding" to any particular profile, and **Multirib™** would be classified as this.

The relevant requirements of NZS2295 for wall and roofing underlays are tabulated below:

Property	**Wall Underlay**	**Roof Underlay**
Water vapour resistance	7 MN s/g or less	Kraft: 7 MN s/g or less Synthetic: 0.5 MN s/g or less
Resistance to water penetration	20mm or greater	100mm or greater
Absorbency	100g/m2 or greater	150g/m2 or greater

The parameters of underlays relevant to the management of external moisture are more critical for roofing underlay than for wall underlay, and the properties exceed the requirements for wall underlays. The use of a roofing underlay in the place of a wall underlay could provide an even more conservative option.

Designers and specifiers should refer to the manufacturer's technical literature for instructions for the installation of **Multirib™** and to the NZ Metal Roof and Cladding Code of Practice[iii].

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Conclusions

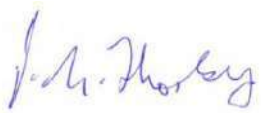
Multirib™ roofing meets the requirements in Acceptable Solution E2/AS1 for asymmetric trapezoidal profile metal roofing and meets the performance requirements of E2 External Moisture.

Multirib™ (and **Multirib™ Reverse Run**) direct fixed[iv] vertically as cladding can be expected to perform as well as standard corrugated profile as provided for in Acceptable Solution E2/AS1, with respect to ingress of external moisture and drainage and ventilation of the voids formed by the profile, and meets the performance requirements of E2 External Moisture up to and including a risk score of 20.

Absorbent synthetic wall underlay Type W4 or heavy kraft wall underlay Type W2 specified in NZS2295 allows the direct fixing of a non-absorbent cladding, such as **Multirib™** on timber framing. A roofing underlay (Types R1, R2, R3, or R4) in the place of wall underlay would provide at least equivalent performance.

Multirib™ (and **Multirib™ Reverse Run**) fixed vertically as cladding over a nominal 20 mm drained cavity can be expected to perform as well as standard corrugated profile as provided for in Acceptable Solution E2/AS1, with respect to ingress of external moisture and drainage and ventilation of the voids formed by the profile and meets the performance requirements of E2 External Moisture.

Multirib™ (and **Multirib™ Reverse Run**) horizontally fixed as cladding over a nominal 20 mm drained cavity meets the requirements in Acceptable Solution E2/AS1 for trapezoidal profile metal cladding and meets the performance requirements of E2 External Moisture.



P N Thorby

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[i] Verification Methods E2/VM1 and Acceptable Solutions E2/AS1, E2/AS2 and E2/AS3 for New Zealand Building Code Clause E2 External Moisture Third edition (Amendment 10), 5 November 2020
[ii] NZS 2295 2295:2006 Pliable, permeable building underlays
[iii] NZ Metal Roof and Wall Cladding Code of Practice v24.03, 1 March 2024
[iv] Designers and specifiers should consult Roofing Industries for direct fixed applications where the wind zone exceeds Very High.

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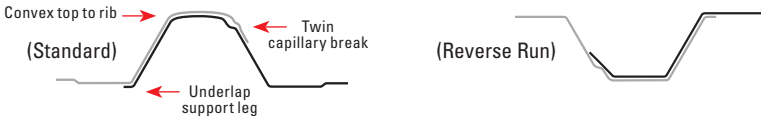
MULTIRIB™



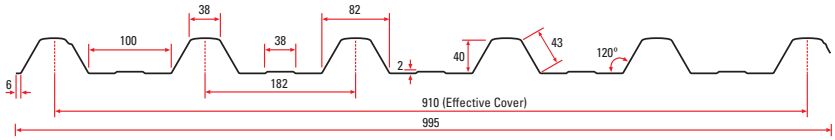
PROFILE TECHNICAL SUMMARY

(All dimensions are nominal and in mm.)

Multirib lap

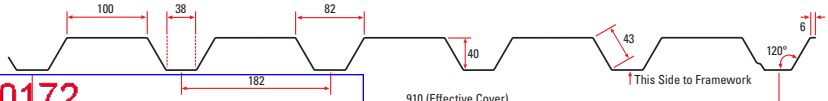


Multirib (Roofing and Wall Cladding)
Dimensioned Drawing of Multirib



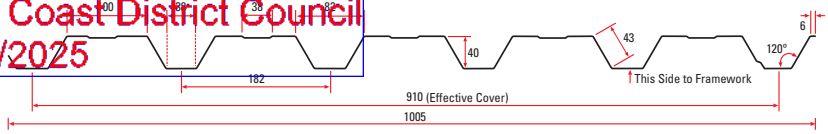
Multirib Reverse Run
Dimensioned Drawings of Multirib Reverse Run
(For wall cladding only)

Option A - Without swage



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Option B - With swage



Minimum Pitch

The minimum roof pitch for Multirib is 3 degrees (approx 1:20).
Any variation from the above should be referred to Roofing Industries.

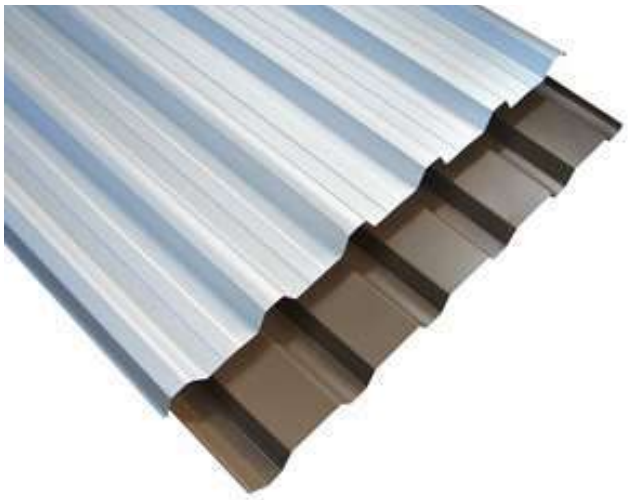
When a combination of sheets provide a run of in excess of 40 metres and up to 60 metres the roof pitch should be increased by 1 degree. Longer lengths require specific design.

When rainfall intensity exceeds 100mm/hour the minimum pitches need to be increased by a further 1 degree for every 10 metres of run over 40 metres.

The building design pitch may need to be higher to take into account any cumulative deflections of the frame, purlin and roof sheeting or penetrations.

With curved roofing the roof cladding must not terminate at a pitch lower than permitted above.

Side laps of curved sheets must be sealed to any areas below the minimum pitches permitted above.



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- Manufactured custom cut to length subject to transport and site limitations.
- As sheet lengths increase higher transportation costs may be applicable.
- Sheet lengths in excess of 28 metres require specialised transportation. Refer to Roofing Industries.
- Maximum recommended sheet lengths for **Aluminium** is 10-12 metres for dark coloured and 12-15 metres for plain and light coloured. Refer to Roof Expansions Provisions of this summary.

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Information Table

Substrate Material	Steel		Aluminium	
Thickness	**.40mm BMT**	**.55mm BMT**	**.70mm BMT**	**.90mm BMT**
Aprox weight per lineal metre for Zincalume based material (kg/lm)	4.05	5.48	2.39	3.07
Purlin Spacings -General	Refer to separate section.		Refer to separate section.	
Unsupported Overhang (mm)[1]	250	350	200	300
Drape Curved Roof -min Radius (m)	N/R[2]	85	N/R[2]	85
Purlin Spacings for Curved Roofs -Intermediate (mm)	N/R[2]	2400	N/R[2]	2400
-End (mm)	N/R[2]	1600	N/R[2]	1600
Precurved Roof -min Radius (mm)	N/A[3]	N/A[3]	N/A[3]	N/A[3]
-Recommended Minimum Radius (mm)	N/A[3]	N/A[3]	N/A[3]	N/A[3]

[1] Not suitable for roof access without additional support) [2] N/R - Not recommended [3] N/A - Not Available

This technical data sheet is for steel and aluminium based substrates. Multirib can also be manufactured in other metals such as Copper or Titanium Zinc. Refer to Roofing Industries.

Specification

Refer to our Full Specification on Masterspec, our website, and our Selection Guide.

Building Design / Performance Criteria / Product Selection

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During the design of buildings, it is necessary for the designer to take into account a number of issues to ensure that the most appropriate roofing and cladding product is chosen.

Whilst aesthetics and product availability do play a part, the chosen profile must meet certain performance criteria. These are centred around the profile's ability to shed water from the roof and the ability of the product to span purlin and girt spacings and meet design criteria. The minimum pitch for this profile is outlined elsewhere within this literature.

In terms of purlin spans and girt spacing it is necessary to follow due process.

If a building is being designed and constructed in full accordance with E2/AS1 and roofing and cladding products as covered by that document are chosen, then it is necessary for the design spans and fixing methodology to comply with those of E2/AS1. However E2/AS1 states that the use of the manufacturers information may provide a more optimum spacing of fixings, and this is recommended by Roofing Industries.

Further where a building is outside of the scope of E2/AS1 and the building or parts thereof are of specific design then it is necessary for the roofing and cladding to be suitable for the design and vice versa.

Loadings referred to in Roofing Industries graphs are the result of testing to a serviceability limit state which is more conservative than an ultimate limit state as quoted by some manufacturers.

Our Design Graphs are presented in a form to allow the designer to select suitable products and purlin spacings.

For most roof installations the purlin spacings will be limited by the trafficable limitations of the profile or the structural design. It is then necessary for the designer to calculate the design wind load for the roofing and cladding in accordance with generally acceptable practice, by reference to AS/NZS 1170.2: 2011, and/or NZS 3604: 2011 as appropriate. For a fuller explanation of this refer to the NZ Metal Roof and Wall Cladding Code of Practice. This result should be referenced to the Wind Load Span Design Graphs.

The purlin spacings should be limited to the lower of the trafficable limitations and design wind load with the capacity of the structure being greater than the design load for the application. However for roofs that are not able to be walked on and for wall cladding applications, the trafficable limitations may be exceeded providing the design wind loading criteria is met. However this should be done with caution as it may require considerable extra secondary fasteners within the laps.

The designer should always take into account in areas of heavy roof traffic, snow loadings, or where the roofing supports such items as air conditioning units, purlin spacing should be reduced accordingly. Consideration also needs to be given to limitations of purlin spacings for any translucent sheeting.

Reference should be made to the notes in the graphs.

It is our recommendation that for commercial and industrial roofing applications that .55mm BMT steel or .90mm BMT Aluminium is used as it has more resilience to damage particularly by other trades.

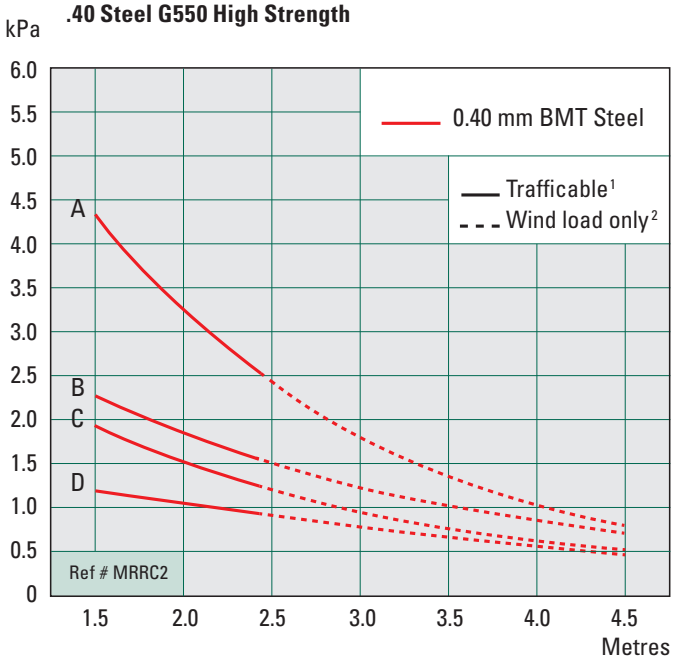
Underlay as per the project specifications should be used.

With an aluminium substrate steel netting should not be used where it may be in contact (either directly or through underlay degradation) with the aluminium roofing or cladding. Alternative material such as polypropylene strapping should be used where support is required, or the cladding separated from the underlay by a high density polystyrene batten or Thermakraft Drainage Matt or similar, and the use of an aluminium gutter flashing. This is also applicable to coated metal and zinc roofing in severe marine applications. In all the above cases self supporting paper should be used, including when support is required.

WIND & CONCENTRATED LOAD SPAN DESIGN GRAPH

Roofing - Steel Based Material

.40 Steel G550 High Strength



- Intermediate span in metres.
- End spans to be a maximum of 2/3 of this span.
- A, B, C and D represent alternative primary fixing methods

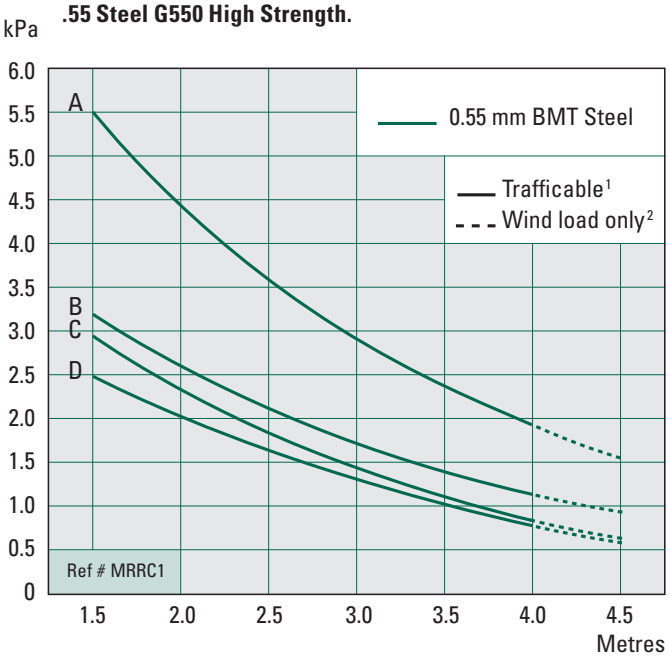
1) The solid line represents where walking is permitted within 300 mm of the purlin line or in the pan of the profile. Therefore for a normal roof, providing wind load requirements are met, purlin spans are limited to:

Maximum Spans	0.40 mm BMT
Intermediate	2.4 metres
End	1.6 metres
Type 2B *"Restricted Access"* Classification	

2) The broken line represents untrafficable roof areas and is wind loading only and has a Type 3 Classification.

In areas of heavy roof traffic, snow loadings or containing items such as air conditioning units purlin spacing should be reduced accordingly.

.55 Steel G550 High Strength.



- Intermediate span in metres.
- End spans to be a maximum of 2/3 of this span.
- A, B, C and D represent alternative primary fixing methods

1) The solid line represents where walking is permitted within 300 mm of the purlin line or in the pan of the profile. Therefore for a normal roof, providing wind load requirements are met, purlin spans are limited to:

Maximum Spans	0.55 mm BMT
Intermediate	4.0 metres
End	2.7 metres
Type 2B *"Restricted Access"* Classification	

2) The broken line represents untrafficable roof areas and is wind loading only and has a Type 3 Classification.

In areas of heavy roof traffic, snow loadings or containing items such as air conditioning units purlin spacing should be reduced accordingly.

For Type A "Unrestricted Access" Classification, refer to Purlin Spacing Limitations and Recommendations.
Classification types are from the NZ Metal Roof and Wall Cladding Code of Practice.
Testing confirms that .70mm Aluminium has similar results to .40mm Steel and that .90mm Aluminium has similar results to .55mm Steel and is adjusted for practical application. Aluminium requires load spreading profile washers and EPDM's at all time.

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Primary Fixing Methods

Roofing Application

A - Fixed every purlin, every rib with approved screws & neos, load spreading profiled metal washers and EPDM washers.



B - Fixed every purlin with the same pattern, (hit-miss-hit-hit-miss-hit) with approved screws &and neos, load spreading profiled metal washers and EPDM washers. End purlins and periphery of roof to be fixed every rib.



C - Fixed every purlin with the same pattern, (hit-miss-hit-hit-miss-hit) with approved screws and neos and 25mm Aluminium embossed washers. End purlins and periphery of roof to be fixed every rib.



D - Fixed every purlin with the same pattern, (hit-miss-hit-hit-miss-hit) with approved screws and neos without washers. End purlins and periphery of roof to be fixed every rib.

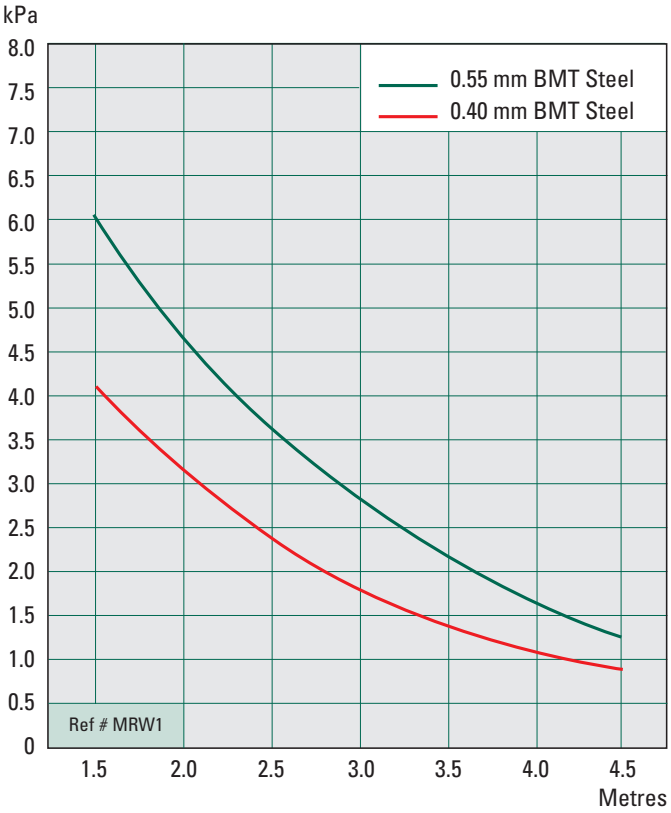


Drape Curved Roofing

It is recommended that the first two purlins at each end of the sheet in drape curving situations, should be fixed using profile metal washers and EPDM washers to every crest, with the balance of the roof fixed as above.

Wall Cladding - Steel Based Material

Combined Graph, .40 and .55 Steel High Stength



- Intermediate span in metres.
- End spans to be a maximum of 2/3 of this span.
- Type 3 Classification.

Testing confirms that .70mm Aluminium has similar results to .40mm Steel and that .90mm Aluminium has similar results to .55mm Steel and is adjusted for practical application.

Classification type

All roofing and cladding has been tested in accordance with the NZMRM test procedure.
Classification Types are from the NZ Metal Roof and Wall Cladding Code of Practice and is adjusted for practical application.

Primary Fixing Methods

Fixed in the pan adjacent to every rib every girt, with approved screws & neos. At the laps the fixing is to be adjacent to the lap rib.



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PURLIN/GIRT SPACING LIMITATIONS AND RECOMMENDATIONS

(Dimensions in metres)

E2/AS1 states that a specific design may produce a more optimum spacing for fixing than as presented in this document. For profiles such as Multirib that is particularly applicable and as such the manufacturers information should be used.

Manufacturers recommendations for maximum spacings in accordance with NZ Metal Roof and Wall Cladding Code of Practice

		Steel Based Material			Aluminium H36	
		.40mm BMT		.55mm BMT	.70mm BMT	.90mm BMT
Restricted Access Roof (Type 2B) (Where walking is permitted within 300mm of the purlin line or in the pan of the profile)	Intermediate End	2.400 1.600	For wind design loads for steel based materials refer to graphs or Summary Chart.	4.000 2.700	1.800 (2.5kPa)* 1.200 (4.0kPa)*	3.000 (1.9kPa)* 2.000 (3.2kPa)*
Unrestricted Access Roof (Type 2A) (Where walking is permitted anywhere on the roof cladding)	Intermediate End	1.200 0.800		3.000 2.000	1.100 (4.5kPa)* 0.750 (4.7kPa)*	2.100 (3.6kPa)* 1.400 (5.2kPa)*
Non Accessible Roof and Wall Cladding (Type 3)	Intermediate End	2.900 1.900		4.100 2.700	1.800 (1.8kPa)* 1.200 (3.3kPa)*	3.000 (1.9kPa)* 2.000 (3.2kPa)*

*Wind design load for Aluminium using Primary Fixing Method A. See Summary Charts for steel

Classification Types are from the NZ Metal Roof and Wall Cladding Code of Practice and do not allow for any congregation of foot traffic.
Purlin spacing limitations to be read in conjunction with Wind Load Span Design Graphs and Charts.
In areas of heavy traffic purlin spacing should be reduced accordingly.
For curved roofing refer to Information Table.
When roof pitch is 8 Degrees or higher and self supporting paper is preferred to be used (without any support) purlin spacings must be limited to a maximum of 1.200 mtr centres for vertically run underlay and 1.150 mtr centres for horizontally run underlay. This is particularly relevant with aluminium and /or severe marine environments for the reasons designated under Building Design/Performance Criteria/Product Selection part of this document.

Snow Loads

When the possibility of snow exists it is necessary to allow for the extra imposed snow loads by increasing the strength of the structure, and/or minimising the build up of snow, and this is generally achieved by increasing the roof pitch by allowing easier shedding of the snow or otherwise as the designer determines.

The objective is to simplify rather complex loading patterns while remaining adequately cautious. The design loads should take account of drifting snow due to wind, but wind loads are not required to be combined with snow loads.

As snow loads are uniformly distributed loads they are similar to wind loads.

Snow loadings are not required to be taken into account for the North Island of New Zealand north of a line drawn from Opotiki to Turangi and New Plymouth.

However for other areas snow loadings may need to be taken into account dependent on the area and altitude of the proposed project. A fuller reference including a map and chart is available from the NZ Metal Roofing Roof and Wall Cladding Code of Practice Section 3.5.

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SUMMARY CHART FOR ROOFING SPANS IN STEEL

Incorporating Wind and Concentrated Load Span Design Graphs, Primary Fixing Methods and Foot Traffic

.40mm BMT Steel

		WIND DESIGN LOADINGS - kPa's												
Purlin Spacing (mtrs)		**Fixing Method A**			**Fixing Method B**			**Fixing Method C**			**Fixing Method D**			**Foot Traffic**
Intermediate	End	Int.	End	Int (P)	Int.	End	Int (P)	Int.	End	Int (P)	Int.	End	Int (P)	
1.2	0.8	4.5	4.7	4.5	2.3	2.4	4.5	1.9	2.2	2.8	1.2	1.3	2.6	Unrestricted
1.5	1.0	4.3	4.5	4.3	2.2	2.3	4.3	1.8	2.1	2.7	1.2	1.2	2.5	Restricted Access Walk within 300mm of Purlins or in pan of roof
1.75	1.17	3.7	4.5	3.7	2.0	2.3	3.7	1.7	2.1	2.4	1.1	1.2	2.25	
2.00	1.33	3.2	4.4	3.2	1.8	2.2	3.2	1.5	2.1	2.2	1.0	1.2	2.0	
2.25	1.5	2.7	4.3	2.7	1.6	2.2	2.7	1.4	1.9	2.0	0.9	1.2	1.8	
2.4	1.6	2.5	4.0	2.5	1.55	2.1	2.5	1.3	1.8	1.8	0.9	1.2	1.7	
2.5	1.67	2.4	3.8	2.4	1.5	2.1	2.4	1.2	1.8	1.8	0.9	1.1	1.6	Non Accessible
2.75	1.83	2.0	3.4	2.0	1.3	1.95	2.0	1.1	1.7	1.5	0.8	1.1	1.4	
2.9	1.9	1.8	3.3	1.8	1.2	1.9	1.8	1.0	1.6	1.4	0.8	1.00	1.25	

.55mm BMT Steel

		WIND DESIGN LOADINGS - kPa's												
Purlin Spacing (mtrs)		**Fixing Method A**			**Fixing Method B**			**Fixing Method C**			**Fixing Method D**			**Foot Traffic**
Intermediate	End	Int.	End	Int (P)	Int.	End	Int (P)	Int.	End	Int (P)	Int.	End	Int (P)	
1.2	0.8	6.0	6.0	6.0	3.5	3.5	6.0	3.3	3.3	5.5	2.7	2.7	5.0	Unrestricted
1.5	1.0	5.5	6.0	5.5	3.2	3.5	5.5	2.9	3.3	5.0	2.5	2.7	4.6	
1.75	1.17	4.9	5.9	4.9	2.8	3.4	4.9	2.65	3.2	4.4	2.25	2.6	4.0	
2.0	1.33	4.4	5.7	4.4	2.6	3.3	4.4	2.3	3.1	3.7	2.0	2.5	3.4	
2.25	1.5	4.0	5.5	4.0	2.3	3.2	4.0	2.1	2.9	3.3	1.8	2.5	3.0	
2.4	1.6	3.6	5.3	3.6	2.15	3.1	3.6	1.9	2.8	2.9	1.65	2.4	2.7	
2.5	1.67	3.5	5.1	3.5	2.1	3.0	3.5	1.8	2.7	2.8	1.6	2.3	2.6	Restricted Access Walk within 300mm of Purlins or in pan of roof
2.75	1.83	3.3	4.7	3.3	1.8	2.75	3.3	1.6	2.5	2.4	1.45	2.2	2.2	
2.9	1.9	3.0	4.6	3.0	1.75	2.7	3.0	1.5	2.4	2.2	1.4	2.1	2.0	
3.0	2.0	2.9	4.4	2.9	1.70	2.6	2.9	1.4	2.3	2.1	1.3	2.0	1.9	
3.25	2.16	2.6	4.3	2.6	1.50	2.5	2.6	1.2	2.2	1.8	1.25	1.9	1.65	
3.5	2.33	2.3	3.8	2.3	1.35	2.2	2.3	1.1	2.0	1.5	1.0	1.75	1.4	
3.75	2.5	2.2	3.5	2.2	1.25	2.1	2.2	0.95	1.8	0.9	0.8	1.6	0.8	
4.0	2.70	1.90	3.2	1.9	1.1	1.8	1.9	0.8	1.7	0.8	0.75	1.4	0.75	
4.1	2.70	1.8	3.2	1.8	1.1	1.8	1.8	0.8	1.7	0.75	0.7	1.4	0.7	Non Accessible

Int (P) = Intermediate Periphery Loadings other than end spans (eg gable ends)

For wall cladding refer to Wall Cladding Graph. When fixed in accordance with the Primary Fixing Method loadings will always be higher than the above roofing charts.
Foot traffic classifications do not allow for any congregation of foot traffic.

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PRIMARY FIXING CHART

Roofing - Crest fixed (To be read in conjunction with Roof Expansion Provisions and Load Span Design Graph)

	Wood Purlins	Steel Purlins or girts up to 1.5mm	Steel Purlins or girts 1.5-4.5mm	Steel Purlins or girts 4.5-12mm	Washers (When required)
Steel Based Material	14-10x75 Class 4 Type 17 Woodteks with neos or 14-10x100 Class 4 Type 17 Woodteks with neos	12-14x65 Class 4 Steelteks with neos	12-14x65 Class 4 Steelteks with neos	12-24x 65 Class 4 Series 500 Steelteks with neos	Multirib load spreading profile Steel and 36mm EPDM or 25mm Aluminium embossed washer
Aluminium Based Material	14-11x73 Alutite with bonded washer with Multirib load spreading profile 1.2mm Ali washers and 36mm EPDM, or Stainless steel grade 316, 14-10x100 Type 17 with neos through a 10mm dia. clearance hole with Multirib load spreading profile 1.2mm Ali washer & 36mm EPDM	Stainless steel grade 304, 14-14x70 Steelteks and bonded washer through a 10mm dia. clearance hole with Multirib load spreading profile 1.2mm Ali washer & 36mm EPDM	Stainless steel grade 304, 14-14x70 Steelteks and bonded washer through a 10mm dia. clearance hole with Multirib load spreading profile 1.2mm Ali washer & 36mm EPDM	Fabco stainless steel grade 304, 14-14x70 Type B screw and bonded washer through a 10mm dia. clearance hole with Multirib load spreading profile 1.2mm Ali washer & 36mm EPDM	Multirib load spreading profile 1.20mm Ali and 36mm EPDM

Wall Cladding - Pan fixed

	Wood Purlins	Steel Purlins or girts up to 1.5mm	Steel Purlins or girts 1.5-4.5mm	Steel Purlins or girts 4.5-12mm	Washers (When required)
Steel Based Material Direct fixed	12-11x40 Class 4 Type 17 Woodteks with neos	12-14x20 Class 4 Steelteks with neos	12-14x20 Class 4 Steelteks with neos	12-24x32 Class 4 Steelteks Series 500 with neos	
Steel Based Material 20mm Cavity	12-11x50 Class 4 Type 17 Woodteks or Roofzips with neos	12-14x45 Class 4 Steelteks with neos or 12x50 Roofzips with neos	12-14x45 Class 4 Steelteks with neos	12-24x50 Class 4 Steelteks Series 500 with neos	
Aluminium Based Material Direct Fixed	12-11x35 Alutite with bonded washer	Stainless steel grade 304, 14-14x25 Steelteks and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Stainless steel grade 304, 14-14x25 Steelteks and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Fabco stainless steel grade 304, 4-14x20 Type B screw and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	19mm bonded Ali washer
Aluminium Based Material 20mm Cavity	12-14x55 Alutite with bonded washer	Stainless steel grade 304, 14-14x70 Steelteks and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Stainless steel grade 304, 14-14x70 Steelteks and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Fabco stainless steel grade 304, 14-14x70 Type B screw and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	19mm bonded Ali washer

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Note: All primary fasteners to have a minimum embedment into structural timber of 30mm. Adjust fastener length for both timber and steel fixings when necessary for battens etc. When using load spreading profile washers or 25mm Aluminium embossed washers for roofing fix ridging, roof flashings etc. using a 25mm Aluminium embossed washer and appropriate screw.

Secondary Fasteners (To be used in accordance with the NZ Metal Roof and Wall Cladding Code of Practice.)

These should be:

- Aluminium Blind Rivets AS5-3 x 4mm minimum (Residential)
- Aluminium Blind Rivets AS 6-3 x 4.8mm minimum (Commercial)
- Aluminium Bulb-tite Rivets
- 12-11x35 Alutites
- 12-11x25 Class 4 Type 17 Woodteks (Steel based material only)

ROOF EXPANSION PROVISIONS

Fix with recommended fasteners and systems from the Primary Fixing Chart and additionally allow for the following where applicable.

Steel Based Material				
E2/AS1 Compliance				
Sheet Lengths	**Up to 8 metres**	**>8-12 metres**	**>12-18 metres**	**>18 metres**
	No special provision.	Lower 50 % of the roof should be fixed using oversize holes at fastening points with approved load spreading profile washer, and 36mm EPDM washers.		Not Applicable.
NZ Metal Roof and Wall Cladding Code of Practice Compliance				
Sheet Lengths	**Up to 15 metres**	**>15-18 metres**	**>18-25 metres**	**>25-30 metres**
Zincalume and light colours	No special provision.	No special provision	Solid fix from the ridge down 12 metres and oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM or approved 25mm Aluminium embossed washer.	Solid fix from the ridge down 12 metres & oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM or approved 25mm Aluminium embossed washer used for the entire sheet
Dark Colours	No special provision.	Solid fix from the ridge down 12 metres and oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM washer or approved 25mm Aluminium embossed washers		Not recommended

For sheet lengths in excess of the above a step joint or other special provision for expansion is required. Refer to Roofing Industries.
When using load spreading profile washers or 25mm Aluminium embossed washers for roofing fix ridging, roof flashings etc. using a 25mm Aluminium embossed washer and appropriate screw.
Oversize holes should be 3mm greater diameter than the screw or as per the Primary Fixing Chart for stainless steel screws.
For further information on the fixing of Multirib refer to E2/AS1 of the NZ Building Code and NZ Metal Roof and Wall Cladding Code of Practice, www.metalroofing.org.nz.
These publications along with the foregoing technical data should form the basis of the design and installation of metal roofing and cladding
Also refer to our suite of detail drawings, and to NZ Steel Ltd and Pacific Coilcoaters literature.

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ROOF EXPANSION PROVISIONS

Fix with recommended fasteners and systems from the Primary Fixing Chart and additionally allow for the following where applicable.

<table>
<tr><td colspan="4">Aluminium</td><td></td></tr>
<tr><td>Sheet Lengths</td><td>Up to 10 metres</td><td>10-12 metres</td><td>12-15 metres</td><td>>15 metres</td></tr>
<tr><td colspan="4"></td><td></td></tr>
<tr><td>Plain Aluminium & lighter colours in Favourable Installations
(Refer NZMRM C.O.P. Section 4.1.6)</td><td colspan="3">Fix using oversize holes with screws and approved load spreading profile Ali washers, and 36mm EPDM washers</td><td>Not recommended</td></tr>
<tr><td>Dark Coloured Aluminium in Favourable Installations
(Refer NZMRM C.O.P. Section 4.1.6)</td><td colspan="2">Fix using oversize holes with screws and approved load spreading profile Ali washers, and 36mm EPDM washers</td><td colspan="2">Not recommended</td></tr>
<tr><td>Plain Aluminium & lighter colours in Unfavourable Installations
(Refer NZMRM C.O.P. Section 4.1.6)</td><td colspan="2">Fix using oversize holes with screws and approved load spreading profile Ali washers, and 30mm EPDM washers</td><td colspan="2">Not recommended</td></tr>
<tr><td>Dark Coloured Aluminium in Unfavourable Installations
(Refer NZMRM C.O.P. Section 4.1.6)</td><td>Fix using oversize holes with screws and approved load spreading profile Ali washers, and 30mm EPDM washers.</td><td colspan="3">Not recommended</td></tr>
</table>

For sheet lengths in excess of the above a step joint or other special provision for expansion is required. Refer to Roofing Industries.

When using load spreading profile washers or 25mm Aluminium embossed washers for roofing fix ridging, roof flashings etc. using a 25mm Aluminium embossed washer and appropriate screw.

Oversize holes should be 3mm greater diameter than the screw or as per the Primary Fixing Chart for stainless steel screws.

For further information on the fixing of Multirib refer to E2/AS1 of the NZ Building Code and NZ Metal Roof and Wall Cladding Code of Practice, www.metalroofing.org.nz.

These publications along with the foregoing technical data should form the basis of the design and installation of metal roofing and cladding

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Maintenance of Metal Roofing and Cladding

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Most products used in the construction sector need some form of regular maintenance to ensure life of the products meet performance and warranty expectancy and most certainly metal roofing, cladding and rainwater products are no different. The cumulative effects of weather, airborne contaminants, grime and debris coupled with New Zealand's extensive coastline and associated corrosive atmosphere can create degradation without programmed maintenance.

Whilst normal rain washing will assist in the prevention of product degradation, unfortunately variance in building design does not always allow for this. "Unwashed" areas such as under eaves, spouting guttering and fascia etc are just some that require ongoing fresh water washing to remove contaminants. The following minimum guidelines should be followed to ensure product and system warranty conditions are not voided:

- Particular care of unwashed areas which require extensive manual washing. These areas include (but not limited to) soffits, wall cladding under eaves, undersides of gutters, fascias, garage doors, around flues, under television aerials and solar panels. Where solar panels, walkways and platforms are installed either on or above the roof/cladding, additional maintenance of the roof and cladding material is required. Any areas subject to bird droppings should be regularly cleaned.
- Guttering and spouting systems should be cleaned on a regular basis to remove dirt, grime, debris and airborne contaminants.
- Products should either be manually washed using fresh water, soft bristled nylon type brush and/or by water blasting at pressures of no more than 1000 psi in accordance with the maintenance programme chart.

RECOMMENDED MINIMUM MAINTENANCE PROGRAMME

MATERIAL	ENVIRONMENT		MINIMUM MAINTENANCE REQUIREMENT		
		Roof	Walls	Rainwater systems	Unwashed & high risk areas
Prepainted Steel	Moderate	Rainwashing only	Wash every 12 months	Wash every 6 months	Wash every 3 months
	Severe	Rainwashing only	Wash every 6 months	Wash every 3 months	Wash every 3 months
	Very Severe	Rainwashing only	Wash every 3 months	Wash monthly	Wash monthly
Zincalume	Moderate	Rainwashing only	Wash every 6 months	Wash every 3 months	Wash every 3 months
	Severe	Not recommended			
	Very Severe	Not recommended			
Galvanised	Moderate	Rainwashing only	Wash every 6 months	Wash every 3 months	Wash every 3 months
	Severe	Not recommended			
	Very Severe	Not recommended			
Prepainted Aluminium	Moderate	Rainwashing only	Rainwashing only	Wash every 6 months	Wash every 3 months
	Severe	Rainwashing only	Wash every 6 months	Wash every 3 months	Wash every 3 months
	Very Severe	Wash every 6 months	Wash every 6 months	Wash every 3 months	Wash every 3 months

NOTE: Environment categories can be viewed in the Environment Categories bulletin on our website www.roof.co.nz



Lichen and Fungus Growth

Where lichen is suspected as being attached to the roof/cladding material, the following action should be undertaken:

- We recommend a spot test to confirm. Apply a 3-5% solution of Sodium Hypochlorite (house bleach in water) to the area and leave for a few minutes, If lichen/fungus is present, the dark area will be destroyed by the bleach
- Wash the roof down with a 2% Sodium Hypochlorite solution. The table below shows the dilution required for differing strength bleaches to give a 2% solution. A small amount of household detergent (no more than 5-7 ml per litre of water) may be added to the solution to improve wetting
- Apply bleach solution with a nylon soft bristle broom and leave for up to 5 minutes
- Following removal of the lichen, wash all roofing and cladding down with copious amounts of clean fresh water. A low pressure water blaster up to 1000 psi may also be used at this stage.

% SODIUM HYPOCHLORITE OR % AVAILABLE CHLORINE IN BLEACH	DILUTION REQUIRED FOR 1L OF 2% SODIUM HYPOCHLORITE SOLUTION
10%	200ml bleach + 800ml water
5%	400ml bleach + 600ml water
4%	500ml bleach + 500ml water
3%	670ml bleach + 330ml water
2%	No dilution

IMPORTANT. If rainwater is being collected from the roof, ensure the lines between the gutters and water collection tanks are disconnected to avoid contamination.

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Pollen Deposits

Where pollen deposits need to removed from the roof, the following process should be followed:

- As for lichen and fungus removal, wash down the roof or wall cladding to remove any loose on non-adhered pollen. A low pressure water blaster up to 1000 psi is appropriate
- Wash the roof down with an effective detergent-based cleaning product such as "Simple Green" available through most hardware and DIY outlets
  - Always use cleaning agents to the manufacturer's instructions, taking particular care to adhere to the recommended dilution levels
  - These products should be applied using a soft nylon bristle broom or low pressure water blaster up to 1000 psi
- Following removal of the pollen, wash all roofing and cladding down with copious amounts of clean fresh water. Failure to this may result in "streaking" on the product surface
- Important If rainwater is being collected from the roof, ensure the lines between the gutters and water collection tanks are disconnected to avoid contamination.

NZ Building Code

- The minimum maintenance requirements referred to in this document apply to the standard provisions of the NZ Building Code, Section B2, Durability. Note: The New Zealand building code durability does not extend to include aesthetic appearance. It requires durability of 15 Years minimum (with maintenance) for non structural roofing and cladding
- In some industrial locations, variation in environment conditions may alter the recommendations contained in this document. Please contact Roofing Industries Technical helpline 0800 844 822 for clarification.

The maintenance information in this document is intended as a guide and is NOT a warranty. For more detailed information please refer to the environmental categories literature and warranty information contained in our website www.roof.co.nz

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4710P Pink® Batts® Thermal & Acoustic Insulation

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SUPPORTING DOCUMENTS

BRANZ Appraisal 238 - Pink® Batts® Insulation

Ref 99878. Uploaded 9 Oct 2024

Purpose: Performance

Pink Superbatts Installation Instructions April 2023

Ref 99886. Uploaded 9 Oct 2024

Purpose: Installation

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BRANZ Appraised

Appraisal No. 238 [2023]

PINK® BATTS® INSULATION



Appraisal No. 238 (2023)

This Appraisal replaces BRANZ Appraisal No. 238 (2018)

Amended 12 August 2024

BRANZ Appraisals

Technical Assessments of products for building and construction.

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BUILDING PERFORMANCE SOLUTIONS

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WFTAO

Product

1.1 Pink® Batts® Insulation is a range of resin-bonded, fibrous glasswool thermal insulating material for use in walls, ceilings and roofs of buildings. Pink® Batts® Insulation is pre-cut to suit a range of framing spacings.

Scope

2.1 Pink® Batts® Insulation has been appraised as a thermal insulation material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Pink® Batts® Insulation, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:**

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years and B2.3.1 (b) 15 years. Pink® Batts® Insulation meets these requirements. See Paragraph 8.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Pink® Batts® Insulation will contribute to meeting this requirement. See Paragraphs 13.1 and 13.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Pink® Batts® Insulation meets this requirement.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 (a) and H1.3.2 E. Pink® Batts® Insulation will contribute to meeting these requirements. See Paragraphs 14.1 and 14.2.

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Technical Specification

4.1 Pink® Batts® Insulation is a resin-bonded, fibrous, glasswool insulation, manufactured from recycled and/or virgin glass and cured urea extended phenolic resin.

4.2 Pink® Batts® Insulation is manufactured in a range of sizes to suit framing centres and cavity depths. Building Insulation Blanket (BIB) is supplied in rolls for commercial applications. Pink® Batts® Insulation is available as set out in Table 1.

Table 1: Pink® Batts® Insulation Product Table.

R-value	Length (mm)	Width (mm)	Nominal Thickness (mm)	Density (kg/m³)
Roof - Ceiling Thermal Insulation				
1.8	1,220	432	95	8.3
2.2	1,220	432	115	8.2
2.6	1,220	432	140	7.0
2.6	1,220	432	110	10.5
3.0	1,220	432	160	8.2
3.2	1,220	432	170	6.9
3.6	1,220	432	180	7.2
4.0	1,220	432	195	8.1
4.5	1,220	460	210	8.5
5.0	1,220	432	220	9.5
5.0	1,220	460	225	9.5
6.0	1,220	460	245	11.7
7.0	1,220	460	275	12.6
7.0[1]	1,220	460	275	12.6
Roof - Building Insulation Blanket (BIB)				
1.2	24,000	1,200	50	12.0
1.8	20,000	1,200	75	12.0
2.4	16,000	1,200	95	12.0
2.6	14,000	1,200	105	12.0
3.2	12,000	1,200	125	12.0
3.6	10,000	1,200	140	12.5
Wall - Masonry Insulation				
1.0	1,220	580	40	14.0
1.2	1,220	580	50	12.8
Wall - Interior Secondary Insulation Layer[2]				
1.0[2]	1,220	530	35	22.0
1.3[2]	1,220	530	45	22.0
70 mm Wall Range - Thermal Insulation				
2.2	1,140	560	70	30.0

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90 mm Wall Range - Thermal Insulation				
1.8	1,140	560	90	9.1
2.2	1,140	560	90	11.0
2.4	1,140	560	90	14.2
2.6	1,140	560	90	18.0
2.6[1]	1,140	560	90	18.0
2.8	1,140	560	90	25.2
2.8[1]	1,140	560	90	25.5
90 mm Narrow Wall Range - Thermal Insulation				
2.2	1,140	360	90	11.0
2.6	1,140	360	90	18.0
2.8	1,140	360	90	25.2
90 mm Steel Wall Range - Thermal Insulation				
2.2	1,220	610	90	11.0
2.6	1,220	610	90	18.0
2.8	1,220	610	90	25.2
140 mm Wall Range - Thermal Insulation				
3.2	1,140	560	140	9.6
3.6	1,140	560	140	12.4
4.0	1,140	560	140	17.6
4.3	1,140	560	140	28.0
140 mm Narrow Wall Range - Thermal Insulation				
3.2	1,140	360	140	9.6
4.0	1,140	360	140	17.6
4.3	1,140	360	140	28.0

[1]Pink® Batts® Wall range R2.6 and R2.8 and Roof Insulation R7.0 are manufactured by Owens Corning Canada.

[2]Pink® Batts® R1.0 and R1.3 wall products have been assessed as thermal insulation material. The assessment of performance of these when used as a secondary insulation layer for walls specifically impacts on the bracing design of the wall as well as interstitial condensation, these have not been assessed by BRANZ and are outside the scope of this Appraisal.

Note: Customised widths additional to those listed above can be provided by Tasman Insulation NZ Ltd (t/a Comfortech Building Performance Solutions). These must be to the same R-value, thickness and density requirements as the products above.

All Pink® Batts® Insulation products covered by this Appraisal and manufactured in New Zealand have the Eco Choice Aotearoa licence.

4.3 Pink® Batts® Insulation is pink in colour and is baled in polythene bags with labelling in compliance with AS/NZS 4859.1.

4.4 Accessories used with Pink® Batts® Insulation, which are supplied by the insulation installer, are wire netting, plastic strapping and fixings.

Handling and Storage

5.1 Pink® Batts® Insulation must be stored under cover and in dry conditions. Heavy objects must not be stacked on the bales. The bales must be stored in an orientation that avoids excessive compression of the product.

5.2 In general, insulation products are sensitive to the length of time they are stored under compression packaging. Product that does not recover to its nominal thickness may not achieve the stated thermal resistance (R-value).

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Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Pink® Batts® Thermal Solutions: Product Guide, July 2024.
- Pink® Batts® Ceiling Insulation Installation Product and Installation Guide, June 2023.
- Pink® Batts® Wall Insulation Product and Installation Guide, August 2024.
- Pink® Superbatts® Thermal Solutions: Installation Guide, April 2023.
- Pink® Batts® Building Insulation Blanket (BIB) – Product data sheet, Feb22/1080RevD, February 2022.
- Pink® Batts® Building Insulation Blanket (BIB) – Installation instructions, Feb22/1081/RevD, February 2022.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 Pink® Batts® Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Pink® Batts® Insulation can be used to meet the minimum schedule method R-values of the NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. Greater construction R-values can be achieved where specific design is used. For construction R-values, refer to the BRANZ House Insulation Guide. Product R-values and dimensions are given in Table 1.

7.2 The R-value of Pink® Batts® Insulation has been determined by testing to AS/NZS 4859.1, which is an acceptable method in NZBC Acceptable Solution H1/AS1.

7.3 Pink® Batts® Insulation is designed to be friction-fitted between wall, ceiling or roof framing. It can also be laid directly on a ceiling lining, over ceiling battens or over joists/truss chords. In other horizontal situations, the insulation must be adequately supported by galvanised wire netting or some other suitable durable material.

7.4 When insulation is installed in a double layer over new or existing insulation, the possibility of compression of the bottom layer must be avoided, or reduction of R-values for the bottom layer of the formed system must be taken into account.

7.5 For new and existing buildings, the R4.5, R5.0, R6.0 and R7.0 Pink® Superbatts® ceiling products are designed to be notched around timber framing and to form a uniform layer above the timber framing, between and on the top of the truss chords.

7.6 At the roof perimeter, Pink® Batts® insulation is designed to be compressed at the roof perimeter rather than cut. To achieve the required construction R-value of R3.3 at the ceiling perimeter, a minimum product R-value of R3.5 and a minimum 115 mm height is required at the midpoint of the top plate to the underside of the insulation guard, to accommodate the compressed insulation. The Pink® Superbatts® range all exceed this product R-value requirement under compression with a 115 mm heel. If the roof slope is less than 20 degrees and the height is less than 115 mm, a raised heel will be required.

7.7 Where the insulation is installed in exterior walls, the nominal thickness of the insulation material must be selected to provide a snug close fit which touches all sides of the insulation cavity between the wall underlay and the interior wall lining.

7.8 Where the insulation is retrofitted in external walls without a wall underlay, and with direct-fixed claddings, the insulation must be at least 20 mm thinner than the framing to allow a gap of at least 20 mm between the insulation and the wall cladding. Horizontal straps must be stapled into the sides of the wall studs at 300 mm centres maximum as support before the insulation is installed. Refer also to NZS 4246, Section 5.4.2.

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7.9 When the insulation is installed in a wall with a drained cavity, it is recommended that specific wall products with a controlled nominal thickness be used. Where the stud spacings are greater than 450 mm, an intermediate means of restraining the insulation from bulging into the cavity must be installed in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

7.10 Building Insulation Blanket is designed specifically for commercial roof and commercial wall applications. In residential applications, installation must be completed in accordance with NZS 4246.

7.11 The building envelope must be constructed to ensure the insulation remains dry during installation and throughout the life of the building.

7.12 The clearance requirements for heating appliances and downlights must be met, and reference made to the manufacturer's instructions and NZS 4246. See Paragraphs 10.1-10.3.

Durability

Serviceable Life

8.1 Where the building is maintained so that the provisions of NZBC Clauses E2 and E3 are met, and where the insulation is not crushed or exposed to conditions that will diminish its thermal performance (e.g. moisture), Pink® Batts® Insulation can be expected to have a serviceable life of at least 50 years.

Maintenance

9.1 Insulation that has become damp must be removed and the cause of dampness repaired. Cavities must be clean and dry before fitting new insulation of an equivalent thermal rating. NZS 4246 gives guidance on thermal insulation maintenance due to water damage.

Prevention of Fire Occurring

10.1 Pink® Batts® Insulation is classified a non-combustible material and need not be separated from heat sources such as fireplaces, flues and chimneys. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated or protected from heat sources. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

Downlights

10.2 Insulation should maintain 100 mm clearance from all undefined recessed luminaires, treating them as a heat source. For insulation to abut or cover recessed luminaires these must be clearly marked as being suitable for having insulation abutting and covering them, and have been installed in accordance with NZBC Acceptable Solution G9/AS1.

Fire Affecting Areas Beyond the Fire Source

10.2 Pink® Batts® Insulation products are classified non-combustible when tested to AS 1530.1 and can be assigned a Group Number of 1-S. When used in an occupied space, Pink® Batts® Insulation is not required to be enclosed by an internal lining. Refer to the relevant NZBC Acceptable Solution C/AS1 or C/AS2 for specific internal surface finish requirements.

External Moisture

11.1 The total building envelope must be weathertight and comply with the requirements of NZBC Clause E2 to ensure that the insulation remains dry in use.

11.2 The moisture content of the construction materials at the time of installing and enclosing the insulation must meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 10.2 a), or a lower moisture content if required by the lining manufacturer.

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Internal Moisture

12.1 Buildings must provide an adequate combination of thermal resistance, ventilation and space temperature to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate. This does not apply to Communal Non-residential, Commercial, Industrial, Outbuildings or Ancillary buildings.

12.2 Roofs and walls of housing complying with the Schedule Method for Compliance with NZBC Clause H1.3.2 E will have adequate thermal resistance. Other buildings may require more thermal insulation to satisfy the requirements of NZBC Acceptable Solution E3/AS1 than that to satisfy the energy efficiency provisions alone.

Energy Efficiency

13.1 Pink® Batts® Insulation will contribute to meeting the requirements of NZBC Clause H1, Performance H1.3.1 (a) and H1.3.2 E, by compliance with NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. Refer to Paragraphs 7.1-7.8.

13.2 Pink® Batts® Insulation R-values have been determined by testing to AS/NZS 4859.1 and are given in Table 1.

Installation Information

Installation Skill Level Requirement

14.1 All design and building work must be carried out in accordance with the Pink® Batts® Insulation Technical Literature and this Appraisal. All building work must be undertaken by competent and experienced tradespersons conversant with Pink® Batts® Insulation.

General

15.1 Installation of Pink® Batts® Insulation must be in accordance with the Technical Literature and this Appraisal. NZS 4246 should be used as a guide for installing insulation in residential buildings.

15.2 The product must be installed only when the building is enclosed and when the construction materials have achieved the required maximum moisture content or less.

15.3 Pink® Batts® Insulation must be released from the packaging and allowed to re-loft prior to installation. The time to loft will depend upon the length of time the product has been packaged and stored.

15.4 Pink® Batts® Insulation is supplied in segment and blanket form (see Table 1) to suit framing layouts. The product is able to be cut to suit wall cavities and when fitted between roof or ceiling framing. The insulation must be neatly friction-fitted between framing members so that the potential for gaps and convective heat loss is reduced. In wall cavities, the insulation must be neatly friction-fitted between framing members to prevent sagging. In ceiling or roofs, the insulation may be fitted between framing members or fitted over framing members and butted tightly. The insulation must extend to the external wall top plate. The insulation must not be folded or compressed. A close even fit provides the most efficient thermal performance. Whenever possible, the insulation should be fitted beneath wiring or plumbing.

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15.5 The clearance requirements for heating appliances and downlights must be followed. Refer also to NZS 4246.

Inspections

15.6 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of Pink® Batts® Insulation installations.

Health and Safety

16.1 Refer to the Technical Literature and NZS 4246 for guidance on health and safety requirements such as personal protective clothing and installation hazard assessment.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

17.1 Thermal resistance testing of Pink® Batts Insulation in accordance with AS/NZS 4859.1 has been completed. The results have been reviewed by BRANZ technical experts.

17.2 Tests have been carried out in accordance with AS 1530.1. Pink® Batts® Insulation is not deemed combustible according to the test criteria. The results have been reviewed by BRANZ technical experts.

Other Investigations

18.1 An assessment of the durability of Pink® Batts® Insulation has been made by BRANZ technical experts.

18.2 The manufacturer's Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

19.1 The manufacture of Pink® Batts® Insulation has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.

19.2 The range of Pink® Batts® Insulation products have been assessed for their environmental impact by the New Zealand Ecolabelling Trust and comply with the requirements of the Eco Choice Aotearoa Specification, Licence No. 2504017 - Thermal (resistive type) Building Insulants. The products that have the Environmental Choice licence are noted in Table 1.

19.3 Tasman Insulation New Zealand Ltd (t/a Comfortech Building Performance Solutions) is responsible for the quality of the product supplied.

19.4 Quality of installation of the product on-site is the responsibility of the installer.

19.5 Quality of maintenance of the building to ensure the insulation material remains dry is the responsibility of the building owner.

Sources of Information

- AS 1530.1:1994 Combustibility test for materials.
- AS/NZS 4859.1:2018 Thermal insulation materials for buildings.
- BRANZ House Insulation Guide (Sixth Edition), 2022.
- NZS 4246:2016 Energy efficiency - Installing bulk thermal insulation in residential buildings.
- Ministry of Business, Innovation and Employment Record of Amendments - Acceptable Solutions, Verification Methods and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 12 August 2024

This Appraisal has been amended to update Table 1.

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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

BRANZ

In the opinion of BRANZ, Pink® Batts® Insulation is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Tasman Insulation New Zealand Ltd (t/a Comfortech Building Performance Solutions), and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Tasman Insulation New Zealand Ltd (t/a Comfortech Building Performance Solutions):
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and quality of work;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Tasman Insulation New Zealand Ltd (t/a Comfortech Building Performance Solutions).
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Tasman Insulation New Zealand Ltd (t/a Comfortech Building Performance Solutions) or any third party.

For BRANZ

Claire Falck
Chief Executive
Date of Issue:
30 October 2023

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Pink® Superbatts® Thermal Solutions

Installation Guide



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Pink® Superbatts® Ceiling Insulation
Installation Instructions

Installation Instructions

Correct installation with no gaps or folds is critical to ensure Pink® Superbatts® ceiling insulation performance is not compromised.

Safety

Each installation is unique so prior to installation check for all hazards that may cause injury:

- Ensure roof space structure is safe to install in
- Ensure there's adequate lighting to identify any hazards
- Treat all electrical cables as live, being careful not to cut or expose cables and wires
- Beware of sharp objects (protruding nails, splinters etc.), pests (bees and wasps), loose boards and pipe work
- Check roof temperature
- The roof cavity temperature can increase to uncomfortable levels
- Do not stand on ceiling lining or ceiling battens

Note: Seek professional advice if you are unsure how best to isolate the hazard or have a professional installer carry out the work on your behalf.

For insulation installation, PinkFit® are a nationwide network of professional installers who guarantee that their completed installation will meet the requirements of NZS 4246:2016.

Call **0800 746 534** for your local PinkFit® installer.

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Pink® Superbatts® Ceiling Insulation
Installation Instructions

Installation

Comfortech® recommend referring to NZS 4246:2016 for full details on insulation installation, before installing any Pink® Batts® or Pink® Superbatts® products.

Although not required, for your comfort while installing, it's recommended you wear appropriate clothing and PPE including:

- Dust mask
- Safety glasses
- Cut resistant gloves (if knife is used)
- Kneepads (for retrofitting)

For an efficient installation, the following tools are recommended:

- Stable working platform
- Kneeling board or planks (for retrofitting)
- Knife
- Tape measure
- Install rod for tight spaces
- Head torch (for retrofitting) or appropriate lighting

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For retrofitting, take into consideration:

- Using planks laid across joists to walk and work on
- Levelling and refitting any existing insulation if required with correct clearances
- Removing any damp or damaged insulation
- Starting installation at the point furtherest away from the ceiling access hole
- Ensure the product is installed dry
- Friction fit product between framing, ensuring there are no gaps, folds or over compression of the product to achieve optimal performance
- If cutting is required, cut oversize by 5-10mm to ensure a good friction fit
- Ensure that Pink® Superbatts® ceiling segments are firmly butted against each other
- Install over timber where insulation already exists or where appropriate. Any open air pockets beside joist/truss cord ends at the roof perimeter to be blocked off with insulation baffling
- Maintain a minimum 25mm gap clearance between the Pink® Superbatts® insulation and any roofing membrane
- Insulate access hole cover and secure in place
- Excess material offcuts from notching can be used to fill small voids or cavities.

Tip: To verify Building Code Compliance, staple a product label at an easy to find location away from any hot items such as down lights or water cylinders e.g. on truss/rafter above ceiling access hole and hot water cupboard.

Note: Pink® Superbatts® ceiling insulation should not be installed in a roof space where foil has been installed as a roof underlay. Refer to NZS 4246:2016 for full details.

Pink® Superbatts® Ceiling Insulation
Installation Instructions

Clearances

For determining clearances, refer to NZS 4246:2016 Energy Efficiency – Installing bulk thermal insulation in residential buildings.

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Pink® Superbatts® Installation Guide

Insulation Guard

If an insulation guard is in place, this will allow compression of the Pink® Superbatts® to a minimum of halfway or more across the top plate. On lower pitched roofs, or if there is no insulation guard, a thinner product may need to be installed above the top plate. This is to ensure a minimum of 25mm air gap between insulation and roofing underlay. It is important to note the insulation guard must be fitted as part of the roof install, not as part of the insulation install. A minimum of R3.3 construction R-value is required for the last 500mm of the ceiling perimeter.

Single Layer Installation

Pink® Superbatts® products are designed so they can be cut to fit over the bottom truss chord with trusses at 900mm centres. Comfortech® recommend notching one side of the Pink® Superbatts® as illustrated in Figure 1, this ensures that there is insulation above the truss cord, and heat loss is mitigated as there is no thermal bridge. To notch the product, cut to the same width as the truss chord and adjust the depth in accordance with the depth of your truss bottom chord. You will need to notch one of the two Pink® Superbatts® that fit between each truss, installing the notched Batt® over the truss with the second Pink® Superbatt® to butt up against the side of the next truss under slight compression. To achieve the required construction R-value of R3.3 at the ceiling perimeter (last 500mm), a minimum product R-value of R3.5* and a minimum 115mm height is required at the midpoint of the top plate to the underside of the insulation guard, to accommodate the compressed insulation. If the roof slope is less than 20 degrees, a raised heel will be required on the truss.

***Testing has shown that the full Pink® Superbatts® ceiling range achieves the required perimeter construction R-value under compression.**

Double layer Installation

In some situations, a double layer insulation solution may be specified or required. Comfortech® recommend the top layer install be started first, with the bottom layer being installed underneath it. The top layer is to be run uninterrupted across the trusses, and the bottom layer to be installed in between the trusses (Figure 2).

To achieve the required construction R-value of R3.3 at the ceiling perimeter (last 500mm), a minimum product R-value of R3.5* and a minimum 115mm height is required at the midpoint of the top plate to the underside of the insulation guard, to accommodate the compressed insulation. Therefore, the first 460mm of ceiling perimeter insulation utilises a single layer of the higher R-value product (the top layer). If the roof slope is less than 20 degrees, a raised heel will be required on the truss.

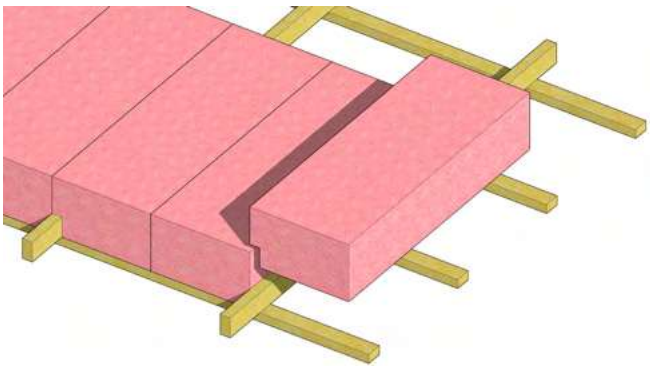


Figure 1.

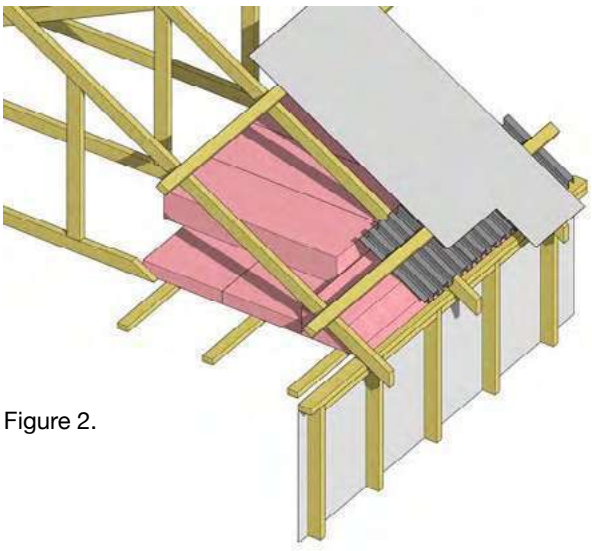


Figure 2.

Pink® Superbatts® Ceiling Insulation

Installation Instructions

H1 Ceiling Solutions	Product Code	Size (mm)	Nominal Stabilised Thickness (mm)	Nominal Total Area Per Bale (m^2)	Approx. Coverage Per Bale* (m^2)	BRANZ Appraisal Number
***R2.6** Pink® Batts®	7160266	1220 x 432	110	9.5	10	238
***R3.0** Pink® Batts®	7160265	1220 x 432	160	8.4	8.9	238
R4.5 Pink® Superbatts®	7113145	1220 x 460	210	5.6	5.5	238
R5.0 Pink® Superbatts®	7113150	1220 x 460	225	4.5	4.4	238
R6.0 Pink® Superbatts®	7113160	1220 x 460	245	3.9	3.8	238
R7.0 Pink® Superbatts®	7113170	1220 x 460	275	3.4	3.3	238

**First layer of a double layer solution*

Storage and Maintenance

Pink® Superbatts® insulation should be protected from damage and weather. Store undercover in clean, dry conditions. The installed product should remain dry at all times. If the product becomes wet or damp, the source of dampness (e.g. leak in building) should be repaired and any wet or damp insulation should be removed and replaced with new insulation of an equivalent R-value.

Disposal of bags

Recyclable LLDPE bags are used for packaging of Pink® Superbatts® insulation. For further details download the relevant product data sheet from pinkbatts.co.nz

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PREFERRED PINK® BATTS® INSTALLERS

BRANZ Appraised
Appraisal No. 238
Appraisal No. 632
Appraisal No. 767

Licence No 2504017.
Thermal Building Insulants

AUSTRALASIA EPD®
ENVIRONMENTAL PRODUCT DECLARATION

Comfortech Building Performance Solutions Certified QMS

pinkbatts.co.nz **0800 746 522**

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9-15 Holloway Place, Penrose, Auckland
April 2023

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SUPPORTING DOCUMENTS

Villaboard Lining Product Technical Statement

Ref 85777. Uploaded 5 Mar 2024

Purpose: Performance

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Villaboard™ Lining
Product Technical Statement

Product Description: Villaboard™ Lining is available in 6mm and 9mm thicknesses and is used for dry or wet area internal wall lining.

Scope of Use: Villaboard™ Lining is suitable for use as an internal wall lining on residential or light commercial buildings. It is fixed to the framing and is ready to have finishes applied e.g., paint, wallpaper or tiles etc.

Villaboard™ Lining is also suitable for use in fire rated systems and bracing applications.

Limitations: Villaboard™ Lining must not be used in external wall applications.

Compliance with the NZBC:

The following clauses of the NZBC are applicable to Villaboard™ Lining and it meets these requirements as follows.

Structure - B1: Villaboard™ Lining installed as per its installation manual meets the requirements of Clause B1.3.1, B1.3.2 and B1.3.4.

Villaboard™ Lining is tested as per BRANZ P21 test and is suitable for use in bracing applications

Durability - B2: Villaboard™ Lining are manufactured in accordance with AS/NZS 2908.2 and meets the durability performance requirements of Clause B2.3.1(d) and B2.3.2.

Internal Moisture – E3: Villaboard™ Lining installed as per its installation manual with surface finishes as per E3/AS1 complies with Clause E3.

Fire Performance - C: Villaboard™ Lining have been tested and is classified as non-combustible material and is classified as group S-1.

Hazardous Building Materials - F2: Villaboard™ Lining complies with the requirements of Clause F2.3.1 and will not present a health hazard when handled as per its technical specifications.

Energy Efficiency - H1: Villaboard™ Lining in an internal wall lining application using bulk insulation meet the construction R-Value requirements of Clause H1.

Installation: Villaboard™ Lining must be installed in accordance with Villaboard Lining installation manual. The specifications are available online at www.jameshardie.co.nz or Ask James Hardie at 0800 808 868 for further information.

Warranty: Villaboard™ Lining has a product warranty of 15 years when installed and maintained as per the current installation manual.

Villaboard™ Lining is not subject to a warning or ban under section 26 of the Building Act. Villaboard™ Lining is manufactured in Australia.

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5113G GIB Plasterboard Linings

Winstone Wallboards Ltd
+64 09 6330100
info@gib.co.nz
www.gib.co.nz

SUPPORTING DOCUMENTS

BRANZ Appraisal 427 (2021) GIB® Wet Area Systems

Ref 20082. Uploaded 3 Sep 2024

Purpose: Performance

GIB EzyBrace® Systems

Ref 11539. Uploaded 3 Sep 2024

Purpose: Installation, Maintenance

GIB® Product and System Warranty

Ref 104871. Uploaded 10 Dec 2024

Purpose: Warranty

GIB® Wet Area Systems

Ref 37693. Uploaded 3 Sep 2024

Purpose: Maintenance

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BRANZ Appraised
Appraisal No. 427 [2021]

GIB® WET AREA SYSTEMS



Appraisal No. 427 (2021)

This Appraisal replaces BRANZ Appraisal No. 427 (2007)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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BRANZ
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Product

1.1 GIB® Wet Area Systems are for the interior lining of timber and steel-framed walls and ceilings in wet areas such as bathrooms, laundries, kitchens and toilets where a water-resistant lining material is desirable.

Scope

2.1 GIB® Wet Area Systems have been appraised for use as a wet area wall and ceiling lining in buildings within the following scope:

- on timber-framed walls and ceilings within the scope limitations on NZS 3604; or,
- on steel-framed walls and ceilings within the scope limitations of NASH Standard Part 2, or,
- on timber and light gauge steel-framed walls and ceilings subject to specific design.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, GIB® Wet Area Systems, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:**

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. GIB® Wet Area Systems meet the requirements for loads arising from self-weight and impact [i.e. B1.3.3 (a) and (j)]. See Paragraphs 8.1-8.3.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.1 (c) 5 years. GIB® Wet Area Systems meet these requirements. See Paragraphs 9.1-9.5.

Clause E3 INTERNAL MOISTURE: Performance E3.3.4 and E3.3.5. GIB® Wet Area Systems meet these requirements. See Paragraphs 12.1-12.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. GIB® Wet Area Systems meet this requirement.

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Technical Specification

4.1 The GIB® plasterboards and accessories used in GIB® Wet Area Systems, and supplied by Winstone Wallboards Ltd are as follows:

GIB® Plasterboards

- **GIB Aqualine®** is a paper-bound, modified water-resistant gypsum-plaster core sheet lining material. It is available in 10 and 13 mm sheet thicknesses. Sheets are available in various edge profiles and lengths from 2,400 mm to 4,800 mm. Refer to Table 1. The nominal sheet weights are 8 kg/m² and 11 kg/m² for 10 mm and 13 mm thick sheets respectively. GIB Aqualine® face paper is green in colour.
- **GIB Toughline® Aqua** is a paper-bound, modified water-resistant gypsum-plaster core sheet lining material. It is available in a sheet thickness of 13 mm. Sheets are available in various edge profiles and lengths from 2,400 mm to 3,000 mm. Refer to Table 1. The nominal sheet weight is 11.4 kg/m². GIB Toughline® Aqua face paper is mauve in colour.
- **GIB Weatherline®** is an exterior-grade, glass-fibre fleece-wrapped modified-gypsum core sheet material. The product is available in 10 mm and 13 mm thicknesses and a board width of 1,200 mm. Standard sheet lengths are 2,450, 2,700 and 3,000 mm. Custom sheet lengths are also available. The nominal sheet weights are 9 kg/m² and 11.5 kg/m² for 10 mm and 13 mm thick sheets respectively.

Table 1: GIB® Wet Area Plasterboard Available Sheet Sizes

Plasterboard Type	Sheet Thickness (mm)	Sheet Edge Profile	Sheet Width (mm)	Sheet Length (mm)					
				2,400	2,450	2,700	3,000	3,600	4,800
GIB Aqualine®	10	TE/TE	1,200	✓		✓	✓	✓	
		TE/SE	1,200	✓					✓
		TE/SE	1,350	✓				✓	
	13	TE/TE	1,200	✓		✓	✓	✓	
GIB Toughline® Aqua	13	TE/TE	1,200	✓		✓	✓		
GIB Weatherline®	10	SE/SE	1,200		✓	✓	✓		
	13	SE/SE	1,200			✓	✓		

TE = Tapered Edge SE = Square Edge

Fastenings

- GIB® Grabber® High Thread Drywall screws for fixing to timber: 6 g x 25 mm and 32 mm.
- GIB® Grabber® Self Tapping Drywall screws for fixing to light gauge steel: 6 g x 25 mm and 32 mm.

Adhesive and Sealants

- GIBFix® One (Acrylic).
- GIBFix® All-Bond (Solvent).

GIB® Accessories

- Corner Support Angle - GIBFix® Angle or GIB® Rondo® NZ18. Minimum 32 x 32 x 0.55 mm galvanised metal angle.

GIB® Jointing Compounds

- As specified in the GIB® Wet Area Systems and GIB® Site Guide Technical Literature.

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4.2 System components and accessories for the GIB® Wet Area Systems, which are supplied by the building contractor are:

Waterproofing

- A waterproofing system complying with AS/NZS 4858.

Finishes

- Finishes such as tiling, flexible sheet vinyl, paints and wallpapers have not been assessed and are outside the scope of this Appraisal.

Handling and Storage

5.1 The best results are achieved when GIB® plasterboards are treated as a finishing material and protected from damage. Sheets must be stacked flat and kept dry at all times. For limits on stack heights see the GIB® Site Guide. Sheets must be carried on edge and not dragged.

5.2 All accessories must be kept dry.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for GIB® Wet Area Systems. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 GIB® Wet Area Systems provide a water-resistant lining as a base for finishing systems in wet areas such as bathrooms, toilets, laundries and kitchens. The typical finishes are ceramic tiles and flexible sheet vinyl to walls, and paint and wallpaper to walls and ceilings. [*Note: GIB Weatherline® is a suitable substrate for ceramic tiles and sheet vinyl. For paint or wallpaper finishes use GIB Aqualine® or GIB Toughline® Aqua.]*

7.2 GIB® Wet Area Systems must not be used in the following situations:

- For bracing applications in shower areas or adjacent baths [See Paragraphs 7.4 and 8.2].
- In areas of high humidity [above 90% RH] or continually wet areas such as group showers, steam rooms, or swimming pools.
- Installed over a vapour barrier.
- Applied directly to masonry, concrete or solid plaster.
- Applied over other sheet lining materials.
- Used externally of the building envelope.
- Exposed to temperatures of 52°C or greater for prolonged periods. [Refer to appliance and fitting manufacturers for installation details.]

7.3 GIB Aqualine® may be substituted for some other GIB® plasterboard products in specific GIB® Bracing Systems, GIB® Fire Rated Systems and GIB® Noise Control Systems. Refer to the relevant systems technical literature for details.

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Wet Areas

7.4 Wet areas are spaces where sanitary fixtures and sanitary appliances are located such as bathrooms, toilets, laundries and kitchens. There are two general categories of wet areas as follows:

- Water Splash – These are areas subject to intermittent splashing of water such as around baths, vanities, tubs and sinks.
- Shower Areas – These are areas subject to frequent and heavy water splash such as enclosed showers, unenclosed shower zones and showers over baths.

7.5 Both the above wet area categories must be finished with surfaces and joints that are impervious and easily cleaned. In addition, shower areas must be waterproofed. This can be achieved using proprietary rigid shower lining systems, flexible vinyl shower wall finishes, or tiling. Tiled shower areas must include a wet area waterproofing membrane system under the tiles.

Intertenancy Walls – Wet Areas

7.6 Intertenancy construction that incorporates fire resistance and noise control must be protected from water splash. In shower areas, GIB® Wet Area plasterboards must not be substituted for other GIB® plasterboards but must be an extra lining layer. Refer to the Technical Literature.

Tiling

7.7 GIB® Wet Area Systems are suitable as a substrate for tiling up to the following weights:

- 10 mm GIB Aqualine® and GIB Weatherline® - up to 26 kg/m^2.
- 13 mm GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® - up to 40 kg/m^2.

[Note: Most ceramic and porcelain wall tiles weigh less than 20 kg/m^2. For further information on tiling consult the BRANZ Good Practice Guide – Tiling.]

Framing

7.8 Supporting framing must comprise one of the following, subject to the minimum sizes, dwang centres and all other frame requirements of GIB® Wet Area Systems Technical Literature:

- Timber framing must be designed and constructed in accordance with NZS 3604, or to a specific design using NZS 3603 and AS/NZS 1170. Refer to Paragraph 15.2 regarding recommended moisture content of timber framing.
- Steel framing must be designed and constructed in accordance with NASH Standard Part 2, or to a specific design in accordance with AS/NZS 1170.

Structure

Bracing

8.1 GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline®can be used in GIB EzyBrace® Systems. Refer to BRANZ Appraisals Nos. 928 (2016) and 1048 (2019).

8.2 GIB Wet Area Systems must not be used for bracing in shower areas or behind baths.

Impact Resistance

8.3 GIB® plasterboards provide adequate resistance to soft body impact, based upon experience of use in domestic and light commercial applications. GIB Toughline® Aqua is recommended by Winstone Wallboards Ltd where higher impact resistance is desired.

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Durability

Serviceable Life

9.1 GIB® Wet Area Systems have a serviceable life of at least 15 years as a fully protected shower or water splash lining. As a general wall and ceiling lining, GIB® Wet Area Systems will have a serviceable life in excess of 50 years. The ability of GIB® plasterboards to remain durable is dependent on being protected and remaining dry in service, and being maintained in accordance with this Appraisal.

Maintenance

9.2 The building must be maintained weathertight and all lining systems protected from internal and external moisture.

9.3 Finishes to water splash and shower areas, including tiles, grout, waterproof membranes, sealants and flexible sheet vinyl must be checked to ensure the integrity of the system is maintained. They must be repaired or replaced if necessary. When repairing or replacing finishes, the GIB® plasterboard substrate must be checked for defects and repaired or replaced, as required.

9.4 For flexible sheet vinyl, particular attention must be paid to joints, especially at corners. Checks should be made to ensure the vinyl has not been punctured. Where damage has occurred, repairs must be made immediately.

9.5 Impact damage to GIB® plasterboard, resulting in small holes and cracks, may be patched, stopped and finished. For larger areas of damage, expert advice on repair must be sought from Winstone Wallboards Ltd.

Prevention of Fire Occurring

10.1 Separation or protection must be provided to the GIB® Wet Area Systems from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 and C/AS2, and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

Fire Affecting Areas Beyond the Fire Source

Control of Internal Fire and Smoke Spread

11.1 The gypsum plasterboard used in GIB® Wet Area Systems without an applied paint or wallpaper finish has been tested in accordance with ISO 5660 and achieved a Material Group Number of 1-S.

11.2 The gypsum plasterboard used in GIB® Wet Area Systems with an untested applied finish of a waterborne or solvent borne paint coating ≤ 0.4mm thick achieves a Material Group Number of G2-S in accordance with Table A1 of NZBC Verification Method C/VM2.

11.3 A lower Material Group Number may be achieved when used with a tested finishing system. The Material Group Number for the complete lining system must be obtained from the supplier of the finish product or system.

Fire Resistance Ratings (FRRs)

11.4 GIB® Wet Area plasterboards, when used as part of GIB® Fire Rated Systems, can be used to provide FRRs as determined by NZBC Acceptable Solutions C/AS1 and C/AS2 and NZBC Verification Method C/VM2. Refer to BRANZ Appraisal No. 289 (2018) and relevant technical literature.

Internal Moisture

12.1 When installed in accordance with this Appraisal, GIB® Wet Area Systems will provide wall surfaces adjacent to sanitary fixtures and sanitary appliances that are impervious and easily cleaned.

12.2 The construction methods in the Technical Literature meet with the internal moisture requirements of the NZBC Acceptable Solution E3/AS1.

12.3 To minimise internal condensation, adequate levels of ventilation and thermal resistance must be provided to all spaces where moisture may be generated.

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Airborne and Impact Sound

13.1 GIB® Wet Area plasterboards, when used as part of GIB® Noise Control systems, can be used to provide acoustic ratings as required by NZBC Acceptable Solution G6/AS1. Refer to BRANZ Appraisal No. 394 (2017) and relevant technical literature.

Installation Information

Installation Skill Level Requirement

14.1 Installation of GIB® Wet Area Systems must be completed by, or under the supervision of, a Licensed Building Practitioner with the relevant Licence Class, in accordance with the Technical Literature and this Appraisal.

General

15.1 GIB® Wet Area Systems must be installed in accordance with the Technical Literature. For inspection, reference must be made to the Technical Literature.

Framing

15.2 To achieve an acceptable decorative finish, the walls must not be lined unless the moisture content of timber framing is less than 18%. Winstone Wallboards Ltd recommend a moisture content of 8–12% where buildings are to be air conditioned or centrally heated.

Cutting

15.3 GIB® Wet Area plasterboards are easily cut by scoring the face paper with a sharp short-bladed trimming knife, and then snapping the plasterboard away from the cut face and cutting the back paper or by sawing. Use of a metal straightedge facilitates clean straight cuts. Cut edges can be tidied up by using a knife. Paper dags should be removed.

Fixing Sheets

Non-Tiled Areas

16.1 GIB® Wet Area plasterboards may be installed vertically or horizontally. Sheets are fixed with GIB® Grabber® screws at 300 mm centres around the perimeter of the sheet, and with GIBFix® adhesive on all intermediate studs and dwangs. Adhesive must not be used under fasteners. A 5-10 mm gap must be left between the floor and the bottom of the sheet.

Tiled Areas

16.2 Control joints must be provided at maximum 4 m centres.

16.3 Internal corners in shower areas must be reinforced with a minimum 32 x 32 x 0.55 mm galvanised metal angle (i.e. GIBFix® Angle or GIB® Rondo® NZ18) prior to lining the walls.

16.4 GIB® Wet Area plasterboards may be installed vertically or horizontally. Sheets are fixed with GIB® Grabber® screws at 150 mm centres to the perimeter of wall and to all intermediate studs. Adhesive must not be used in place of screws.

Ceilings

16.5 Supports of timber or steel battens or ceiling joists must be 450 mm centres for 10 mm GIB Aqualine®, or 600 mm centres for 13 mm GIB Aqualine® or GIB Toughline® Aqua.

16.6 GIB Aqualine® and GIB Toughline® Aqua sheets must be fixed with GIB® Grabber® screws at 600 mm centres around the perimeter of the ceiling and at 200 mm centre along supports. Alternatively, sheets are screw fixed at 600 mm centres along the supports and GIBFix® adhesive placed at 200 mm centres between the screws.

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Penetrations and Sealants

17.1 All cut-outs for pipe penetrations must be made neatly using a hole saw. Cut-outs should be made approximately 12 mm diameter greater than the pipe.

17.2 A bead of sealant must be placed to the full thickness of the plasterboard sheet around all pipe penetrations, at bath rims and preformed shower bases and where an impervious junction is required at the floor/wall line.

17.3 In tiled areas, a bead of sealant 6 mm wide must also be placed to the full thickness of the tiles where the above situation occurs. The sealant manufacturer's technical literature must be followed for installation.

Jointing and Finishing

18.1 Jointing must be carried out in accordance with GIB® Site Guide Technical Literature.

18.2 Tiled shower areas must incorporate a waterproofing membrane over GIB® Wet Area Systems. Waterproofing membranes are outside the scope of this Appraisal and must otherwise be specified and approved.

Health and Safety

19.1 Dust resulting from the sanding of stopping and finishing compounds may be a respiratory irritant, and the use of a suitable facemask is recommended.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

20.1 Winstone Wallboards Ltd GIB® plasterboards have been assessed for the following properties: MOR, MOE, paper tensile strength, paper shear strength, nail pull resistance, edge hardness, water resistance, hard and soft body impact tests and humidified deflection.

20.2 Cone calorimeter tests to ISO 5660 have been carried out by BRANZ.

Other Investigations

21.1 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.

21.2 Site inspections were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.

21.3 The GIB® Wet Area Systems and GIB® Site Guide Technical Literature have been examined by BRANZ and found to be satisfactory.

Quality

22.1 Winstone Wallboards Ltd's manufacturing process and details of the quality and composition of the materials, have been examined by BRANZ and found to be satisfactory.

22.2 The quality management systems of Winstone Wallboards Ltd have been assessed and registered by TELARC as meeting the requirements of ISO 9001: 2015, Registration No. 581.

22.3 Winstone Wallboards Ltd is responsible for the quality of the product supplied.

22.4 The quality of the application and finish on site is the responsibility of the installation, stopping and finishing contractors.

22.5 Designers are responsible for the design of buildings.

22.6 Building owners are responsible for the maintenance in accordance with the instructions of Winstone Wallboards Ltd.

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Sources of Information

- AS/NZS 1170: 2002 Structural design actions - General principles.
- AS/NZS 2588: 2018 Gypsum plasterboard.
- BRANZ Good Practice Guide: Tiling (3rd edition), April 2015.
- ISO 5660-1:2002 Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method).
- NZS 3603: 1993 Timber Structures Standard.
- NZS 3604: 2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of Amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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BRANZ

In the opinion of BRANZ, GIB® Wet Area Systems are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Winstone Wallboards Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Winstone Wallboards Ltd:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Winstone Wallboards Ltd.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Winstone Wallboards Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive
Date of Issue:
15 February 2021

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