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GREAT LAKE TAUPŌ
Taupō District Council

Property File

Property File No: REF260256100

I have requested that the information be provided to me under the Local Government Official Information and Meetings Act 1987 (LGOIMA). Council is protected from liability for having provided this information by s41 of the LGOIMA. Council is not liable for any inaccuracies or errors in the information provided.

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Application accepted 25/06/2018 - A2249571

To: willie@pennyhomes.co.nz[willie@pennyhomes.co.nz]; Tech Support[businesssupport@taupo.govt.nz]; buildingconsents[buildingconsents@taupo.govt.nz]
From: buildingconsents
Sent: Fri 22/06/2018 1:10:54 a.m
Importance: Normal
Subject: Accepted Building Consent application for 6 Mayfly Grove, Taupo
MAIL_RECEIVED: Fri 22/06/2018 1:11:01 a.m
REF180530177.pdf

;

Your online building consent application has been accepted.

Attached is a copy of the vetting checksheet completed by the vetting officer, for the proposed works at 6 Mayfly Grove, Taupo (REF180530177).

We will advise you of the outcome within 20 working days.

Please note that further information may be requested during the processing of your application.

Kind regards,
Taupō District Council Building Consent Team

Taupo District Council
46 Horomatangi Street, Taupo
Private Bag 2005, Taupo 3352
New Zealand

Telephone 00 64 7 376 0899
Fax 00 64 7 378 0118
Email info@taupo.govt.nz
Website www.taupodc.govt.nz

GREAT LAKE TAUPŌ
Taupō District Council

Application for Building Consent/PIM (including Amendment &Temporary Structures) Checklist

Reference Number:	REF180530177
Submitted On:	30/05/2018 01:05
Submitted By:	willie robinson
Status:	Accepted

Office Use Only

PIM Required?	PIM
Compliance Schedule?	N/A
Restricted Building Work?	Yes
Building Category	Residential 1

General Documentation Required

Form 2A Certificate of Design Work	Pass
All drawings must meet the minimum requirements of the technical drawings standard AS/NZS1100 with a minimum font size of Microsoft Word text size 8. Index provided for plans and specifications.	Pass
Are you applying for owner/builder exemption? If yes, the appropriate documentation including Form 2B is to be supplied	N/A
All documents including photocopies must be legible	Pass
All plans are to be titled and dated (or version number)	Pass

Legal Documentation Required

Evidence of ownership provided.	Pass
Vetting Officer Comments	Council to provide CT

Site/Location Plan

North point	Pass
Road frontage indicated and street named	Pass
Location of all existing and proposed buildings	Pass
Distance of buildings to boundaries and distance between existing and proposed buildings including eaves and gutters.	Pass

Site levels and finished floor levels relative to Moturiki Datum survey point (if applicable)	Pass
Existing contours (proposed cut or fill also needs to be shown).	Pass
Building line restrictions and easements, if applicable	Pass
Site boundaries/exclusive area boundaries for cross lease properties and common areas clearly shown	Pass
Show calculations and percentage of net site coverage	Pass
Labelled points on boundaries where overshadowing is taken from.	Pass
Dimensions and location of parking spaces shown onsite	Pass
Existing and proposed crossings/driveways, also showing berms and footpaths.	Pass
Sediment control plan	Pass
If building under or near transmission lines, please show transmission plan area or location of power lines.	N/A

Foundation Plan

Foundation details	Pass
For timber floors and decks, show the location of piles, pile type, sub-floor bracing calculations, foundation perimeter walls and internal piling system where applicable.	N/A
Concrete floor details provided	Pass
Control joints shown/saw cuts.	Pass
Bearer layout for floors and decks	N/A
Access/ventilation to subfloor space.	N/A
Foundation details and concrete strength, post foundations (must provided resistance to uplift).	Pass
Construction joints to control concrete shrinkage.	N/A

Floor Plan

Plan of all floors describing the function of each room	Pass
Show all doors, windows and ventilation including enclosed space ventilation	Pass
Stairs, handrails and decking shown showing dimensions and details	Pass
Smoke alarm positions shown	Pass
For additions and alterations, the existing shall be shown separately to the proposed and to the same scale for comparison	N/A
Chimneys and solid fuel heaters	N/A
Disabled access to building showing dimensions and details.	N/A
Disabled access toilet showing dimensions and details	N/A
Lintel sizes/beam sizes and proprietary systems.	Pass
Dimensions of proposed building work.	Pass
Finished floor levels/datum, daylight angles.	Pass

Framing Plan/Bracing Plan

Bracing calculations/details - type and fixings	Pass

Framing plan, including size, centres, grade and treatment of members.	Pass
Bottom plate, top plate, stud, lintel fixing details.	Pass
Floor joist layout for floors and decks.	N/A
Upper storey floor design, if applicable.	N/A

Roof Plan

Roof plans and roof bracing.	Pass
Truss types/roof framing layout, design statement and manufacturers PS1.	Pass
Truss/Rafter and purlin fixings.	Pass

Elevations

North, South, East and West elevations.	Pass
Overshadowing labelled to correspond with points on site plan shown on all elevations	Pass
Height from ground level to apex of building	Pass
Show existing finished ground levels/floor levels and proposed finished ground levels/floor levels (sub-floor ventilation and access).	Pass
Stairs, handrails and decking shown	N/A
Cladding systems, roofing type and any other relevant details	Pass
Window schedule	Pass
Roof pitch and chimneys (show height of chimney in relation to ridge)	Pass
Alterations to land contour, retaining, cut and fill and batters	N/A

Specifications &Other Documentation

Technical specifications for proprietary systems/products e.g. tile showers, membranes, claddings systems and foundation systems etc.)	Pass
H1 calculations	Pass
E2 Risk Matrix	Pass
Compliance Schedule systems design and relevant maintenance and inspection procedures (copy of existing compliance schedule and/or proposed compliance schedule).	N/A
A4/A3 plan showing location of all specified systems for Compliance Schedule.	N/A
Has a seismic assessment been undertaken, if applicable	N/A
Natural hazard assessment report, where applicable (erosion, falling debris, subsidence, inundation, slippage).	N/A
Technical specifications for proprietary systems/products e.g. foundations/structural design.	Pass

Plumbing &Drainage

All existing SEWERS, sewer connections and sewer drains shown including Territorial Authority services	Pass
All existing STORMWATER drains and connections shown including Territorial Authority services	Pass

Proposed sewer and stormwater drains/soak holes, terminal vents shown.	Pass
Existing and proposed potable water supply.	N/A
All existing and proposed sanitary fittings including pipe sizes and gradients (isometric)	Pass
Sanitary facilities - Assessment of existing sanitary facilities within the building comparative to current code and levels of amenity provided by the acceptable solutions.	N/A
Wastewater design and on-site soil evaluation to show compliance with Waikato Regional Council rules.	N/A
Specifications for hot water heating system including seismic restraints.	Pass
Water Supply Schematic (multi-storey buildings).	N/A
Backflow preventer shown – type and location	N/A
Stormwater disposal design and calculations.	Pass
Stormwater - soakholes (sizes and depths), Council drains disposal (if applicable).	N/A
Design for any proposed drainage, including those installed behind retaining walls.	N/A
Cross sections	Yes
Drawings showing constructional details of foundations, floor systems, wall, ceiling, stud heights and stud sizes, roof construction, balustrades and barriers.	Pass
Surface finishes to wet areas (walls and floor to laundry, kitchen and bathroom).	Pass
Location and type of insulation.	Pass
Details for all penetration in walls, roof (i.e. windows, doors, meter boards, skylights etc.)	Pass
Cavity construction details, where applicable.	Pass
Relocatable buildings	N/A
Structure	N/A
Marquee/Temporary structures	N/A
Comment from Vetting Officer:	Accepted, thank you. Steph M.

Vetting checksheet - A2249572

Taupo District Council
46 Horomatangi Street, Taupo
Private Bag 2005, Taupo 3352
New Zealand

Telephone 00 64 7 376 0899
Fax 00 64 7 378 0118
Email info@taupo.govt.nz
Website www.taupodc.govt.nz

GREAT LAKE TAUPŌ
Taupō District Council

Application for Building Consent/PIM (including Amendment &Temporary Structures) Checklist

Reference Number:	REF180530177
Submitted On:	30/05/2018 01:05
Submitted By:	willie robinson
Status:	Accepted

Office Use Only

PIM Required?	PIM
Compliance Schedule?	N/A
Restricted Building Work?	Yes
Building Category	Residential 1

General Documentation Required

Form 2A Certificate of Design Work	Pass
All drawings must meet the minimum requirements of the technical drawings standard AS/NZS1100 with a minimum font size of Microsoft Word text size 8. Index provided for plans and specifications.	Pass
Are you applying for owner/builder exemption? If yes, the appropriate documentation including Form 2B is to be supplied	N/A
All documents including photocopies must be legible	Pass
All plans are to be titled and dated (or version number)	Pass

Legal Documentation Required

Evidence of ownership provided.	Pass
Vetting Officer Comments	Council to provide CT

Site/Location Plan

North point	Pass
Road frontage indicated and street named	Pass
Location of all existing and proposed buildings	Pass
Distance of buildings to boundaries and distance between existing and proposed buildings including eaves and gutters.	Pass

Site levels and finished floor levels relative to Moturiki Datum survey point (if applicable)	Pass
Existing contours (proposed cut or fill also needs to be shown).	Pass
Building line restrictions and easements, if applicable	Pass
Site boundaries/exclusive area boundaries for cross lease properties and common areas clearly shown	Pass
Show calculations and percentage of net site coverage	Pass
Labelled points on boundaries where overshadowing is taken from.	Pass
Dimensions and location of parking spaces shown onsite	Pass
Existing and proposed crossings/driveways, also showing berms and footpaths.	Pass
Sediment control plan	Pass
If building under or near transmission lines, please show transmission plan area or location of power lines.	N/A

Foundation Plan

Foundation details	Pass
For timber floors and decks, show the location of piles, pile type, sub-floor bracing calculations, foundation perimeter walls and internal piling system where applicable.	N/A
Concrete floor details provided	Pass
Control joints shown/saw cuts.	Pass
Bearer layout for floors and decks	N/A
Access/ventilation to subfloor space.	N/A
Foundation details and concrete strength, post foundations (must provided resistance to uplift).	Pass
Construction joints to control concrete shrinkage.	N/A

Floor Plan

Plan of all floors describing the function of each room	Pass
Show all doors, windows and ventilation including enclosed space ventilation	Pass
Stairs, handrails and decking shown showing dimensions and details	Pass
Smoke alarm positions shown	Pass
For additions and alterations, the existing shall be shown separately to the proposed and to the same scale for comparison	N/A
Chimneys and solid fuel heaters	N/A
Disabled access to building showing dimensions and details.	N/A
Disabled access toilet showing dimensions and details	N/A
Lintel sizes/beam sizes and proprietary systems.	Pass
Dimensions of proposed building work.	Pass
Finished floor levels/datum, daylight angles.	Pass

Framing Plan/Bracing Plan

Bracing calculations/details - type and fixings	Pass

Framing plan, including size, centres, grade and treatment of members.	Pass
Bottom plate, top plate, stud, lintel fixing details.	Pass
Floor joist layout for floors and decks.	N/A
Upper storey floor design, if applicable.	N/A

Roof Plan

Roof plans and roof bracing.	Pass
Truss types/roof framing layout, design statement and manufacturers PS1.	Pass
Truss/Rafter and purlin fixings.	Pass

Elevations

North, South, East and West elevations.	Pass
Overshadowing labelled to correspond with points on site plan shown on all elevations	Pass
Height from ground level to apex of building	Pass
Show existing finished ground levels/floor levels and proposed finished ground levels/floor levels (sub-floor ventilation and access).	Pass
Stairs, handrails and decking shown	N/A
Cladding systems, roofing type and any other relevant details	Pass
Window schedule	Pass
Roof pitch and chimneys (show height of chimney in relation to ridge)	Pass
Alterations to land contour, retaining, cut and fill and batters	N/A

Specifications &Other Documentation

Technical specifications for proprietary systems/products e.g. tile showers, membranes, claddings systems and foundation systems etc.)	Pass
H1 calculations	Pass
E2 Risk Matrix	Pass
Compliance Schedule systems design and relevant maintenance and inspection procedures (copy of existing compliance schedule and/or proposed compliance schedule).	N/A
A4/A3 plan showing location of all specified systems for Compliance Schedule.	N/A
Has a seismic assessment been undertaken, if applicable	N/A
Natural hazard assessment report, where applicable (erosion, falling debris, subsidence, inundation, slippage).	N/A
Technical specifications for proprietary systems/products e.g. foundations/structural design.	Pass

Plumbing &Drainage

All existing SEWERS, sewer connections and sewer drains shown including Territorial Authority services	Pass
All existing STORMWATER drains and connections shown including Territorial Authority services	Pass

Proposed sewer and stormwater drains/soak holes, terminal vents shown.	Pass
Existing and proposed potable water supply.	N/A
All existing and proposed sanitary fittings including pipe sizes and gradients (isometric)	Pass
Sanitary facilities - Assessment of existing sanitary facilities within the building comparative to current code and levels of amenity provided by the acceptable solutions.	N/A
Wastewater design and on-site soil evaluation to show compliance with Waikato Regional Council rules.	N/A
Specifications for hot water heating system including seismic restraints.	Pass
Water Supply Schematic (multi-storey buildings).	N/A
Backflow preventer shown – type and location	N/A
Stormwater disposal design and calculations.	Pass
Stormwater - soakholes (sizes and depths), Council drains disposal (if applicable).	N/A
Design for any proposed drainage, including those installed behind retaining walls.	N/A
Cross sections	Yes
Drawings showing constructional details of foundations, floor systems, wall, ceiling, stud heights and stud sizes, roof construction, balustrades and barriers.	Pass
Surface finishes to wet areas (walls and floor to laundry, kitchen and bathroom).	Pass
Location and type of insulation.	Pass
Details for all penetration in walls, roof (i.e. windows, doors, meter boards, skylights etc.)	Pass
Cavity construction details, where applicable.	Pass
Relocatable buildings	N/A
Structure	N/A
Marquee/Temporary structures	N/A
Comment from Vetting Officer:	Accepted, thank you. Steph M.

Site specific specis - A2249573

APPROVED CONSENT COPY
THESE PLANS AND SPECIFICATIONS ARE APPROVED SUBJECT TO THE PROVISIONS OF THE BUILDING ACT 2004 AND IT'S REGULATIONS. A FULL (PRINTED) COPY OF DRAWINGS AND SPECIFICATIONS ARE TO BE RETAINED ON SITE IN GOOD ORDER AND PRODUCED UPON REQUEST.

Appendix

E2-AS1 Risk Matrix

Truss Design

CHH DesignIT Calculations

Bracing Calculations

Insulation Calculations

Cladding Manufacturers Specification

Hot Water Heating System

Fireplace and Installation Information

Waterproofing Systems

Other Items Relevant to this Project

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E2-AS1 Risk Matrix

TAUPO DISTRICT COUNCIL

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PLANS/SPECIFICATIONS

NZBC E2/AS1 - BUILDING ENVELOPE RISK MATRIX

WALL NUMBER: **NORTH** Risk factor	Risk severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS3604)	0		0		1	**1**	2		**1**
Number of storeys	0	**0**	1		2		4		**0**
Roof/wall junctions	0	**0**	1		3		5		**0**
Eave width	0		1	**1**	2		5		**1**
Envelope complexity	0		1		3	**3**	6		**3**
Decks	0	**0**	2		4		6		**0**
Notes:							Total risk score:		**5**

TAUPO DISTRICT COUNCIL
BC180581
APPROVED CONSENT PLANS/SPECIFICATIONS

WALL NUMBER: **SOUTH** Risk factor	Risk severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS3604)	0		0		1	**1**	2		**1**
Number of storeys	0	**0**	1		2		4		**0**
Roof/wall junctions	0		1		3		5	**5**	**5**
Eave width	0		1	**1**	2		5		**1**
Envelope complexity	0		1		3	**3**	6		**3**
Decks	0	**0**	2		4		6		**0**
Notes:							Total risk score:		**10**

WALL NUMBER: **WEST** Risk factor	Risk severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS3604)	0		0		1	**1**	2		**1**
Number of storeys	0	**0**	1		2		4		**0**
Roof/wall junctions	0	**0**	1		3		5		**0**
Eave width	0		1	**1**	2		5		**1**
Envelope complexity	0		1		3	**3**	6		**3**
Decks	0	**0**	2		4		6		**0**
Notes:							Total risk score:		**5**

WALL NUMBER: **EAST** Risk factor	Risk severity								Subtotals for each risk factor
	LOW	score	MEDIUM	score	HIGH	score	VERY HIGH	score	
Wind zone (per NZS3604)	0		0		1	**1**	2		**1**
Number of storeys	0	**0**	1		2		4		**0**
Roof/wall junctions	0	**0**	1		3		5		**0**
Eave width	0		1	**1**	2		5		**1**
Envelope complexity	0		1		3	**3**	6		**3**
Decks	0	**0**	2		4		6		**0**
Notes:							Total risk score:		**5**

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT
PLANS/SPECIFICATIONS

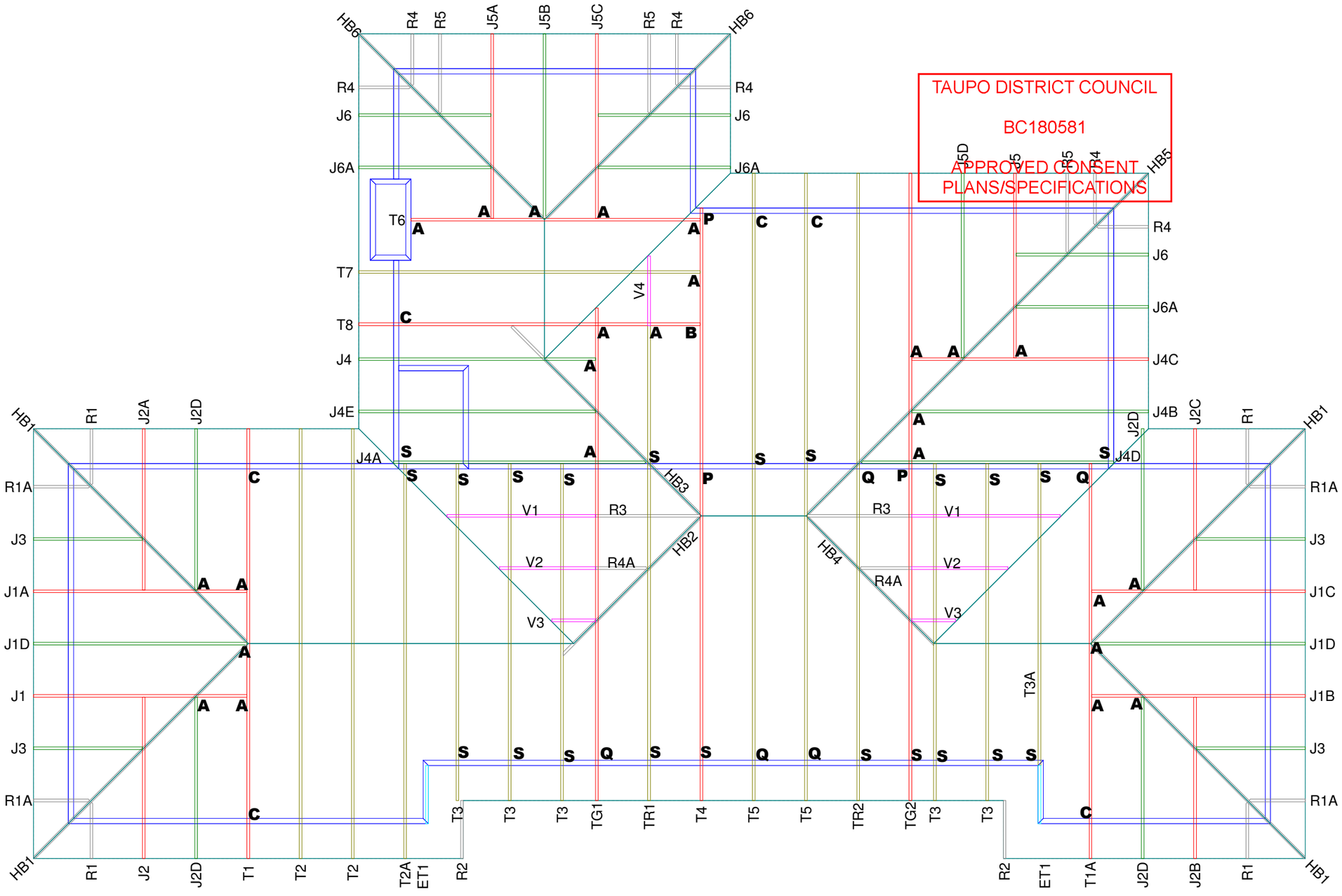
Truss Design

TAUPO DISTRICT COUNCIL

BC180581

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PLANS/SPECIFICATIONS

BUILDABLE CONSENT LAYOUT



NOTE: All gable trusses are designed to suit cladding manufacturers framing requirements.
If a gable truss requires a windbeam brace, the type of MiTek brace will be noted as such on the layout

CARTERS
YourBuildingPartner

Napier Manufacturing
5 Waitane Place, Onekawa
(07) 377 6904

JOB No **FA10742**

Client: PENNY HOMES LTD
Job Name: NEW RESIDENCE
Address: LOT 196
MAYFLY GROVE
TAUPO

Pitch: 25.0deg
Roof Type: Metal Tiles
Overhang: 600mm
Wind Area: High
Roof Snow: 0.000kPa

Trusses and rafters at 900mm max centres unless stated otherwise. This layout is to be read in conjunction with the Architectural plans.

DRAWN David shaw | 27 Feb,2017

FIXINGS

A = 47x90 Joist Hanger
B = 47x120 Joist Hanger
C = CT200 (pair)
D = 47x190 Joist Hanger
E = 95x165 Joist Hanger
G = SH-140 Split Hanger
H = SH-180 Split Hanger
K = SH-220 Split Hanger
L = 6kN Strap
M = Multigrips (pair)
N = Nailon Plate
S = CPC 40 Single Cleat
T = CPC 40 Short (pair)
U = CPC 80 Single Cleat
Q = 9kN Pack
P = 16kN Pack
X = 25kN Uplift
Y = 35kN Uplift
Z = 45kN Uplift

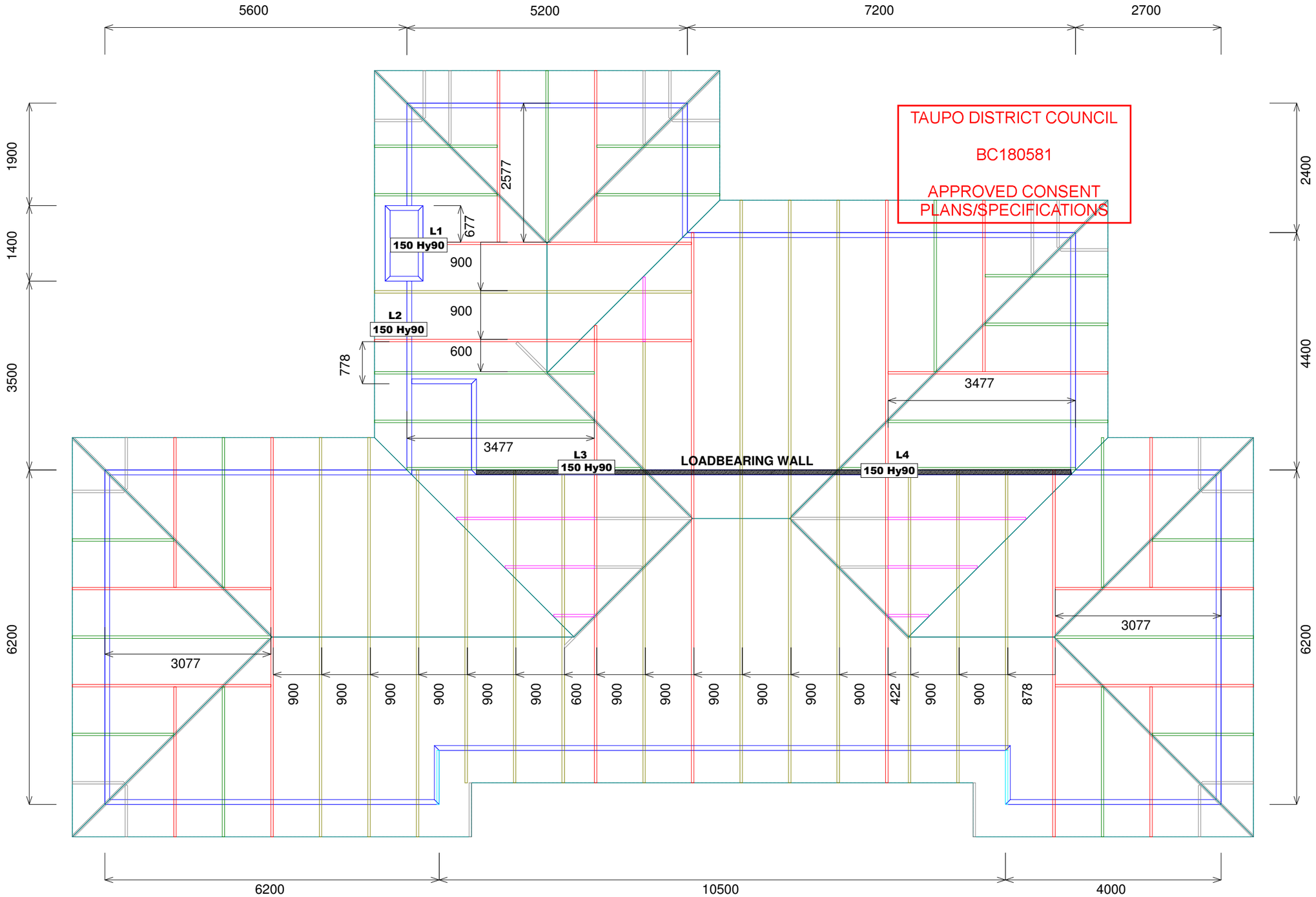
All truss fixings not indicated as above must have two wire dogs.

Please contact your local CARTERS Manufacturing Branch for any queries regarding this layout.

See Back Page for Dimensions, Lintel Statement & Point Load Notification.

FTMA NEW ZEALAND

BUILDABLE CONSENT LAYOUT



TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS

NOTE: Metal ceiling battens direct fixed to bottom chord at 600mm centres.

CARTERS
YourBuildingPartner

Napier Manufacturing
5 Waitane Place, Onekawa
(07) 377 6904

JOB No **FA10742**

Client: PENNY HOMES LTD
Job Name: NEW RESIDENCE
Address: LOT 196
MAYFLY GROVE
TAUPO

Pitch: 25.0deg
Roof Type: Metal Tiles
Overhang: 600mm
Wind Area: High
Roof Snow: 0.000kPa

Trusses and rafters at 900mm max centres unless stated otherwise. This layout is to be read in conjunction with the Architectural plans.

DRAWN David shaw | 27 Feb,2017

The lintels have been sized using one of the following:

hy90, hyONE and hySPAN lintels have been sized using the designIT for houses - New Zealand series 5 software.

GANGLAM and FLITCH BEAMS have been sized using the MiTek Beam Program V1.10 June 2011.

Any treated LVL product is H3.1, which satisfies the minimum treatment requirement of H1.2 as per NZS3602.

Unless otherwise stated the timber grade for all lintels is SG8. Lintels not shown are to be selected as per NZS3604: 2011.

All walls shown on this layout are considered to be load bearing.

__kN

Dn _____ kN
Up _____ kN

Notification of point loaded lintels or point loads on internal walls where the downward load is higher than 10kN or the upward load is greater than 12kN.

See Front Page for Truss Layout and Fixings

FTMA NEW ZEALAND

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

PRODUCER STATEMENT for MiTek 20/20® TRUSS DESIGN - Version 4.6

ISSUED BY: **MiTek New Zealand Limited**

TO: **Napier Manufacturing**

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

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS

This producer statement covers the MiTek 20/20® truss design and the structural performance of the GANG-NAIL® connector plate for the job reference **FA10742** 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 Clauses B1 and B2 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: Monday, 27 February 2017**



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

Job: FA10742 Client: PENNY HOMES LTD Site: NEW RESIDENCE
Phone: LOT 196
MAYFLY GROVE
Description: TAUPO
Building Consent No.: Phone:

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **Napier Manufacturing**, 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:	MSG8 DDP H1.2	Pitch:	25.000 deg	Nominal Overhang:	600 mm
Roof		**Ceiling**		**Wind**	
Material:	Metal Tiles	Material:	Gib 13mm Ronde Screwed	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:	400 mm centres	Restraints:	600 mm centres		
Live Load:	Qur = 0.250 kPa Qc = 1.100 kN	Live Load:	Qc = 1.400 kN		

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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)
T1	1	6200	25.000	900	J2D	4	2177	25.000	900	T3	5	5200	25.000	900
T1A	1	6200	25.000	900	J3	4	1277	25.000	900	T3A	1	5200	25.000	900
T4	1	9600	25.000	900	J4	1	3477	25.000	900	T7	1	5200	25.000	900
T5	2	9600	25.000	900	J4A	1	3477	25.000	900	TR1	1	7578	25.000	900
T6	1	4900	25.000	900	J4B	1	3477	25.000	900	V1	2	2555	25.000	900
T8	1	5200	25.000	900	J4C	1	3477	25.000	900	V2	2	1655	25.000	900
TG1	1	7578	25.000	900	J4D	1	3477	25.000	900	V3	2	755	25.000	900
TG2	1	9600	25.000	900	J4E	1	3477	25.000	900	V4	1	1199	25.000	900
TR2	1	9600	25.000	900	J5	1	2577	25.000	900	*HB1	4	5178	18.249	900
ET1	2	1000	25.000	900	J5A	1	2577	25.000	900	*HB2	1	3354	18.249	900
J1	1	3077	25.000	900	J5B	1	2577	25.000	900	*HB3	1	4582	18.249	900
J1A	1	3077	25.000	900	J5C	1	2577	25.000	900	*HB4	1	3102	18.249	900
J1B	1	3077	25.000	900	J5D	1	2577	25.000	900	*HB5	1	8290	18.249	900
J1C	1	3077	25.000	900	J6	3	1677	25.000	900	*HB6	2	4471	18.249	900
J1D	2	3077	25.000	900	J6A	3	1677	25.000	900	*R1	4	968	25.000	900
J2	1	2177	25.000	900	R3	2	1801	25.000	900	*R1A	4	968	25.000	900
J2A	1	2177	25.000	900	R4A	2	891	25.000	900	*R2	2	1000	25.000	900
J2B	1	2177	25.000	900	T2	2	6200	25.000	900	*R4	6	891	25.000	900
J2C	1	2177	25.000	900	T2A	1	6200	25.000	900	*R5	3	1368	25.000	900

Total quantity : 98

The computer design input has been carried out by:

Name of Computer Operator: David shaw

Qualifications and Title: Truss Detailer

Signed:

CARTERS

A Division of Carter Holt Harvey Dated: Monday, 27 February 2017

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 (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 Laserframe 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).

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References:

AS 1720.1 – 2010 Timber structures. Part 1: Design methods.
NZS 3603:1993 Timber Structures Standard.
NZS 3604:2011 Timber-framed buildings.
NZS 3602:2003 Timber and Wood-based products for Use in Building
AS 1684.1 – 1999 Residential timber framed construction. Part 1: Design criteria.
AS/NZS 1170:2002 Structural design actions, Parts 0 and 1.
AS/NZS 1170:2011 Structural design actions, Part 2: Wind actions.
AS/NZS 1170:2003 Structural design actions, Part 3: Snow and ice actions.

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: 15 September 2016

For further information or advice please contact: Carter Holt Harvey Woodproducts New Zealand
173 Captain Springs Road, Onehunga. Auckland
Telephone 0800 808 131
Facsimile 0800 808 132
Email: designit@chhwoodproducts.co.nz

Specifier details:

Specifier:	David Shaw		
Business name:	Carters		
Address:	Cnr Spa Road & Totara Street		
Email:	David.Shaw@carters.co.nz		
Phone: 07 377 6904		**Mobile:**	**Facsimile:**

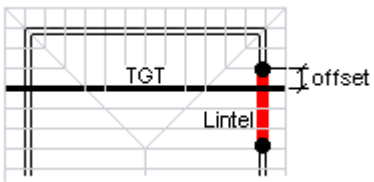
Project & Site details:

Project:	NEW RESIDENCE	**Ref. no.:** FA10742
At (address):	LOT 196 MAYFLY GROVE, TAUPO	
For (owner/s):	PENNY HOMES	
Wind zone:	High	
Snow loading	Snow region: N0, snow loading not applicable	

MEMBER DESIGN DETAILS

Member 1

1) Member code and description L1, Lintels - Supporting girder truss / truncated girder truss



2) Date prepared 27/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m²
Roof pitch	25.0 °
Truss spacing	900 mm
Eave overhang	600 mm
TGT - span	5200 mm
- setback	2577 mm
- offset	497 mm
Lintel span	1040 mm

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5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	3.5 mm	0.4 mm (long term)	$\frac{3.5}{0.4} = 8.1$
*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 [4] kN
1.35G	0.60	-1.5
1.2G + 1.5Q	0.80	-3.3
$1.2G + W_U + \Psi_C Q$	1.00	-3.2
$0.9G + W_U$	1.00	2.5

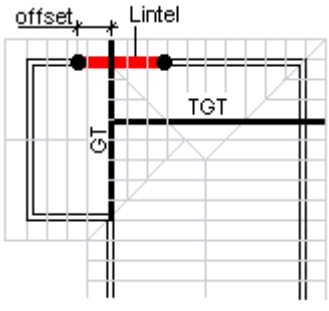
See 'Notes for interpretation of reaction data' at the end of this report

8) Installation requirements Provide at least 30 mm bearing at end supports

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Member 2

1) Member code and description L2, Lintels - Supporting girder truss / truncated girder truss



2) Date prepared 27/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m²
Roof pitch	25.0 °
Truss spacing	900 mm
Eave overhang	600 mm
TGT - span	7578 mm
- setback	3477 mm
GT - span	5200 mm
- offset	190 mm
Lintel span	815 mm

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APPROVED CONSENT PLANS/SPECIFICATIONS

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	2.7 mm	0.2 mm (long term)	$\frac{2.7}{0.2} = 12.0$
*Critical serviceability load case			

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

7) Reactions

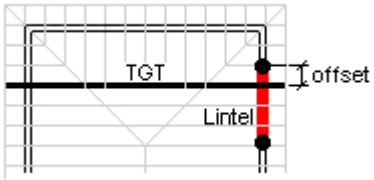
Load case	k_1 [1]	Limit states design reaction [2,3] End [4] kN
1.35G	0.60	-3.7
1.2G + 1.5Q	0.80	-6.6
$1.2G + W_U + \Psi_C Q$	1.00	-7.7
$0.9G + W_U$	1.00	6.2

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

8) Installation requirements Provide at least 30 mm bearing at end supports

Member 3

1) Member code and description L3, Lintels - Supporting girder truss / truncated girder truss



2) Date prepared 27/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m²
Roof pitch	25.0 °
Truss spacing	900 mm
Eave overhang	600 mm
TGT - span	7578 mm
- setback	3477 mm

- offset	957 mm
Lintel span	1000 mm

5) Member specification

Size, stress grade/product	Use 150 x 90 hy90
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

6) Serviceability

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Load case	Limit [3] on average deflection [2]	Estimated average deflection [2]	Rigidity ratio [4]
Long term load - $G+\psi_L Q$ *	3.3 mm	0.1 mm (long term)	$\frac{3.3}{0.1}$ = 28.4

*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 [4] kN
1.35G	0.60	-4.7
1.2G + 1.5Q	0.80	-7.8
1.2G + W_U + $\Psi_C Q$	1.00	-9.8
0.9G + W_U	1.00	7.9

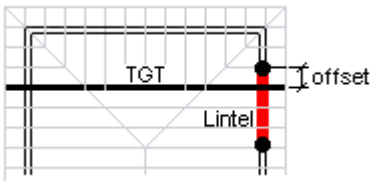
See 'Notes for interpretation of reaction data' at the end of this report

8) Installation requirements Provide at least 30 mm bearing at end supports

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Member 4

1) Member code and description L4, Lintels - Supporting girder truss / truncated girder truss



2) Date prepared 27/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m²
Roof pitch	25.0 °
Truss spacing	900 mm
Eave overhang	600 mm
TGT - span	9600 mm
- setback	3477 mm
- offset	1257 mm
Lintel span	1550 mm

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	5.2 mm	2.1 mm (long term)	$\frac{5.2}{2.1} = 2.5$
*Critical serviceability load case			

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

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7) Reactions

Load case	k_1 [1]	Limit states design reaction [2,3] End [4] kN
1.35G	0.60	-5.3
1.2G + 1.5Q	0.80	-8.4
1.2G + W_U + $\Psi_C Q$	1.00	-11.0
0.9G + W_U	1.00	8.8

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

8) Installation requirements Provide at least 30 mm bearing at end supports

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/NZS 1170, AS 1684.1 and AS 1720. Deflections calculated using this methodology cannot therefore be usefully compared with deflections calculated using other methods, eg GLTAA design methodology.
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/NZS 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 1684.1 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 of AS 1684.1

Notes for interpretation of reaction data

1. Duration of load factor 'k_1' for strength as per NZ 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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CHH DesignIT Calculations

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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 (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 Laserframe 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).

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References:

AS 1720.1 – 2010 Timber structures. Part 1: Design methods.
NZS 3603:1993 Timber Structures Standard.
NZS 3604:2011 Timber-framed buildings.
NZS 3602:2003 Timber and Wood-based products for Use in Building
AS 1684.1 – 1999 Residential timber framed construction. Part 1: Design criteria.
AS/NZS 1170:2002 Structural design actions, Parts 0 and 1.
AS/NZS 1170:2011 Structural design actions, Part 2: Wind actions.
AS/NZS 1170:2003 Structural design actions, Part 3: Snow and ice actions.

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: 15 September 2016

For further information or advice please contact: Carter Holt Harvey Woodproducts New Zealand
173 Captain Springs Road, Onehunga. Auckland
Telephone 0800 808 131
Facsimile 0800 808 132
Email: designit@chhwoodproducts.co.nz

Specifier details:

Specifier:	Joanna Tynan		
Business name:	JT Design Architecture Ltd		
Address:	32 Tuwharetoa Street Taupo		
Email:	joanna@jtdesign.co.nz		
Phone:	**Mobile:** 021840989	**Facsimile:**	

Project & Site details:

Project:	New residence	**Ref. no.:**
At (address):	Lot 196, Mayfly Grove, Nukuhau Taupo	
For (owner/s):		
Wind zone:	High	
Snow loading	Snow region: N0, snow loading not applicable	

MEMBER DESIGN DETAILS

Member 1

1) Member code and description L1 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	1.2 m
Roof load width 'RLW'	3.4 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	4.0 mm	0.5 mm (long term)	$\frac{4.0}{0.5} = 8.2$
*Critical serviceability load case			

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

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7) Reactions

Load case	k_1 [1]	Limit states design reaction [2,3] End [4] kN
1.35G	0.60	-1.9
1.2G + 1.5Q	0.80	-4.4
$1.2G + W_U + \Psi_C Q$	1.00	-3.8
$0.9G + W_U$	1.00	3.0

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

8) Installation requirements Provide at least 30 mm bearing at end supports

Member 2

1) Member code and description L2 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	1.6 m
Roof load width 'RLW'	2.0 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	5.3 mm	0.7 mm (long term)	$\frac{5.3}{0.7} = 7.5$
*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 [4] kN
1.35G	0.60	-1.3
1.2G + 1.5Q	0.80	-2.9

$1.2G + W_U + \Psi_C Q$	1.00	-2.7
$0.9G + W_U$	1.00	2.1

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

8) Installation requirements Provide at least 30 mm bearing at end supports

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Member 3

1) Member code and description L3 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	0.8 m
Roof load width 'RLW'	3.6 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	2.7 mm	0.2 mm (long term)	$\frac{2.7}{0.2} = 17.8$
*Critical serviceability load case			

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

7) Reactions

		Limit states design reaction [2,3]
Load case	**k_1 [1]**	**End [4] kN**
1.35G	0.60	-1.7
1.2G + 1.5Q	0.80	-4.0
$1.2G + W_U + \Psi_C Q$	1.00	-3.5
$0.9G + W_U$	1.00	2.8

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

8) Installation requirements Provide at least 30 mm bearing at end supports

Member 4

1) Member code and description L4 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	2.4 m
Roof load width 'RLW'	3.6 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	8.0 mm	4.2 mm (long term)	$\frac{8.0}{4.2} = 1.9$
*Critical serviceability load case			

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

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7) Reactions

Load case	k_1 [1]	Limit states design reaction [2,3] End [4] kN
1.35G	0.60	-3.2
1.2G + 1.5Q	0.80	-5.6
1.2G + W_U + $\Psi_C Q$	1.00	-6.5
0.9G + W_U	1.00	5.1

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

8) Installation requirements Provide at least 30 mm bearing at end supports

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Member 5

1) Member code and description L5 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	2.7 m
Roof load width 'RLW'	6.5 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 240 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 - $G+\psi_L Q$ *	9.0 mm	3.7 mm (long term)	$\frac{9.0}{3.7} = 2.5$
*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 [4] kN

1.35G	0.60	-5.7
1.2G + 1.5Q	0.80	-8.8
1.2G + W_U + Ψ_CQ	1.00	-11.6
0.9G + W_U	1.00	9.1

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

8) Installation requirements Provide at least 30 mm bearing at end supports

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Member 6

1) Member code and description L6 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	1.6 m
Roof load width 'RLW'	4.2 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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+ψ_L Q *	5.3 mm	1.4 mm (long term)	$\frac{5.3}{1.4}$ = 3.7
*Critical serviceability load case			

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

7) Reactions

		Limit states design reaction [2,3]
Load case	**k_1 [1]**	**End [4] kN**
1.35G	0.60	-2.7
1.2G + 1.5Q	0.80	-4.6
1.2G + W_U + Ψ_CQ	1.00	-5.6
0.9G + W_U	1.00	4.4

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

8) Installation requirements Provide at least 30 mm bearing at end supports

Member 7

1) Member code and description L7 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	1.8 m

Roof load width 'RLW'	4.1 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	6.0 mm	2.0 mm (long term)	$\frac{6.0}{2.0} = 3.0$

*Critical serviceability load case

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

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7) Reactions

Load case	k_1 [1]	Limit states design reaction [2,3] End [4] kN
1.35G	0.60	-3.0
1.2G + 1.5Q	0.80	-5.1
1.2G + W_U + $\Psi_C Q$	1.00	-6.1
0.9G + W_U	1.00	4.8

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

8) Installation requirements Provide at least 30 mm bearing at end supports

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Member 8

1) Member code and description L8 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	1.6 m
Roof load width 'RLW'	5.4 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	5.3 mm	1.8 mm (long term)	$\frac{5.3}{1.8} = 2.9$

*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 [4]

		kN
1.35G	0.60	-3.5
1.2G + 1.5Q	0.80	-5.5
1.2G + W_U + Ψ_CQ	1.00	-7.2
0.9G + W_U	1.00	5.7

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

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8) Installation requirements Provide at least 30 mm bearing at end supports

Member 9

1) Member code and description L9 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	0.6 m
Roof load width 'RLW'	5.4 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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+Ψ_LQ *	2.0 mm	0.1 mm (long term)	$\frac{2.0}{0.1}$ = 21.3
*Critical serviceability load case			

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

7) Reactions

		Limit states design reaction [2,3]
Load case	k_1 [1]	End [4] kN
1.35G	0.60	-2.2
1.2G + 1.5Q	0.80	-4.4
1.2G + W_U + Ψ_CQ	1.00	-4.6
0.9G + W_U	1.00	3.7

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

8) Installation requirements Provide at least 30 mm bearing at end supports

Member 10

1) Member code and description L10 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	1.0 m
Roof load width 'RLW'	4.1 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 x 90 hy90
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

6) Serviceability

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Load case	Limit [3] on average deflection [2]	Estimated average deflection [2]	Rigidity ratio [4]
Long term load - $G+\psi_L Q$ *	3.3 mm	0.3 mm (long term)	$\frac{3.3}{0.3} = 10.0$
*Critical serviceability load case			

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

7) Reactions

Load case	k_1 [1]	Limit states design reaction [2,3] End [4] kN
1.35G	0.60	-2.1
1.2G + 1.5Q	0.80	-4.7
1.2G + W_U + $\Psi_C Q$	1.00	-4.4
0.9G + W_U	1.00	3.5

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

8) Installation requirements Provide at least 30 mm bearing at end supports

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Member 11

1) Member code and description L11 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	1.6 m
Roof load width 'RLW'	4.1 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 150 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 - $G+\psi_L Q$ *	5.3 mm	1.4 mm (long term)	$\frac{5.3}{1.4} = 3.8$
*Critical serviceability load case			

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

7) Reactions

Limit states design reaction [2,3]

Load case	k_1 [1]	End [4] kN
1.35G	0.60	-2.7
1.2G + 1.5Q	0.80	-4.5
1.2G + W_U + $\Psi_C Q$	1.00	-5.5
0.9G + W_U	1.00	4.3

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

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8) Installation requirements Provide at least 30 mm bearing at end supports

Member 12

1) Member code and description L12 - Lintels - In single or upper storey load bearing walls

2) Date prepared 24/02/2017

3) Serviceability criteria AS 1720.1-2010 and AS 1684.1-1999

4) Design inputs

Span	4.8 m
Roof load width 'RLW'	4.1 m
Roof type and mass	Light roof & ceiling - 40 kg/m²

5) Member specification

Size, stress grade/product	Use 400 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	5.5 mm (long term)	$\frac{10.0}{5.5} = 1.8$
*Critical serviceability load case			

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

7) Reactions

		Limit states design reaction [2,3]
Load case	**k_1 [1]**	**End [4] kN**
1.35G	0.60	-6.0
1.2G + 1.5Q	0.80	-9.0
1.2G + W_U + $\Psi_C Q$	1.00	-11.7
0.9G + W_U	1.00	8.6

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

8) Installation requirements Provide at least 30 mm bearing at end supports

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/NZS 1170, AS 1684.1 and AS 1720. Deflections calculated using this methodology cannot therefore be usefully compared with deflections calculated using other methods, eg GLTAA design methodology.

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/NZS 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 1684.1 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 of AS 1684.1

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Notes for interpretation of reaction data

1. Duration of load factor 'k_1' for strength as per NZ 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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Bracing Calculations

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GIB EzyBrace® Bracing Software

Demand Calculation Sheet

Job Details

Name:	New Residence
Street and Number:	Mayfly Grove, Nukuhau
Lot and DP Number:	Lot 196
City/Town/District:	Taupo DC
Designer:	J Tynan
Company:	JT Design Architecture Ltd
Date:	Friday, 24 February 2017

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Building Specification

Number of Storeys	1
Floor Loading	2 kPa
Foundation Type	Slab
	Single
Cladding Weight	Heavy
Roof Weight	Light
Room in Roof Space	No
Roof Pitch (degrees)	25
Roof Height above Eaves (m)	3
Building Height to Apex (m)	5.4
Ground to Lower Floor (m)	0.2
Average Stud Height (m)	2.4
Building Length (m)	20.7
Building Width (m)	13
Building Plan Area (m^2)	184

Building Location

Wind Zone = High		**Earthquake Zone 2**	
Wind Region	A	Soil Type	D & E (Deep to Very Soft)
Lee Zone	No	Annual Prob. of Exceedance:	1 in 500 (NZS3604:2011 Default)
Ground Roughness	Open		
Site Exposure	Exposed		
Topography Class	T1		

Bracing Units required for Wind

	Along	Across
Single Level	**754**	**1340**

Bracing Units required for Earthquake

	Along & Across
Single Level	**1118**

GIB EzyBrace® Bracing Software

Single Level Along Resistance Sheet

Job Name: New Residence

Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	Wind	EQ
									Demand	
									754	1118
									Achieved	
									1457	1284
									193%	115%
a	1	1.20		2.4	BL1-H	GIB®	154	125		
	2	1.20		2.4	GS1-N	GIB®	83	72		
									236 OK	197 OK
b	1	0.60		2.4	GS1-N	GIB®	34	35		
	2	1.20		2.4	GS1-N	GIB®	83	72		
	3	0.60		2.4	GS1-N	GIB®	34	35		
									151 OK	142 OK
c	1	4.80		2.4	GS1-N	GIB®	331	288		
	2	2.40		2.4	GS1-N	GIB®	166	144		
	3	1.50		2.4	GS1-N	GIB®	104	90		
	4	2.00		2.4	GS1-N	GIB®	138	120		
									738 OK	642 OK
d	1	1.20		2.4	GS1-N	GIB®	83	72		
	2	0.80		2.4	GS1-N	GIB®	49	47		
	3	0.70		2.4	GS1-N	GIB®	41	41		
	4	0.70		2.4	GS1-N	GIB®	41	41		
	5	1.70		2.4	GS1-N	GIB®	117	102		
									332 OK	303 OK

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Single Level Across Resistance Sheet

Job Name: New Residence

									Wind	EQ
									Demand	
									1340	1118
									Achieved	
Line	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BUs)	EQ (BUs)	1417 106%	1292 116%
m	1	0.50		2.4	BLP-H	GIB®	64	69		
	2	0.50		2.4	BLP-H	GIB®	64	69		
									127 OK	139 OK
n	1	0.50		2.4	GS1-N	GIB®	28	29		
	2	0.50		2.4	GS1-N	GIB®	28	29		
	3	3.10		2.4	GS1-N	GIB®	214	186		
	4	1.00		2.4	GS1-N	GIB®	65	60		
									334 OK	304 OK
o	1	1.60		2.4	GS1-N	GIB®	110	96		
	2	2.10		2.4	GS1-N	GIB®	145	126		
									255 OK	222 OK
p	1	0.70		2.4	GS1-N	GIB®	41	41		
	2	3.80		2.4	GS1-N	GIB®	262	228		
									304 OK	269 OK
q	1	0.60		2.4	GS1-N	GIB®	34	35		
	2	0.70		2.4	GS1-N	GIB®	41	41		
	3	2.00		2.4	GS1-N	GIB®	138	120		
									214 OK	196 OK
r	1	1.00		2.4	GS1-N	GIB®	65	60		
	2	1.00		2.4	BL1-H	GIB®	118	103		
									183 OK	163 OK

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Custom Wall Elements

Supplier	System	Min. Length m	Wind BUs/m	EQ BUs/m
CHH	EP1_1.2	1.2	120	135
CHH	EP1_0.6	0.6	95	105
CHH	EP1_0.4	0.4	80	95

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GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

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PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

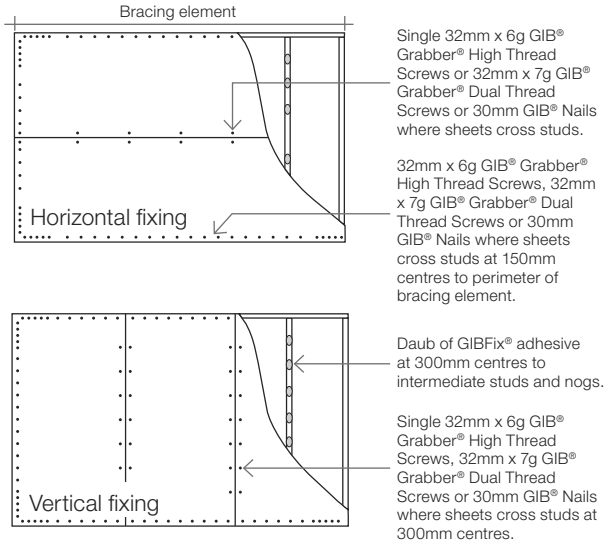
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

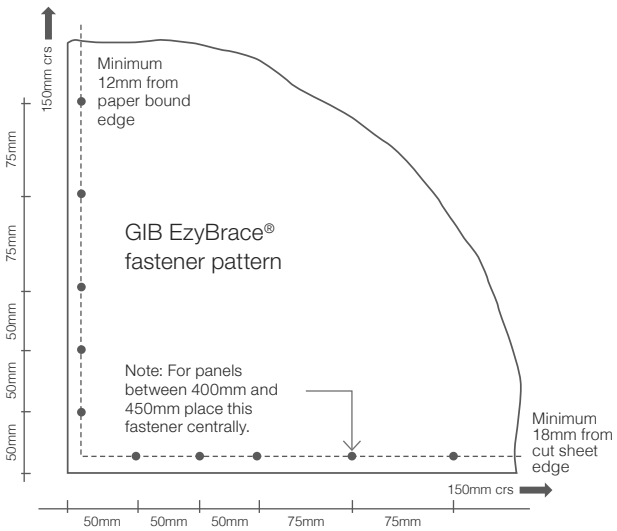
Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.





Unless stated all fastener spacings are maximums.

In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

GIB EzyBrace® Systems specification BL1-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BL1-H	0.4	10mm or 13mm GIB Braceline® to one side only	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline®
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

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PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

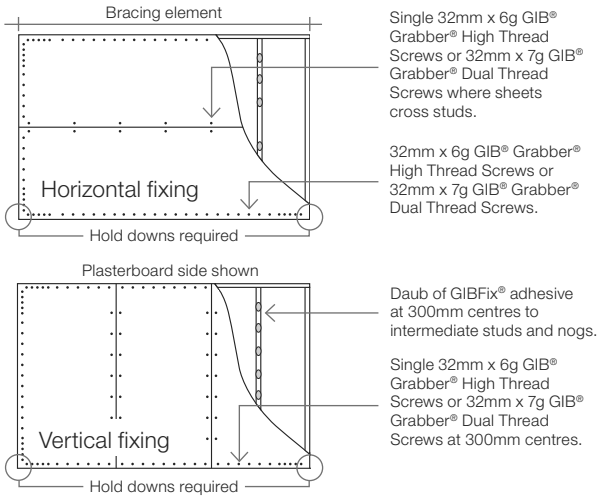
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

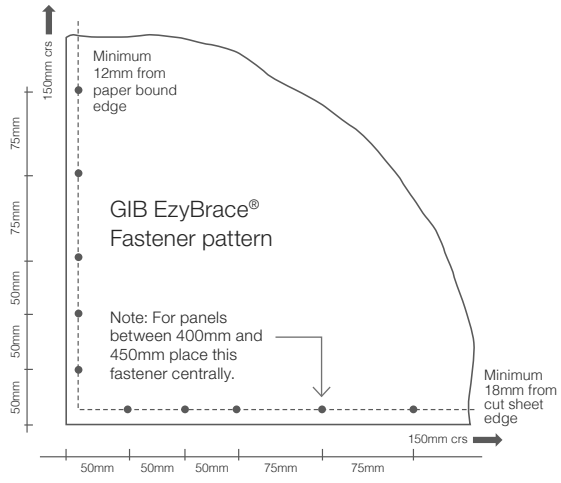
Fastener centres

50,100,150, 225, 300mm from maximum each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the sheet joint. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.





Unless stated all fastener spacings are maximums.

In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

GIB EzyBrace® Systems specification BLP-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLP-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

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WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure; B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of AS/NZ 2269/0 :2012.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZS 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally.
- Plywood is to be fixed vertically with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

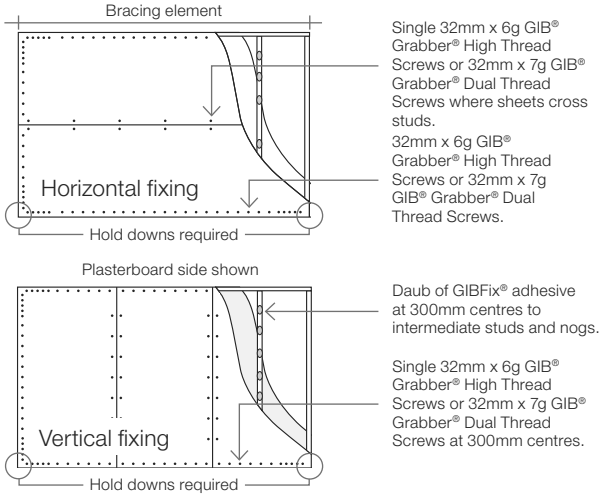
GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

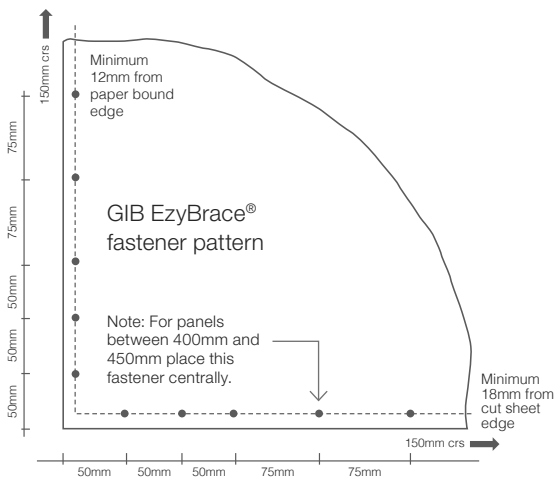
Fastener centres

GIB® Plasterboard side: 50,100,150, 225, 300mm from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.





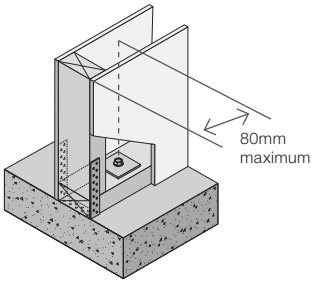
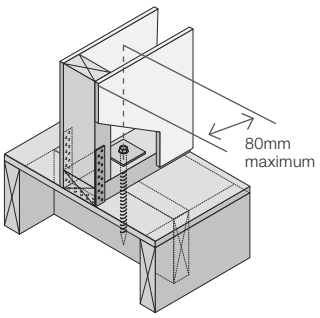
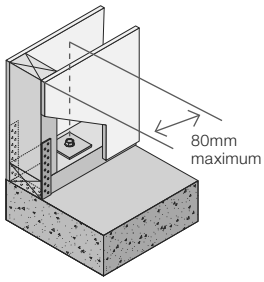
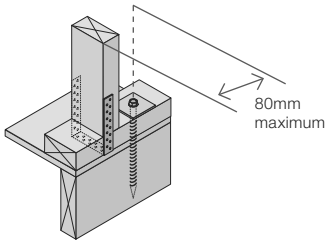
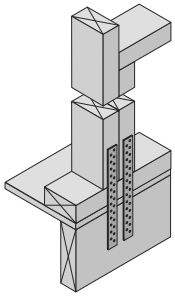
Unless stated all fastener spacings are maximums.

In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

Bracing strap installation

Care needs to be taken with the installation of the bracing strap. It should be checked in to be flush with the face of the stud providing a flat substrate for the plasterboard and positioned in such a way that the corner fastenings of the bracing element are not affected by it. Keeping the strap to the edge of the end stud as shown will allow the corner fastenings to be installed without having to penetrate the bracing strap.

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Concrete floor	Timber floor
400 x 25 x 0.9mm galvanised strap to pass under the plate and up the other side of the stud. Six 30 x 2.5mm flat head galvanised nails to each side of the stud. Three 30 x 2.5mm flat head galvanised nails to each side of the plate. Hold down bolt with 50 x 50 x 3mm washer to be fitted within 80mm of the end of the element.	
Internal wall	
 GEB004	 GEB005
External wall	
 GEB006	 GEB007
Note: Where applicable drawings have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box that can be found at gib.co.nz/library.	2/300 x 25 x 0.9mm galvanised straps with six 30 x 2.5mm flat head galvanised nails to each stud and into the floor joist and three nails to the plate. Block to nog fixed with 3/100 x 3.75mm nails to stud.
	 GEB008

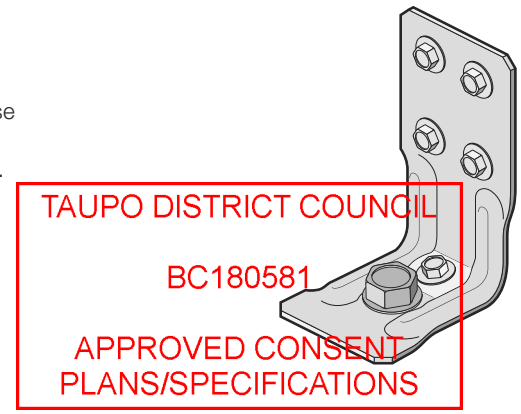
Hold-down fastener requirements	
Concrete floor	Timber floor
A mechanical fastening with a minimum characteristic uplift capacity of 15kN fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element.	12 x 150mm galvanised coach screw fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element

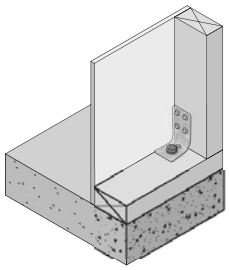
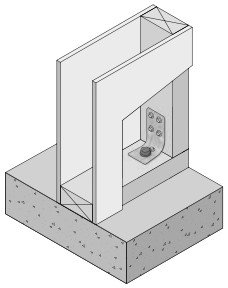
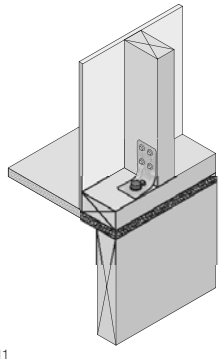
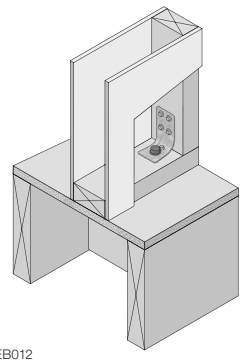
GIB HandiBrac® installation

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

— Quick and easy to fit.
— May be fitted at any stage before lining.
— Framing face is clear to allow flush lining.
— Easily inspected.

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011.



Concrete floor		Timber floor	
External walls	Internal walls	External walls	Internal walls
 GEB009	 GEB010	 GEB011	 GEB012
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.	Position GIB HandiBrac® at the stud/plate junction and at mid-width of plate.	Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.	Position GIB HandiBrac® in the centre of floor joist or full depth solid block.
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.		12 x 150mm galvanised coach screw or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.	

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PLANS/SPECIFICATIONS

Insulation Calculations

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PLANS/SPECIFICATIONS

INSULATION CALCULATION BASIC DATA AND DETERMINATION OF METHOD

This calculation is valid for buildings of non-solid construction only

PROJECT: *STAGE 19 --- Lot 196*

CLIMATE ZONE: *3*

BASIC DATA TABLE:

	WALL & GLASS AREAS			
LINE #	WALL	WALL AREA (m²)	GLASS AREA (m²)	
1	N	38.25	14.81	
2	S	38.24	6.17	
3	W	31.96	4.74	
4	E	31.98	10.73	

	TOTAL AREAS	(m²)	(m²)	%	
5	N,S,W,E	140.43	36.45	25.96	<=30%
6	S,W,E ONLY	102.18	21.64	21.18	<=30%
7	TOTAL INCL SKYLIGHTS	140.43	36.45	25.96	<=30%
		(m²)	PERIMETER (m)		RATIO
8	ROOF AREA	136.20	N/A		
9	FLOOR AREA	147.06			
11	SKYLIGHT AREA		N/A		<1.2m²
12	LEADLIGHT AREA		N/A		<2.6m²
13	ACTUAL WALL AREA	103.98	N/A		N/A
14	ACTUAL ROOF AREA	136.20	N/A		N/A
15	ACTUAL WINDOW AREA	36.45	N/A		N/A

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PLANS/SPECIFICATIONS

CONCLUSION OF METHOD:

DO CALCULATIONS COMPLY WITH SCHEDULE METHOD?	Yes/No?	Yes
USE CALCULATION METHOD FOR OTHER REASONS?	Yes/No?	No

WALL AREAS:		CONSTRUCTION DESCRIPTION	R-VALUE
	=	90x45 @600crs. Brick veneer over cavity	2.24
	=	90x45 @600crs. RCS 40mm Graphex over cavity	3.05
	=	140x45 @300crs.RCS 40mm Graphex over cavity	3.47
	=	90x45 @600crs.Gib lining both sides	2.18
	=		

Note: Similar highlighted values in the 'Window Areas' calculation box below indicate windows which are in that particular wall type.

WALL AREAS				WINDOW AREAS			
NORTH (m²)	SOUTH (m²)	WEST (m²)	EAST (m²)	NORTH (m²)	SOUTH (m²)	WEST (m²)	EAST (m²)
37.15	9.84	2.46	31.98	3.41	1.96	2.44	3.65
1.10	2.95	9.34		5.47	1.63	1.15	5.47
	1.10	3.93		2.28	0.62	1.15	0.99
	24.35	3.44		3.65	1.96		0.62
		12.79					
38.25	**38.24**	**31.96**	**31.98**	**14.81**	**6.17**	**4.74**	**10.73**
							TOTALS

cont…

…cont

ROOF AREAS

ROOF AREA	CONSTRUCTION DESCRIPTION	PLAN AREA (m²)	SLOPE ANGLE (°)	AREA	R-VALUE
1	Timber trusses @900crs.	136.20		136.20	3.37

FLOOR AREAS AND PERIMETER DIMENSIONS:

FLOOR AREA	CONSTRUCTION DESCRIPTION	PLAN AREA (m²)	PERIMETER (m)	RATIO	R-VALUE
1	Ribraft slab on ground	147.06	57.88	2.54	1.30
	TOTALS	147.06			

CONCLUSION:

PROPOSED R-VALUES - SCHEDULE METHOD				
LOCATION	COMPONENT	SCHEDULE METHOD MINIMUM	R-VALUE ACHIEVED	INSULATION DESCRIPTION & REFERENCE
WALLS	90x45 @600crs. Brick veneer over cavity	2	2.24	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	90x45 @600crs. RCS 40mm Graphex over cavity	2	3.05	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	140x45 @300crs.RCS 40mm Graphex over cavity	2	3.47	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	90x45 @600crs.Gib lining both sides	2	2.18	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
ROOFS	Timber trusses @900crs.	3.3	3.37	Pink Batts R3.6 ceiling insulation ***Refer to Design Navigator Calculations in Appendix***
FLOOR	Ribraft slab on ground	1.3	1.30	No insulation ***Refer to Branz House Insulation Guide Fifth Edition***
GLAZING	Aluminium joinery with double glazed windows	0.26	0.26	Standard aluminimum joinery with double glazed windows ***Refer to Branz House Insulation Guide Fifth Edition***

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the new Design Navigator message board.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors ○
Walls ◉
Roofs ○

Element Name (optional) **2.24** m²K/W

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APPROVED CONSENT
PLANS/SPECIFICATIONS

Type: Wall: Timber frame with vented cavity

timber frame with vented cavity

external surface 0.03

Cladding : 70mm brick
R-value: 0.06

Air Barrier : James Hardie HomeRAB Precladding - 4mm
R-value: 0.02

Timber Frame & Cavity : 90mm, 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: 0.75*	Pink®Batts® Ultra R2.6 Wall 2.6
	still Airgap: none *R-value: 0.00*

Wall Lining : Gypsum plasterboard 10mm
R-value: 0.04

internal surface 0.09

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Current NZS4218/H1 Schedule minimum R-value Targets (non-solid contruction):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets:

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

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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 ○

Element Name (optional)

3.05 m²K/W

TAUPO DISTRICT COUNCIL
BC180581
APPROVED CONSENT PLANS/SPECIFICATIONS

Type: Wall: Timber frame with vented cavity

timber frame with vented cavity

external surface 0.03

Cladding : Graphex 40mm Overlay (R1.31) with plaster finish
R-value: 1.31

Air Barrier : James Hardie HomeRAB Precladding - 4mm
R-value: 0.02

Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 800mm

Wall Frame Area: 14.4%

15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08

Framing :
R-value: 0.75

Cavity Area: 85.6%

15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08

Pink®Batts® Ultra R2.6 Wall 2.6

still Airgap: none
R-value: 0.00

Wall Lining : Gypsum plasterboard 10mm
R-value: 0.04

internal surface 0.09

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid contruction):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets:

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

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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 ○

Element Name (optional)

3.47 m²K/W

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BC180581
APPROVED CONSENT PLANS/SPECIFICATIONS

Type: Wall: Timber frame with vented cavity

timber frame with vented cavity

external surface 0.03

Cladding : Graphex 40mm Overlay (R1.31) with plaster finish
R-value: 1.31

Air Barrier : James Hardie HomeRAB Precladding - 4mm
R-value: 0.02

Timber Frame & Cavity : 144mm, studs @ 300mm, dwangs @ 800mm

Wall Frame Area: 21.4%	*Cavity Area: 78.6%*
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: 1.19*	Pink®Batts® R3.2 140mm Wall 3.2
	still Airgap: none *R-value: 0.00*

Wall Lining : Gypsum plasterboard 10mm
R-value: 0.04

internal surface 0.09

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid contruction):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets:

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

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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 ○

Element Name (optional) 2.18 m²K/W

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APPROVED CONSENT
PLANS/SPECIFICATIONS

Type: Wall: Timber frame (direct fixed cladding)

timber frame (direct fixed cladding)

external surface 0.03

Cladding : Gypsum plasterboard 10mm into still air (garage, etc.)
R-value: 0.10

Air Barrier : 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®Batts® Ultra R2.6 Wall 2.6

still Airgap: none
R-value: 0.00

Wall Lining : Gypsum plasterboard 10mm
R-value: 0.04

internal surface 0.09

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid contruction):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets:

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

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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 ◉

Element Name (optional) 3.37 m²K/W

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APPROVED CONSENT PLANS/SPECIFICATIONS

Type: Roof: Timber framed roof, direct fixed or battened flat ceiling

Pitched timber framed roof, flat ceiling

external surface 0.03

Roofing : Metal tiles with building paper
R-value: 0.01

Insulation :

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®Batts® R3.6 Ceiling 3.6

Roof Lining : Gypsum plasterboard 13mm
R-value: 0.06

internal surface 0.09

Recessed downlights
Ceiling Area [m²]: Number of downlights: Clearance from lamp holder side [m]:

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid contruction):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets:

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8

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Cladding Manufacturers Specification

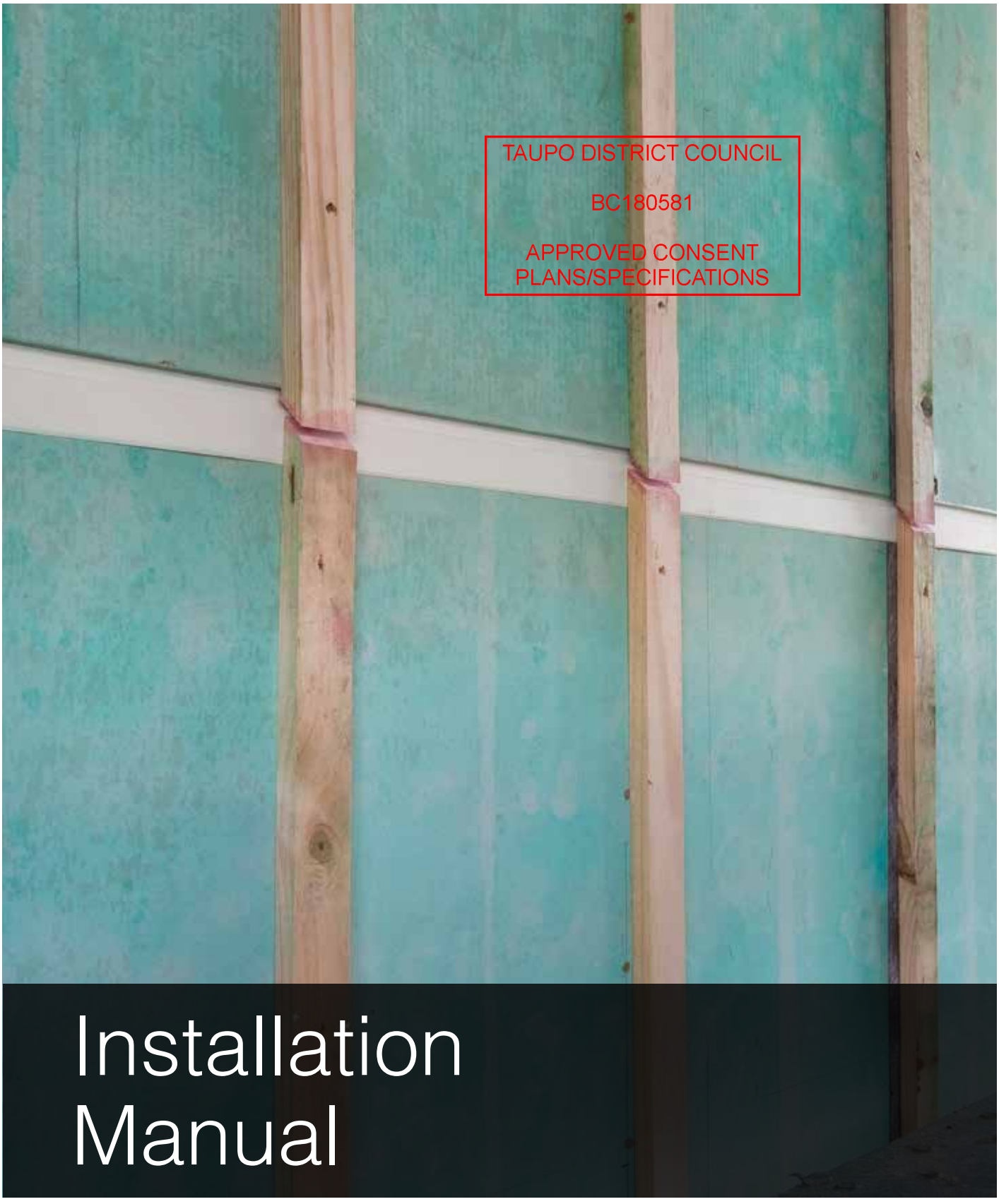
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James Hardie
a smarter way™

James Hardie®
RIGID AIR BARRIERS



Installation Manual

APRIL 2016 | 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™
Fax 0800 808 988
literaturefeedback@jameshardie.co.nz

1 Introduction

James Hardie manufactures a range of rigid air barriers such as HomeRAB® Pre-Cladding and RAB® Board.

HomeRAB Pre-Cladding is a 4.5mm thick fibre cement sheet which is sealed on the face and edges and is used as a rigid air barrier for residential buildings within the scope of NZS 3604. HomeRAB Pre-Cladding is manufactured in New Zealand by James Hardie and complies with the requirements of AS/NZS 2908.2.

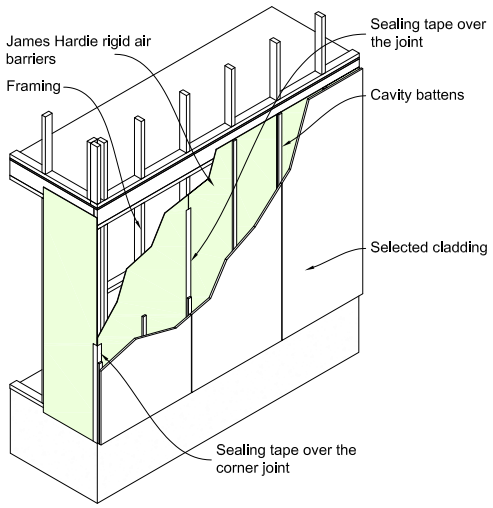
It acts as temporary weather protection during construction, ideal for renovations or new construction. It is suitable for use as rigid underlay in residential buildings as per section 9.1.4 of E2/AS1 and complies with the requirements of Table 23 of E2/AS1. HomeRAB Pre-Cladding is suitable to withstand wind pressures experienced in all wind zones up to and including Very High (VH) wind zone as specified in NZS 3604. HomeRAB Pre-Cladding doesn't get fatigued or tear under the wind pressures exerted on it in the long term. HomeRAB Pre-Cladding has been tested to withstand wind pressures up to VH wind zone.

RAB Board is a 6.0mm thick fibre cement sheet which is sealed on the face and edges and is suitable for use as a rigid air barrier in Extra High Wind (EH) zones or in wind pressures up to 4.5kPa.

It complies with the requirements of Table 23 of E2/AS1.

It is suitable for use as rigid underlay as per the requirement of section 9.1.4 of E2/AS1. RAB Board is also suitable to withstand high wind pressures experienced on building facades where it creates a wind barrier which equalises pressure within the cavity to the external pressures. Flexible underlays can deteroirate caused by positive/negative pumping actions created by gusting winds within the cavity and on building facade.

Figure 1: James Hardie Rigid Air Barriers over framing



Selected Cladding Over Framing

Due to these pressures a building underlay may not perform as desired in the long term. RAB Board has been tested to withstand wind pressures up to 4.5kPa(ULS).

James Hardie rigid air barriers provide the following benefits:

- Resistant to moisture damage and rotting when installed correctly.
- Integral sealer applied on the face and edges repels moisture rapidly and helps resist moisture penetration.
- Provides temporary weathertightness to the building envelope until the final claddings are installed.
- Provides general rigidity to the entire structure.
- An efficient way to achieve structural bracing.

This manual covers the use of HomeRAB Pre-Cladding and RAB Board in external wall applications only. Further information relating to HomeRAB Pre-Cladding and RAB Board is also available in the following James Hardie design manuals:

- Fire and Acoustic Design Manual.
- Bracing Design Manual.

The Specifier or other responsible party for the project must ensure that the information in this manual is appropriate for the intended application and that specific design and detailing is undertaken for areas which are not covered in this manual.

Note: James Hardie rigid air barriers must not be used as external cladding.

James Hardie rigid air barriers have been tested to comply with the performance requirements of the New Zealand Building Code (NZBC).

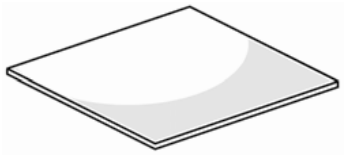
James Hardie rigid air barriers have been BRANZ appraised. This should be read in conjunction with this installation manual. BRANZ Appraisal No. 611 (2011) can be viewed on www.jameshardie.co.nz or www.branz.co.nz.

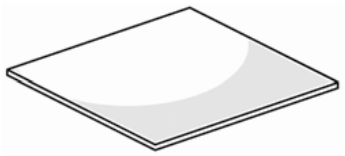
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Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or you need more information, visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

Table 1

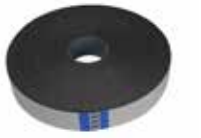
HomeRAB Pre-Cladding				
Product	**Description**	**Quantity / Size**		
	**HomeRAB Pre-Cladding** A fibre cement sheet with a green sealer applied on the face and edges. Installed with green side facing out. Approximate Mass: 6.5 kg/m^2	Thickness: 4.5mm		
		Length (mm)	Width (mm)	Code
		2450	1200	**404766**
		2750	1200	**404768**

RAB Board				
Product	**Description**	**Quantity / Size**		
	**RAB Board** A fibre cement sheet with a green sealer applied on the face and edges. Installed with green side facing out. Approximate Mass: 8.6 kg/m^2	Thickness: 6.0mm		
		Length (mm)	Width (mm)	Code
		2450	1200	**402980**
		3000	1200	**402981**

NOTE:

All dimensions and masses provided are approximate only and are subject to manufacturing tolerances. Masses are based on Equilibrium Moisture Content (EMC) of product.

Table 2

Accessories/Tools			
Components Supplied by James Hardie			
	**HardieBlade™ Saw Blade** 185mm diameter, Poly diamond blade for fast, clean cutting of James Hardie fibre cement. **CODE: 300660**		**Inseal® 3259 Tape 50mm wide** A sealing strip for vertical joints 50m roll. **CODE: 300767**
	**RAB uPVC Horizontal Flashing** 3000mm long for RAB Board horizontal joints **CODE: 305152**		**Inseal® 3259 Tape 80mm wide** A sealing strip for corner joints 50m roll. **CODE: 300769**
	**HomeRAB 4.5 Horizontal Flashing** 3000mm long for horizontal joints **CODE: 305798**		

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Table 3

COMPONENTS NOT SUPPLIED BY JAMES HARDIE

James Hardie recommends the following products for use in conjunction with its James Hardie rigid air barriers. James Hardie does not manufacture 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.

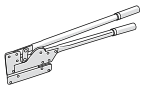
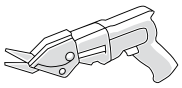
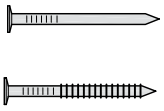
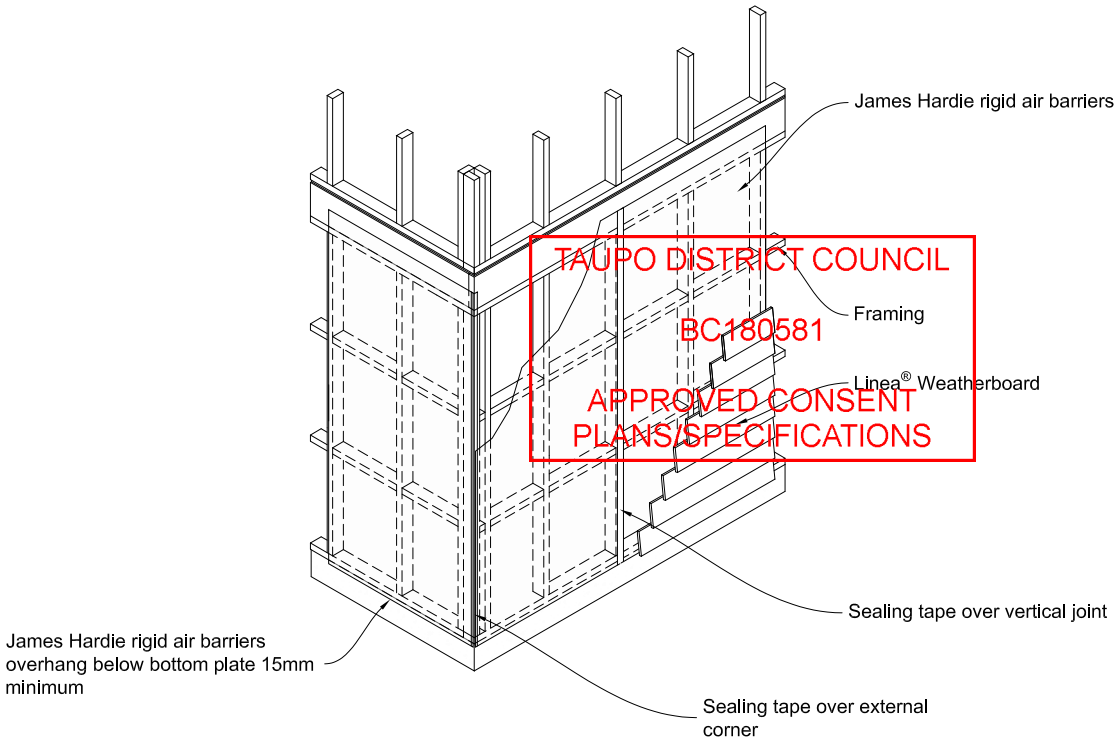
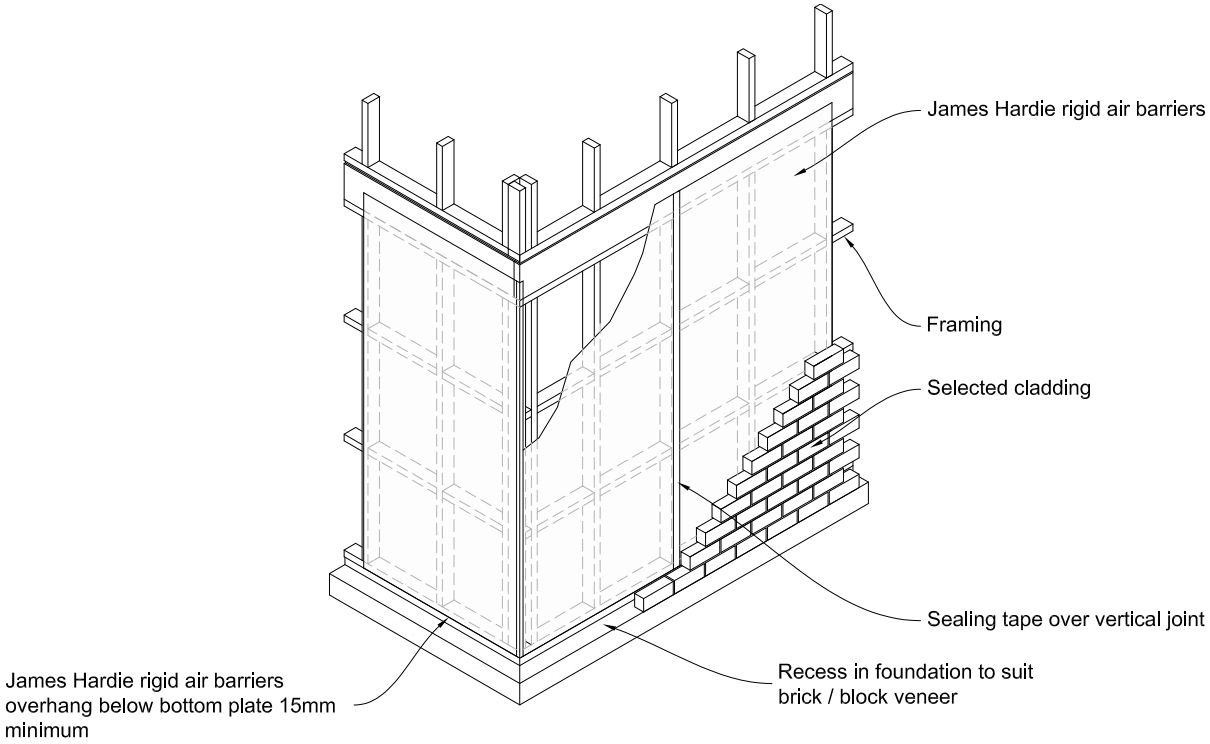
	**Hand Guillotine** Guillotine for cutting fibre cement.		**Sealing Tape/Window Flashing Tape** Tape used to seal vertical joints and flash around window, door and pipe penetrations. **SUPER-STICK Building Tape®** **- Marshall Innovations** **0800 776 9727** **3M™ All Weather Flashing Tape 8067** **3M™ 0800 474 787**
	**Electric Shear / Fibreshear**		
	**Fibre Cement Nails** 40 x 2.8mm hot dipped galvanised HardieFlex™ nails as per Table 4. 40 x 2.8mm stainless steel HardieFlex™ nails as per Table 4.		**Scoring Knife** For easy score and snap cutting of fibre cement sheets.
 	**Nail Gun and Nails** Suitable pneumatic or coil gun nailer with: • 50 x 2.8mm galvanised / stainless steel round head gun nails or minimum length and gauge required for specific application. • 60 x 2.8mm galvanised / stainless steel round head gun nails or minimum length and gauge required for site specific application.		

Figure 2: James Hardie Rigid Air Barriers with Linea Weatherboard



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Figure 3: James Hardie Rigid Air Barriers with Brick/Block Cladding



2 Safe working practices

WARNING — DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

James Hardie products contain sand, a source of respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'Score and Snap' knife, fibre cement shears or, where not feasible, use a HardieBlade™ Saw Blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods — never dry sweep. 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 INSTRUCTION MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

James Hardie recommended safe working practices
CUTTING OUTDOORS
Position cutting station so that wind will blow dust away from user or others in working area. Use one of the following methods based on the required cutting rate: BEST • Score and snap • Hand guillotine • Fibreshear BETTER • Dust reducing circular saw equipped with HardieBlade™ Saw Blade and HEPA vacuum extraction. GOOD • Dust reducing circular saw equipped with HardieBlade™ Saw Blade
CUTTING INDOORS
• Cut only using score and snap, hand guillotine or fibreshears (manual, electric or pneumatic). • Position cutting station in well-ventilated area
DRILLING/OTHER MACHINING
When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.
IMPORTANT NOTES:
1. For maximum protection (lowest respirable dust production), James Hardie recommends always using "Best" — level cutting methods where feasible 2. NEVER use a power saw indoors 3. NEVER use a circular saw blade that does not carry the HardieBlade™ logo 4. NEVER dry sweep — Use wet suppression or HEPA Vacuum 5. NEVER use grinders 6. Always follow tool manufacturer's safety recommendations
P1 or P2 respirators can be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.co.nz to help you determine the most appropriate cutting method for your job requirements. 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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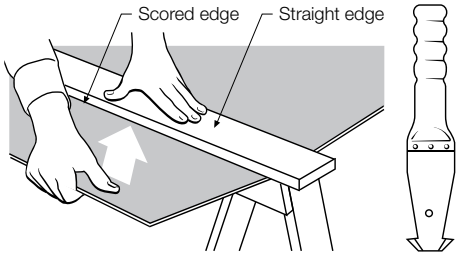
Working instructions

Refer to Recommended Safe Working Practices before starting any cutting or machining of product.

Score and Snap

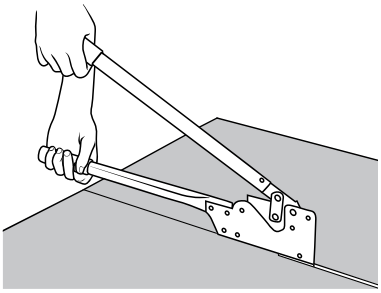
Score and Snap is a fast and efficient method of cutting the product using special tungsten tipped Score and Snap knife.

Preferably score on the face side of the product. Score against a straight edge and repeat the action to obtain adequate depth for clean break — normally 1/3 of sheet thickness. Snap upwards to achieve break. Smooth any rough edges with a rasp.



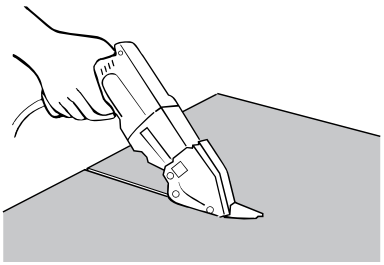
Hand guillotine

Make guillotine cut on the off-cut side of line to allow for the thickness of the blade.



Fibreshear heavy duty

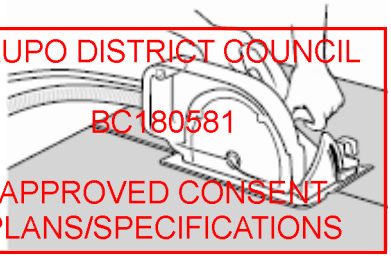
An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make Fibreshear cut on the “off-cut” side of the line to allow for the thickness of the shear.



HardieBlade™ Saw Blade

The HardieBlade™ Saw Blade used with a dust-reducing saw fitted with HEPA vacuum filter is ideal for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. 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.

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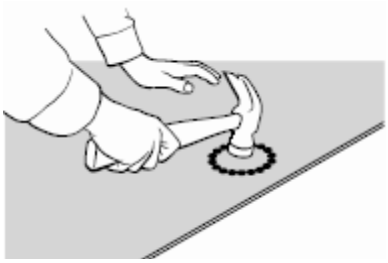
Hole-forming

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.



Storage and handling

To avoid damage, all James Hardie building products should be stored with edges and corners of the sheets protected from chipping.

James Hardie building products must be installed in a dry state and protected from weather during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water, moisture, etc.

Quality

James Hardie conducts quality checks to ensure any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

3 Applications

HomeRAB Pre-Cladding is suitable for use as a rigid air barrier for residential buildings up to and including VH wind zone within the scope of NZS 3604 and E2/AS1. HomeRAB Pre-Cladding is fixed directly to the framing. The vertical joints are sealed over the face of the HomeRAB Pre-Cladding. HomeRAB Pre-Cladding is suitable for use behind all James Hardie claddings or alternative claddings such as brick, timber weatherboard, EIFS etc.

The **RAB Board** is suitable for use as a rigid air barrier in EH wind zone in residential or SED project applications to withstand high wind pressures in conjunction with cladding/commercial facades. In these applications, RAB Board is fixed directly to the framing. The vertical joints are sealed over the face of the RAB Board using joint flashing tape.

JAMES HARDIE RIGID AIR BARRIER

James Hardie rigid air barriers can remain exposed to the external elements for maximum 90 days prior to the external cladding being installed.

The James Hardie rigid air barriers can be used as a backing board behind stucco plasters. Refer to James Hardie Stucco Solution technical specification, E2/AS1 'External Moisture' clause of the NZBC and BRANZ 'Weathertight Solutions Stucco' for further information on stucco plaster. The RAB Board can also be used as a backing board behind other proprietary claddings which comply with the NZBC requirements. Proprietary cladding must be installed as per their manufacturing specifications. In these applications, a building underlay must be used as a slip layer to cover RAB Board and ensure a separation between mortars and RAB Board. The RAB Board is fixed over a minimum 18mm thick cavity batten for these applications. The RAB Board may also be required over the framing to withstand high wind pressures within the cavity.

The claddings/facades used over James Hardie rigid air barriers must satisfy the various performance requirements of the NZBC.

Horizontal profiled metal and uPVC claddings must not be direct fixed over James Hardie rigid air barriers. These must be fixed over an underlay or overlay the James Hardie rigid air barrier using the cavity construction method.

Vertical profiled metal cladding can be direct fixed over James Hardie rigid air barriers with a flexible building underlay separator over to comply with manufacturers recommendations.

The cladding fastener length must be increased by 5mm minimum to maintain the required nail pull out strength.

In case of gable end trusses sitting on top plates of external wall frame, the frame size must comply with the minimum timber sizes stipuated for wall frames in Section 8 of the NZS 3604.

Bracing

For bracing application the James Hardie rigid air barriers must be installed as per HomeRAB Pre-Cladding/RAB Board bracing details in the James Hardie Bracing Design Manual. Bracing with HomeRAB Pre-Cladding can only be achieved for direct fix construction. Bracing can be achieved for both construction methods i.e. direct fixed and cavity construction using RAB Board. The board must be fixed with 40 x 2.8mm HardieFlex nails at 150mm c/c to all framing. For further information on bracing refer to James Hardie Bracing Design Manual or Ask James Hardie on 0800 808 868.

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Fire Rated Wall Construction

RAB Board is classified as 'Non-Combustible Material'. For fire rated wall applications RAB Board must be installed as per the current James Hardie Fire and Acoustic Design Manual. RAB Board is suitable to achieve fire ratings up to 60 minutes when installed in accordance with fire systems specifications published in James Hardie Fire and Acoustic Design Manual. The board must be fixed with 40 x 2.8mm HardieFlex nails at 150mm c/c to all framing.

TEMPORARY WEATHER PROTECTION

Installation of internal lining can be started after James Hardie rigid air barriers have been installed on the exterior of the building envelope. In order to achieve this, all sheet joints and penetrations must be sealed and the roof, soffit lining, windows/doors (including head flashings and airseals) must have been installed to ensure the building is weathertight before starting the installation of internal linings. The insulation, electrical cables, plumbing and any other services required in external walls must be installed and inspected by the building consent authority before starting the installation of internal linings. The internal lining and services must be installed in accordance with their manufacturer's product literature and comply with the NZBC requirements.

The claddings must be installed within 90 days after the installation of James Hardie rigid air barriers.

STUD TO TOP PLATE FIXING

Alternative stud to top plate connection refer to Figure 15.

4 Framing and fixings

FRAMING

The timber framing must be in accordance with the current relevant standards or comply with the specific engineering design requirements. The timber treatment and moisture content must comply with NZBC Acceptable Solution B2/AS1 requirements. Framing must satisfy the requirements of B1 and B2 clauses of the NZBC.

The minimum framing size required for fixing James Hardie rigid air barriers is 90 x 45mm. Studs must be provided as per Table 4. Ensure that the framing is suitable for installing the selected cladding. Refer to cladding installation manual for further information about the framing requirements.

For specific engineering design projects where the timber framing differs from whats been provided in this manual, Ask James Hardie on 0800 808 868.

FIXINGS

James Hardie rigid air barriers must be installed with its sealed face towards the external cladding and unsealed face towards the framing. The sealer applied on the face helps the board to drain the moisture freely over the face and keeps it dry.

- Nails must finish flush with board surface.

The **HomeRAB Pre-Cladding and RAB Board** is fixed as described below.

HomeRAB Pre-Cladding and RAB Board can either be gun nailed or hand nailed. It is recommended to use gun nails to cut down installation time. When gun nailing, follow nail gun manufacturer's instructions for correct operation of tool and site safety requirements.

- Nails must have a minimum clearance of 12mm from the sheet edges and a minimum of 50mm horizontally and 75mm vertically from the sheet corners.
- When using a nail gun use 50 x 2.8mm round head gun nails. The gun nails used must have a full round head to provide the required holding power.

  NOTE: Do not use D Head nails. Do not use gun nailing for bracing applications.
- When fixing for bracing applications, follow the bracing details for installation provided in James Hardie Bracing Design Manual.
- When using as a backing board over a cavity batten for stucco plasters or proprietary claddings, fix using 60 x 3.15mm HardieFlex nails at 200mm c/c at board edges and intermediate framing.
- When RAB Board is used for a fire rating system, the board must be fixed with HardieFlex nails at 150mm c/c at board edges and intermediate framing.

NOTE: HomeRAB Pre-Cladding must not be used in EH wind zones. Use RAB Board instead.

Table 4

Fixings			
Wind pressures	**Stud centres max**	**Type of nail**	**Nailing centres to all framing**
HomeRAB Pre-Cladding / RAB Board			
Up to VH wind zone	600mm	40 x 2.8mm HardieFlex nail	200mm
RAB Board			
Above 1.5kPa to 4.5kPa (EH wind zone and SED project)	400mm	40 x 2.8mm HardieFlex nail	200mm

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FASTENER DURABILITY

Fasteners must have the appropriate level of durability required for the intended project to comply with the NZBC. This is of particular importance in coastal areas, areas subject to salt spray and other corrosive environments. The following table provides the information regarding the types of nails to use to comply with the durability requirements of the NZBC.

Table 5

Exposure conditions and nail selection prescribed by NZS 3604			
ZONE:	D Zone*	Zone C outside sea spray zone and Zone B and Geothermal hot spots	Bracing — outside sea spray
NAIL MATERIAL:	Grade 316 Stainless steel	Hot-dipped galvanised** or grade 316 stainless	Hot-dipped galvanised**

*Zone C areas where local knowledge dictates that increased durability is required are to be classified as sea spray zones. Also where the cladding is expected to meet 50 year durability, HomeRAB Pre-Cladding/RAB Board must be fixed with stainless steel nails.

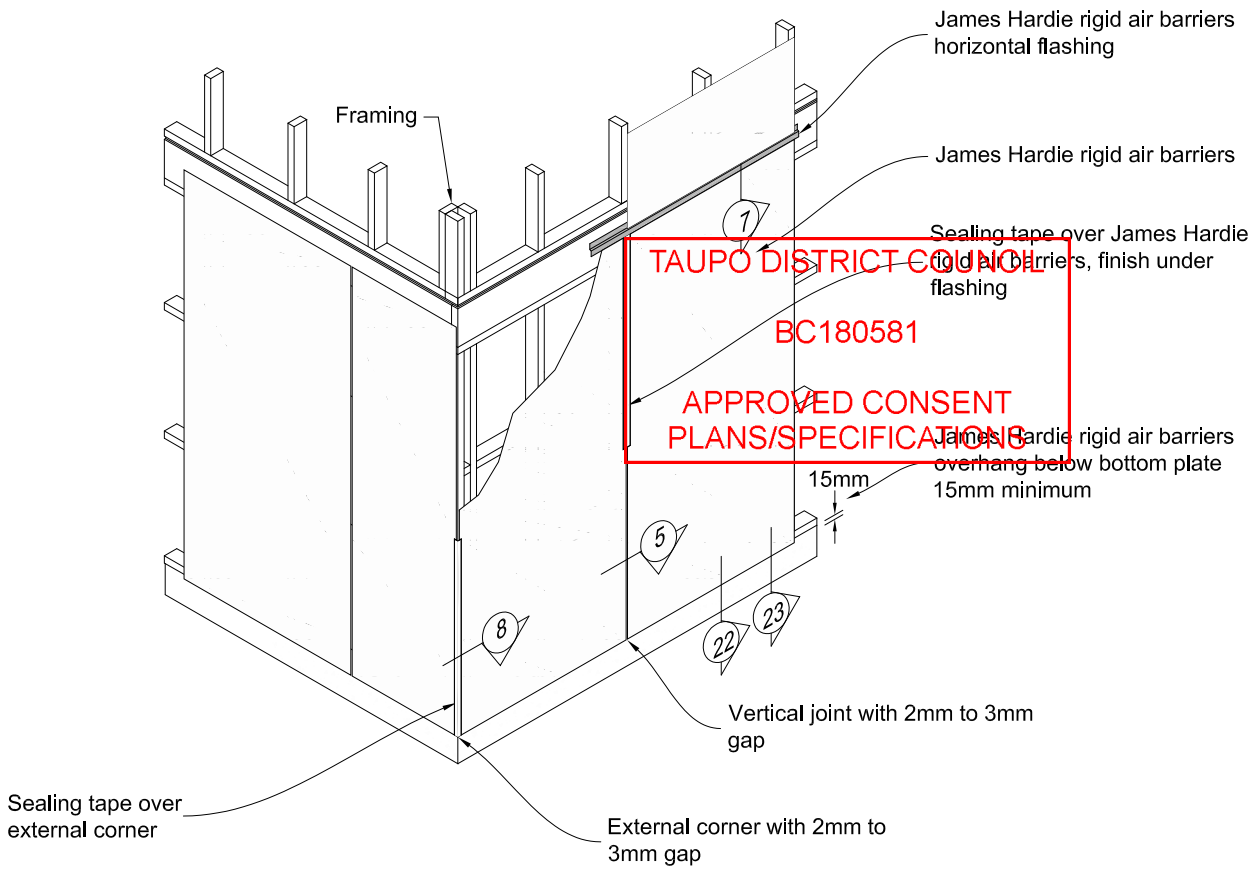
** Hot dip galvanised must comply with AS/NZS 4680

Check with the local Territorial Authority if unsure. Refer to fixing manufacturer for warranty and fixing installation guidance.

Fasteners must be fully compatible with all other materials that they are in contact with to ensure the durability and integrity of the assembly. Contact fastener manufacturers for more information. Also refer to Table 20 and 21 of E2/AS1 for further information about the suitable fastening materials and their compatibility with other materials.

Galvanised nails can be used for bracing when in non coastal zones.

Figure 4: James Hardie Rigid Air Barriers layout



5 Installation

BOARD LAYOUT

When using James Hardie rigid air barrier, building underlays are not required over the framing. HomeRAB Pre-Cladding/ RAB Board has been tested and complies with the performance requirements of Table 23 of Clause E2 of the NZBC. The sheets are jointed keeping a gap of 2-3mm maximum between the sheet edges. The board must be cleaned of any dust before fixing the jointing tape over the joint.

Cut edges where exposed must be primed prior to installation with Dulux® Primacryl, Resene Quick Dry or similar.

The bottom edge of James Hardie rigid air barriers must overhang below the bottom plate by 15mm minimum. Refer Figures 21 and 22.

Vertical Joints

Vertical joints must be sealed to stop the moisture ingress into the framing behind James Hardie rigid air barrier. The vertical joints are sealed over by running a 75mm wide sealing tape e.g. SUPER-STICK Building Tape / 3M All Weather Flashing Tape 8067.

A 50mm wide Inseal 3259 sealing tape can also be used where the CLD Structural Cavity Batten or timber cavity battens are fixed over the joint. The Inseal tape gets compressed permanently under the cavity battens to seal the joint.

Inseal tapes must not be left exposed. Battens must be installed within 24 hours of the Inseal tape installation for the compression to happen. White protective tape must be removed before batten installation.

The sealing tapes must be pressed hard over the James Hardie rigid air barriers surface while fixing so that they achieve the required bond. The sealing tapes must not be exposed to elements for more than 90 days. This achieves the required protection when the cladding is installed. The claddings must be installed within 90 days.

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NOTE: Refer to sealing tape manufacturers recommendations regarding the installation of their sealing tapes in cold climate conditions. It is recommended to warm up the sealing tapes eg when the air and substrate temperatures are below 10°C. Check with tape manufacturer for their recommendations

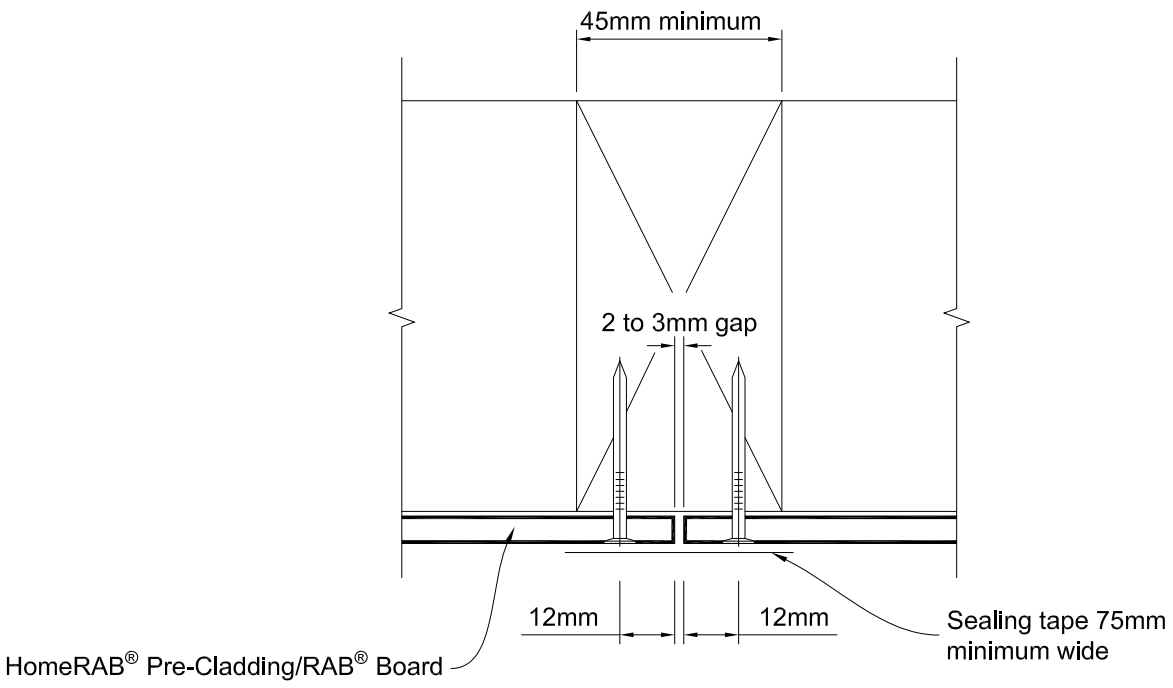
Horizontal Joints

The horizontal joint of James Hardie rigid air barriers must be flashed using a uPVC horizontal flashing or alternatively aluminium or colour steel Z flashings can also be used. Refer Figure 7. Leave a gap of minimum 15mm at the solid timber floor joist or as specified by the project engineer. The flashing must be lapped by a minimum 35mm on both sides of the joint.

For walls longer than 3m, horizontal uPVC flashing must be lapped by 50mm minimum and silicone sealed.

Rigid air barriers must not be fixed into floor joists.

Figure 5: Vertical joint



Internal/External Corners

James Hardie rigid air barrier corner joints must be sealed using a 75mm minimum wide sealing tape. A 80mm wide Inseal 3259 sealing tape can also be used where the cavity battens are fixed over the corner joint to compress the Inseal tape.

When using a uPVC horizontal flashing in horizontal joints, the internal and external corner flashing joints must be sealed using a 75mm minimum wide joint sealing tape. Refer Figure 10.

When using James Hardie rigid air barrier as a backing board for stucco plaster, the vertical joints of James Hardie rigid air barrier are not required to be sealed using flashing tapes. The horizontal joints at floor level and in tall walls must be flashed to satisfy the requirements of clause E2 of the NZBC.

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Figure 6: Horizontal joint flashing

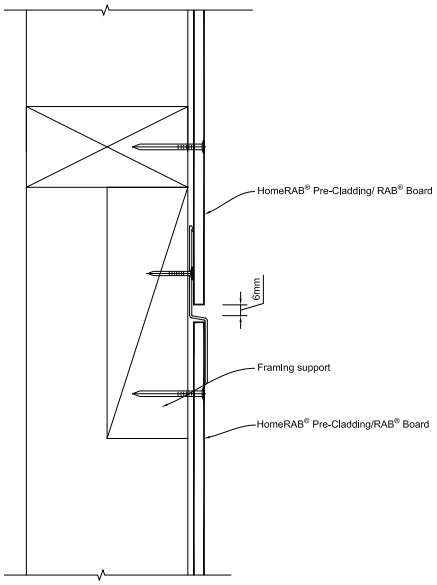


Figure 7: Horizontal joint

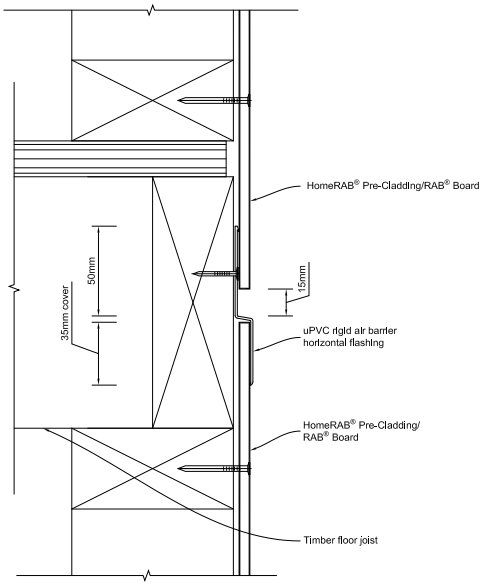


Figure 8: External corner joint

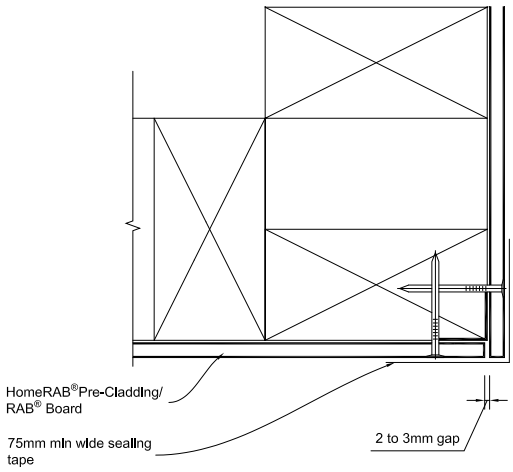


Figure 9: Internal corner joint

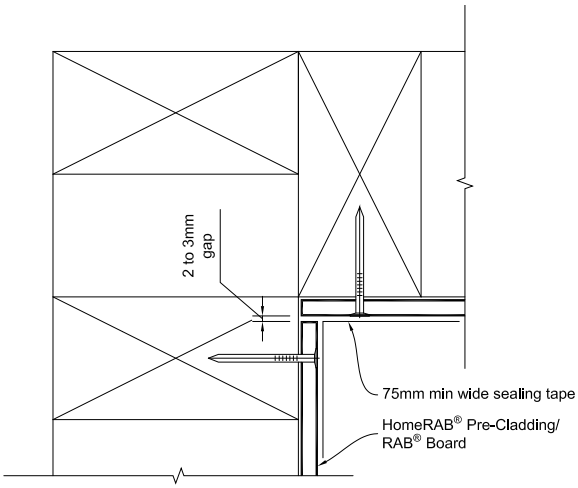
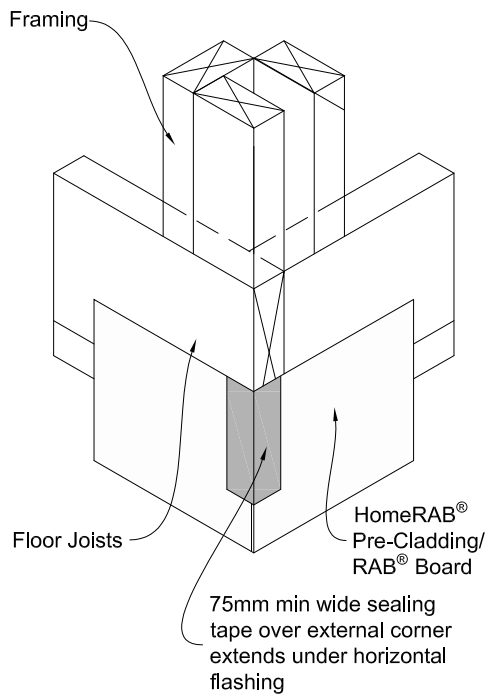


Figure 10a: Corner junction to horizontal joint



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Figure 10c: Corner junction to horizontal joint

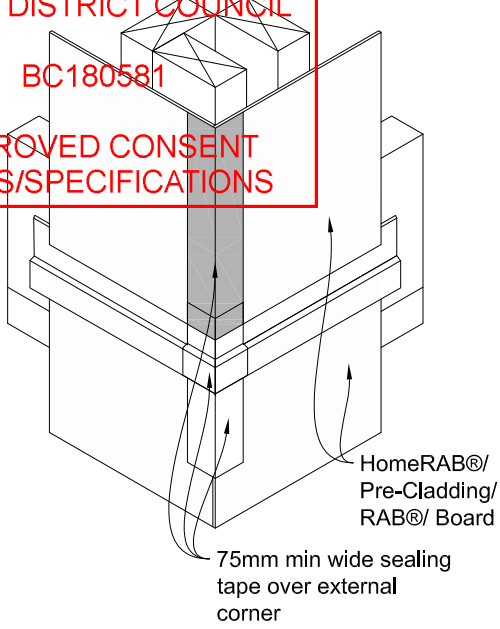
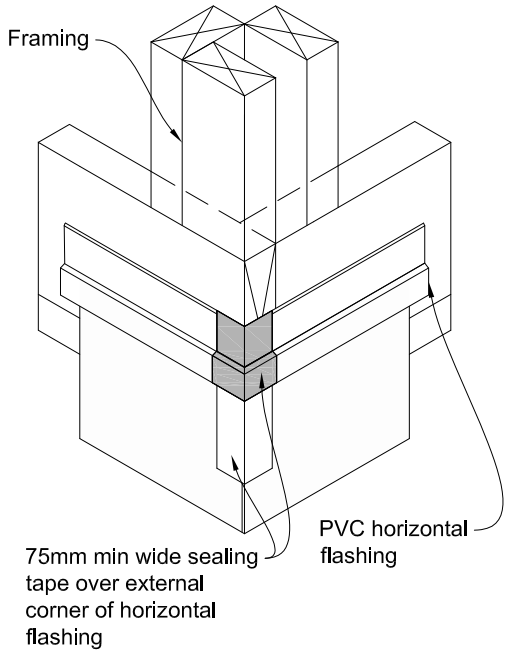


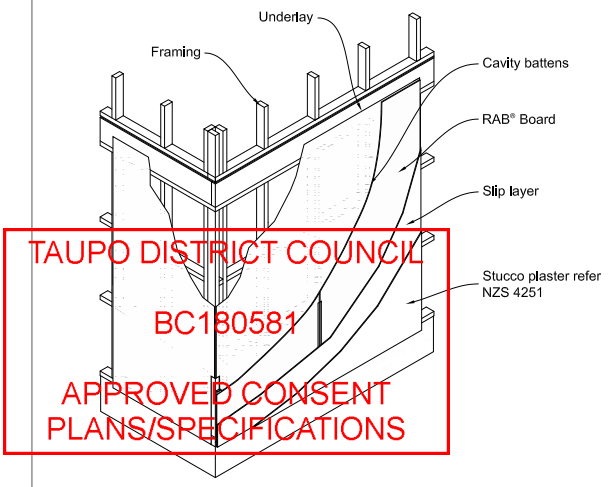
Figure 10b: Corner junction to horizontal joint



Flexible Underlay

James Hardie rigid air barriers can also be used in conjunction with flexible underlay in accordance with Section 9.1.7.2 of E2/AS1. When installing rigid underlay as per E2/AS1 requirements, its horizontal and vertical joint does not require to be sealed with flashing tapes, but instead, a flexible underlay is applied over the entire rigid air barrier in accordance with Section 9.1.7.1. The flexible underlay must comply with Table 23 of E2/AS1. The wall openings must be flashed in accordance with E2/AS1 and this installation manual.

Figure 11: RAB Board used as backing board for stucco plaster/proprietary cladding systems



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Figure 12: James Hardie Rigid Air Barriers to standard soffit

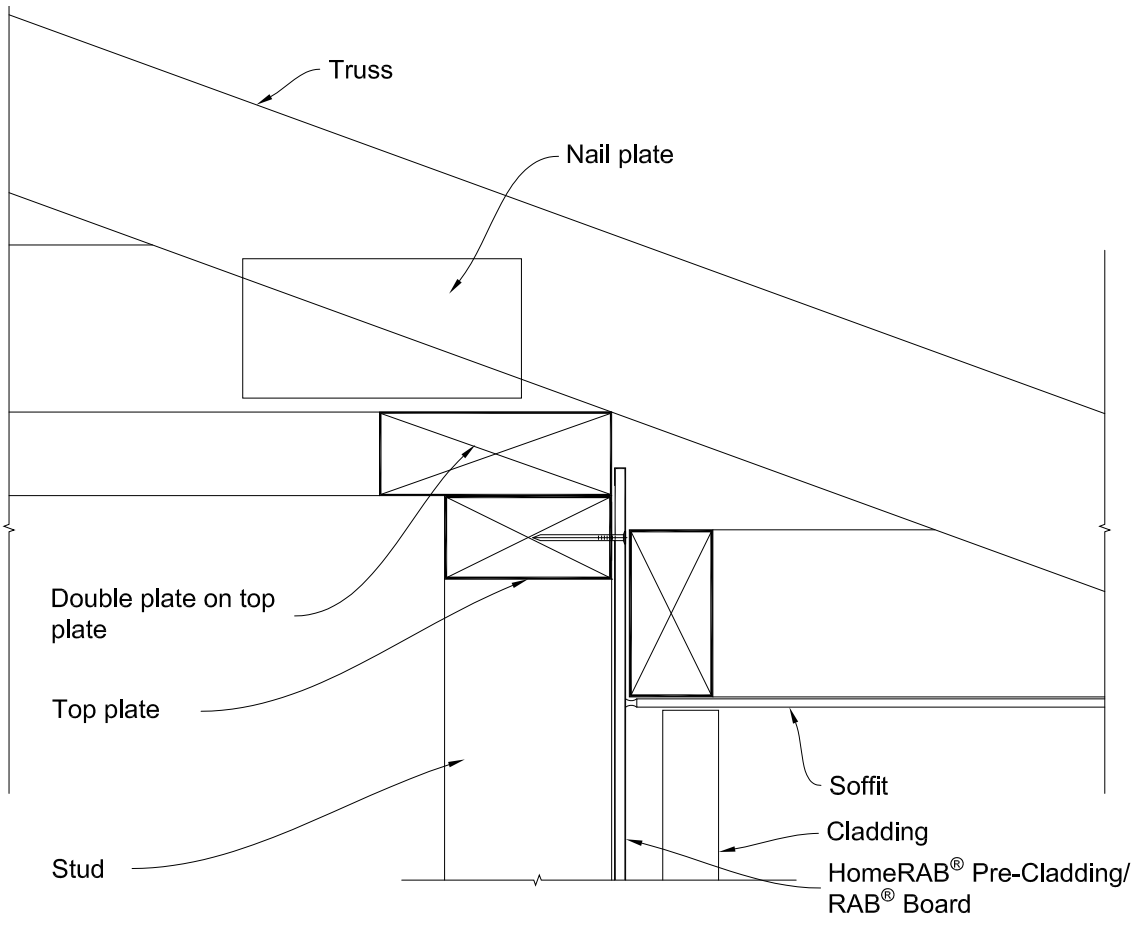
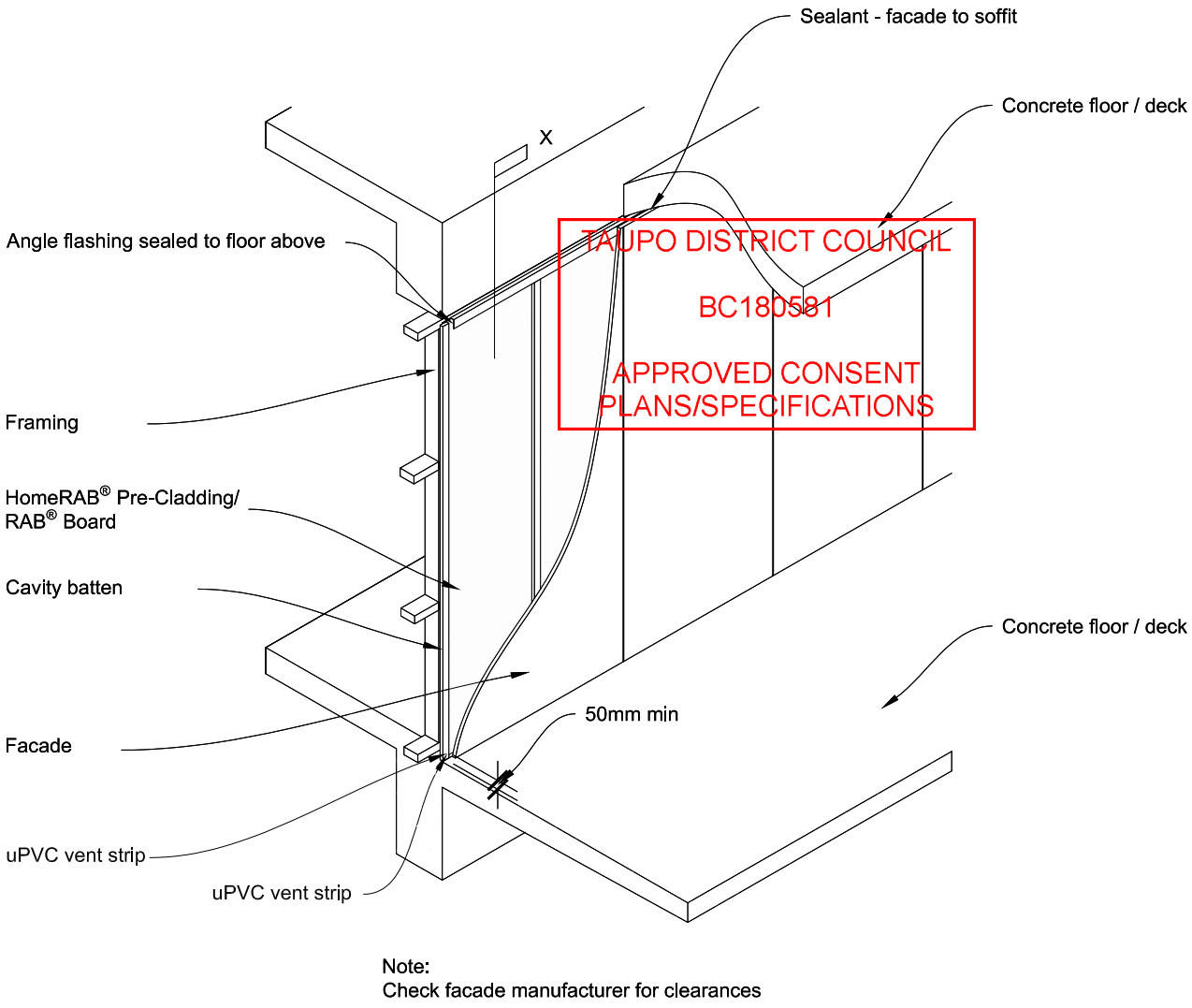
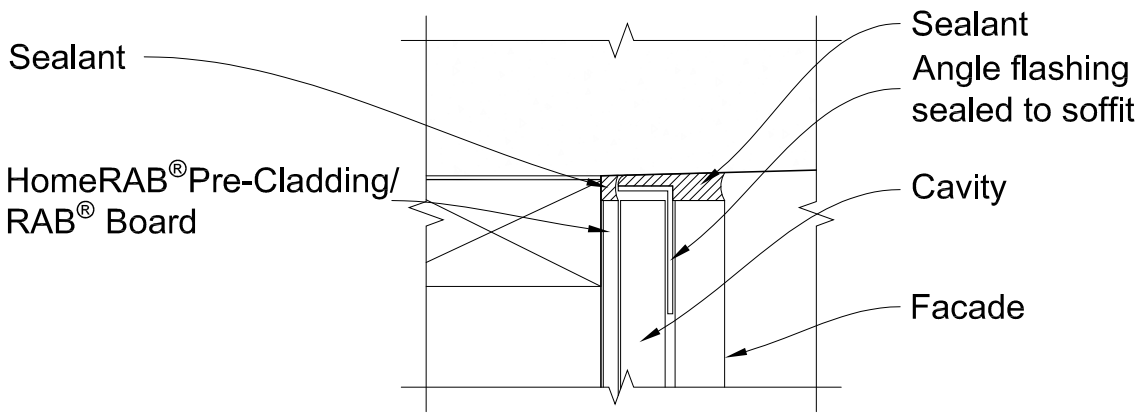


Figure 13: RAB Board to soffit junction/concrete



Note:
Check facade manufacturer for clearances

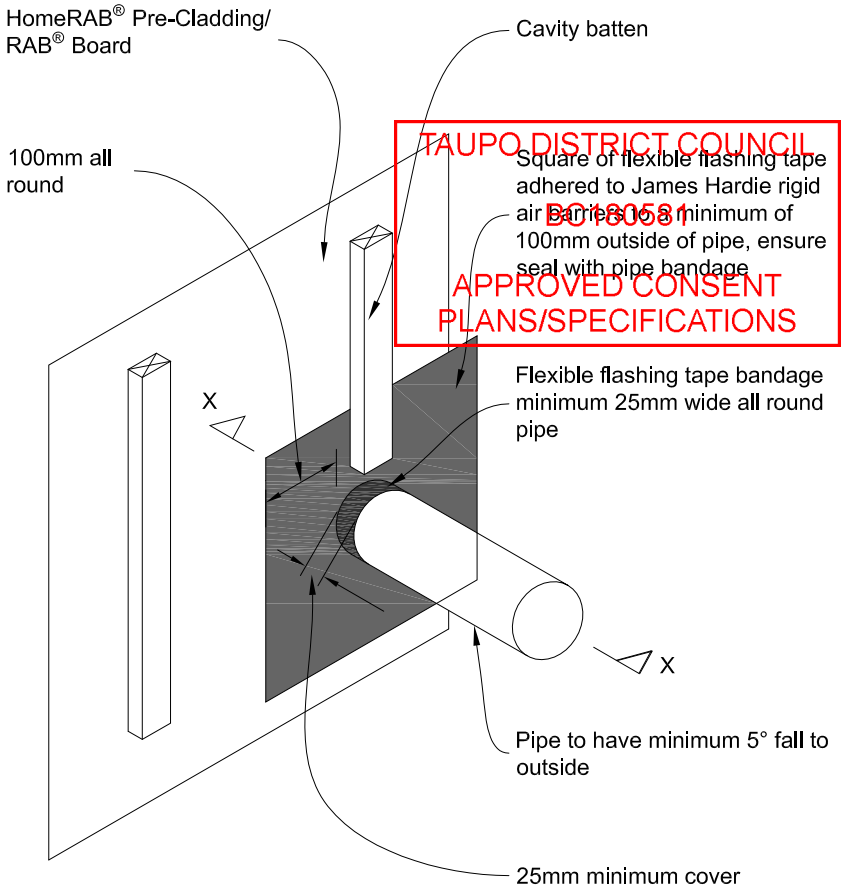


Section X

Penetrations

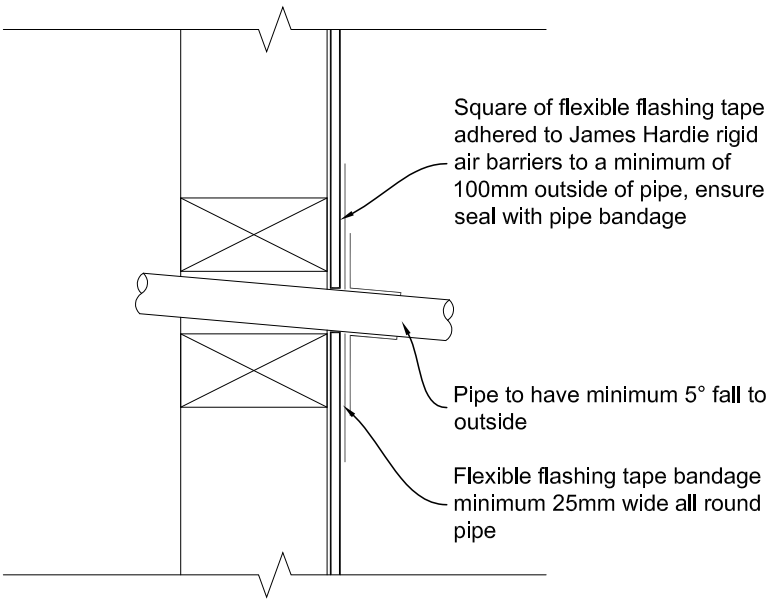
The pipe penetrations through James Hardie rigid air barrier must be sealed properly using a flexible flashing tape. Maintain a 100mm minimum cover of flashing over the board around the penetration.

Figure 14: Pipe penetration through James Hardie Rigid Air Barriers



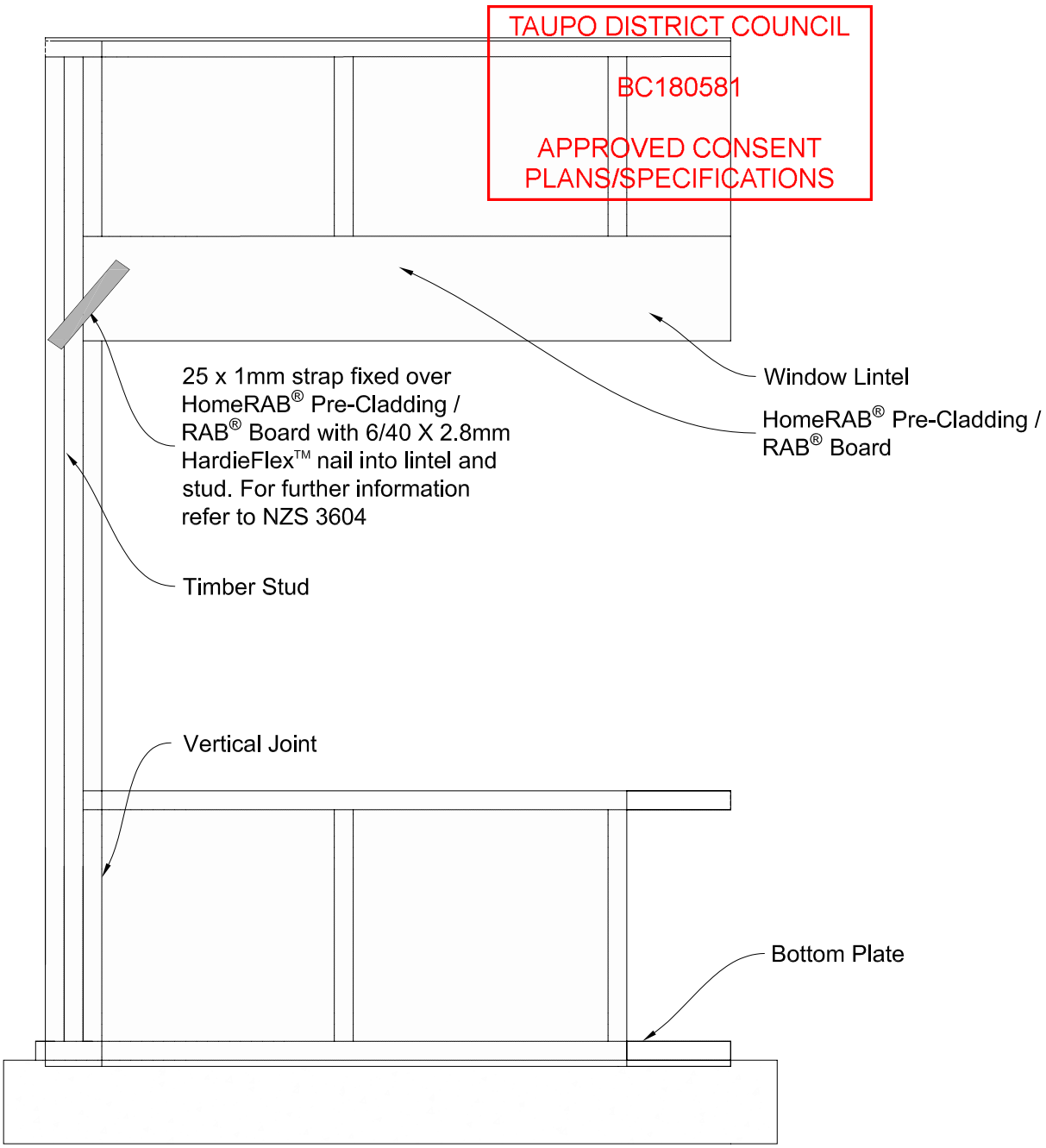
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Note: Also refer to Figure 60 of E2/AS1 for information on pipe penetrations.



Section XX

Figure 15: Lintel connection



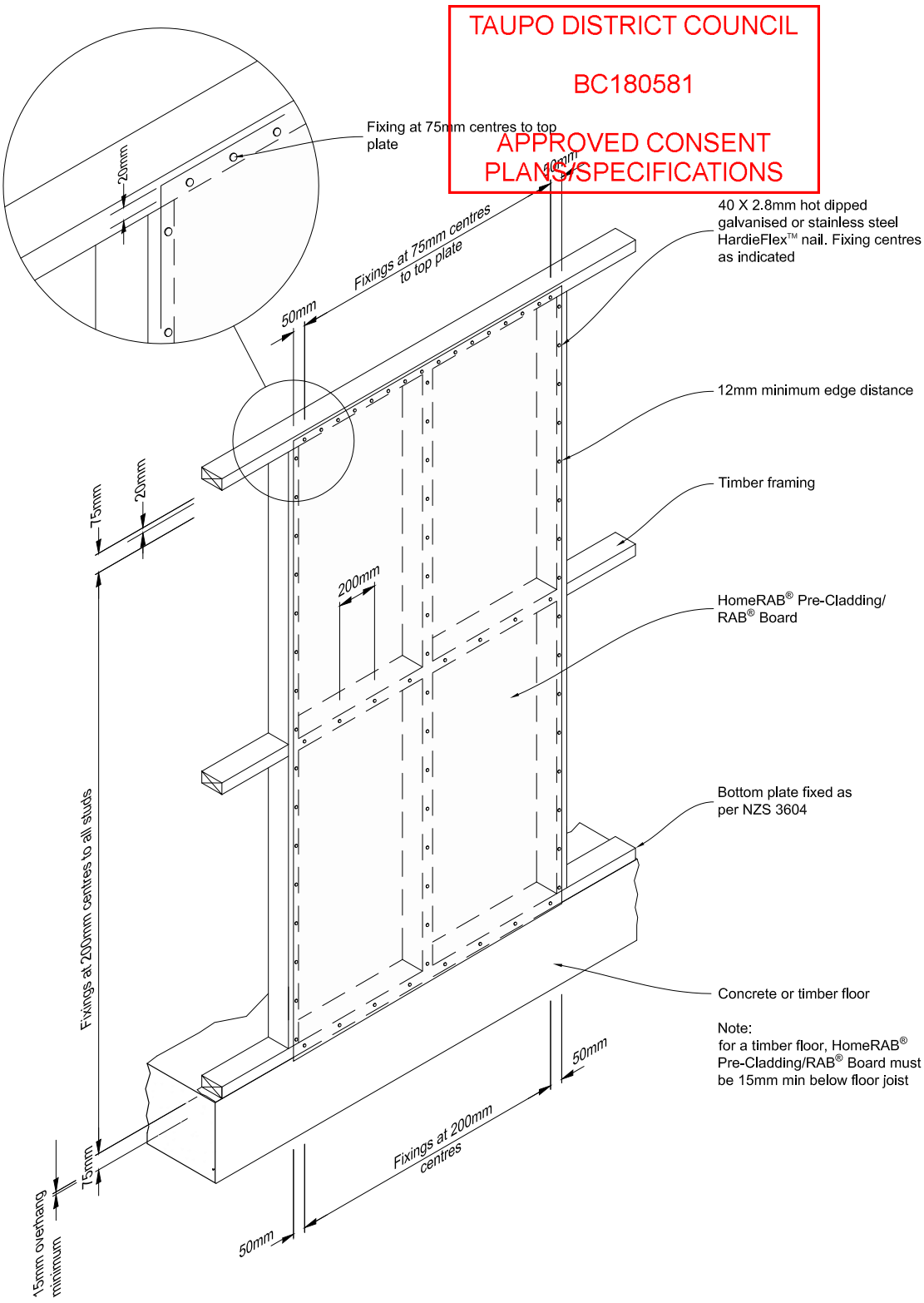
STUD TO TOP PLATE FIXING

Table 8.18 of NZS 3604 specifies two types of fixings i.e. Type-A with a fixing capacity of 0.7kN and Type-B with a fixing capacity 4.7kN. HomeRAB Pre-Cladding or RAB Board rigid air barriers have been tested and are verified as suitable alternatives to achieve the required stud top plate connectivity as mentioned above and no special use of straps/plates or wire dogs etc. is required.

For a 0.7kN connectivity, the standard fixing of HomeRAB Pre-Cladding and RAB Board using 40 x 2.8mm HardieFlex nails at 200mm centres maximum will achieve this.

For a 4.7kN connectivity, fix HomeRAB Pre-Cladding or RAB Board using 40 x 2.8mm HardieFlex nails at 75mm centres maximum to top plate with a minimum edge distance of 20mm. Refer to Figure 15.

Figure 16: Stud to top plate connection



Flashings

The exposed timber framing around the window jamb can either be covered with a 150mm minimum wide flashing tape / sealing tape, refer Figure 19, or the jamb can be covered with a building underlay, refer Figure 20. The window sill must be dressed with a 150mm minimum wide flashing tape. The tape is sealed over the face of James Hardie rigid air barrier, refer Figure 16.

The James Hardie rigid air barrier surface must be clean, free of grime and dry before the tapes are applied. Some tape manufacturers require a primer tak spray be applied before fixing the tapes to the board surface to achieve a better tape adhesion. Check with the tape manufacturers for further information regarding minimum requirements etc.

Figure 17: Window flashing

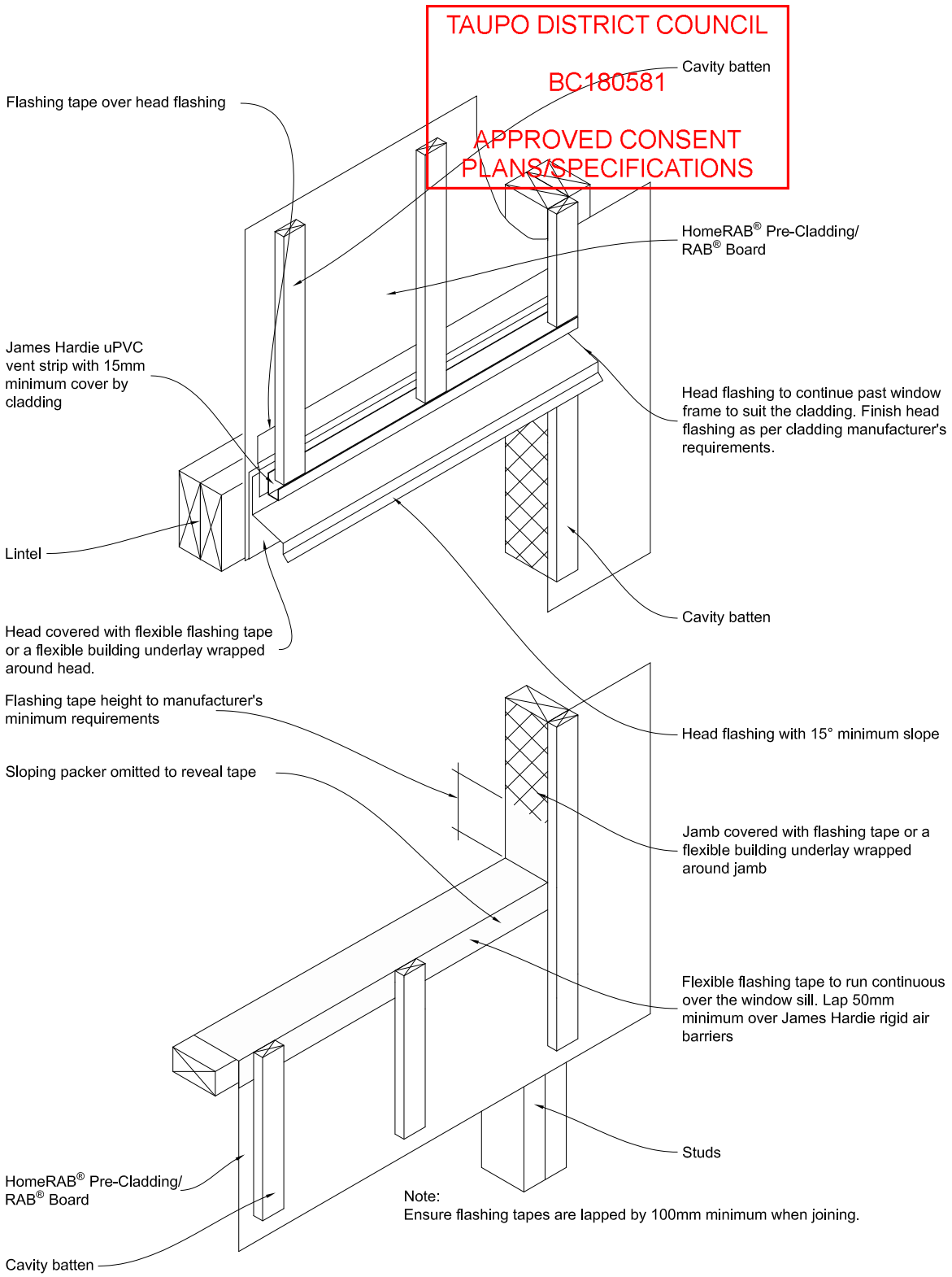
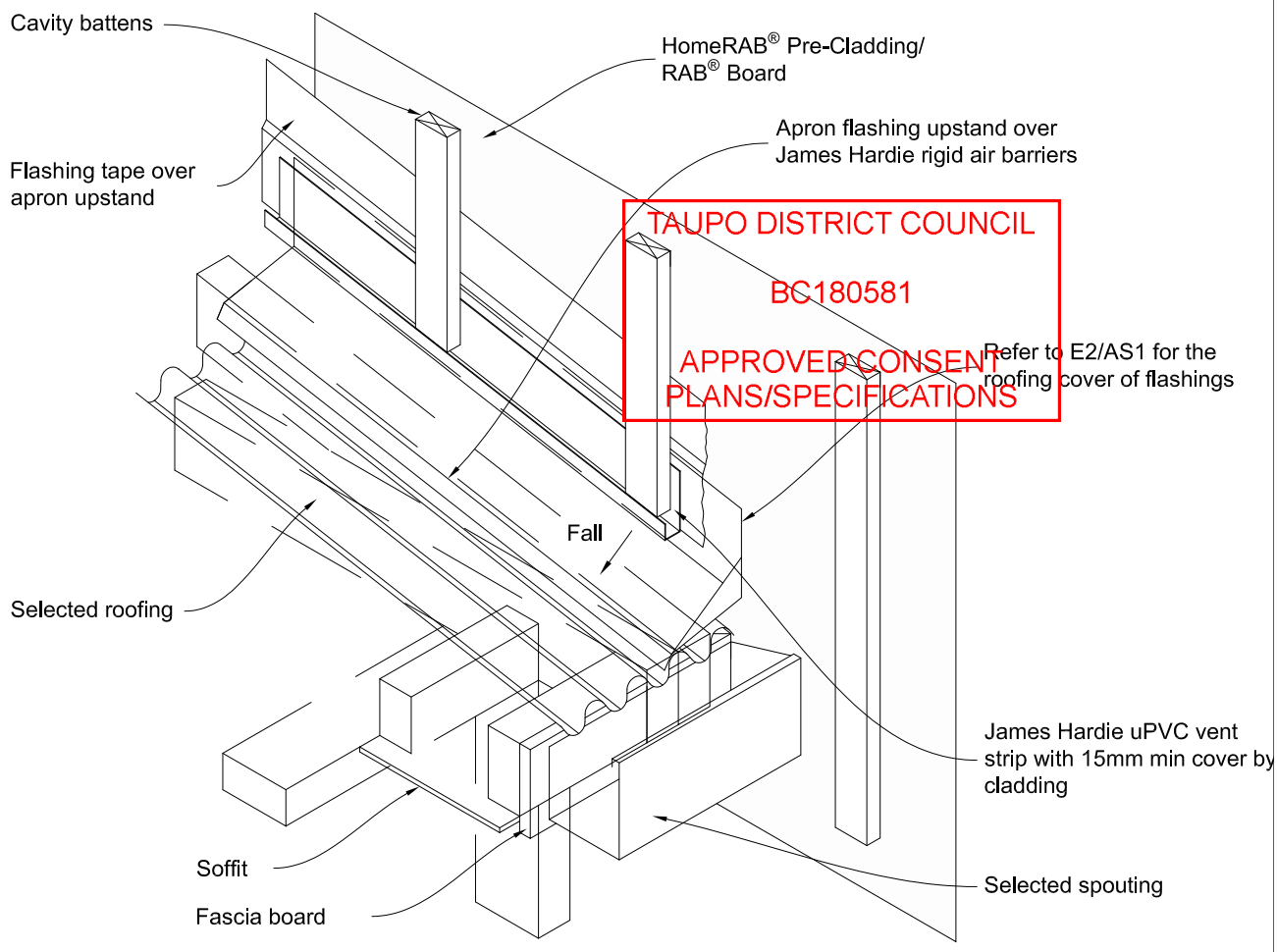


Figure 18: Apron flashing



Balustrade to Wall Junctions

The junctions between balustrades to wall should be appropriately flashed. Refer to E2/AS1 of the NZBC for information and flashing details.

Figure 19: Flashing at balustrade

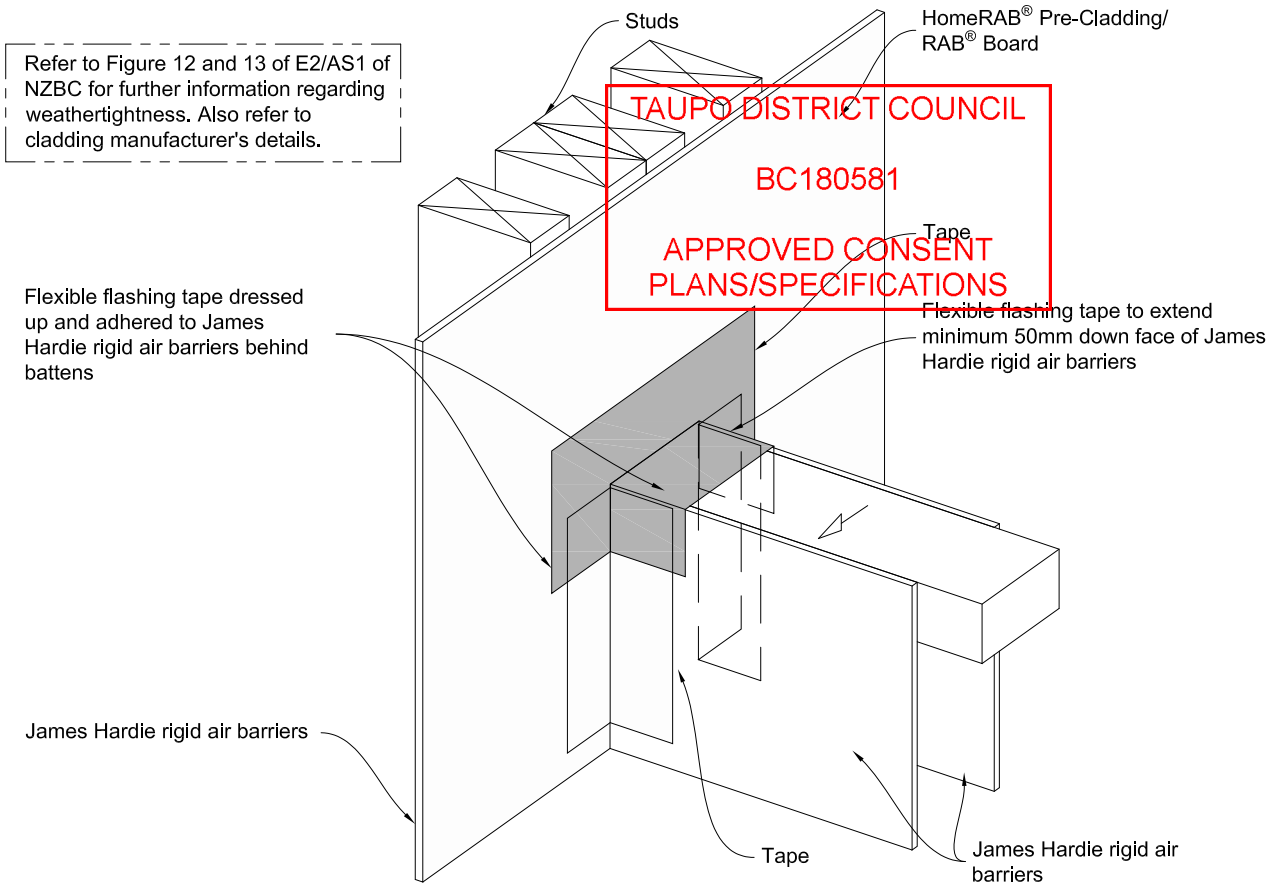
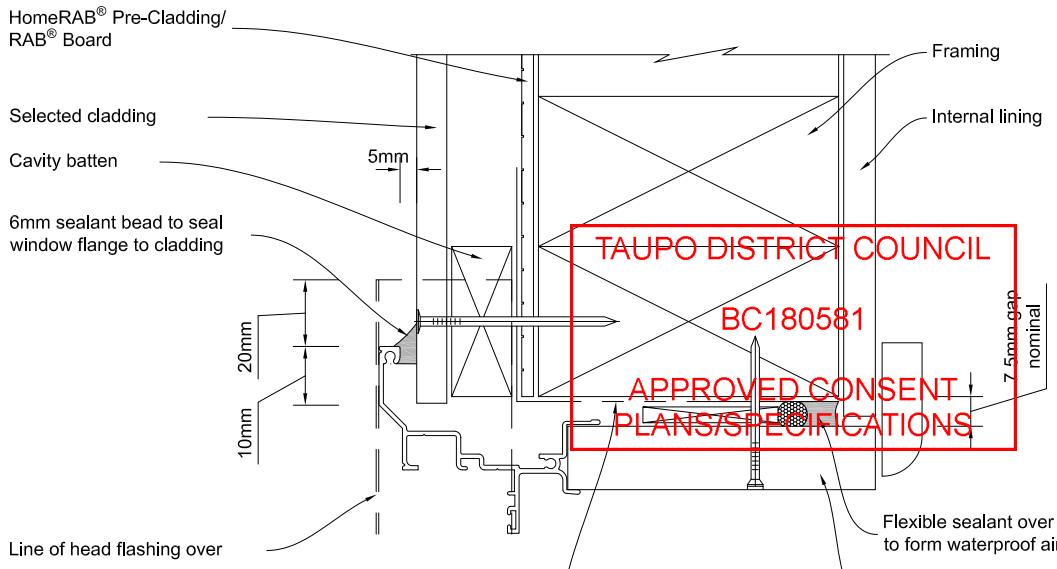


Figure 20: Window jamb with flashing tape

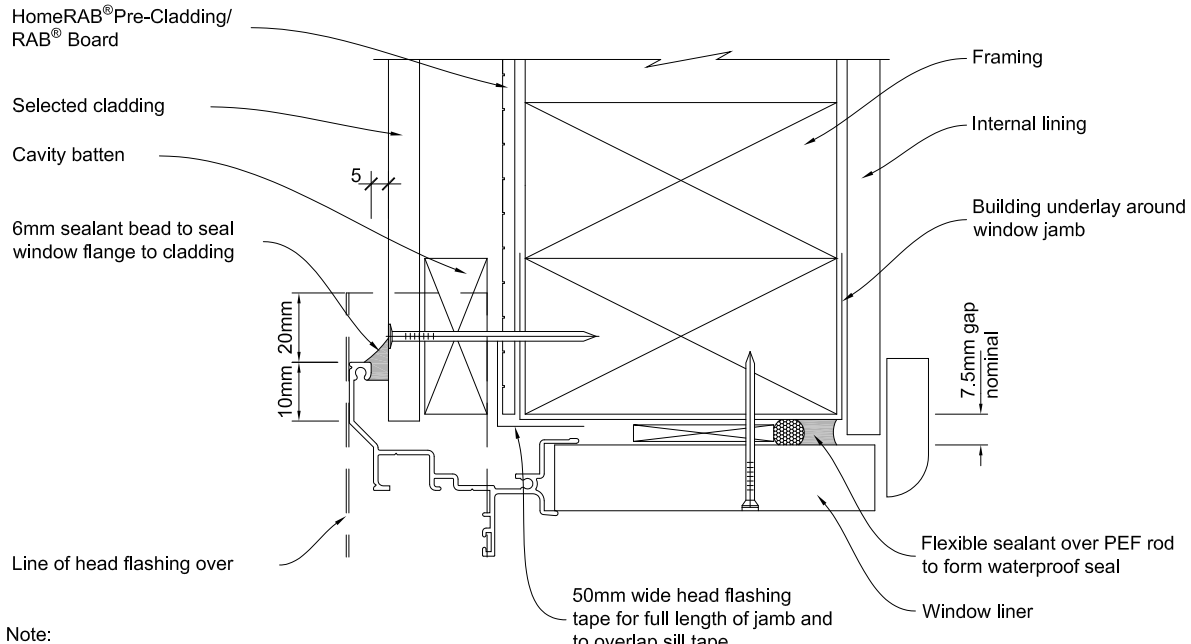


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Note:

- For wind zones above VH and up to 2.5kPa wind pressure use RAB Board only.
- For higher wind pressures refer to cladding and window manufacturer.

Figure 21: Alternate window jamb with building underlay



Note:

- For wind zones above VH and up to 2.5kPa wind pressure use RAB Board only.
- For higher wind pressures refer to cladding and window manufacturer.

Note: Flashing tapes must be installed to meet requirements of tape manufacturer

SURFACE CLEARANCES

James Hardie rigid air barriers must extend below the bottom plate by 15mm minimum over concrete foundation and 15mm past floor joist of timber foundation. James Hardie rigid air barriers must maintain a 100mm minimum clearance between the bottom edge of the sheet and the finished ground.

Check cladding manufacturer for minimum clearances required for the selected cladding.

Maintain the required clearances between the bottom plate and top of ground to comply with the NZBC and NZ standards. The adjacent finished ground must slope away from the building in accordance with the NZBC requirements. Do not install James Hardie rigid air barriers in such a way that it may remain in contact with standing water.

Figure 22: Foundation detail — direct fix cladding

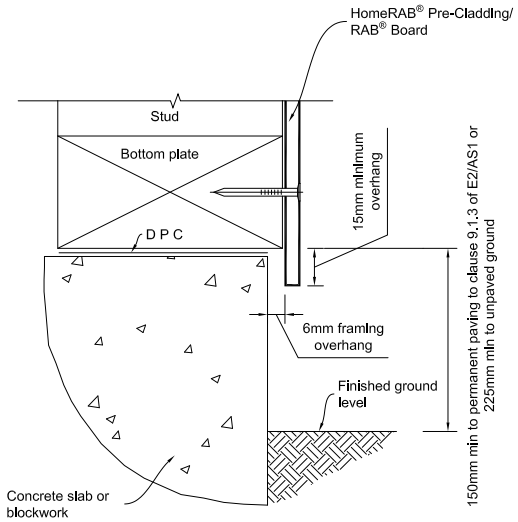
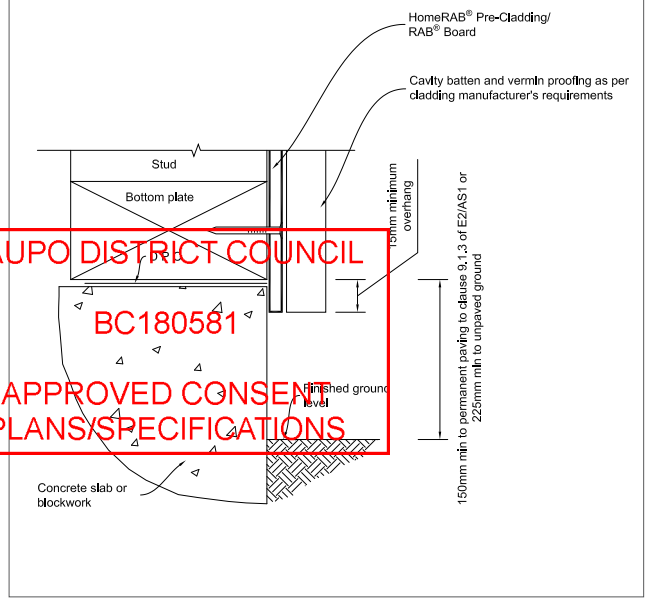


Figure 23: Foundation detail — cavity fix cladding



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ALPINE REGIONS

In regions subject to freeze/thaw conditions, James Hardie rigid air barriers must not be in direct contact with snow or ice build up e.g. external walls in alpine regions subject to snow drifts over winter. James Hardie rigid air barriers have been tested to resist freeze thaw in accordance with AS/NZS 2908.2 clause 8.2.3 requirements and is suitable for use in alpine regions.

6 Product information

GENERAL

HomeRAB Pre-Cladding and RAB Board are cellulose fibre reinforced cement building products. The basic composition is Portland cement, ground sand, cellulose fibre and water.

RAB Board is easily identified by the name RAB Board printed on the back face. It has green colour water repellant sealer applied on its front face.

HomeRAB Pre-Cladding is easily identified by the name 'HomeRAB Pre-Cladding' on the front face. It has green colour water repellent sealer applied on its front face. The name is also printed on the back face of the lining.

HomeRAB Pre-Cladding and RAB Board are manufactured to conform to the requirements of AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheet (ISO 8336).

HomeRAB Pre-Cladding and RAB Board are classified Type B, Category 3 in accordance with AS/NZS 2908.2.

For Safety Data Sheets (SDS) visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

DURABILITY

Resistance to Moisture/Rotting

James Hardie rigid air barriers have been assessed for permanent moisture induced deterioration (rotting) and have met the expectation of AS/NZS 2908.2.

Resistance to Fire

James Hardie rigid air barriers have been tesed/assessed and are classified as Non-Combustible Material.

7 Finishes and maintenance

The selected cladding must be installed and finished within 90 days after the installation of James Hardie rigid air barriers, and the cladding must comply with the requirements of the NZBC. Regular cleaning and maintenance of claddings paints, joints, junctions, penetrations, flashings etc must be carried out at regular intervals and as per the requirements of the material manufacturers. Regular maintenance of cladding is also a requirement under the NZBC.

The ground clearances required for the James Hardie rigid air barriers and the cladding must always be maintained.

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Product Warranty

James Hardie®
RIGID AIR BARRIERS

April 2016

James Hardie New Zealand ("James Hardie") warrants for a period of 15 years from the date of purchase that the HomeRAB® Pre-Cladding/RAB® Board (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.

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CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;

b) this warranty is not transferable;

c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;

d) the project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards;

e) the claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;

f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);

g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;

h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

Disclaimer: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested the performance of the HomeRAB® Pre-Cladding/RAB® Board when installed in accordance with the HomeRAB® Pre-Cladding/RAB® Board installation manual 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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a smarter way™



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Graphex Insulated Facade System - Graphex 40mm Panel on 20mm Cavity

General

Properties

Graphex Panels have the following material properties:

- Thermal Conductivity: 0.32 W/(mk)
- Thermal Resistivity, R0.69 @40mm, R0.86 @50mm, R1.03 @60mm (The thermal calculations shown are de-rated in accordance with NZS4214)
- Substrate Thickness: 40/50/60mm GRAPHEX Insulation panel
- Total thickness: 45/55/65mm (min/average) coatings and substrate (excluding cavity)
- Weight: approx 7kg/m2 coatings and substrate, considered a light weight cladding in terms of NZS3604
- Windzone: All wind zones of 3604

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Building Code Compliance

If the project has a building consent then the following clauses apply.

Durability

The work covered by this part of the specification has been designed and constructed to meet the durability performance requirements of NZBC B2.

On Going Maintenance Instructions

Provide ongoing maintenance instructions required to meet the performance requirements of the NZBC.

Substrate

All the appropriate inspections are to be carried out by a BCA representative and that it complies with the NZBC requirements.

Documents

Abbreviations

The following abbreviations are used throughout this work section:

Documents to also refer to where applicable

- NZBC B1 Structure
- NZBC B2 Durability
- NZBC E2 External Moisture
- NZBC F2 Hazardous Building Materials
- AS/NZS 1170.2 Structural design actions - Wind actions
- NZS 3602 Timber and wood-based products for use in building
- NZS 3603 Timber structures standard
- NZS 3604 Timber framed buildings
- BRANZ Bulletin 353 Ground clearances
- BRANZ Bulletin 418 Weathertightness do's and don'ts
- BRANZ Bulletin 439 Condensation risk in walls

Manufacturers Documents

- Resene Construction Systems Technical Resources
- Resene Construction Systems TradeSpec
- Resene Construction Systems Project Guide
- Resene: Total Colour System

Copies of the above relevant company documents referred to in this specification are available at;

Resene Construction Systems
Web: reseneconstruction.co.nz
Telephone: 0800 50 70 40

Resene Paints
Web:resene.co.nz
Telephone: 0800 RESENE (0800 737 363)

No Substitutions

Substitutions are not permitted to any specified Resene Construction Systems system. Materials and execution to Resene Construction Systems specification except where varied by this specification and supported by architectural detailing.

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Qualifications

Use only LBP registered plasterers licensed to apply the Resene Construction Systems exterior render systems.

Documentation

Finish Sample

Submit one 300 mm x 300 mm sample of the selected texture finish and colour for approval on request by the main contractor or specifier. Obtain signature of acceptance on sample and return to the Registered Plasterer.

Maintenance Instructions

Provide Resene Construction Systems Maintenance Guide on or before practical completion of the contract for issuing to the building owner. Resene Construction Systems Maintenance Guide to be provided on request.

Producer Statement

If the project has a building consent then a producer statement shall be supplied by the plasterer in the form as required by the BCA.

Health and Safety

Refer to the requirements of the Health and Safety in Employment Act 2015 and Worksafe NZ: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards and risks is not possible then minimise hazards and risks in this work on site by using the proper equipment and techniques as required in the MPNZA Painters hazard handbook. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put into place procedures for dealing with emergencies. Obtain from Resene Construction Systems the Material Safety Data Sheets for each product. Keep sheets on site and comply with the required safety procedures. Confirmation at the start of the project as to whether a Site Specific Safety Plan is to be produced by the Registered Plasterer prior to works starting.

Warranty

Warrant this system under normal environmental and use conditions against failure. Resene Construction Systems system warranty.
Materials: by Resene Construction Systems - 15 Years Materials only
Execution: by Registered Plasterer - 5 Years Workmanship only

OnSite Assistance

Allow to inspect the whole of the work at each stage. Determine a programme for onsite assistance including notification when each part and stage of the work is ready for inspection prior to the work commencing. Permit representatives of Resene Construction Systems to inspect the work in progress and to take samples of their products from site if requested.

Components

RCS 20mm Graphex Battens

- 40mm x 20mm H-Grade Graphex Peel and Stick Batten
- Supplied in Boxes
- 228 units in a box
- AS 1366 Part 3 Class H (with fire retardant).

Graphex 40mm

- 2400 x 1200
- 40mm Thick
- Allow for 10% Wastage when Installing
- AS 1366 Part 3 Class H (with fire retardant).

Nails (Preloaded) 90mm

- 90mm x 3.55
- Flat-head, hot-dipped galvanised and 40 mm diameter nylon washers.

RCS Drip Edge (Window Heads)

- Supplied in 2400mm Lengths
- Used with both the EdgeSeal Head Flashing and also the Universal Starter Strip

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RCS EdgeSeal Head Flashing

- Supplied in 2.4m Lengths
- Generally requires the Drip Edge Flashing

RCS EdgeSeal Window Flashing

- Used for sill and jamb installations
- Supplied in 2400mm lengths

RCS Pre-meshed Corners

- Supplied in 2400mm Lengths

RCS Starter Strip (40mm Clip-On)

- Supplied in 2400mm Lengths
- Suitable for 40mm Substrates
- Allows for a 20mm Cavity

Rockcote PM100 Quick Render Base Coat

- Polymer-modified cement-based dry plaster mix. Supplied in 20 kg bags

- View Technical Data Sheet - View Safety Data Sheet

RCS RMaxx - Base Coat

RCS RMaxx - is a high-yielding, cement-free dispersion based basecoat mortar. Thanks to its high elasticity, it prevents the formation of cracks and is thus also ideal for use as renovation filler.

- View Technical Data Sheet

RCS Blue Mesh (1200mm wide)

- Alkali Resistant 6mm x 5mm Weave mesh supplied in 50m rolls

- View Technical Data Sheet

RCS RMaxx - Level Coat

RCS RMaxx - is a high-yielding, cement-free dispersion based basecoat mortar. Thanks to its high elasticity, it prevents the formation of cracks and is thus also ideal for use as renovation filler.

- View Technical Data Sheet

Bostik MS Sealant (Tubes)

- 550gm Cartridges

- View Technical Data Sheet - View Safety Data Sheet

Rockcote Classico

- 100% acrylic, high-build texture coating. Supplied in 15 Litre pails

- View Technical Data Sheet - View Safety Data Sheet

Resene X200 (2 Coats)

- Acrylic reinforced waterproof membrane. Supplied in 4 and 10 litre pails. Tinted to the selected colour

- View Technical Data Sheet - View Safety Data Sheet

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Installation

The following Resene Construction Systems TradeSpec® Documents can be found at http://tradespec.co.nz
All Technical Data Sheets are available at https://reseneconstruction.co.nz/tds
All Safety Data Sheets are available at https://reseneconstruction.co.nz/sds

- Building Underlays and Flashing Tapes - Timber Frame - Refer to RCS TradeSpec™ document 1.1
- Design Information - Refer to RCS TradeSpec™ document 1.2
- Checking Joinery - Refer to RCS TradeSpec™ document 1.3
- Light and Heavyweight Fixings - Refer to RCS TradeSpec™ document 1.9
- Check Timber or Steel Framing - Refer to RCS TradeSpec™ document 2.1
- Cavity and Batten Installation - Refer to RCS TradeSpec™ document 2.2
- Fastening EPS / XPS / Graphex board - to timber / steel frame - Refer to RCS TradeSpec™ document 2.3
- Check and Prepare EPS / Graphex - Refer to RCS TradeSpec™ document 2.9
- Resene Construction Systems Flashings - Refer to RCS TradeSpec™ document 4.1
- Rockcote PM100 Quick Render Base Coat
- RCS RMaxx - Base Coat
- RCS Mesh (Standard Weave)
- RCS RMaxx - Level Coat
- Rockcote Classico Texture Finish
- Resene X200 Paint Finish (2 Coats)
- Light Reflectance Values (LRV) - Refer to RCS TradeSpec™ document 1.6
- Maintenance - Refer to RCS TradeSpec™ document 1.7
- Cleaning Up - Refer to RCS TradeSpec™ document 5.10

Important:

This specification must be read in conjunction with the Resene Construction Systems technical drawings.
No alteration to the Resene Construction Systems RenderSpec® is permitted.
This Resene Construction Systems RenderSpec® must be read in conjunction with Resene Construction Systems TradeSpec® available at http://tradespec.co.nz
All Technical Data Sheets are available at https://reseneconstruction.co.nz/tds
All Safety Data Sheets are available at https://reseneconstruction.co.nz/sds

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Hot Water Heating System

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Rinnai

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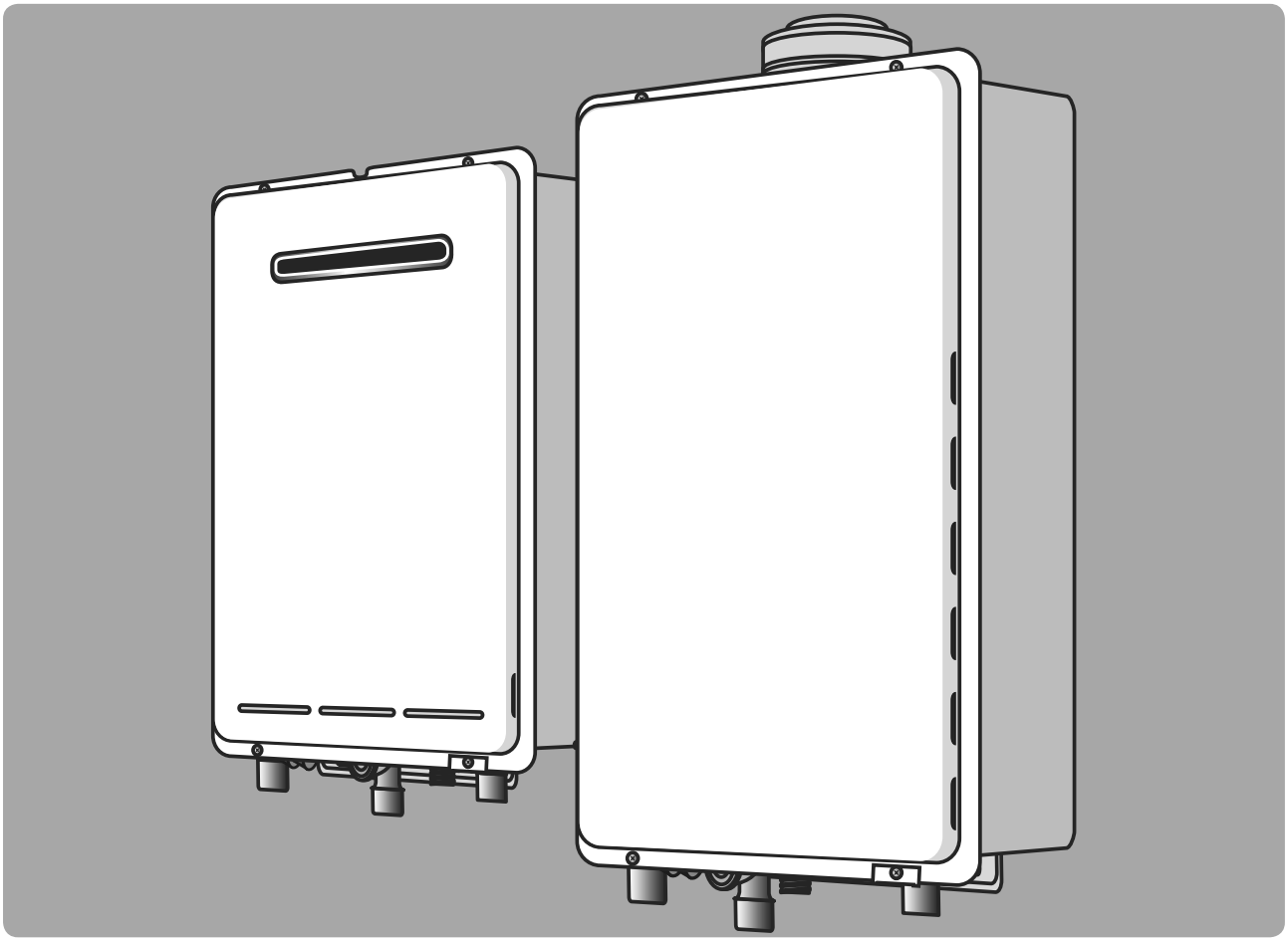
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Installation guide

Continuous flow water heaters

Models: VT16-26, HD200, HDi200, HD250, EF24, EF250, EFi250



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Important:

This appliance must be installed in accordance with:

- Manufacturer's installation instructions
- Current AS/NZS3000, AS/NZS3500, AS/NZS 5601.1 and G12/AS1
- Local regulations and municipal building codes

For use with Natural Gas or Universal LPG as indicated on the appliance.

Not suitable as a spa or swimming pool heater.

Rinnai continuous flow internal water heaters
('i' models) must be installed with an approved Rinnai flue system.

Appliance must be installed, commissioned and serviced by an authorised person, being in New Zealand a licensed gasfitter, in accordance with these instructions and all applicable local rules and regulations.

Warning
Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.

For more information about buying, using, and servicing of Rinnai appliances call: 0800 RINNAI (0800 746 624)

Rinnai New Zealand Limited
105 Pavilion Drive, Mangere, Auckland
PO Box 53177, Auckland Airport, Auckland 2150

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Web: www.rinnai.co.nz, www.youtube.com/rinnainz

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Before installation

Check for damage

Unpack the appliance and flue components (if applicable) and check for damage. DO NOT install any damaged items.

Check components and gas type

Check all components have been supplied and that you have the correct gas type.

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Read these instructions before starting

Read these instructions to get an overview of the steps required before starting the installation. Failure to follow these instructions could cause a malfunction of the appliance. This could result in serious injury and property damage.

Solar installations

For Rinnai continuous flow water heaters used in solar installations, refer 'Recommended Solar System Layout'.

EF models are heavy

The Rinnai Infinity EF models are 32 kg. Please use care when lifting and seek assistance if required.

Applicable models

These installation instructions apply to the following Rinnai continuous flow water heaters.

Rinnai Infinity VT16	External	REU-VR1620WG	**Model number** Note: The model number is written on the data plate on the left hand side of the appliance.
Rinnai Infinity VT20	External	REU-VR2024WG	
Rinnai Infinity VT24	External	REU-VR2426WG	
Rinnai Infinity VT26	External	REU-VR2626WG	
Rinnai Infinity HD200	External	REU-VRM2632WC	
Rinnai Infinity HDi200	Internal	REU-VR2632FFUG	
Rinnai Infinity HD250	External	REU-VR3237WG	
Rinnai Infinity EF24	External	REU-K2430WG	
Rinnai Infinity EF250	External	REU-KM3237WD	
Rinnai Infinity EFi250	Internal	REU-KM3237FFUD	

i = internal—these must be installed with an approved Rinnai flue system

For nominated gas consumption, gas pressures, and gas types please refer to the data plate on the left hand side of the appliance.

Appliance location

Installation in environments free from corrosive compounds

Air surrounding the water heater, venting and vent termination(s) is used for combustion and must be free from compounds that cause corrosion of internal components. These include corrosive compounds that are found in aerosol sprays, detergents, bleaches, cleaning solvents, oil based paints/varnishes, and refrigerants. Therefore Rinnai recommends outdoor models be used for these locations where possible. The water heater, venting and vent termination(s) should not be installed in any areas where the air may contain these corrosive compounds. Chemicals that are corrosive in nature should not be stored or used near the water heater or vent termination.

Damage and repair due to corrosive compounds in the air is not covered by warranty.

If it is necessary for a water heater to be located in areas which may contain corrosive compounds, Rinnai strongly recommends the following:

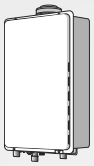
Indoor (internal) water heaters

- DO NOT install in areas where contaminated air is present.
- Consider, before installation, where air has the ability to travel within the building.
- Where possible, install the heater in a sealed closet so that it is free of contaminated indoor air.

Outdoor (external) water heaters and vent terminations of indoor (internal) water heaters

- Install as far away as possible from exhaust vent hoods
- Install as far away as possible from air inlet vents—corrosive fumes may be released through these vents when air is not being run through them

Internal models



Internal models are designed for indoor installations only. They may be installed in an enclosure if the requirements of AS/NZS 5601.1 are satisfied. An enclosure is defined as a compartment, enclosed area or partitioned off space primarily used for the installation of the appliance.

They must be mounted on a vertical structure with the water and gas connections on the underside pointing downwards. For appliances installed in roof spaces or elevated structures, specific requirements apply. Refer to AS/NZS 5601.1 for details.

Catch pan

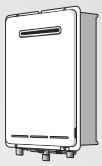
CAUTION It is important that a suitably drained catch pan is fitted where damage could be caused by discharge from the water heater. Provision must be made for safe disposal of any leaking water to an external location.

This appliance MUST be used with the appropriate Rinnai flue system.

The location of the flue terminal must comply with AS/NZS 5601.1 Fig. 6.2.

Manufacturer's instructions for model REU-KM3237FFUD (EFi250); for reference j, gas appliances over 200 MJ/h input, use ≥ 300 mm.

External models



External models are designed for outdoor installations only. They must be located in an above ground open-air situation with natural ventilation, without stagnant areas, and where gas leakage and products of combustion are rapidly dispersed by wind and natural convection.

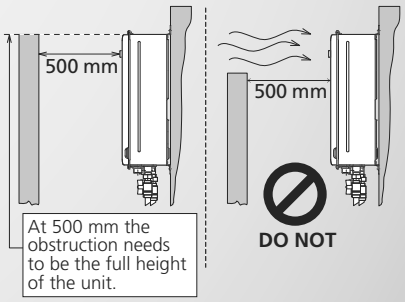
They must be mounted on a vertical structure with the water and gas connections on the underside pointing downwards.

The location of the flue terminal must comply with AS/NZS 5601.1 Fig. 6.2.

Manufacturer's instructions for model REU-KM3237WD (EF250); for reference j, gas appliances over 200 MJ/h input, use ≥ 300 mm.

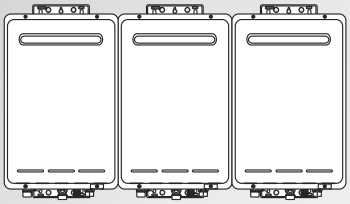
Horizontal obstructions

AS/NZS 5601 stipulates a minimum horizontal clearance of 500 mm between a building structure and obstruction facing the terminal. At 500 mm the obstruction needs to be the full height of the unit (as shown), and not a partial obstruction. A partial obstruction of less than 1 m could result in wind pushing flue gases back into the flue terminal.



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When multiple units of the same model are installed on the same vertical face, with the flue terminals at the same height, they can be installed next to each other (as shown).



All models

This appliance must be placed as close as possible to the most frequently used hot water outlet or outlets to minimise the delay for hot water delivery.

For installations where the distance between the water heater and the outlets is considerable, a flow and return system can be used to minimise the waiting time for hot water delivery. Alternatively, multiple appliances can be strategically placed to serve different outlets. Contact Rinnai for further information.

An AC 230 V, 10 Amp, earthed power point must be provided adjacent to the appliance. For outdoor installations, this power point must be weatherproof. It must be clear of the gas and water connections to the appliance and also the flue exhaust and water pressure relief valve. The power cord of the appliance is 1.5 m long.

All appliances must be installed to ensure access can be gained without hazard or undue difficulty for inspection, repair, renewal or operational purposes. Sufficient clearances shall allow access to and removal of all serviceable components.

Appliances should not be mounted higher than 3.5 m above the ground or floor level unless the customer can arrange permanent and safe access or can provide another means of access such as scissor or boom lifts.

Clearances from combustible materials

The appliance can be mounted directly against the wall or structure. There is no need to use non-combustible sheeting or leave an air gap between the appliance back panel and the wall or structure for the purposes of meeting the temperature hazard requirements of AS/NZS 5601.

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General installation information

Catch pan

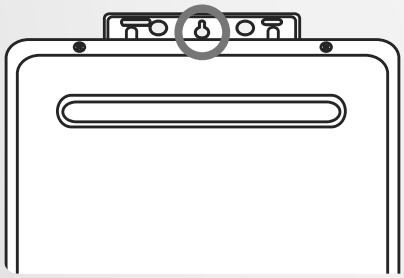
It is important a suitably drained catch pan is fitted (especially for internal units) where damage could be caused by discharge from the water heater. Provision must be made for safe disposal of any leaking water to an external location.

Mounting the appliance

Refer 'Connections and Fittings' for individual appliance weights. The wall or structure on which these units are to be mounted must be capable of supporting these weights and the associated pipe work.

Ensure suitable fixing screws or bolts are used to secure the units to the walls, in accordance with AS/NZS 5601.1. Wooden plugs shall not be used.

The top bracket has a keyhole slot (circled below) so the appliance can be positioned by hanging it on one screw while the other screws are secured.



Circuit diagrams

Refer to commissioning sheet supplied with the appliance (inside front cover of appliance).

Pipe sizing



Refer 'Connections and Fittings' for appliance gas consumption. If the gas pipe sizing is insufficient the customer will not get the full performance benefit. Gas pipe sizing must consider the gas input to this appliance as well as all the other gas appliances in the premises. The gas meter and regulator must be specified for this gas rate.

An approved sizing chart such as the one in AS/NZS 5601.1, or proprietary system manufacturer guide should be used.

Water pipe sizing and layout should be performed in accordance with AS/NZS 3500. All hot water pipe work should be insulated to optimise performance and energy efficiency.

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Water supply



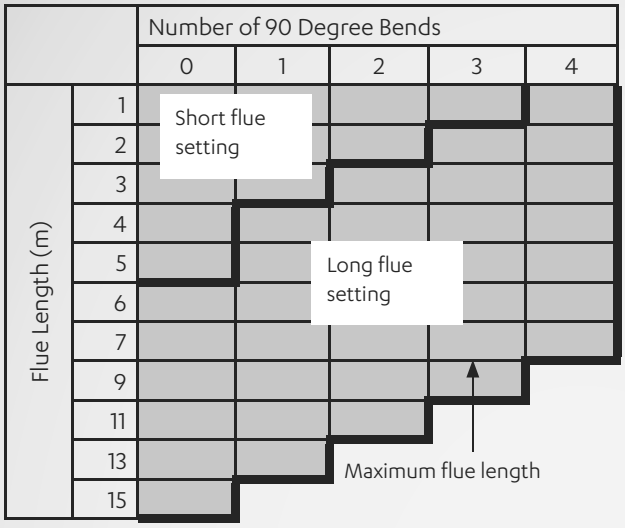
Refer 'Connections and Fittings' for applicable water pressures. Approved pressure limiting valves may be required if the stated maximum rated water supply pressures are exceeded. To achieve the rated flow, the stated minimum water supply pressures must be supplied. The water heaters will operate at lower pressures but will not achieve the rated flow.

Water chemistry and impurity limits are stated in our detailed warranty statement. Most metropolitan water supplies fall within these requirements. If you are unsure about the quality of the water, please contact Rinnai and we will provide you with the details of an authorised agency who are able to test your water for compliance to Rinnai standards. If sludge or foreign matter is present in the water supply, a suitable filter or strainer should be incorporated in the water supply to the water heater.

Flued (internal) water heaters

This water heater must be fitted with the appropriate Rinnai flue system.

The chart below highlights the maximum flue length and number of bends. It also shows the difference between a short and long flue—this is important if changing settings (DIP switches).



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Refer to separate Rinnai flue guide for further details.

Water delivery temperature

Local regulations and/or requirements of AS/NZS3500.4 must be considered regarding the temperature limitations of hot water supplied to areas used primarily for personal hygiene. The temperature of these areas may be limited to 55 °C or less.

If the appliance is to deliver water primarily for the purposes of personal hygiene in an early childhood centre, school, nursing home or similar facility as defined in AS/NZ3500.4 a Temperature Limiting Device (TLD), such as a Tempering Valve may be required (even if the appliance is set to 55 °C or less). For these types of applications contact Rinnai.

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Requirements for Rinnai continuous flow units installed without controllers

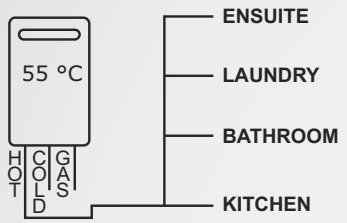


Diagram 1 - 55 °C Appliance

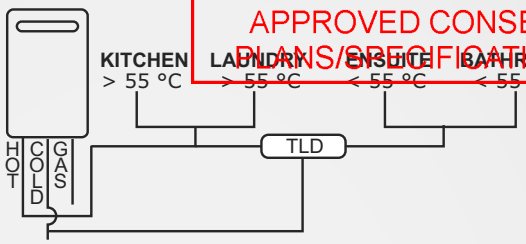


Diagram 2 - Not a 55 °C Appliance
(TLD = Temperature Limiting Device)

When the continuous flow unit is set to deliver water at a temperature higher than 55 °C, it will be necessary to fit a Temperature Limiting Device for delivery to areas used for the purposes of personal hygiene.

Connections and fittings

Models	Gas consumption MJ/h	Water Supply kPa		Weight kg	Fittings			Condensate
		Min.	Max.		Hot	Cold	Gas	
VT16 external REU-VR1620WG	125	120	1000	15	R½ (15 mm)	R½ (15 mm)	R¾ (20 mm)	N/A
VT20 external REU-VR2024WG	160	160	1000	16	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	N/A
VT24 external REU-VR2426WG	188	180	1000	17	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	N/A
VT26 external REU-VR2626WG	199	180	1000	17	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	N/A
HD200 external REU-VRM2632WC	199	140	1000	21	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	N/A
HDi200 internal REU-VR2632FFUG	195	140	1000	21	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	N/A
HD250 external REU-VR3237WG	249	200	1000	29	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	N/A
EF24 external REU-K2430WG	162	240	1000	27	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	R½ (15 mm)
EF250 external REU-KM3237WD	211	240	1000	32	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	R½ (15 mm)
EFi250 internal REU-KM3237FFUD	211	240	1000	32	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	R½ (15 mm)

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Service connection points

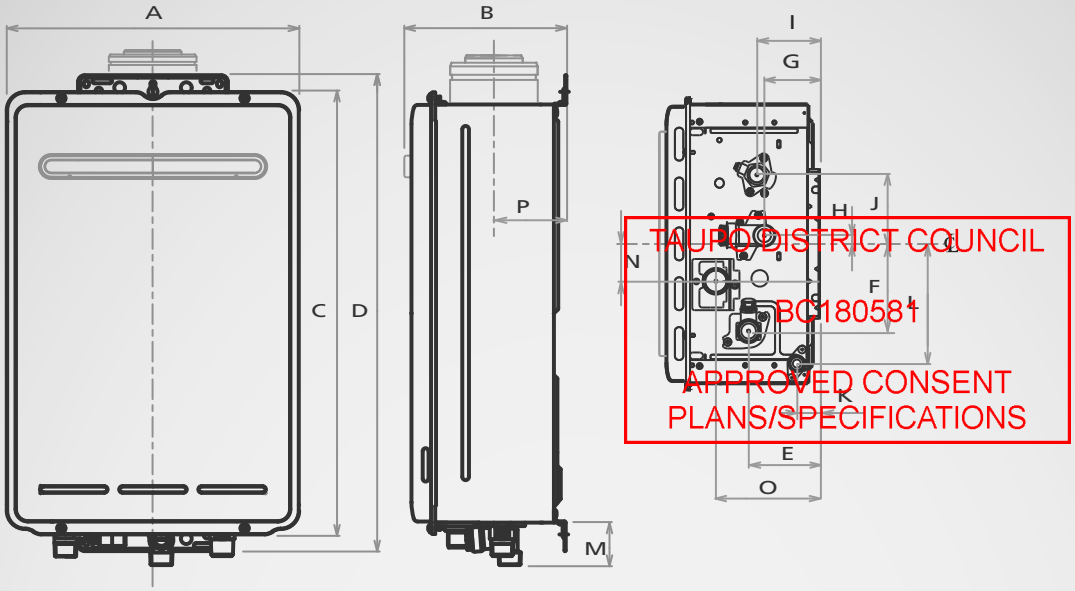
These dimensions are NOT an indication of the pipe sizes required.

An approved full flow isolation valve and disconnection union MUST be fitted to the cold water inlet. A non-return valve is not required unless required by local regulations.

Isolation valves must be fitted so the appliance can be removed.

Purge gas and cold water supply lines to remove air and swarf before final connection of the appliance. Swarf in the gas or water supplies may cause damage.

Dimensions: VT and HD models



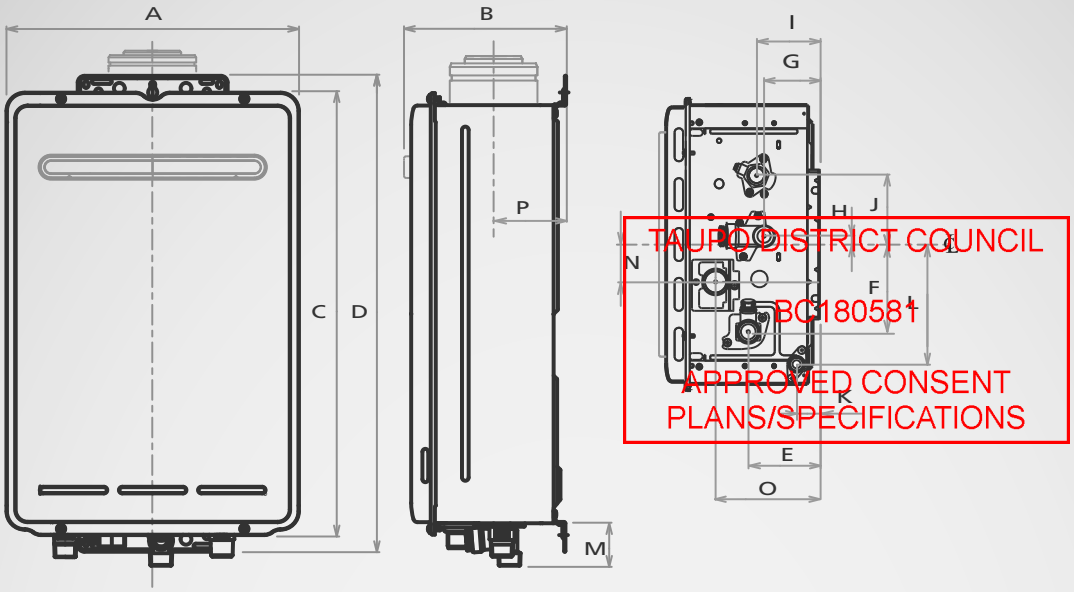
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Dimensions table (mm)		VT16 external (REU-VR1620WG)	VT20 external (REU-VR2024WG)	VT24 external (REU-VR2426WG)	VT26 external (REU-VR2626WG)	HD200 external (REU-VRM2632WC)	HDi200 internal (REU-VR2632FFUG)	HD250 external (REU-VR3237WG)
A	Width	350	350	350	350	350	350	470
B	Depth	194	194	194	194	250	235~275	244
C	Height - unit	530	530	530	530	600	600	600
D	Height - including brackets	571	571	571	571	636	641	644
E	Hot water outlet (from wall)	87	87	87	87	95	91~131	115
F	Hot water outlet (from centre)	105	105	105	105	110	110	61
G	Cold water inlet (from wall)	68	68	68	68	74	70~110	99
H	Cold water inlet (from centre)	10	10	10	10	27*	27*	52
I	Gas connection (from wall)	77	77	77	77	103	99~139	61
J	Gas connection (from centre)	83	83	83	83	89	89	110
K	Condensate outlet (from wall)	-	-	-	-	-	-	-
L	Condensate outlet (from centre)	-	-	-	-	-	-	-
M	Gas: Length gas connection (from base)	40	40	40	40	41	41	41
	Cold: Length of cold water inlet (from base)	50	50	50	50	51	51	51
	Hot: Length of hot water outlet (from base)	39	39	39	39	42	42	42
N	Electrical connection (from centre)	45	45	45	45	21**	21**	2**
O	Electrical connection (from wall)	128	128	128	128	160	160~200	100
P	Flue spigot centre line (from wall)	-	-	-	-	-	95~135	-

* This measurement is to the left of the centre line
** This measurement is to the right of the centre line

HDi200, height of flue spigot from base of unit approx. 85 mm

Dimensions: EF models



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Dimensions table (mm)		EF24 external (REU-K2430WG)	EF250 external (REU-KM3237WD)	EFi250 internal (REU-KM3237FFUD)
A	Width	350	470	470
B	Depth	277	283.1	257~307
C	Height - unit	600	654	654
D	Height - including brackets	644	721.6	721.6
E	Hot water outlet (from wall)	164.5	115	110~150
F	Hot water outlet (from centre)	100	100	100
G	Cold water inlet (from wall)	83	79.6	74.6~114.6
H	Cold water inlet (from centre)	53*	27.2	27.7
I	Gas connection (from wall)	70.5	104	99~139
J	Gas connection (from centre)	25	103.2	103.2
K	Condensate outlet (from wall)	33	137.6	132.6~172.6
L	Condensate outlet (from centre)	132	195	195
M	Gas: Length gas connection (from base)	51	40.2	40.2
	Cold: Length of cold water inlet (from base)	62	50.2	50.2
	Hot: Length of hot water outlet (from base)	41	41.2	41.2
	Condensate connection length (from base)	24	22.4	22.4
N	Electrical connection (from centre)	10**	49	49
O	Electrical connection (from wall)	175	200	195~235
P	Flue spigot centre line (from wall)	-	-	139~179

* This measurement is to the left of the centre line

** This measurement is to the right of the centre line

EF250 models: Earthing the unit

Removing the cover and earthing the unit

For the Rinnai condensing continuous flow water heaters (EF250 & EFi250), the earthing screws are located under the side trim, refer image below. First remove the trim and then the earthing screws before lifting off the cover.

WARNING

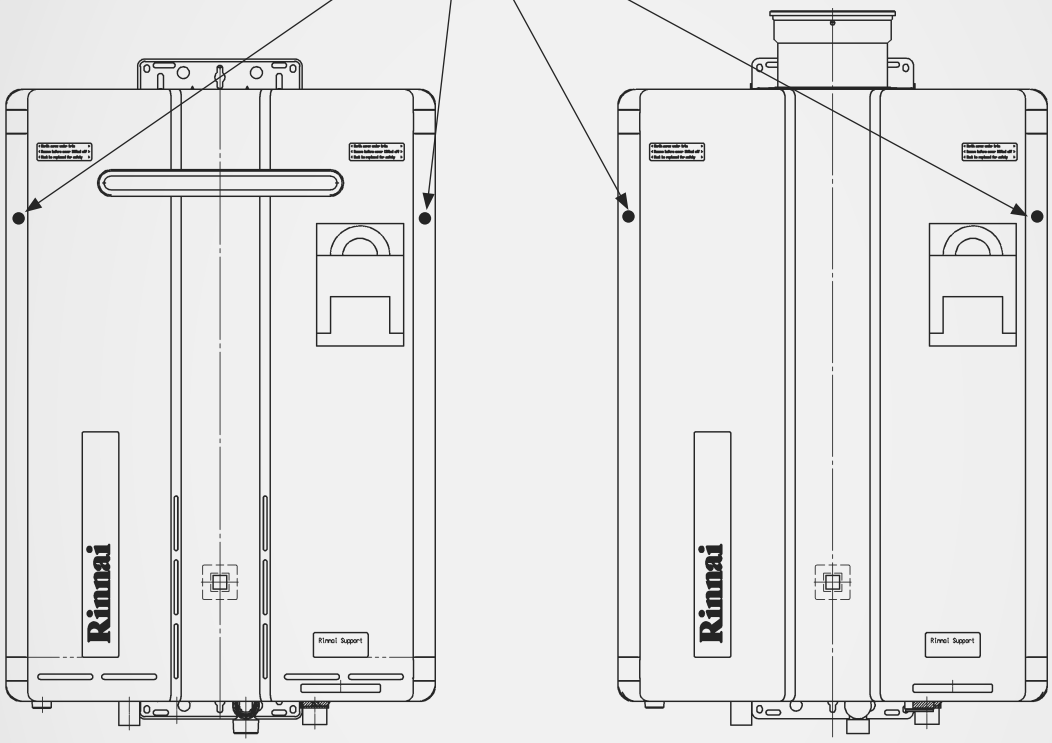
For safe operation of the appliance the earthing screws MUST be replaced.

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Earthing screws located under side trim



EF models: Condensate drain

The Rinnai Infinity EF water heaters generate condensate continuously at a rate of up to five litres per hour as a by-product of a highly efficient gas burner. Condensate must be drained via a pipe to a suitable discharge point.

As condensate is a by-product of gas combustion it is mildly acidic. For this reason copper tube and fittings MUST NOT be used as it will corrode. Instead Rinnai recommend plastic pipes and fittings.

Important considerations for the condensate drain pipe

Content of AS3500.4.2003 section 5.12 'Temperature/Pressure Relief and Expansion Control Valve Drain Lines' has been used as a guide in preparing these considerations.

A. Water heater drain outlet connection, ½ " (15 mm) BSP male.

B. PE ½ "BSP (15 mm) female to barbed ignition system connector (13-19 mm) or equivalent plastic fitting.

C. Drain pipe and fittings to match (B).

D. Continuous fall of at least 2° from water heater to discharge point, length and bends in accordance with 'Maximum length and changes of direction greater than 45°'.

E. Suitable points of discharge are deemed to be sewers or pits. DO NOT discharge onto electrical connections, earth stakes, copper pipes, concrete paths, or into a pond.

Maximum length and changes of direction greater than 45°

Length and changes of direction				
Max. length (m)	9	8	7	6
Max. changes of direction (> 45°)	3	4	5	6

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Installation of a condensate drain

Point of discharge from each drain line shall be located so the release of condensate does not cause a nuisance, is readily discernible and incurs no risk of building damage. There shall be no tap, valve or other restrictions in any line. Each line shall fall continuously from the valve to the approved point of discharge.

Drain lines shall not discharge into a storage water heater safe tray. The end of the condensate drain line shall be:

- Not lower than 200 mm, or higher than 300 mm above an unpaved surface; or
- Not lower than 75 mm, or higher than 300 mm above a gravel pit, and not less than 100 mm in diameter in a paved surface.

Where discharging over a tundish or gully trap, drain lines shall have an air gap of a size at least twice the diameter of a drain line.

Joining of condensate drain lines

Condensate drain lines from multiple water heaters may be joined together provided they conform with the installation requirements stated on this page.

Common stack discharge

Where individual heaters are installed in a multistory building, the condensate drain lines may discharge into a common stack subject to the following:

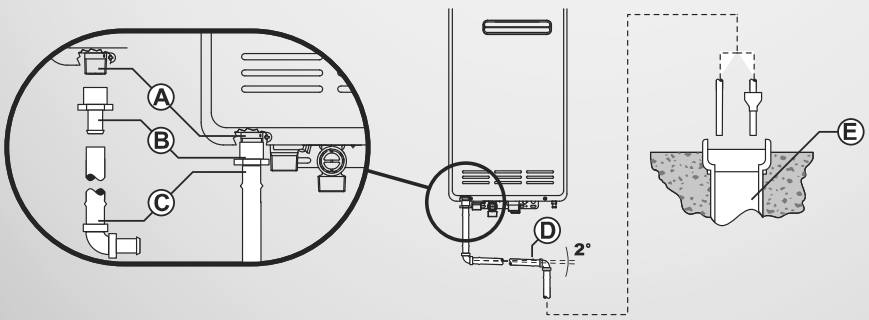
- Drained to a tundish having a discharge line that is not less than the common stack, directly connected to a fixture trap, and installed in a connection with any adjacent soil or waste stack.
- Discharge point of the common stack is readily visible and does not cause any nuisance.
- Common stack is vented by extending the pipe upwards, above the roof level.

Tundish drain lines

The drain line from any tundish shall be not less than DN 20 or less than one size larger than that of the largest drain line discharging into the tundish. Tundish drain lines shall comply with the installation requirements above.

Areas subject to freezing

In areas where water pipes are prone to freezing, the drain pipe from any valve shall be insulated and not exceed 300 mm in length. It shall discharge into a tundish through an air gap of not less than 75 mm and not exceed more than 150 mm measured from the outlet of the drain pipe to the rim of the tundish.



Controllers - general information

Water controllers are available as an optional extra. Universal (Compact), Deluxe, and Wireless controllers can be used together.

Maximum number of controllers

A maximum of four water controllers can be fitted with the following limitations:

- Max. of one Kitchen Deluxe controller (MV-100V)
- Max. of two Bathroom Deluxe controllers (BC-100V)

Only one controller can be set to deliver 55 °C, this cannot be a Bathroom Deluxe controller.

This next section refers to wired controllers. For details on wireless controllers refer to separate instructions.

Important

Others manufacturers' controllers are not compatible with Rinnai Infinity continuous flow water heaters.

Installation of controllers

Do not install controllers:

- near a heat source such as, a cook top, stove or oven—heat, steam, smoke, or hot oil may cause damage
- in direct sunlight
- outdoors unless protection from dust ingress and sunlight are provided
- against a metal wall unless in accordance with AS3000

Positioning

Controllers must be installed in shaded and clean locations. They should be fitted out of reach of children (suggested height 1.5 m). The Compact and Bathroom Deluxe Controllers are water resistant, however, durability is improved when positioned outside the shower recess or at least 400 mm above the highest part of a sink, basin or bath.

Water controller cables

Water controllers operate at extra low voltage (12 Volts DC) which is supplied from the water heater. Controllers come with 15 m of electrical cable. The appliance end of the controller cables are fitted with spade terminals.

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Extension cabling is available as an accessory from Rinnai. Alternatively, a two core sheathed (double insulated) flex with a minimum cross sectional area of 0.5 mm^2 may be used.

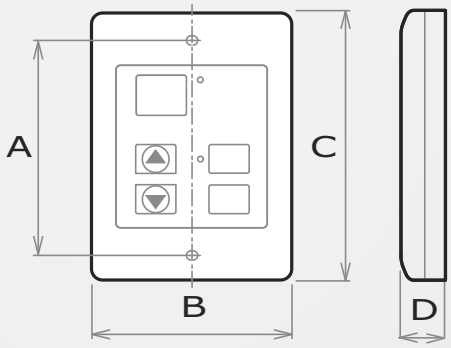
Maximum individual cable runs:

One controller	= 100 m
Two controllers	= 50 m*
Three plus controllers	= 20 m*

* per controller

Water controller cables are not polarity sensitive.

Dimensions



Dim.	Description	Compact (MC-91)	Kitchen Deluxe (MC-100V)	Bathroom Deluxe (BC-100V)
A	Distance between mounting holes	83	83	181
B	Width	90	128	195
C	Height	120	120	97
D	Depth	20	20	22

Controllers - Universal (Compact)

Fitting the Universal (Compact) controller

1. Determine the most suitable position for the controller.

2. Drill three holes as shown (Fig. 1 and Fig. 2) for securing screws and one to provide cable access.

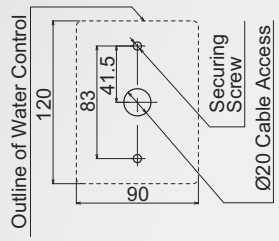


Fig.1

3. When running cable through the access hole ensure the connector and the end of the cable is located nearest to the controller (Fig. 2).

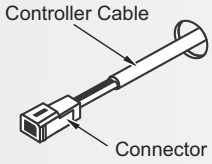


Fig.2

4. Carefully remove the face plate from the controller using the screwdriver (Fig. 3).

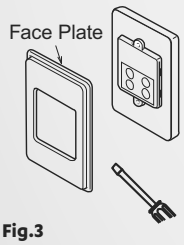


Fig.3

5. Fix the controller to the wall using appropriate fittings as shown (Fig. 4).

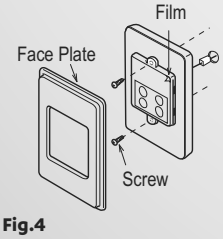


Fig.4

6. Remove protective plastic from the controller face as shown (Fig. 4) and replace the face plate.

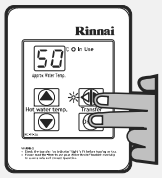
Optional programming of the Universal controller

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Step one

Are four controllers connected? If NO—refer to step two. If YES, activate the fourth controller as follows.

1. For the controller in the kitchen only, press and hold the 'Transfer' and 'On/Off' buttons simultaneously until a beep is heard (approximately five seconds).



2. Check display on all four controllers is displaying a temperature when switched on. If any controller displays two dashes, repeat above step.



Step two

1. For the controller in the kitchen only, press and hold the 'Transfer' and 'On/Off' buttons simultaneously until a beep is heard (approximately five seconds).

2. When the controller fitted in the kitchen is switched on it will be possible to select temperatures higher than 50 °C (at this controller). If not repeat above step.

If the kitchen controller is swapped repeat the programming procedure.

Controllers - Kitchen Deluxe

Installation

1. Determine the most suitable position for the controller.

2. Use the wall mounting bracket as a template to mark and drill three holes, locating the cable access hole as shown.

3. Fix the mounting bracket to the wall using the appropriate fixings.

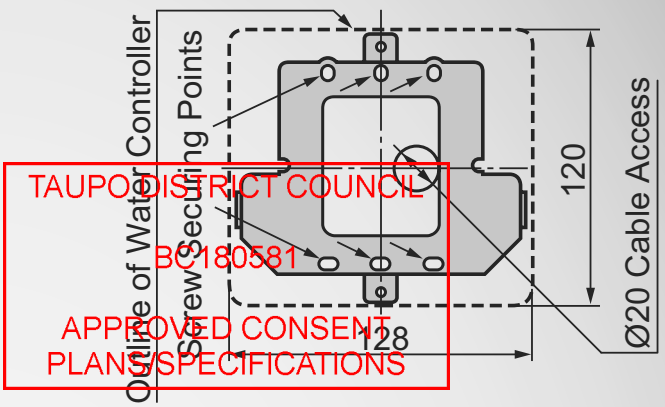
4. Run the water controller cable through the hole in the wall.

5. Carefully remove the face plate from the controller using a screwdriver as shown.

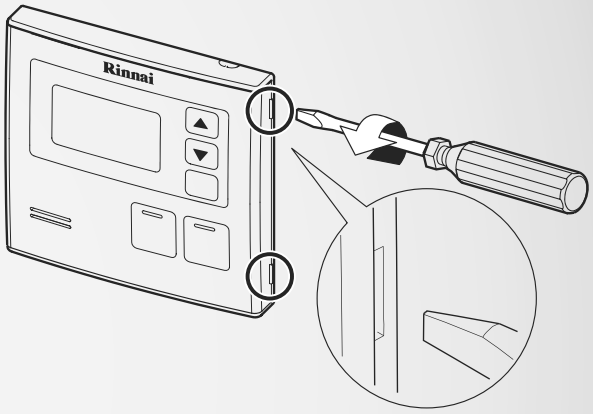
6. Connect the controller cable to the kitchen water controller. At this point cables from other controllers (if fitted) may also be connected to the kitchen water terminals, eliminating the need for multiple cable runs directly to the water heater. Feed excess cable lengths into the wall cavity to avoid pinching of cables between the wall and the water controllers.

7. Fasten water controllers to wall mounting bracket. Avoid the use of impact drills and over-tightening of fixings as this may damage the controllers.

8. Remove the protective plastic from the controller face and replace the face plate.



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Controllers - Bathroom Deluxe

Installation

1. Determine the most suitable position for the controller.

2. Mark and drill three holes, locating the cable access hole as shown (Fig.1).

3. When running a cable through the access hole ensure the connector end of the cable is located nearest to the controller (Fig.2).

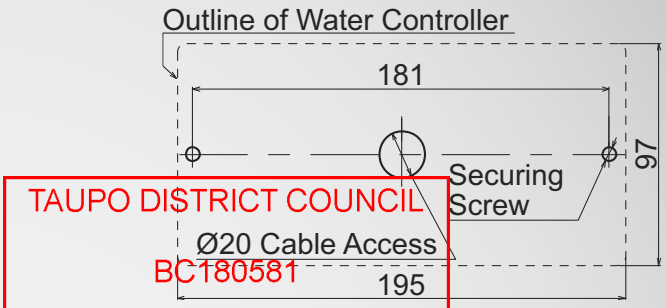
4. Affix the double sided self-adhesive seal to the back of the controller (Fig.3).

5. Carefully remove the face plate from the controller. Do this by placing your thumbs on the front digital display while hooking your fingers behind the top plate and gently push down as shown (Fig.4). Do not use a screwdriver as this may damage the controller.

6. Connect the cable to the bathroom controller. Feed excess cable lengths into the wall cavity to avoid pinching of cables between the wall and the controller.

7. Fix bathroom controller to the wall using appropriate fixings. Avoid the use of impact drills and over-tightening of fixings as this may damage the controller.

8. Remove the protective plastic from the controller face and replace the face plate.



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Fig.1

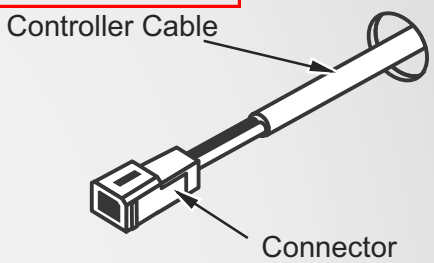


Fig.2

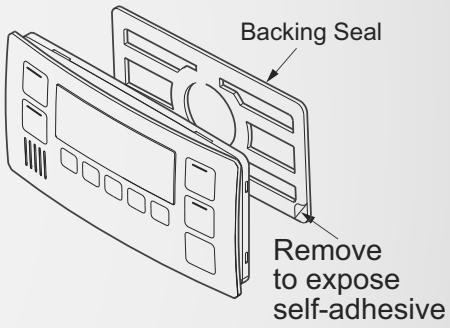


Fig.3

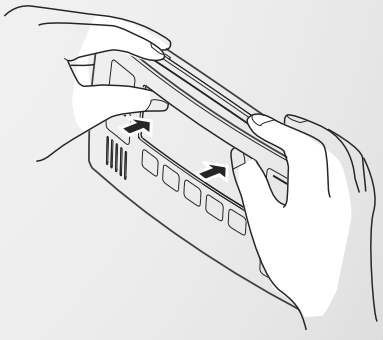


Fig.4

Controllers - communication cables

Communication cables connect the water heater to the water controllers and operate at an extra low voltage (12 Volts DC) which is supplied from the water heater. Communication cables are supplied with the water controllers (15 m) and are fitted with spade terminals for connection to the water heater.

Up to two cables can be connected to the cable connector at the water heater. Extension cables are available from Rinnai. Alternatively two core sheathed (double insulated) flex with a minimum cross sectional area of 0.5 mm^2 may be used (refer maximum individual cable lengths on p. 15).

CAUTION Do not attempt to connect cables to the cable connector at the water heater unless the electric power supply to the water heater is switched off otherwise damage to electrical components may occur.

To connect up to two cables to the cable connector

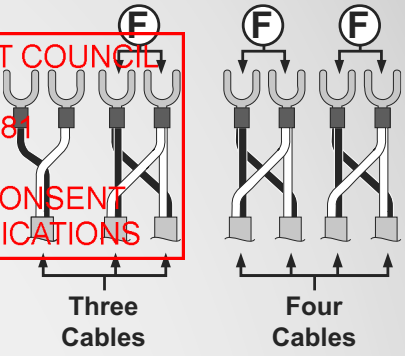
1. Turn off power supply and unplug water heater from the power point.
2. Remove retaining screw of the cable connector at the base of the appliance.
3. Swing the cable connector door open. Thread the cable through the weather seal of the cable access hole (B) in the direction shown allowing sufficient cable length so the cable sheath can be secured with the cable clamp (C) supplied with the transceiver.
4. Loosen screw terminals (D) and (E) and connect cable spade connectors to these terminals and re-tighten. Polarity is not important, either wire colour can be connected to either terminal.
5. Return the cable connector to the original position taking care not to damage cable wires in the process and replace the retaining screw.

Connecting three to four controllers

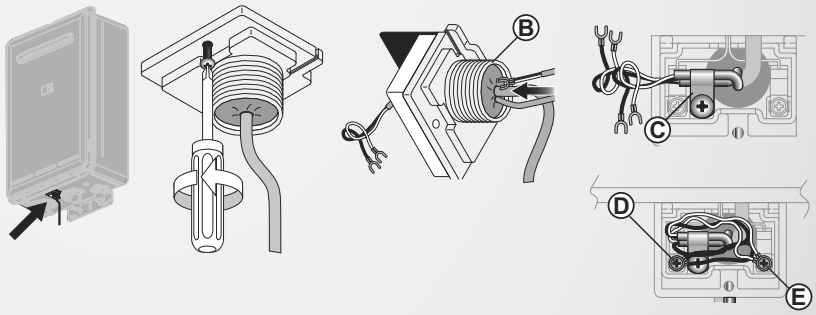
1. Repeat steps 1-3 for connecting up to two controllers.
2. To connect three to four controllers, separate all the cables to be fitted into pairs. Cut off the existing spade connectors from each pair and re-terminate each pair into a new spade connector (F) so there are only two sets of spade connectors. Four spade connectors in total to be terminated.
3. Repeat steps 4 and 5 for connecting up to two controllers.

Spade connectors are available from your local electrical supplier.

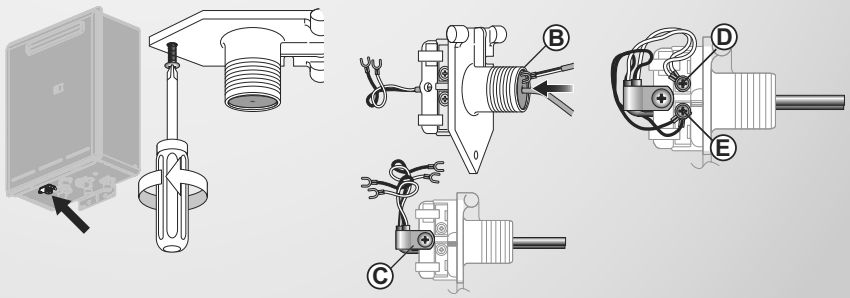
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Cable connector for VT26, VT24, VT20, and VT16



Cable connector for HD250, HD200, HDi200, and EF models



Commissioning

WARNING The appliance operation must be tested after installation. Ensure building occupants do not have access to the hot water outlets during this procedure.

Testing

1. Before final connection of the water heater, purge the gas and hot and cold water supply lines. Swarf in the gas or water supplies may cause damage.
2. Turn on the gas and water supplies and test for leaks (gas and water) near the unit.
3. Isolate gas supply. Remove test point screw located on the gas inlet and attach pressure gauge.
4. Turn the power on at the power point socket and turn on the gas.
5. If water controllers are fitted ensure they are on. Select the maximum delivery temperature and open all available hot water taps including the shower. If water controllers are not fitted, open all available hot water taps.
6. Operate all other gas appliances at their maximum gas rate.
7. With all gas appliances operating on maximum, the pressure should read between 1.0-3.5 kPa (NG) or 2.75-3.5 kPa (ULPG). If the pressure is lower, the gas supply is inadequate and the appliance will not operate to specification. It is the responsibility of the installer to check the gas meter, service regulator and pipe work for correct operation and sizing. The gas regulator on the appliance is electronically controlled and factory preset. Under normal circumstances it does not need adjustment during installation.
8. Close all hot water outlets.
9. Inspect and clean the strainer located on the cold water inlet connection. This may need to be repeated to ensure the strainer remains clear, especially on new installations.
10. If water controllers are fitted, it is necessary to test their operation through the complete range of functions (refer operation guide).
11. Confirm hot water delivery temperatures using a thermometer. If controllers are fitted, ensure temperatures exceeding 55 °C cannot be selected on bathroom controllers.
12. After testing is completed, explain to the customer how to operate the water heater and water controllers (if fitted). Ensure your details are entered in the customer operation guide (Installer details).

Gas pressure setting

The gas regulator on the appliance is electronically controlled and factory preset. Under normal circumstances it does not need adjustment during installation. Make adjustments only if the unit is not operating correctly and all other causes for incorrect operation have been eliminated. Instructions for gas pressure setting are in the instruction pocket located inside the appliance front cover.

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Commissioning checklist

Commission the unit in accordance with the Commissioning Checklist supplied with the appliance (inside front cover of appliance). Ensure you leave the completed checklist with the customer.

If the appliance can not be adjusted to perform correctly call 0800 RINNAI (0800 746 624) for assistance.

Recommended solar system layout

Rinnai continuous flow water heaters configured for solar systems produce hot water at 75 °C and are not suitable for use with water controllers. The household water supply MUST be protected by a suitable tempering valve.

Installation

Rinnai continuous flow water heaters in solar installations are only suitable as gas boosters in solar hot water systems. These models produce water at higher than normal temperatures and must be connected to the hot water supply by use of a suitable tempering valve.

Install a Rinnai continuous flow water heater using a flow diversion valve as shown. Remember 'B to Boiler' when setting up the flow diversion valve.

The water heater must be set to 75 °C (refer dip switch settings on following pages).

Rinnai water controllers cannot be used with Rinnai Infinity solar units as the hot water does not always pass through the Rinnai Infinity, and the Rinnai Infinity dip switch setting of 75 °C is unable to be adjusted.

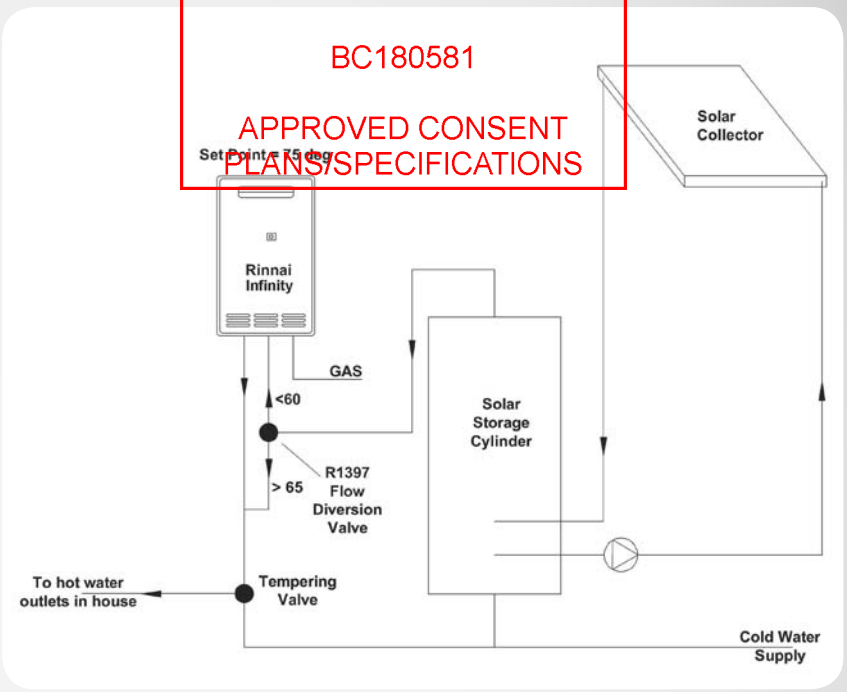
System configuration to protect for Legionella

If the system is configured according to the details above it will meet the requirements of the Acceptable Solution G12/AS2 for protection against Legionella. Section 3.5.2 states:

b) the instantaneous water heater must heat all water passing through it to not less than 70 °C.

Recommended system layout using a Rinnai Continuous Flow water Heater and Flow Diversion Valve

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DIP switch settings

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DIP switch settings - important

DIP switch settings must only be changed by a licensed gasfitter. They have been provided as there may be a requirement to change the temperature of the water delivered from the water heater.

WARNING Care must be taken when changing the temperature settings as the DIP switches are small and can be easily switched or bumped into the wrong position. Please use this information carefully and fully check the operation of the water heater before leaving site including the temperature of the water delivered.

The cover of the water heater will need to be removed to carry out this operation. As this will expose live mains voltage wiring **please disconnect the power supply before removing the front cover**.

We wish to draw your attention to the requirements of the New Zealand Building Code and compliance document G12. This requires that water delivered to sanitary fixtures be no more than 55 °C. Increasing the water heater set temperature will therefore require that you protect all sanitary fixtures to which the appliance is plumbed with suitable tempering valves or similar.

Rinnai will accept no liability for issues arising out of the use of this DIP switch information.

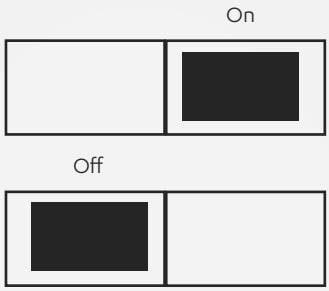
If you have any doubts about the performance of the water heater please contact Rinnai by phoning 0800 TO RINNAI (0800 86 746 624).

The setting of water temperatures in domestic model Infinity units (white cases) to greater than 55 °C (with the exception of units set to 75 °C in domestic solar installations) will reduce the warranty period. Refer to warranty information in the Operation Guide for further information.

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The following pages detail DIP switch settings for the specific Rinnai continuous flow water heaters listed. They ARE NOT applicable for older models.

Legend for DIP switch settings
(black indicates position of switch)



Short and long flues

Reference to what is a short and long flue can be found on page 8.

DIP switch settings



Applicable models and REU numbers

Rinnai Infinity VT16	External	REU-VR1620WG
Rinnai Infinity VT20	External	REU-VR2024WG
Rinnai Infinity VT24	External	REU-VR2426WG
Rinnai Infinity VT26	External	REU-VR2626WG
Rinnai Infinity EF24	External	REU-K2430WG

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DIP switch 1: Upper SW (8P)

SW No.	Note						
1		Off					
2	Fixed temperature (with controllers)	Off	Fixed temperature			On	With controllers
3 4 5	Temperature settings	See Chart A					
6		Off					
7	Gas pressure	Off	Normal	On	Forced min.	On	Forced max.
8		Off		Off		On	

Chart A: Temperature settings

DIP. SW.1-SW No. (8P)			SW No. 2 = Off (fixed temperature)	SW No. 2 = On (with controllers)	
3	4	5	No controllers (fixed temp.)	No controllers (fixed temp.)	With controllers (max. set temp.)
Off	Off	Off	55	55	55
On	Off	Off	75	55	75
Off	On	Off	65	55	65
On	On	Off	60	55	60
Off	Off	On	50	50	50
On	Off	On	42	42	42
Off	On	On	not to be used	40	40
On	On	On	not to be used	55	75

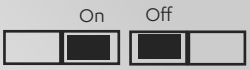
DIP switch 2: Lower SW (4P)

SW No.	Note				
1	Gas type	Off	ULPG	On	NG
2,3,4	Model settings	See Chart B			

Chart B: Model settings

DIP. SW.2-SW No. (4P)			Model (REU-number)
2	3	4	
Off	Off	Off	VT26 (VR2626WG) and EF24 (K2430WG)
Off	On	Off	VT24 (VR2426WG)
Off	Off	On	VT20 (VR2024WG)
Off	On	On	VT16 (VR1620WG)

DIP switch settings



Applicable models and REU numbers

Rinnai Infinity HD200	External	REU-VRM2632WC
Rinnai Infinity HDi200	Internal	REU-VR2632FFUG
Rinnai Infinity HD250	External	REU-VR3237WG

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DIP switch 1: Upper SW (8P)

SW No.	Note							
1	HDi200	Flue setting	Off	Long flue (p. 8)			On	Short flue (p. 8)
	HD200, HD250	Model setting	Off					
2	Fixed temperature (with controllers)		Off	Fixed temperature			On	With controllers
3 4 5	Temperature settings		See Chart A					
6			Off					
7	Gas pressure		Off	Normal	On	Forced min.	On	Forced max.
8			Off		Off		On	

Chart A: Temperature settings

DIP. SW.1-SW No. (8P)			SW No. 2 = Off (fixed temperature)	SW No. 2 = On (with controllers)	
3	4	5	No controllers (fixed temp.)	No controllers (fixed temp.)	With controllers (max. set temp.)
Off	Off	Off	55	55	55
On	Off	Off	75	55	75
Off	On	Off	65	55	65
On	On	Off	60	55	60
Off	Off	On	50	50	50
On	Off	On	42	42	42
Off	On	On	85, 95[1]	40	40
On	On	On	85	55	75

[1] 95 °C setting only available for HD250 model

DIP switch 2: Lower SW (4P)

SW No.	Note				
1	Gas type	Off	ULPG	On	NG
2,3,4	Model settings	See Chart B			
5,6	Not in use	Off			

Chart B: Model settings

DIP. SW.2-SW No. (4P)			Model (REU-number)
2	3	4	
Off	Off	Off	HD250 (VR3237WG)
Off	Off	On	HD200 (VRM2632WC)
Off	On	On	HDi200 (VR2632FFUG)

DIP switch settings



Applicable models and REU numbers

Rinnai Infinity EF250	External	REU-KM3237WD
Rinnai Infinity EFi250	Internal	REU-KM3237FFUD

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DIP switch 1: Upper SW (8P)

SW No.	Note							
1	Flue settings	Off	EF250 Ext & EFi250 Int long flue (p. 8)			On	EFi250 Internal short flue (p. 8)	
2	Fixed temperature (with controllers)	Off	Fixed temperature			On	With controllers	
3 4 5	Temperature settings	See Chart A						
6	Not in use	Factory setting is 'Off'						
7	Gas pressure	Off	Normal	On	Forced min.	On	Forced max.	
8		Off		Off		On		

Chart A: Temperature settings

DIP. SW.1-SW No. (8P)			SW No. 2 = Off (fixed temperature)	SW No. 2 = On (with controllers)	
3	4	5	No controllers (fixed temp.)	No controllers (fixed temp.)	With controllers (max. set temp.)
Off	Off	Off	55	55	55
On	Off	Off	75	55	75
Off	On	Off	65	55	65
On	On	Off	60	55	60
Off	Off	On	50	50	50
On	Off	On	42	42	42
Off	On	On	95	40	40
On	On	On	85	55	75

DIP switch 2: Lower SW (4P)

SW No.	Note				
1	Gas type settings	Off	ULPG	On	NG
2		Off		Off	
3	Type settings	Off	External	Off	Internal
4		Off		On	
5	Automatic return	Off	Inactive	On	Active
6	External device	Off	S-BMS	On	AH

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Fireplace and Installation Information

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escea.

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Installation / Service Instructions

DL850 / DL1100

Gas Fireplaces

For the latest documentation, visit www.escea.com

630241_8

Important:

The appliance shall be installed in accordance with;

- This installation instruction booklet
- Local gas fitting regulations
- Municipal building codes
- Electrical wiring regulations
- Any other relevant statutory regulations.
- AS/NZS 5601:2010 Gas Installations

WARNING:

This appliance must be installed by a qualified person.

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Do not modify this appliance.

This appliance is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.

Young children should be supervised to ensure that they do not play with the appliance.

Failure to follow these instructions could cause a malfunction of the heater, which could result in death, serious bodily injury, and/or property damage. Failure to follow these instructions may also void your fire insurance and/or warranty.

Who can install this product:

Installation must be carried out by a registered installer who, on completion of the installation, must issue a:
AUS: Certificate of Compliance
NZ: Certificates that comply with the latest legislation
in accordance with national and/or local codes. If these are not issued then the Escea warranty may be void.

Warranty Repair and Annual Servicing:

Warranty repair work must be carried out by a recognised Escea Gas Fire Technician. It is recommended that recognised Escea Gas Fire Technicians are also used to carry out annual servicing requirements (particularly during the warranty period). For contact details of recognised Escea Gas Fire Technicians in your area, please contact the retailer from whom the appliance was purchased.

The heater must be installed according to these instructions and in compliance with all relevant building, gas fitting, electrical and other statutory regulations (eg. AS/NZS 5601). Any shortcomings in the appliance and flue installation will be the responsibility of the installer, and Escea will not be accountable for any such failings or their consequences.

Manufactured by: Escea Ltd, PO Box 5277 Dunedin NZ, Ph: +64 3 478 8220
For contact details of your local escea distributor or dealer please visit:

www.escea.com info@escea.com

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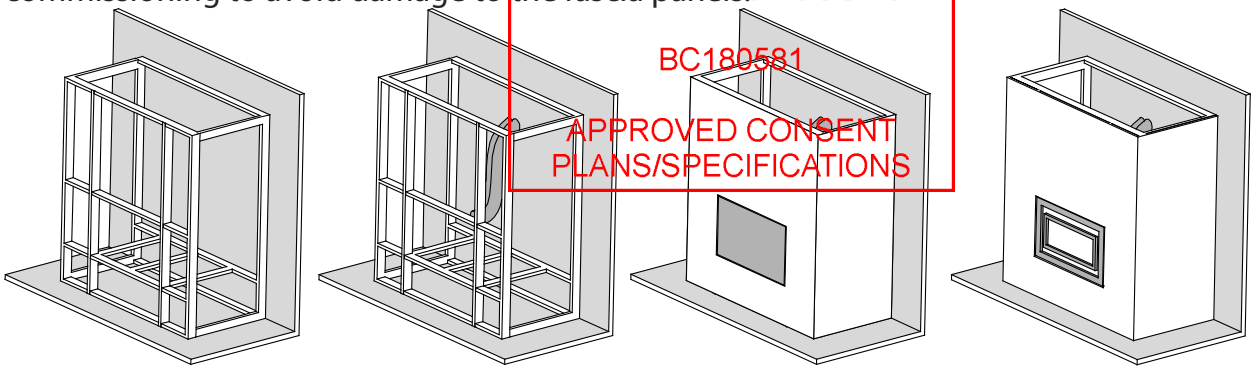
A Installation Process and Product Description

A1 Recommended Installation Process:

The following diagram illustrates the steps required to install your gas fire..

The sequence in which you choose to do these tasks will vary depending on your individual scenario. Please read these instructions fully before proceeding with the installation. Leave the installation of the fascia panels until the very end of the installation and commissioning to avoid damage to the fascia panels.

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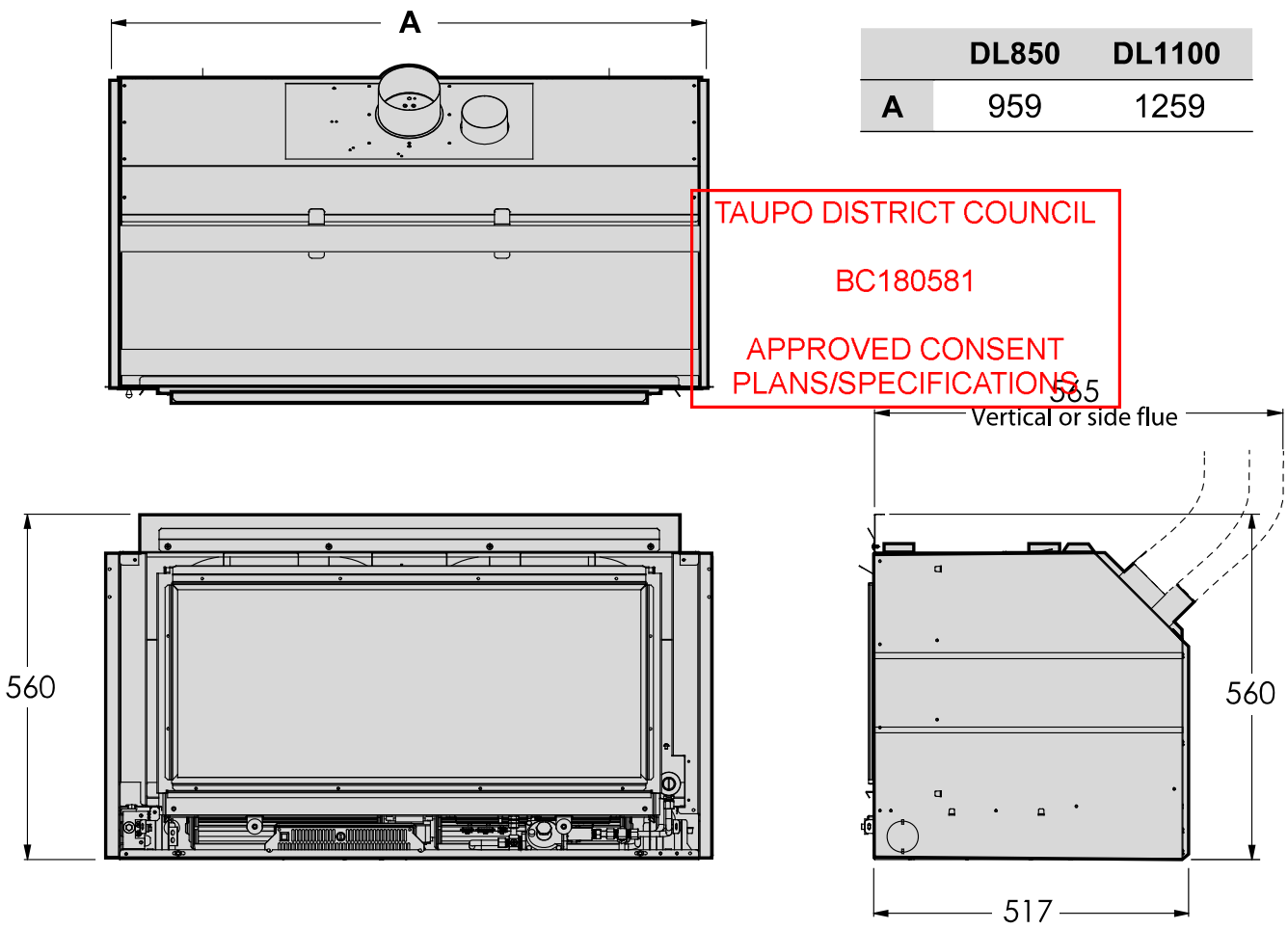
Create the Cavity	Install electrical / gas connections and flue system	Install appliance and finish cavity	Finish installation, fit fascia and test appliance
Section B	Section C, D	Section E	Section F

A2 Product Description:

The Escea DL series gas fire is a room sealed gas appliance designed to be built into a cavity. These appliances are flued using co-linear flexible aluminium flue (with PolyPro flue extensions in some installations) connected to a powerflue.
The user will control their fire with the Radio Frequency (RF) remote that will normally be left in its wall mount cradle. In addition to the RF remote the appliance has a single auxiliary On/Off button on the unit. When not in operation it is in a standby mode unless it is physically isolated from the mains supply.

A3 Product Dimensions:

All dimensions are in mm



	DL850	DL1100
A	959	1259

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B Creating the Cavity

B1 Cavity Shape:

The DL850/DL1100 is suitable for both timber framed and masonry cavities.
The cavity shape is dependant on two things:

-The flue configuration (section B2)

-The fascia (section B4)

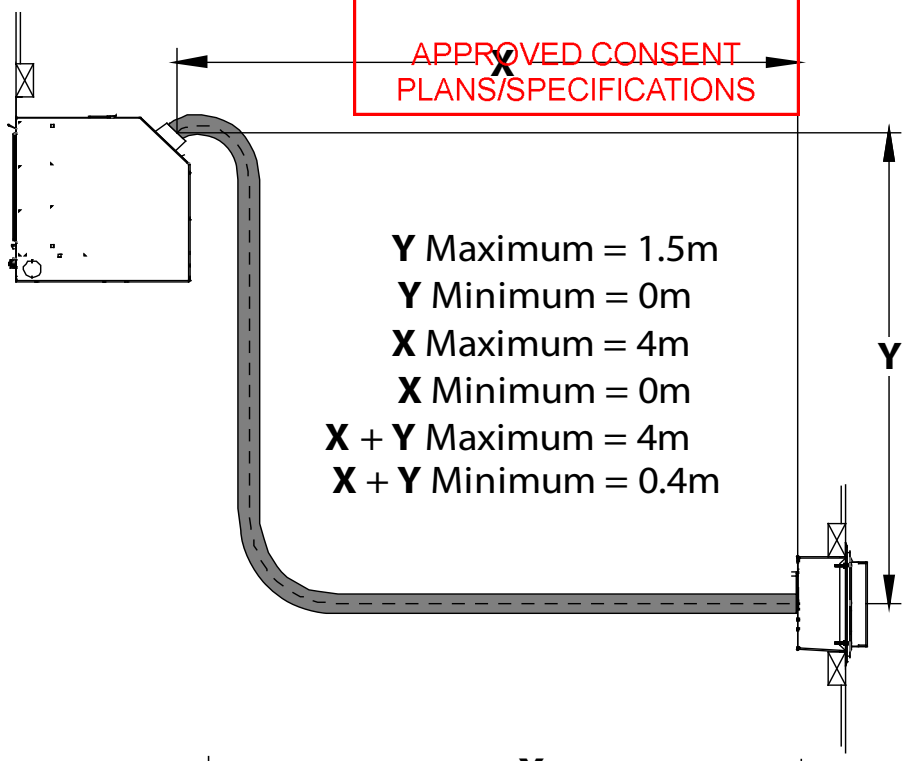
B2 Flue Configuration (If less than 4m flue length is required):

If your flue system is less than 4m long (as shown in diagrams below), then a simple aluminium flexible flue is required. If you wish to install a longer flue run, up to 12m, see section B3.

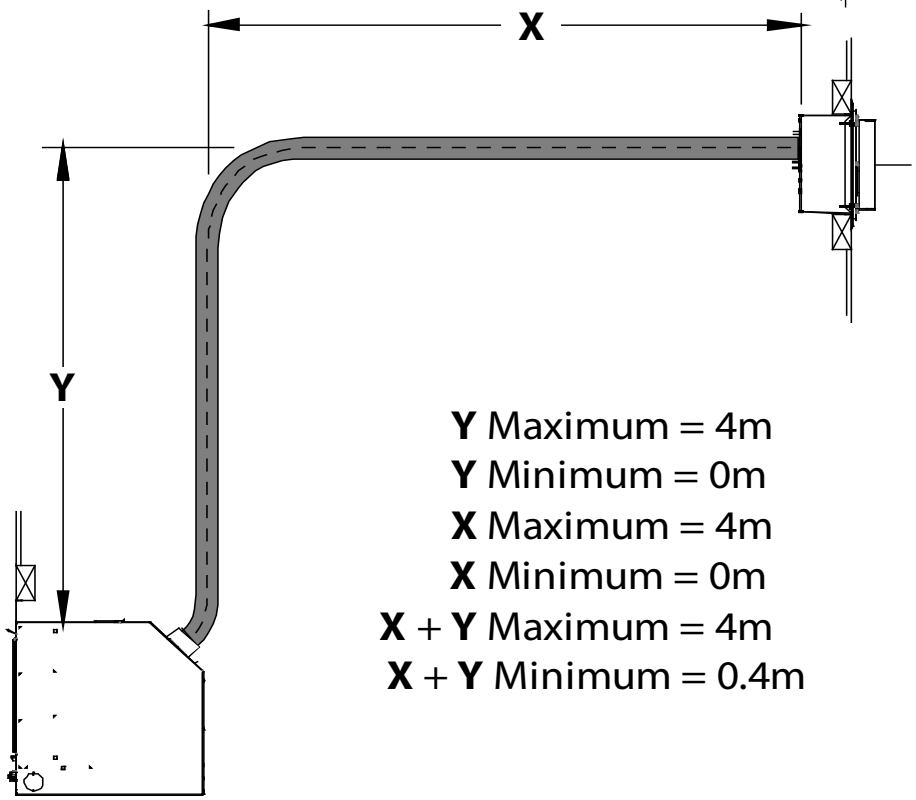
Horizontally Terminated: *(utilises the escea horizontal power flue enclosure kit)*

The horizontal offset of the terminal can be any amount up to the total flue length listed below. Please consult with Escea's technical staff if your intended flue configuration steps outside of the bounds of the flue configurations shown below.

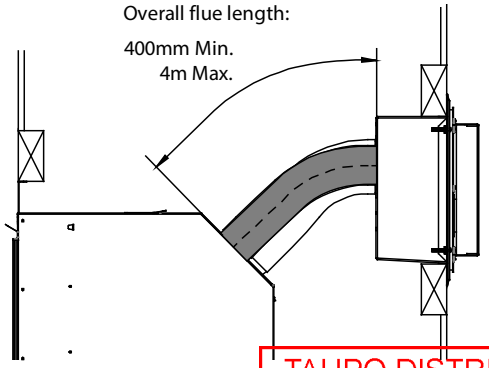
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Y Maximum = 1.5m
Y Minimum = 0m
X Maximum = 4m
X Minimum = 0m
X + **Y** Maximum = 4m
X + **Y** Minimum = 0.4m



Y Maximum = 4m
Y Minimum = 0m
X Maximum = 4m
X Minimum = 0m
X + **Y** Maximum = 4m
X + **Y** Minimum = 0.4m



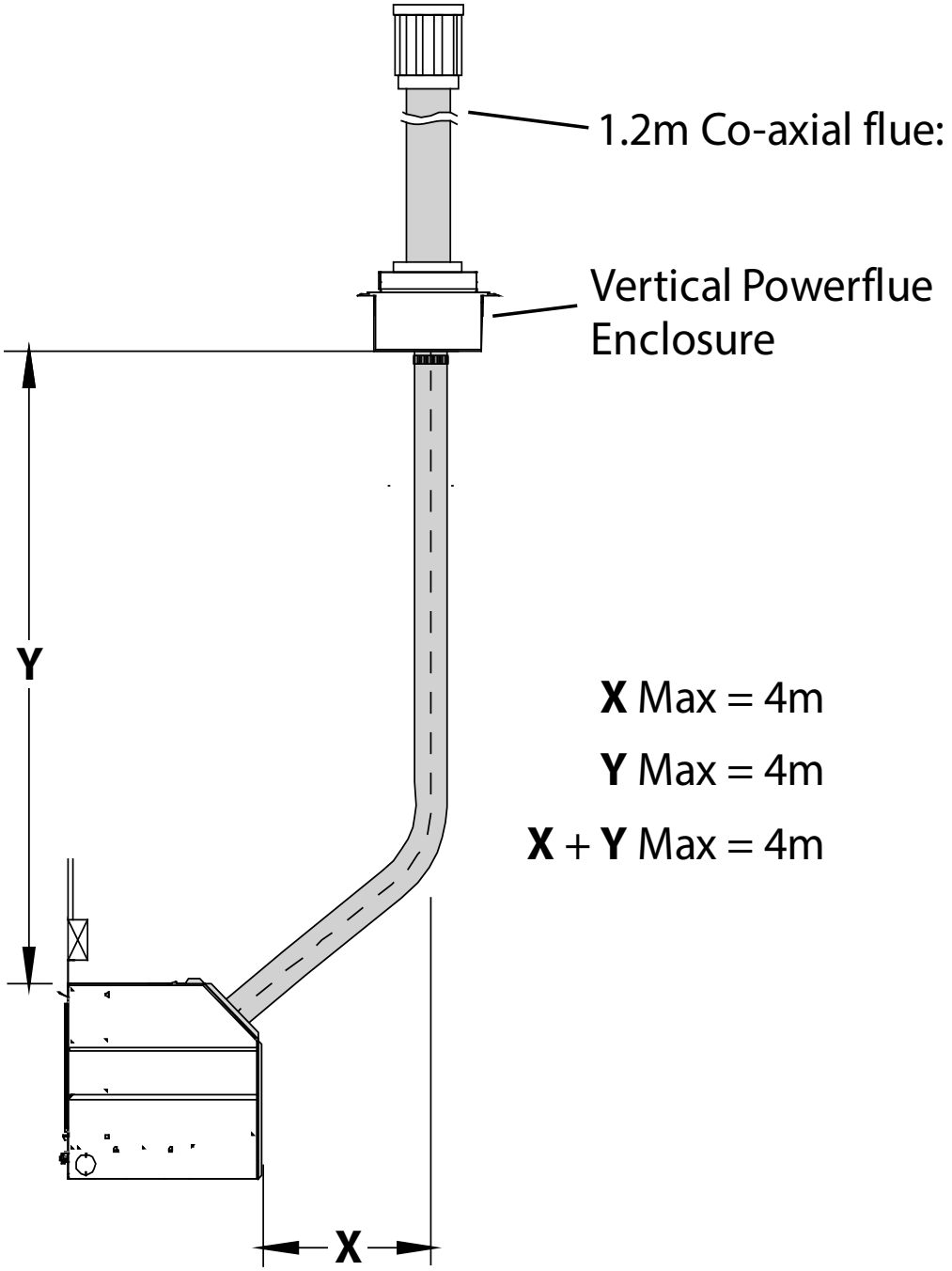
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Vertically Terminated:

(utilises the escea vertical power flue enclosure kit)

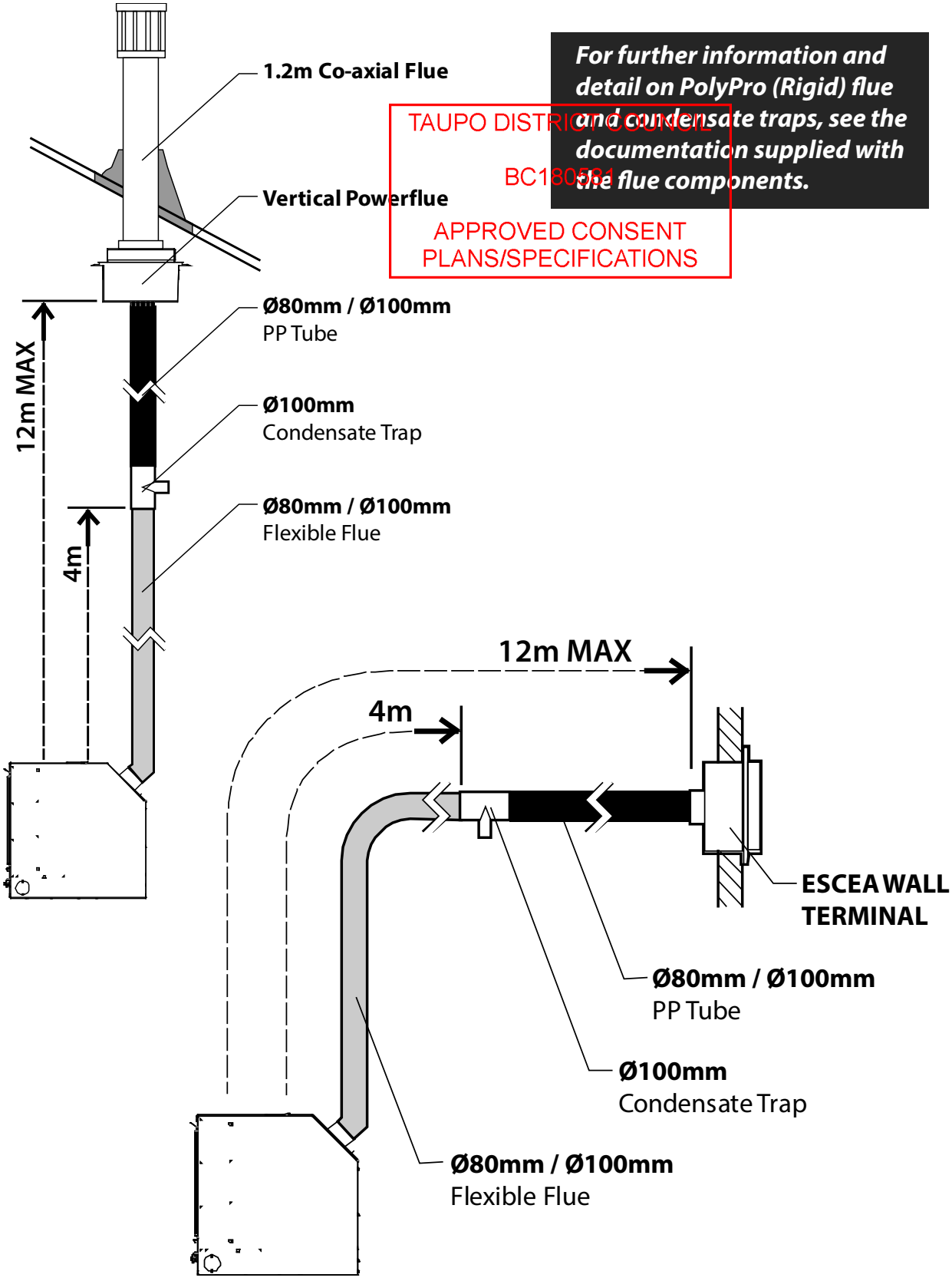


B3 Flue Configuration (If more than 4m flue length is required):

If your flue system is greater than 4m long (as shown in diagrams below), then a flexible flue with condensate trap and rigid PP tube flue lengths is required.

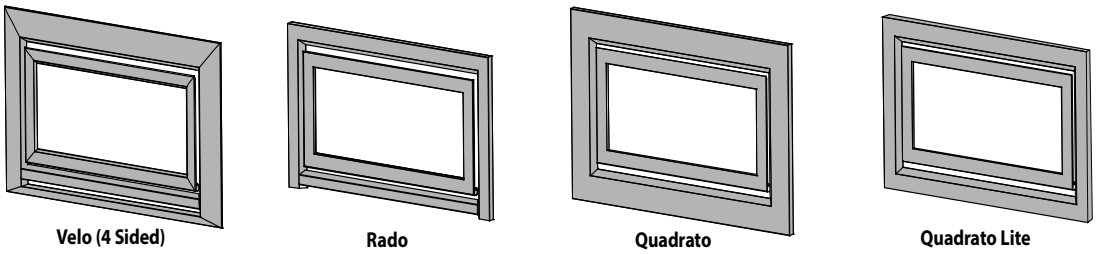
For further information and detail on PolyPro (Rigid) flue and condensate traps, see the documentation supplied with the flue components.

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B4 Fascia:

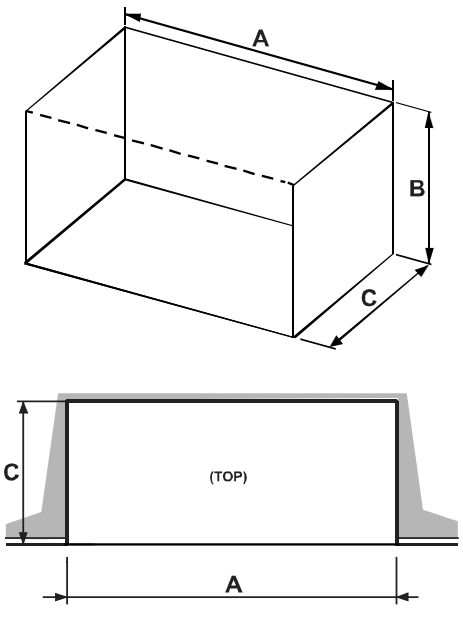
The cavity shape is dependent on the fascia type. There are four fascia types available with the DL850 and DL1100:



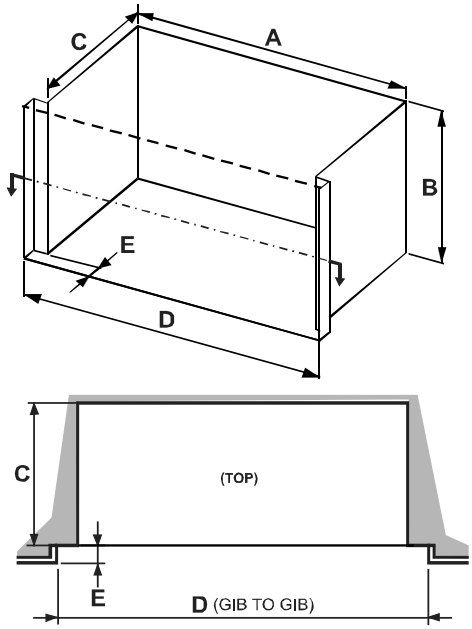
The **Velo**, **Quadrato** and **Quadrato Lite** fascias sit proud of the finished wall surface and have a simple cavity shape. The cavity may be constructed from combustible materials. The **Rado** fascia sits flush with, or inset from, the finished wall surface and has a more complex cavity shape. ***The cavity framing and wall facing for a minimum of 300mm directly above the Rado fascia must be constructed from non-combustible materials.*** Please check the style of fascia before commencing the building of the cavity to the dimensions shown below. The cavity for Velo, Quadrato and Quadrato Lite fascias may be constructed from combustible timber framing materials. Note: It is not necessary to line the sides, top or back of the cavity.

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Cavity for Velo, Quadrato or Quadrato Lite Fascia

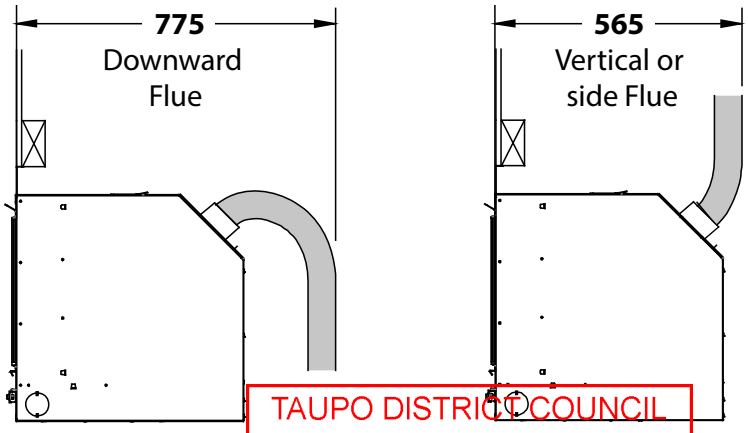


Cavity for Rado Fascia



Ideal Cavity Dimensions (mm):							
DL850:	**A**	**B** (min)	**B** (max)	**C** (min)	**D**	**E** (min)	**E** (max)
Velo / Quadrato / Quadrato Lite	965	560	575	565	-	-	-
Rado	965	585	590	565	995	30	130
DL1100:							
Velo / Quadrato / Quadrato Lite	1265	560	575	565	-	-	-
Rado	1265	585	590	565	1295	30	130

NOTE: The final cavity size and shape should account for the flue direction as shown on following page.



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B5 Cavity Base:

This appliance MUST be fully supported on its base. The base must extend over the entire area of the underside of the appliance. The base must also be levelled to prevent vibration from possible fan imbalance. The base of the cavity must be strong enough to support the total product weight, which is approximately 65kg (DL850) and 80kg (DL1100), depending on fuel bed.

B6 Hearth:

The base of the appliance must be installed a minimum of 100mm off the floor, unless the appliance is being installed at floor level in which case a hearth is required, made from non-combustible material and must extend no less than 300mm from the front of the fire. This hearth should be at least as wide as the fire's outer fascia and no less than 10mm thick. Raised hearths can be any size but must also be constructed from non-combustible materials.

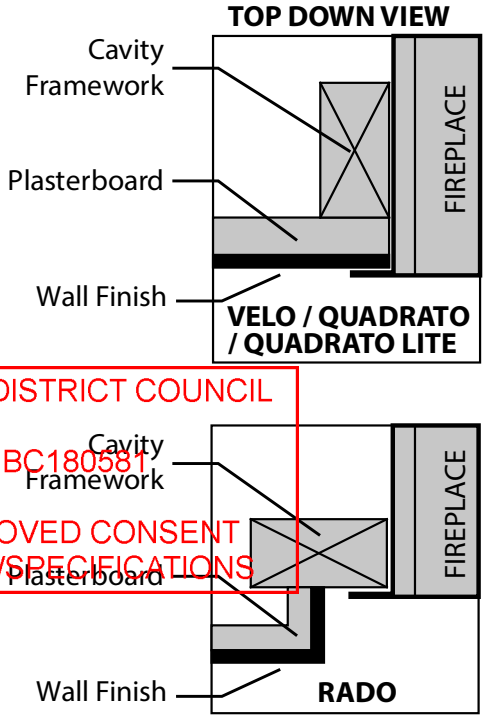
QUADRATO or QUADRATO LITE FASCIA ONLY: The fascia must not be installed flush against a hearth as the fireplace draws air from the lower surface of the fascia. As such the fascia must be raised a minimum of 25mm from a hearth.

The floor in front of this hearth will still get warm so if the floor covering is vinyl, nylon carpet or another heat sensitive material then we recommend extending the hearth to 450mm from the fire. A raised hearth can be of any size but must be constructed from non-combustible materials. ***NOTE:*** *If the hearth is to be covered with tiles or some other veneer then the fire must be installed so that the base of the appliance is level with the finished top surface of the hearth.*

B7 Wall Linings:

The front mounting flanges of the appliance must be on top of the finished wall surface in order for the fascia panels to mount properly. Take into account any plaster board, tiles or any other finishing surface that may be intended for the finished wall surface. Wall finishing materials must not encroach upon the minimum cavity clearances given in section 2.2. The wall board that lines the outside of this opening can be normal dry wall (plaster board) and does not need to be non-combustible.

Note: The temperature of the wall lining directly above the heater does get warm and hence may discolour paint finishes that are susceptible to temperature damage or distort vinyl wall coverings. For durability of finishes and surfaces you should contact the relevant manufacturer for their specification.



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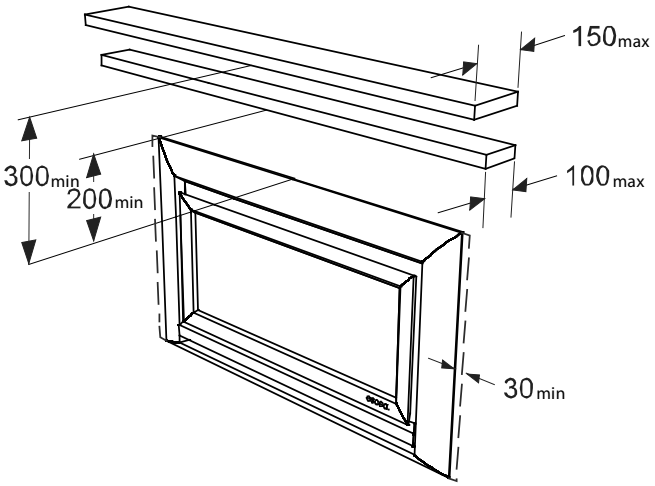
The cavity framing and wall facing for a minimum of 300mm directly above the Rado fascia must be constructed from non-combustible materials.

For more detail on cavity construction, view the "Drawings for Architects" in the technical section of the Escea website.

B8 Mantle Clearance:

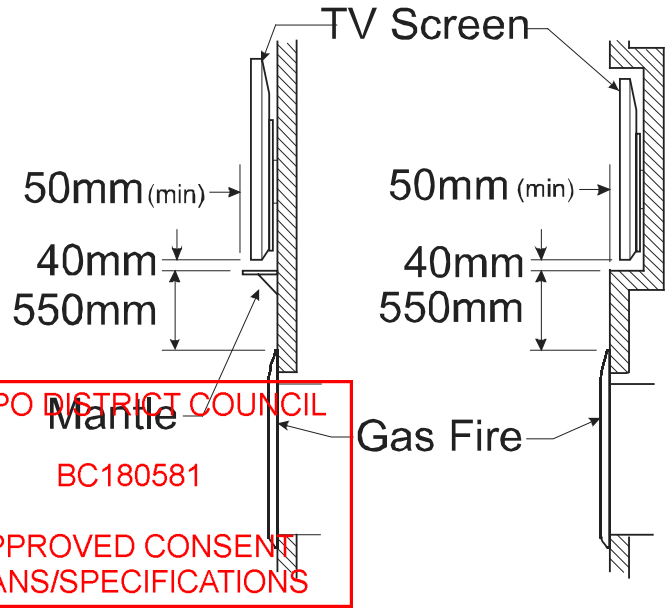
Please refer to the diagram to the right. Mantles or protruding ledges mounted above the heater that are made from combustible materials, must not extend outside of the dimensions shown.

Except for Rado fascias, maintain a 30mm clearance around the fascia to ensure ease of fascia removal. NB: No clearance is needed underneath Velo Three Sided or Rado Fascias



B9 Television Clearances:

The following are the recommended minimum clearances for the location of any electrical equipment (such as Plasma TV, LCD TV or home theatre) above an Escea DL Series gas fire. Use either a shelf or mantle below your TV screen or alternatively you can construct a recess to mount your TV screen into.

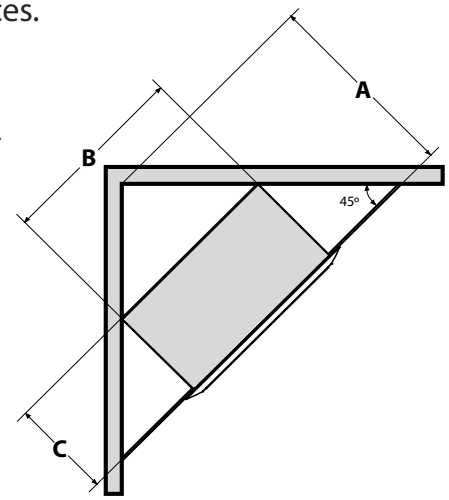


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Note: The above television clearance recommendations are to be treated as a suggestion of a suitable installation only. It is the responsibility of the end user to check the installation instructions of their electrical appliances to ensure that the location in relation to the gas fire is suitable. Escea in no way guarantees or takes responsibility that the above installation suggestion will be suitable for all electrical or home entertainment appliances.

B10 Corner Installations:

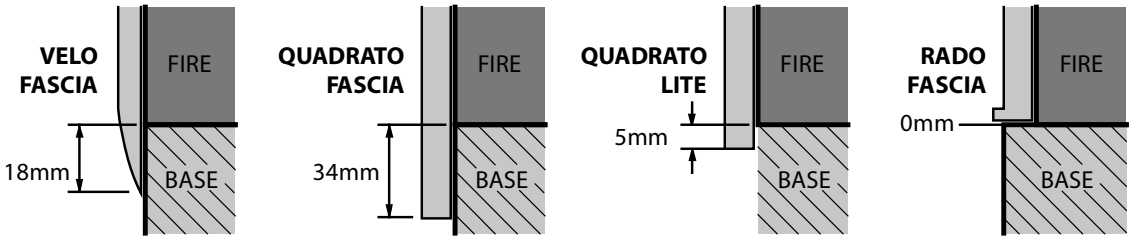
If a cavity is to be created in a corner, the following drawing gives the minimum sized interior wall dimensions.



Minimum corner install dimensions (mm):		
	DL850	DL1100
A	970	1145
B	960	1260
C	510	510

B11 Distance from Fireplace base to Fascia base:

The following side-on views show the measurement from the base of the fireplace to the base of the Fascia.



END OF SECTION B

By the end of this section, you should have:

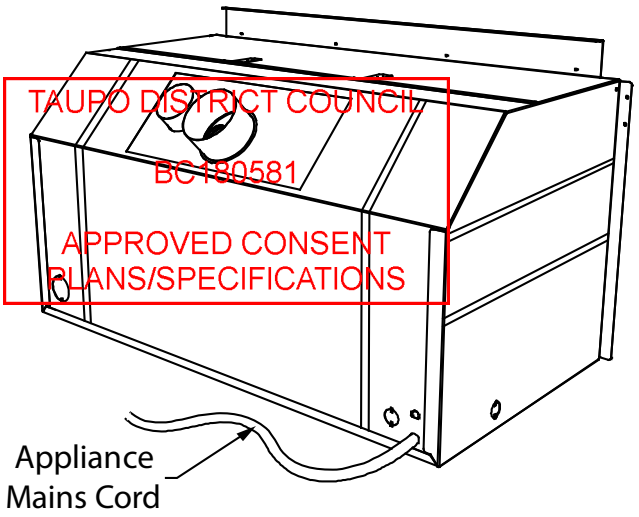
- ☐ A framed, but un-lined, cavity sized to suit your fascia and flue configuration
- ☐ Provision for sufficient access to the powerflue for future servicing

C Installing the Electricity and Gas to the Appliance

C1 Power Supply:

Whilst the cavity is being created consideration should be given to appropriate location of a standard 3 pin, EARTHED 230/240V power outlet. This must be within 1.0m of the rear bottom left hand corner of the appliance.

IMPORTANT: Locating the power outlet within the cavity makes the installation very neat but the provision MUST be made to be able to switch the power supply off and on (electrical isolation switch) and MUST be accessible after the heater has been installed. This is normally done by means of a separate switch which must be located adjacent to the appliance as per AS/NZS 5601.1.2010. This will allow service technicians to isolate the power supply before performing service work on the appliance.



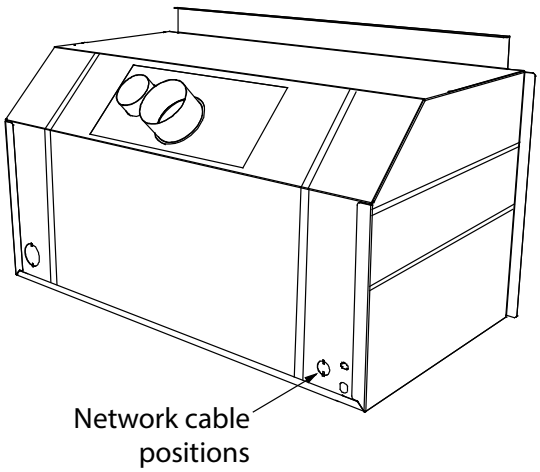
This appliance must not be located directly below a socket outlet.

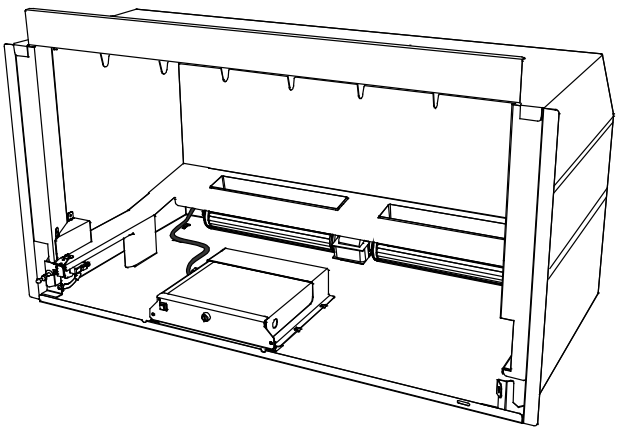
This appliance will draw a maximum of 2 Amps from a 230/240V supply. No additional power supply is required for the power flue.

An electrical wiring diagram is located underneath the electronic tray, and also in the rear of this manual (Service section)

C2 Network Cable:

If the appliance is to be wired to a home automation system or internet router/network is being installed then provision must be made for the network cable to get to the control tray. A plastic plug is provided on the rear left of the appliance for a network cable to pass through the chassis and reach the control tray. Allow enough slack in the network cable to ensure the electronic tray can still be removed from the appliance. See Section E2 for final connection of the network cable.



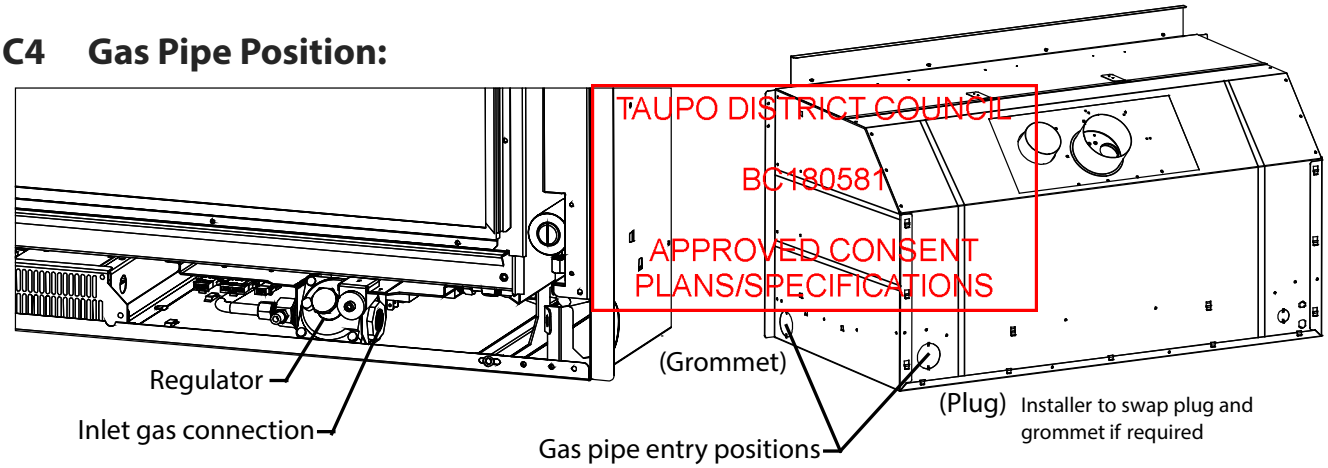


C3 Gas Pipe Sizing:

Gas pipe should be sized as per the requirements of AS/NZS 5601. The pipe sizing must be sufficient to deliver the following volume of gas to the heater with all other gas appliances in the home running at the same time:

DL850 Gas Consumption = 38MJ/hr
DL1100 Gas Consumption = 42Mj/hr

C4 Gas Pipe Position:



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The DL850 / DL1100 has 2 possible entry points for gas pipe, on the rear right corner and the front right. Each is sealed by either a plastic grommet or plastic plug. If you wish to use the rear exit location, you may swap the grommet and plug positions.

The gas connection on the appliance is a ½" female BSP at the very front right of the appliance. This section of the piping will need to be flexible to allow for pipe disconnection and firebox removal.

C5 Gas Isolating Valve:

It is recommended that a gas isolating valve be installed as close to the regulator on the gas inlet side as possible with easy access if the fascia is removed. This will allow for easier servicing in the future.

C6 Pressure Test Point:

As per AS/NZS 5601, a pressure test point shall be provided by the installer prior to the inlet of the appliance

END OF SECTION C

By the end of this section, you should have:

☐ An unlined cavity with a standard three pin 230/240V AC supply that the appliance can be plugged into

☐ An electrical isolating switch that is accessible once the appliance is installed

☐ A suitably sized gas supply to the right hand side of the appliance with a pressure test point, ready to be connected once installed

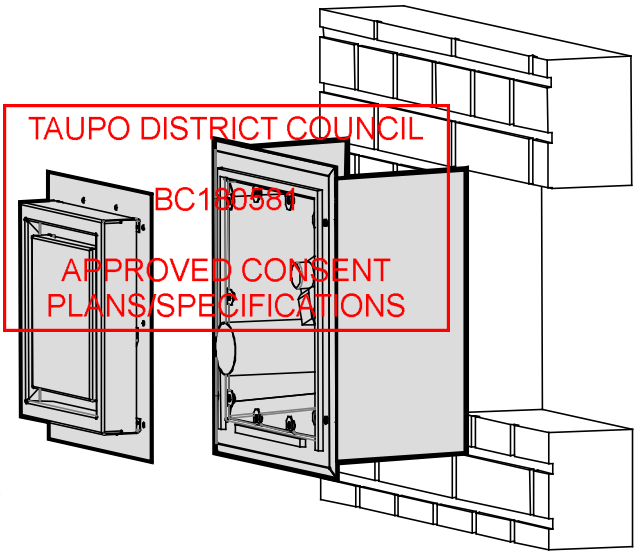
☐ Network cable installed, ready for plugging into appliance (if being connected to internet router/network)

D Installing the flue

For Horizontally terminated flue, see section D1. For Vertically terminated flue, see section D5.

D1 Horizontal Powerflue Description

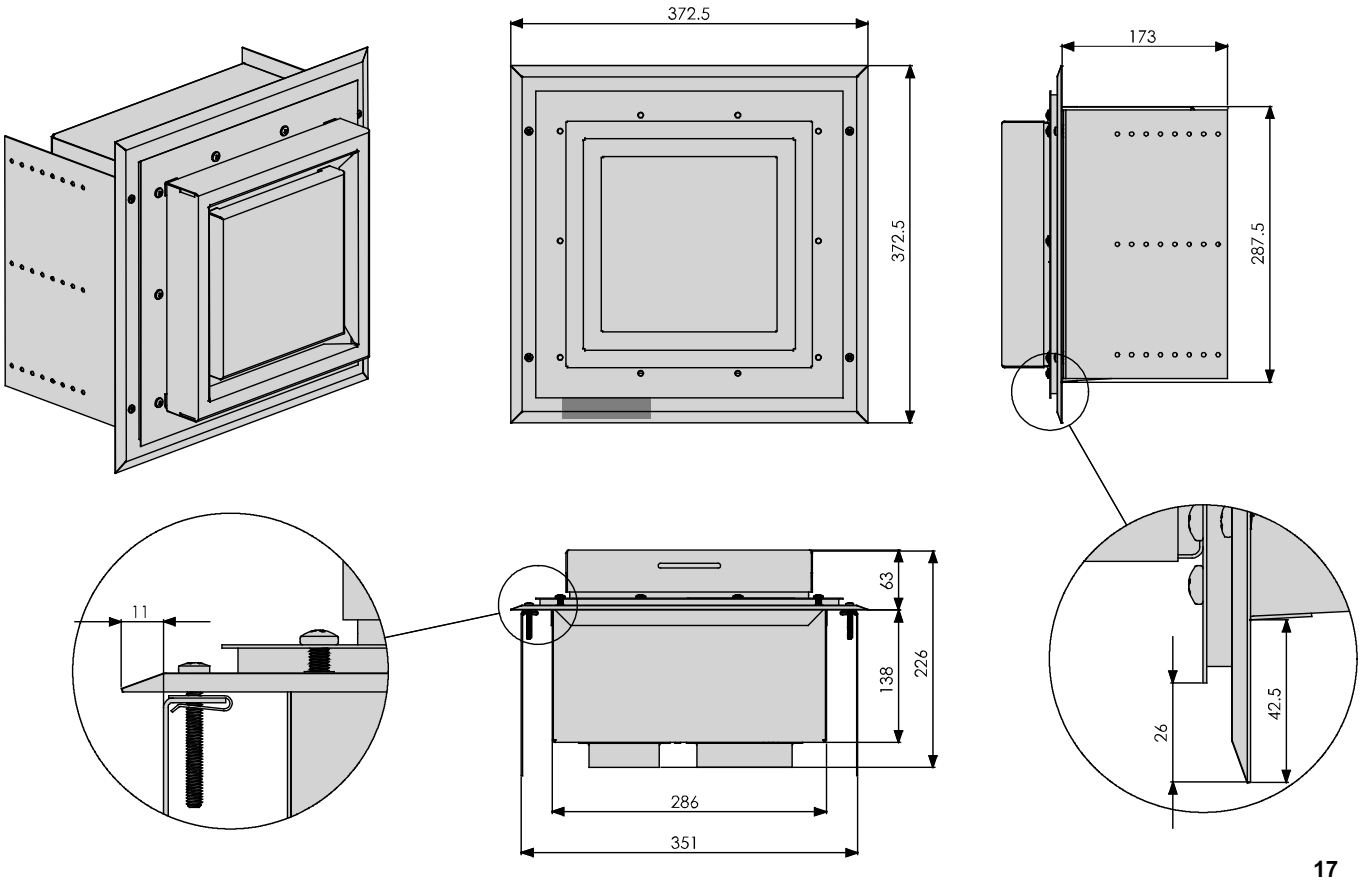
Note: The appliance is designed only to operate using the approved flexible or PolyPro flue supplied by Escea. Other brands of flue may not fit, and this will affect the appliance warranty.



The Horizontal Powerflue Wall Terminal must be installed in the correct orientation. This allows for the correct operation of the flue system and prevents the ingress of rain.

The Horizontal Powerflue Wall Terminal must be weather-tight when installation is complete to prevent damage to the dwelling.
It must be installed by a suitably qualified person.

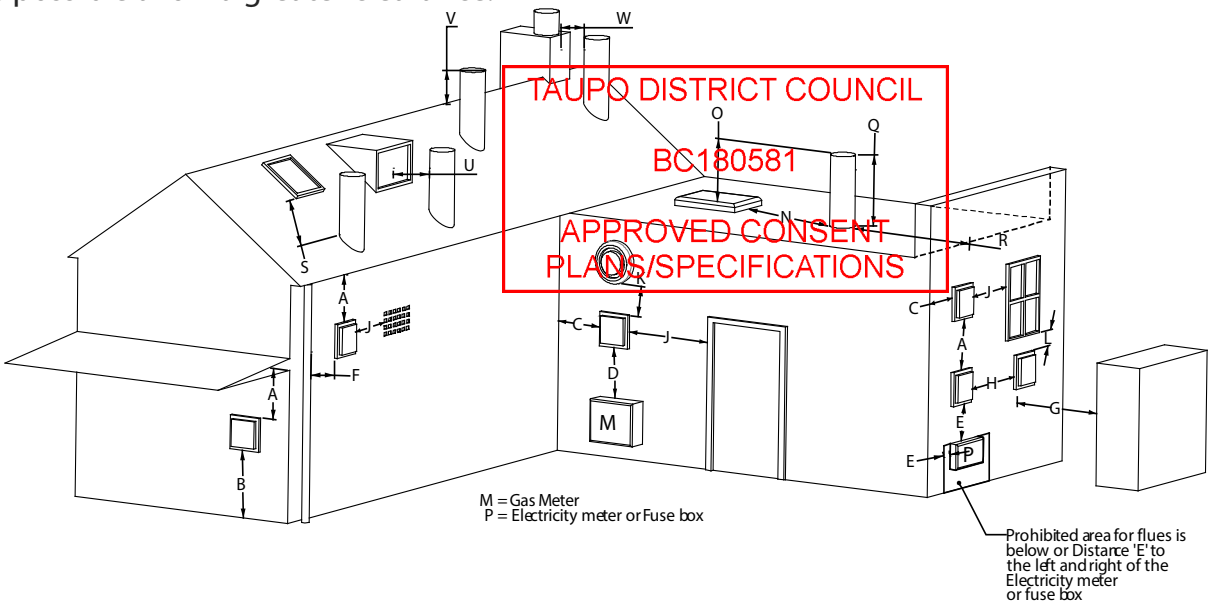
For flexible aluminium flue, access to the powerflue from the outside must be provided for servicing, and this should be taken into consideration when installing in tall buildings.
For PolyPro flue installations, internal and external access is required.



D2 Installing in Accordance with Relevant Codes:

The location of the Horizontal Powerflue Wall Terminal must be installed in accordance with AS/NZS 5601 and any other relevant building codes. If possible, avoid installing the Horizontal Powerflue Wall Terminal in areas exposed to high winds and extreme weather.

Some of the minimum clearances for a fan assisted wall terminal are listed below; please refer to AS/NZS 5601 Gas installation standard for full guidance on the design of the flue system. Where possible allow a greater clearance.



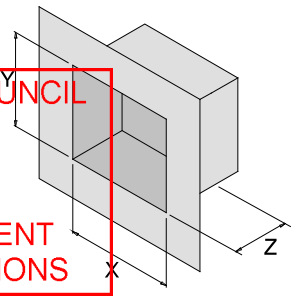
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A	Below eaves, balconies and other projections	200mm
B	From the floor, above a balcony or other surface	300mm
C	From a return wall or external corner	300mm
D	From a gas meter or regulator vent	1000mm
E	From electricity meter or fuse box	500mm
F	From a drain pipe or soil stack	75mm
G	Horizontally from any building structure or obstruction	500mm
H	From any other flue terminal or combustion air intake	300mm
J	Horizontally from any openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub floor ventilation	300mm
K	From a mechanical air inlet or spa blower	1000mm
L	Vertically below any openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub floor ventilation	300mm
N	Horizontally from a roof light	600mm
O	Vertically from a roof light	500mm
Q	Vertically from a flat roof	500mm
R	Horizontally from a vertical structure	500mm
S	Below a roof window	2000mm
T	Above or either side of a roof window	600mm
U	From a dormer window	1500mm
V	Above the apex of the roof (see note 1 on following page)	300mm
W	From an open flue	1500mm

Notes:
1) Should the flue not extend past the apex, the top of the flue should extend at least 400mm from the roof (or 500mm in regions with heavy snow).
2) The installation of a flue into a carport is not recommended.
3) The flue terminal will get very hot when in use. Precautions should be taken to protect people and animals from injury.

D3 Creating the Hole in the Outside Wall

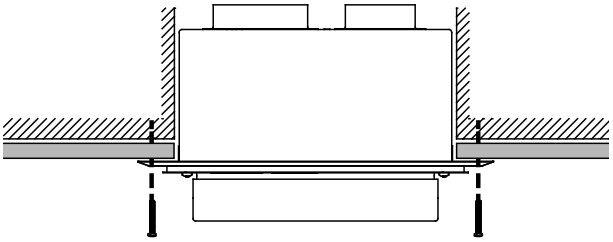
When cutting the hole in the outside wall, be mindful of how the installation Horizontal Powerflue Wall Terminal will be finished, the installation must be weatherproof.



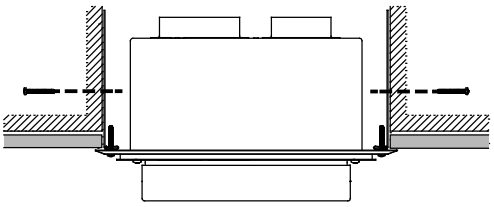
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Ideal hole/cavity size for Horizontal Powerflue		
	Without Side Brackets	With Side Brackets
X	298mm	360mm
Y	298mm	298mm
Z	175mm Excluding allowance for flue which exits here	

The Horizontal Powerflue Wall Terminal can be attached to the wall in two ways,
A) From the front of the terminal:



B) By attaching the optional Wall Terminal Installation Brackets to the sides of the cavity and attaching the Horizontal Powerflue Wall Terminal to these, from the front:

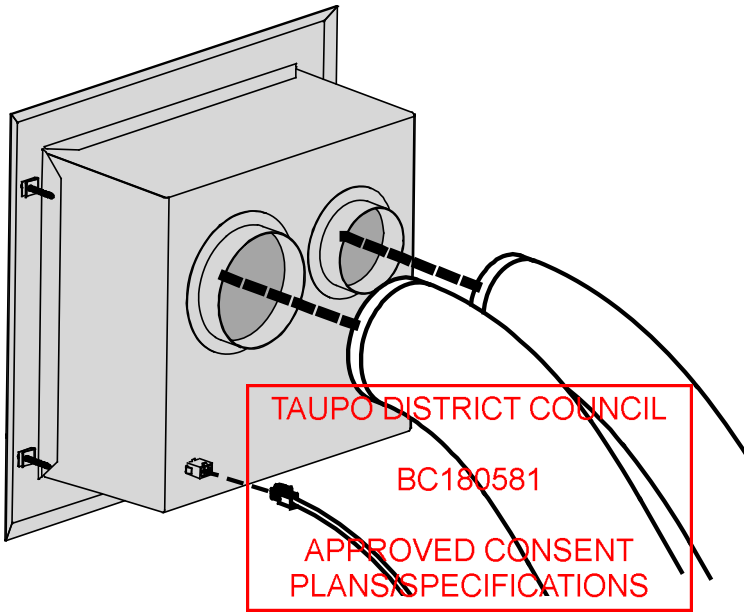


D4 Installing the Horizontal Powerflue Wall Terminal

Attach the Ø100mm and Ø75mm flexible aluminium flues to the spigots on the rear of the Horizontal Powerflue Wall Terminal using the hose band clamps supplied. Plug the powerflue electrical cable into the back of the Horizontal Powerflue Wall Terminal.

For information on the PolyPro flue , see the installation manual which is supplied with the flue components.

Ensure that the electrical cable is firmly secured to the wall terminal or building to prevent damage or disconnection if pulled



Fit the Horizontal Powerflue Wall Terminal into the hole and fix in place, making sure the installation is sealed appropriately to prevent the ingress of water from outside the wall cladding.

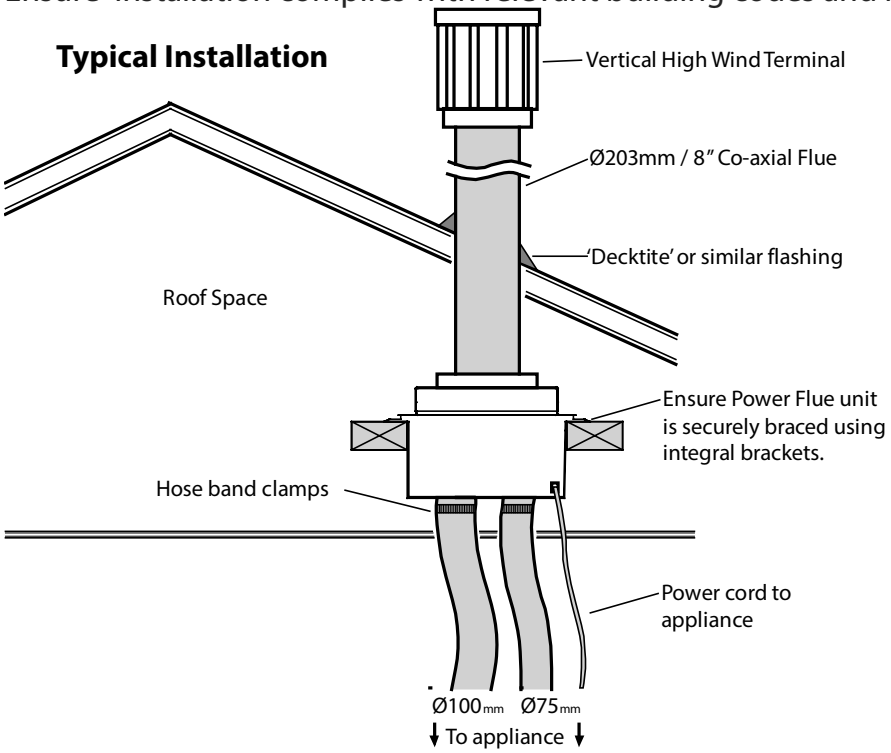
NOTE: It is the responsibility of the installer to ensure the Horizontal Powerflue Wall Terminal is installed to all relevant building codes to ensure weather tightness. This may nesesitate the use of appropriate flashing material where appropriate.

IMPORTANT: Ensure that flashings do not restrict the air intake slot around the periphery of the cowl

D5 Vertical Power Flue

The Vertically terminated flue kit is intended for use within an accesable roof space or accesable 'chimney' construction. **Service access must be provided.**
Ensure installation complies with relevant building codes and regulations.

Typical Installation



D6 Installation the restrictor plate (Vertical Power Flue Only)

Every Vertical Power Flue must have the restrictor plate fitted when installating a DL850 or DL1100. To do this:

☐ Remove the powerflue lid, remove the screw that secures the elbow & then slide the elbow off.

☐ Attach the restrictor centrally over the air inlet as shown using the two rivets provided.

☐ Replace the elbow, replace the screw, and then replace and secure the lid.



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D7 Running the Flue

Run the Ø100mm and Ø75mm flexible aluminium hoses from the cavity to the rear of where the Horizontal or Vertical Powerflue Terminal will be installed. **The flue system for the DL850 / DL1100 is zero rated, so no spaces are required between the flue and any timber framing.** Allow enough stretch in the flexible aluminium flue to allow it to be able to protrude through the wall/ceiling to enable it to be connected to the Powerflue Terminal. The flue should be expanded at each end in order for the flue to be attached to the fire / powerflue.

For information on running the PolyPro flue , see the installation manual which is supplied with the flue components.

It is advisable to secure the flexi flue at regular intervals to prevent vibration and movement. Steel wire or 'builders strapping' may be used for this purpose.
Note: The flexible flue is shipped in a 'compressed' form. Extend it to your desired length by stretching (up to 4m maximum per length).

D8 Running the Powerflue Electrical Cable

Note: The Horizontal Powerflue Wall Terminal is powered from the appliance, and must be connected to the appliance with the supplied electrical cable only.

Run the electrical cable from the cavity where the appliance will be installed to the hole in the outside wall. Ensure it is not draped over, or in contact with, the outer shell of the appliance or the flues and kept clear from any other possible heat sources, sharp edges, or moisture. Fix it appropriately and allow enough cable looped to be able to pull both the appliance and the Horizontal Powerflue Wall Terminal out from their installed positions.

END OF SECTION D

By the end of this section, you should have:

☐ A weather-tight installed Horizontal Powerflue Wall Terminal with clearance as specified by AS/NZ5601

☐ Reasonable access to the outside face for maintenance purposes

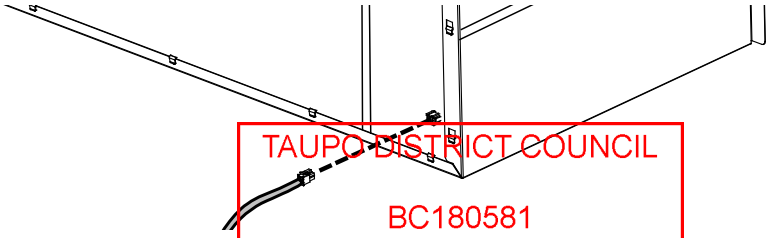
☐ Flue attached to the rear of the Horizontal Powerflue Wall Terminal leading back to the appliance

☐ The electrical cable from the Horizontal Powerflue Wall Terminal attached to the rear of the installation and run back to the appliance cavity in an electrically safe manner

E Installing the Appliance

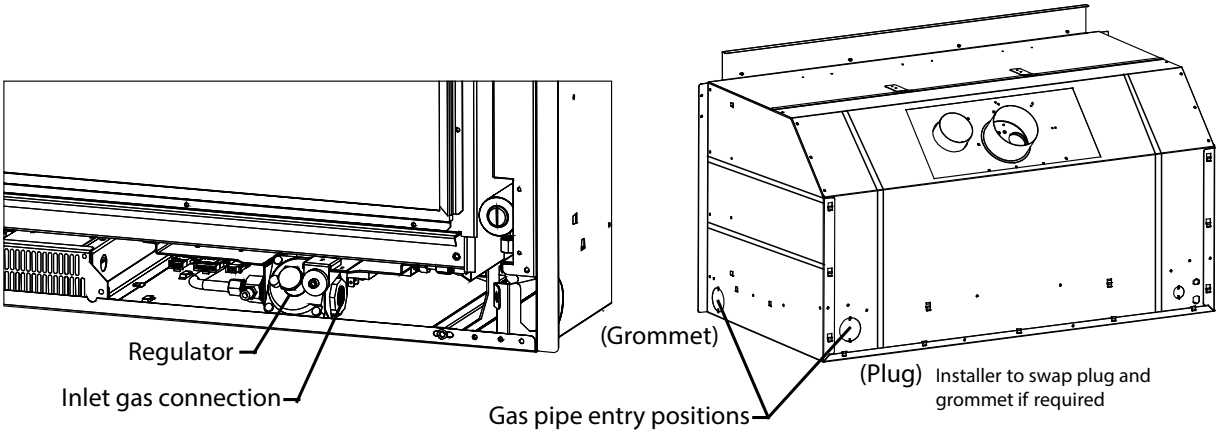
E1 Installation

Note: Ensure the wall has been lined and finished (plastered/painted/covered) before starting the appliance install. Plug the powerflue electrical cable into the appliance in the back right hand side.



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With the appliance electrical cord plugged into the outlet in the cavity, carefully place the appliance on the cavity base and push it into the cavity. Bring the gas connection through the outer shell of the appliance and connect it to the regulator on the bottom right hand side of the appliance. The gas pipe should have already been tested as per section C.



Note: *If using rear entry for gas pipe (shown above), re-use the plug from the side entry position.*

Note: *The regulator that is supplied with the fire MUST NOT BE REMOVED. Removal of the regulator, or replacing it with one not intended for use with an Escea fire, will void the limited appliance warranty.*

E2 Connecting the Network Cable

If a network cable is being installed for a wired connection to an internet router/network (as per Section C2) then bring the cable through the chassis as described earlier and attach it to the correct socket inside the electronic tray.



Remove the electronic tray by unscrewing the two screws at the front and pulling the tray forward and over the lip in the front of the chassis. Unscrew the four screws in the top and remove the lid. Bring the network cable through the side of the tray and plug it into the network socket. Replace the lid and electronic tray by reversing the steps above. Ensure the network cable does not interfere with the pressure switch hoses beneath the firebox and does not rest against the firebox bottom surface.

E3 Connecting the Flue

Remove the lid of the appliance by removing the two screws on either side of the top front of the appliance.

If there is not enough room to reach into the cavity the appliance may need to be pulled forward slightly out of the cavity. Stretch out the last 300mm of the flues, and reach through into the cavity and connect both the inlet flue (Ø75mm) and the exhaust flue (Ø100mm) to their respective spigots on the rear of the appliance. Orientate and position the hose band clamps to provide easy access from the front of the appliance. Tighten the flue onto the spigots by the use of the hose clamps (provided). Ensure the flue connection is as sound as possible and that the flue connection is air tight.

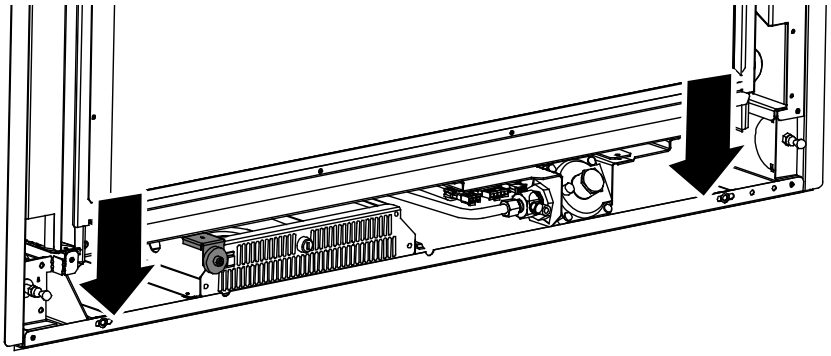
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E4 Fixing the Appliance to the Base and Wall:

There are several ways that the appliance can be fixed against movement: It is a requirement that this appliance be securely fastened to the wall and base.
Note: It is important that the outer fascia is used during this process to ensure that the appliance is located in the appropriate position within the cavity.

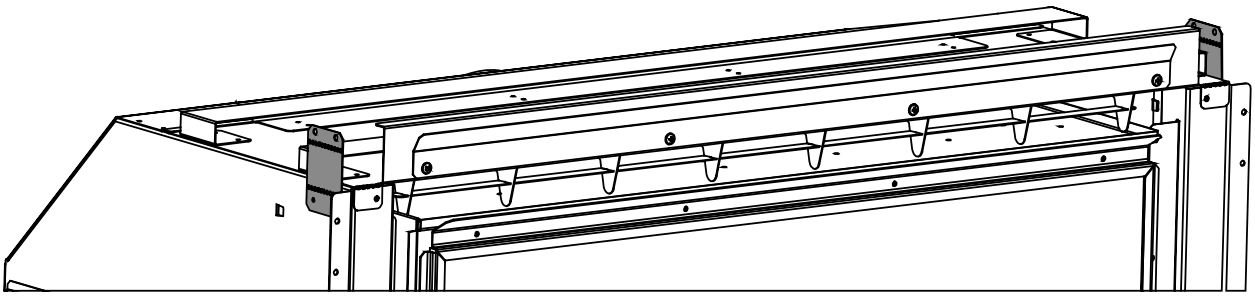
E5 Fixing Appliance to Base:

The Appliance has several holes along the front edge of the base panel that have been provided to allow installers to screw the appliance to the floor. Because of a lack of access for drilling it may be necessary to mark the appropriate location for these screws and then remove the appliance and drill holes into hard flooring.
Alternatively a socket set can be used to drive in hex headed screws.



E6 Fixing Appliance to Wall:

The installer must also fix the appliance to the sides of the cavity using the brackets on the side of the appliance shown below. These flanges can be bent to accommodate the installation.

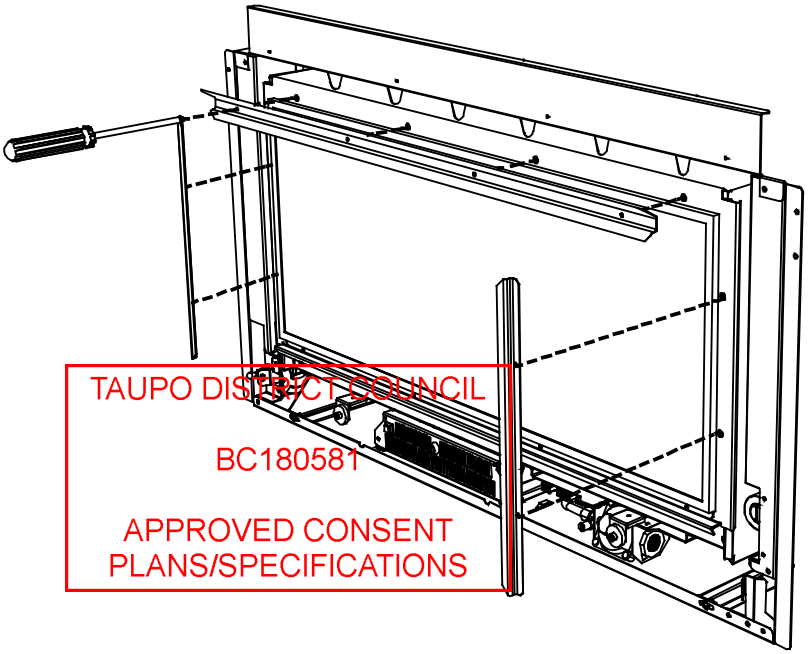


E7 Removing the Glass

Unscrew the top glass retainer bracket and the two side glass retainer brackets. Take care that the glass does not fall forward at this stage.

Pull the top of the glass toward you slightly and lift the glass out of the bottom glass retainer. You may need to tilt the glass to achieve this.

Place the glass carefully aside. Note that the fibreglass tape around the glass can mark carpet and furnishings.



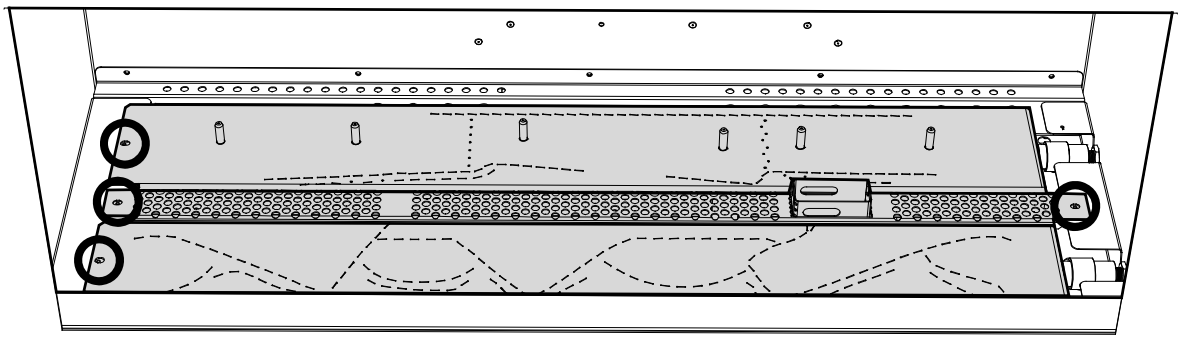
E8 Converting the Appliance Gas Type

This appliance has been factory set to operate on Natural Gas only. To convert the appliance to operate on **propane or ULPG**, proceed as follows:

☐ Remove the small perforated shroud on the right hand side of the firebox.

☐ Remove the 2 screws securing the burners in place and lift out the burners as shown.

☐ Remove the 2 screws securing the pilot guard shown below and lift it out.



Jets	DL850 Front	DL850 Rear	DL1100 Front	DL1100 Rear
NG	Ø2.45mm	Ø2.3mm	Ø2.6mm	Ø2.6mm
Propane	Ø1.4mm	Ø1.3mm	Ø1.4mm	Ø1.3mm
ULPG	Ø1.2mm	Ø1.1mm	Ø1.3mm	Ø1.2mm

☐ Remove the front burner jet and replace with the correct jet as stated in the above table.

☐ Remove the 2 screws securing the Pilot Cover Plates and slide these out as shown on following page.

☐ Remove the 4 screws securing the pilot bracket and lift out the bracket and pilot hood assembly.

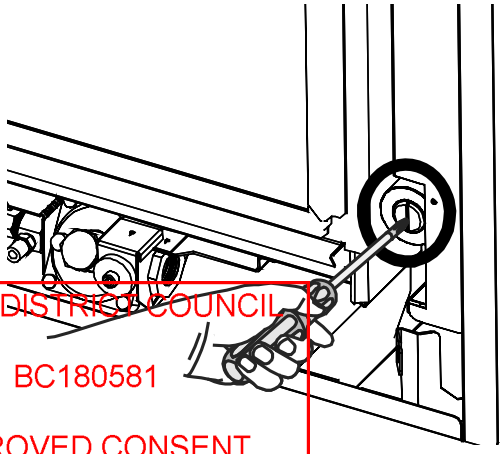
☐ Remove (un screw) the existing pilot jet and replace with the jet marked red supplied in the conversion kit.

☐ Refit the pilot bracket / Hood assembly and pilot cover plates. **NOTE: Ensure the orientation of the pilot gas ports is as shown in section E9**.

☐ Remove the aeration collars from both burners

☐ Refit the pilot guard and then burners.

☐ Turn the restrictor indicator to the vertical position as shown.



☐ Remove the regulator screw cap and screw out the nylon adjuster screw to remove the existing spring.

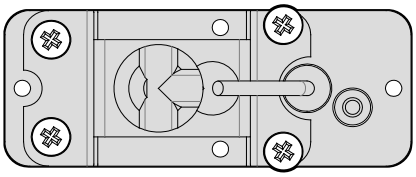
☐ Replace the spring with the blue spring supplied in the conversion kit and reassemble the regulator

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☐ Adjust operating pressure to **2.3kPa for DL1100 (Propane / ULPG) and the DL850 (Propane)** OR **2.6kPa for DL850 (ULPG)** by turning the nylon adjustor screw whilst the appliance is running on maximum.

☐ Adhere the Conversion label over the top of the Natural Gas data on the appliance data plate.

☐ Adhere the 'Propane' or 'ULPG' label over the top of the existing Natural Gas label on the side of the appliance (if accessable).



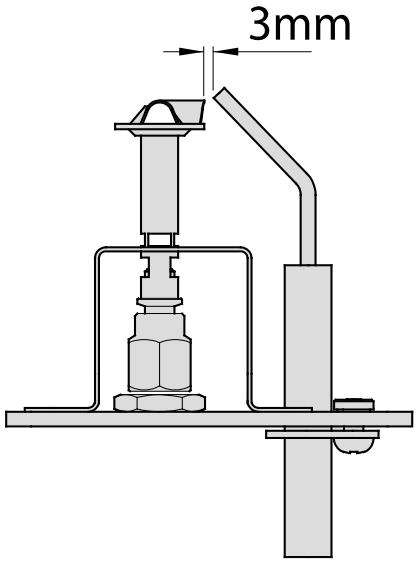
E9 Checking the Pilot Ignition

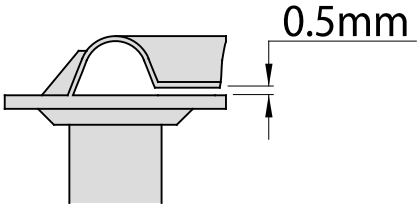
The placement of the electrode is CRITICAL to the operation of the fire. The gap is factory set but in the event that the electrode or pilot hood have moved during installation or the fire is having trouble lighting or staying lit then below is a guide to electrode placement. Ensure no logs, coals, stones or pieces of Crystalight have worked their way around the pilot guard and are touching the electrode or pilot hood.

If the appliance has difficulty igniting, ensure that the pilot hood has the correct gap for the gas to escape from using feeler gauges.

Ensure there is not an excessive carbon build up on either the electrode or the pilot hood. Clean them if necessary.

As shown below, check (and if necessary, set) the gap between the 3 pilot ports to 0.5mm

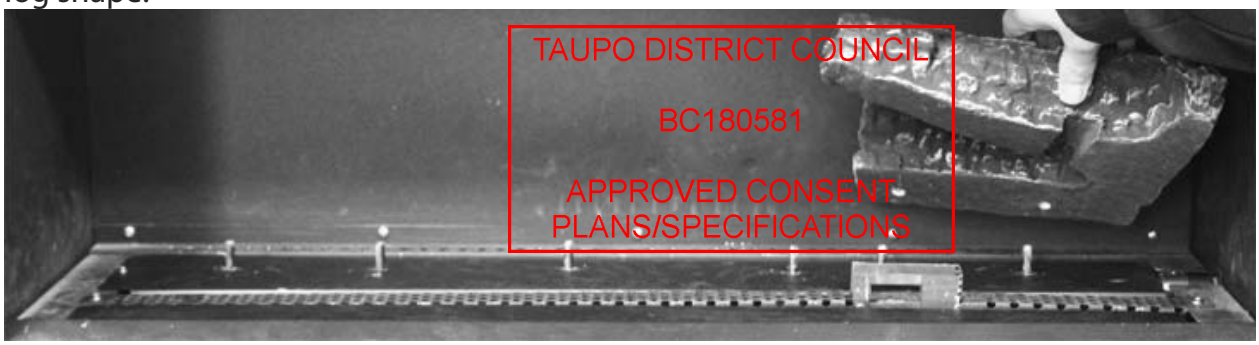




E10 Log Fuel Bed Installation

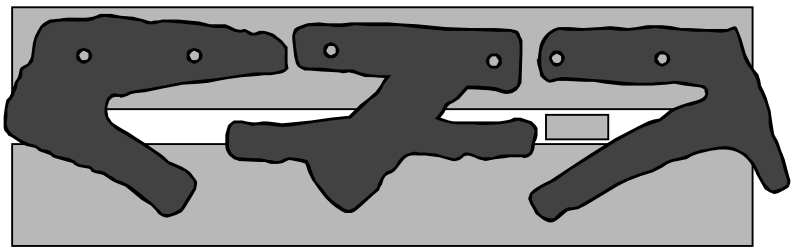
Note: There are several types of fuel bed for the DL850 and DL1100. Please check which fuel bed you have been supplied with and follow the installation instructions for that fuel bed carefully.

Starting at the right hand side, place the 'v' shaped log in place, using the pins on the rear burner to line up with the holes in the base of the log. Ensure the port pattern follows the log shape:

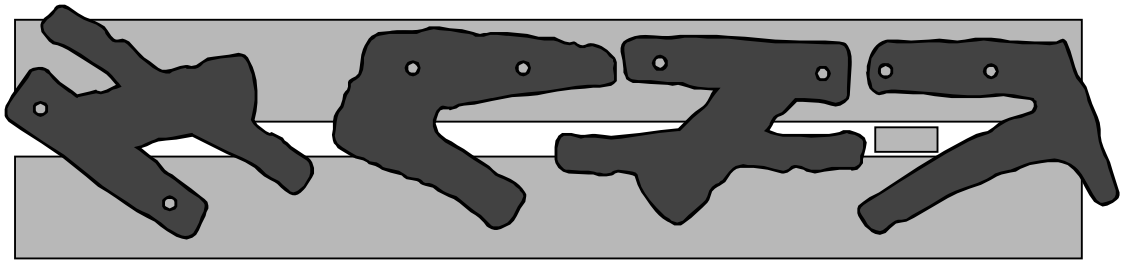


Place the other logs using the same method as above, using the diagrams below to ensure correct log placement

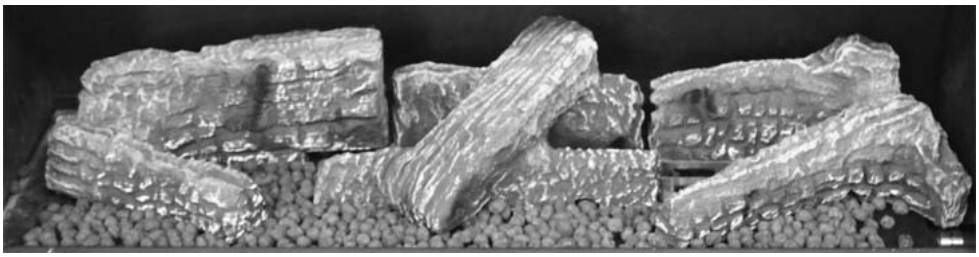
DL850



DL1100



Pour the supplied 'embers' into all the visible gaps around the front of the logs, being careful to avoid letting any fall down between the pilot head, spark electrode and pilot guard. If possible keep the area where the pilot hood flame is directed at the burner ports clear.



Replace the glass and the three glass retainers.

Note: Improper positioning of logs may create carbon build-up and will alter the unit's performance. Malfunctioning due to improper log placement is not covered under warranty.

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E11 River Stone or Coal (Pebbles) Fuel Bed Installation

Note: There are several types of fuel bed for the DL850 and DL1100. Please check which fuel bed you have been supplied with and follow the installation instructions for that fuel bed carefully.

Place all the River Stones or Coals in a single layer atop the burners, covering the entire area. Be careful to avoid letting any fall down between the pilot head, spark electrode and pilot guard, and if possible keep the area where the pilot hood flame is directed at the burner ports clear to aid reliable ignition.



Replace the glass and the three glass retainers.

Note: Improper positioning of Stones/Coals/Pebbles may create carbon build-up and will alter the unit's performance. Malfunctioning due to improper Stone/Coal/Pebble placement is not covered under warranty.

E12 Crystalight Fuel Bed Installation

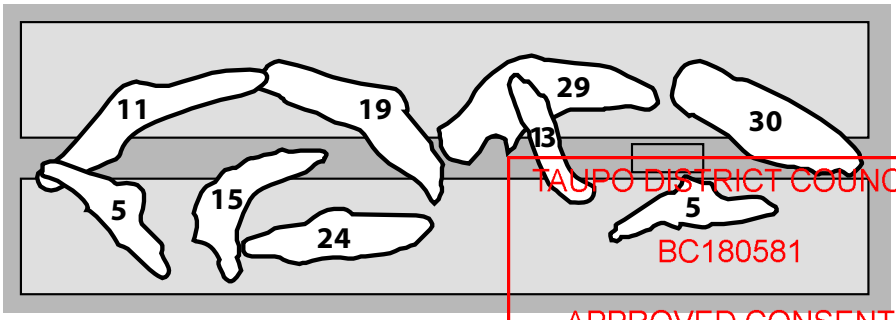
Note: There are several types of fuel bed for the DL850 and DL1100. Please check which fuel bed you have been supplied with and follow the installation instructions for that fuel bed carefully.
Place all the Crystalight pieces in a SINGLE LAYER atop the burners, covering the entire area. Be careful to avoid letting any fall down between the pilot head, spark electrode and pilot guard, and if possible keep the area where the pilot hood flame is directed at the burner ports clear. Replace the glass and the three glass retainers.

Note: Improper positioning of Crystalight may create carbon build-up and will alter the unit's performance. Malfunctioning due to improper Crystalight placement is not covered under warranty

E13 Crystalight and Driftwood Fuel Bed Installation

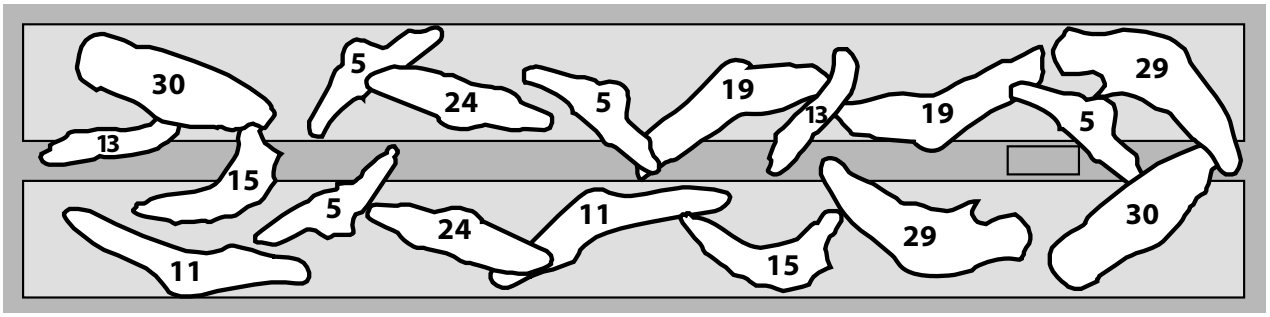
As per E12, and then once Crystalight has been evenly spread across the base of the firebox place the supplied driftwood on top of the Crystalight as shown:

DL850



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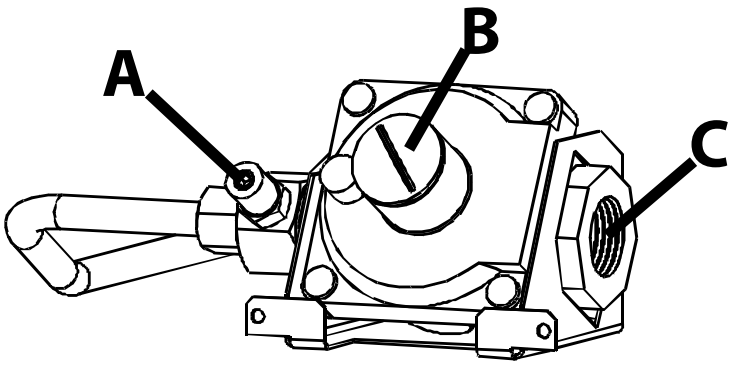
DL1100



E14 Checking the Operating Pressure

WARNING: The regulator that is supplied with the fire MUST NOT BE REMOVED. Removal of the regulator, or replacing it with one not intended for use with an Escea fire, will void the limited appliance warranty.

Check the operating pressure at the regulator located at the front RH corner of the appliance. This is best done before the fascia panels have been fitted to avoid fascia damage. A pressure test point is available for the operating test pressure (as shown below).



A = Operating Pressure test point
B = Pressure adjustment screw (To access first remove metal cap)
C = Inlet gas connection (½" Female BSPT)

☐ Check the inlet pressure to the appliance. Attach manometer tube to the first test point upstream of the appliance (typically at the gas utility meter or auto change device for a propane bottle station)

☐ Run the heater on full (both burners running) and measure inlet pressure with all the other gas appliances in the building running. If pressure does not fall within the maximum or minimum pressures listed on the table below then reassess installation pipe size or upstream regulator settings.

☐ Remove the operating pressure test point screw. Connect manometer tube and measure pressure with heater running on full (both burners running) and with all the other gas appliances in the building running.

☐ If the appliance has not had a gas type conversion on installation, then the appliance regulator pressure has been factory set to 1.0kPa. Please check that the operating pressure is exactly as listed and if not, adjust the screw in the centre of the regulator until the pressure is correct.

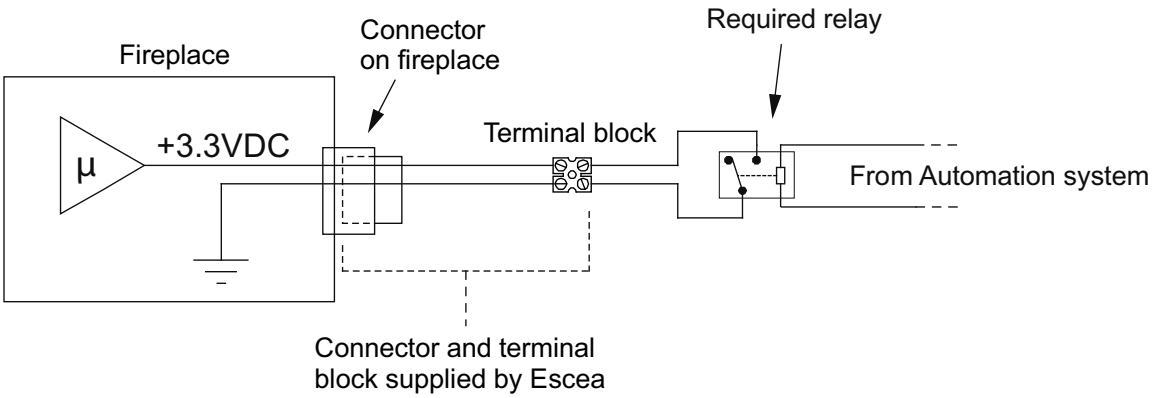
☐ Replace operating test point screw and leak test both test points.

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	Operating Pressures	Propane	Natural Gas	ULPG
DL850	Minimum inlet pressure	2.75kPa	1.13kPa	2.75kPa
	Maximum inlet pressure	5.0kPa	5.0kPa	5.0kPa
	Operating pressure	2.30kPa	1.0kPa	2.60kPa
DL1100	Minimum inlet pressure	2.75kPa	1.13kPa	2.75kPa
	Maximum inlet pressure	5.0kPa	5.0kPa	5.0kPa
	Operating pressure	2.30kPa	1.0kPa	2.30kPa

E15 Home Automation Setup

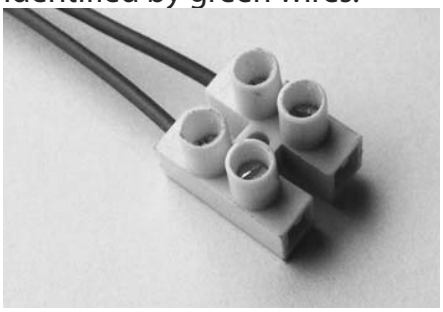
Escea D-Series fireplaces have a simple interface for connection to a home automation system. Simply put this allows the fireplace to be woken up and started and then shut down. The "Close to wake" connection shown is essentially taking one of the 3.3 volt DC pins on the fireplace micro controller and pulling it down to ground. In order to isolate the fireplace from the automaton system a relay needs to be used as shown. This allows you to use any nominal voltage to drive the relay while keeping the fireplaces 3.3V supply isolated.



Note: you will need to match the relay coil voltage with the voltage from your automaton system.

The Home Automation connection can be found inside the DL850 and DL1100 electronic

tray (for access instructions see section E2). The socket is shown to the right and can be identified by green wires.



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Home Automation Operation:

Relay closed

The fireplace will start in a medium setting until it receives a signal from the remote control unit (up to 4 minutes). Once the remote has communicated with the fireplace it will turn on and begin operating the fireplace thermostatically. The remote will use whatever temperature the user has previously set and cannot be altered by the home automation system. The fireplace will continue to operate while the relay is closed.

Note: If the fireplace cannot communicate with the remote controller within 10 minutes of the relay contact closure then the fireplace will shut down and return to standby. The remote controller is required to be operating within range of the fireplace for its safe operation.

Relay open

If the fireplace was operating with a closed relay then upon opening the relay contacts the fireplace will shut down and return the remote controller to its standby mode when it next updates (up to 4 minutes). While the relay is open the fireplace will be in standby mode and available for manual operation by the user.

END OF SECTION E

By the end of this section, you should have:

- ☐ The appliance installed in the cavity
- ☐ The appliance fixed to the cavity base and wall lining
- ☐ The appliance plugged into a mains electricity supply
- ☐ The selected fuel bed installed and glass in place
- ☐ The appliance gas supply attached and pressure tested with all other gas appliances running
- ☐ Checked that the appliance ignites reliably and safely at least three times

F Fitting the Fascia and Finishing Installation

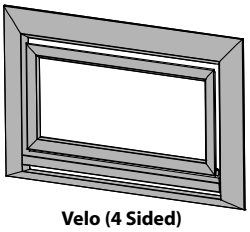
F1 Fitting the Fascia Panels:

To avoid scratches or knocks to the fascia panels of this heater they must be fitted at the complete conclusion of the installation process. It may be necessary to use the outer fascia to initially locate the heater but then remove it again so that there is no chance of damage. Use the soft gloves provided whenever handling the fascia.

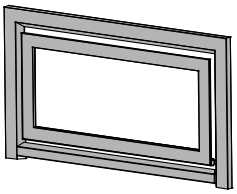
Never, ever rub the fascia panels. Refer to cleaning instructions supplied with fascia.

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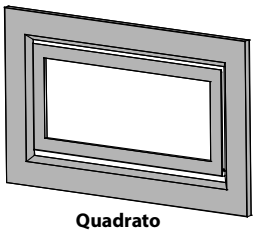
There are four fascia types available with the DL850 / DL1100:



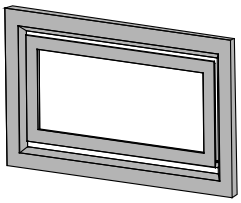
Velo (4 Sided)



Rado



Quadrato



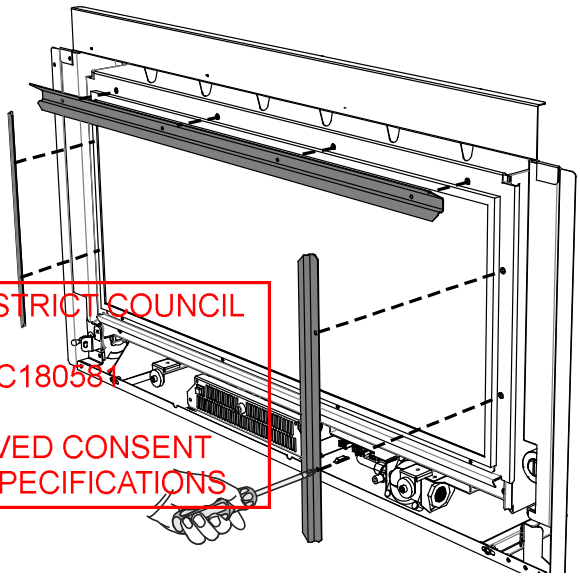
Quadrato Lite

The fascia installation will depend on the fascia and cavity type. For:

Velo Four Sided, see section **F2**
Quadrato / Quadrato Lite, see section **F3**
Rado, see section **F4**

F2 Fitting the Velo Four Sided Fascia Panels

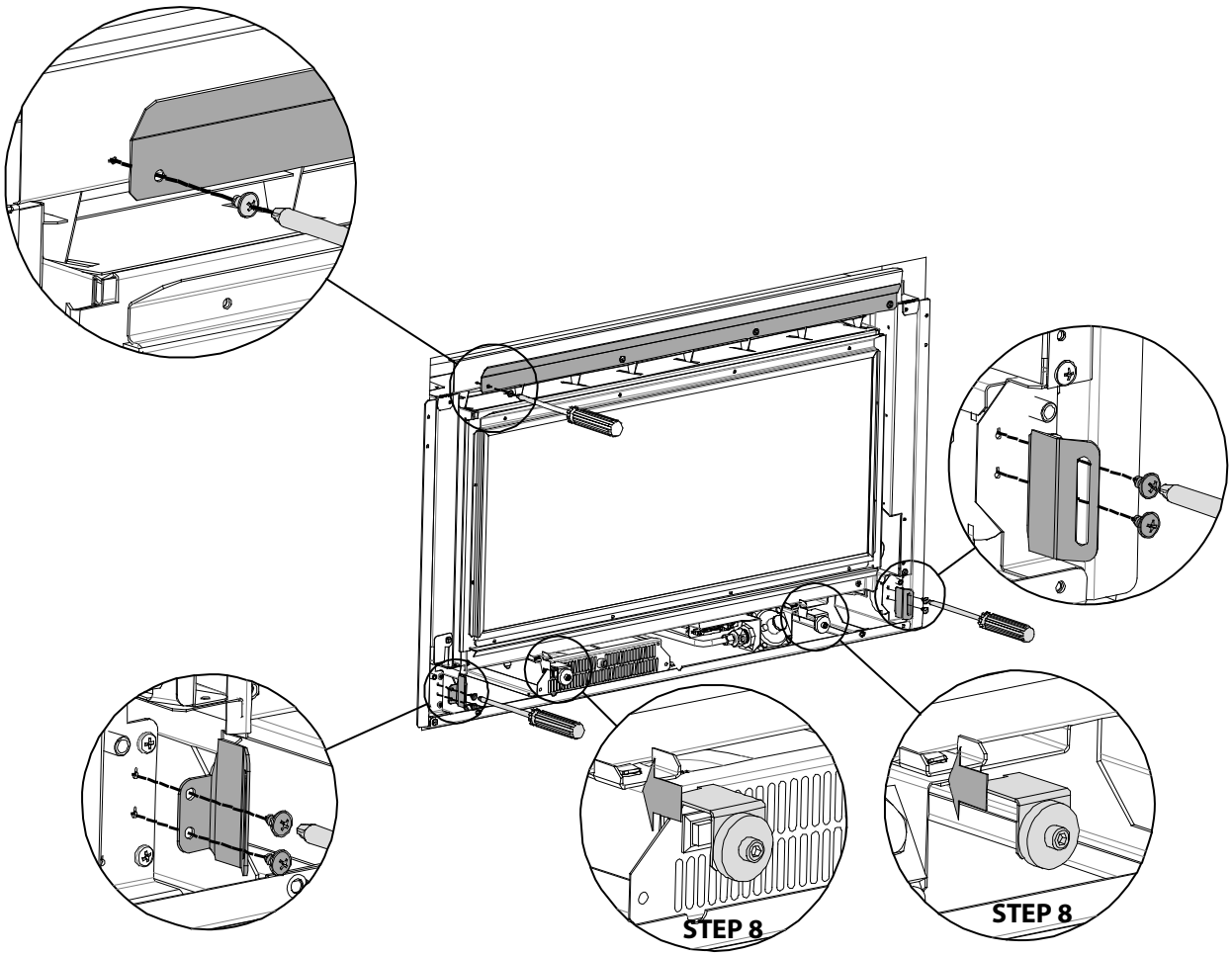
Step 1: Ensure the glass and all glass retainers are securely fitted. Note: If the glass gasket requires a replacement, call your nearest Escea agent who will ensure the part is replaced with the correct type. In the event that the glass is broken by impact, purchase the replacement from an authorised Escea agent only.



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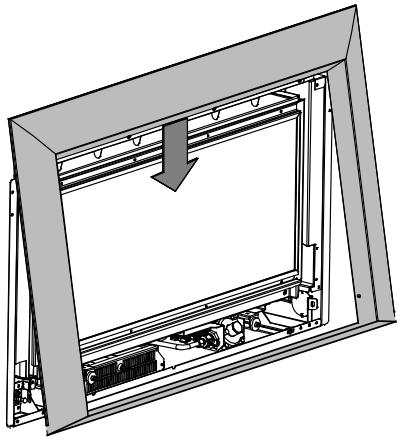
Step 2: Attach the Velo Outer Fascia Bracket to the top lid as shown below:

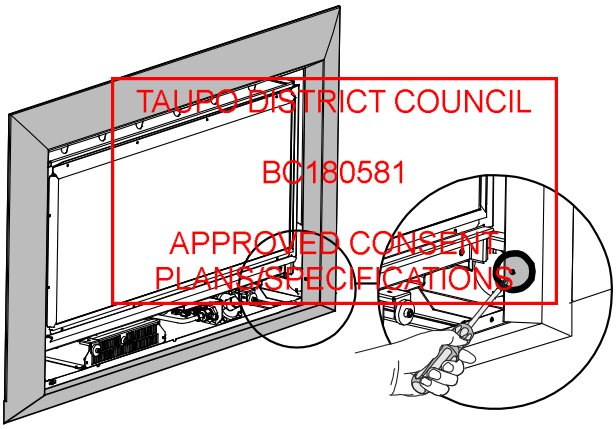
Step 3: Fit the Velo Outer Fascia brackets to the bottom left and right sides of the appliance as shown.



Step 4: Wearing the fabric gloves supplied with your fascia kit, hang the Outer Fascia from the Velo Outer Fascia Bracket attached to the top lid as shown

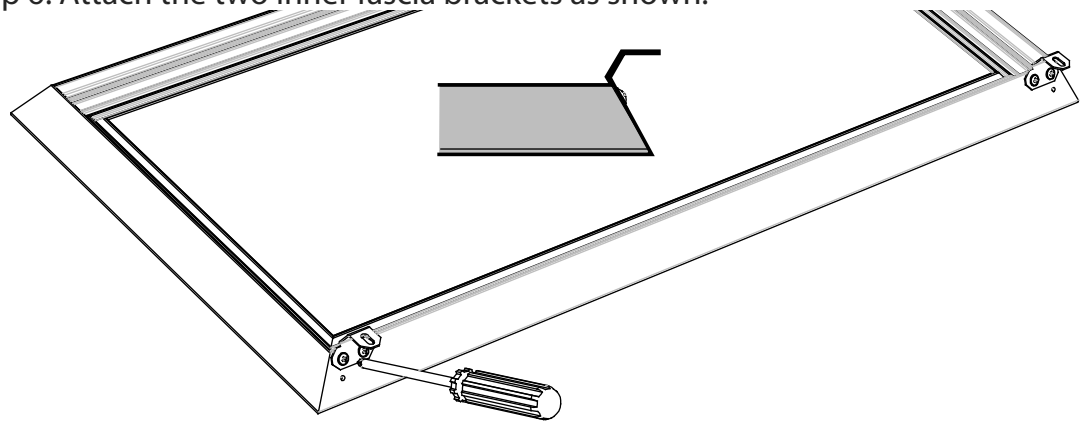
Step 5: Check that the Outer Fascia is centred on the chassis. Screw the Outer Fascia to the chassis at the bottom left and right of the Outer Fascia as shown





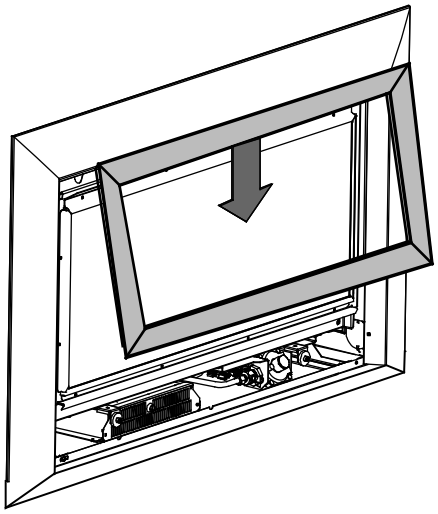
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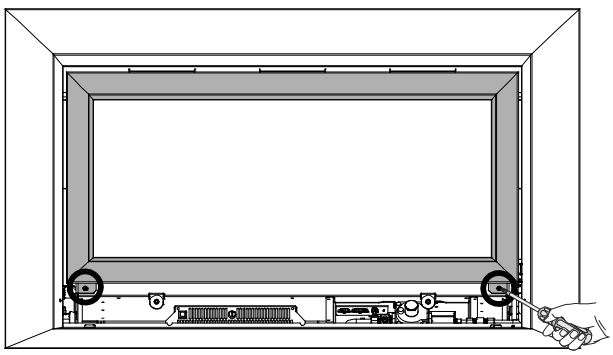
Step 6: Attach the two inner fascia brackets as shown:



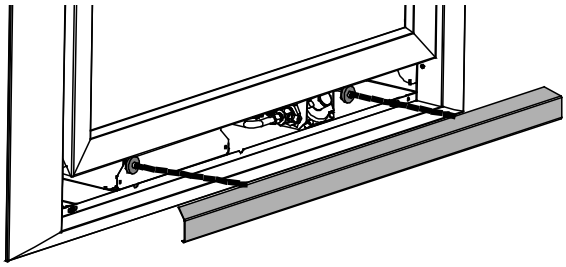
Step 7: Hang the Inner Fascia from the metal bracket on the front of the firebox. Centre the Inner Fascia relative to the Outer Fascia.

Step 8: Screw the Inner Fascia to the bottom left and right of the firebox as shown





Step 9: Push the supplied magnet brackets into position. Place the bottom fascia trim onto the magnets. If this panel does not fit, adjust the outer fascia side to side or the appliance in/out until the trim fits well.



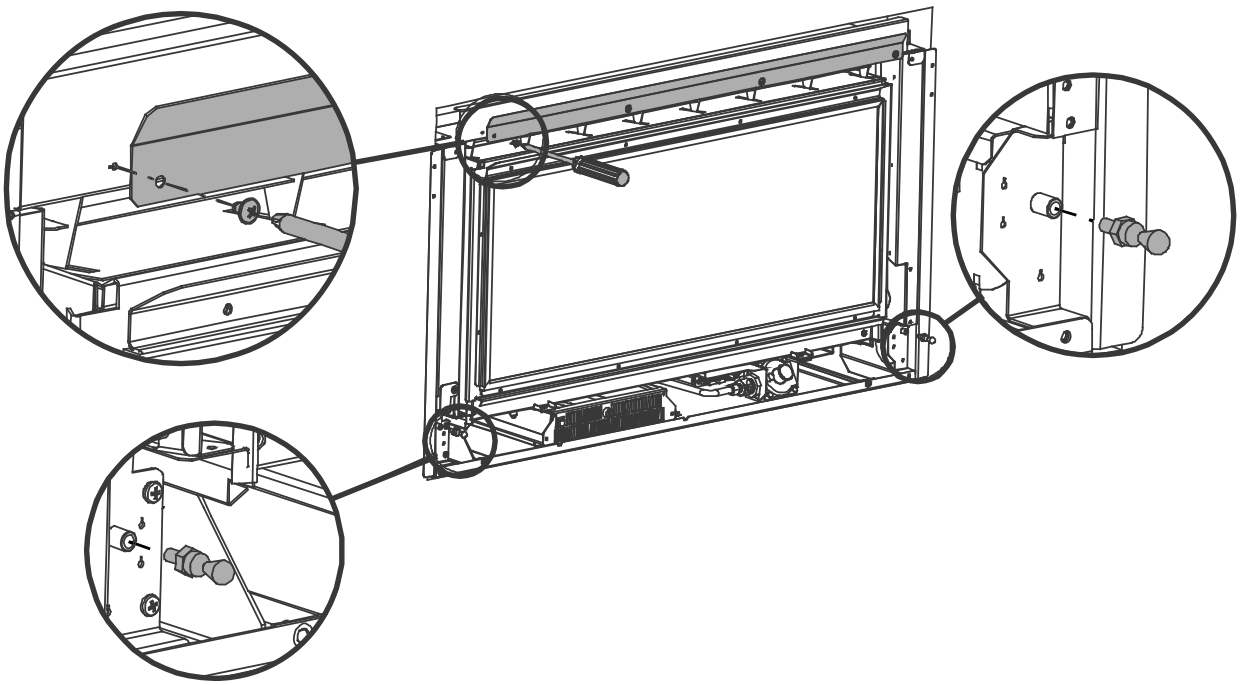
F3 Fitting the Quadrato or Quadrato Lite Fascia Panels

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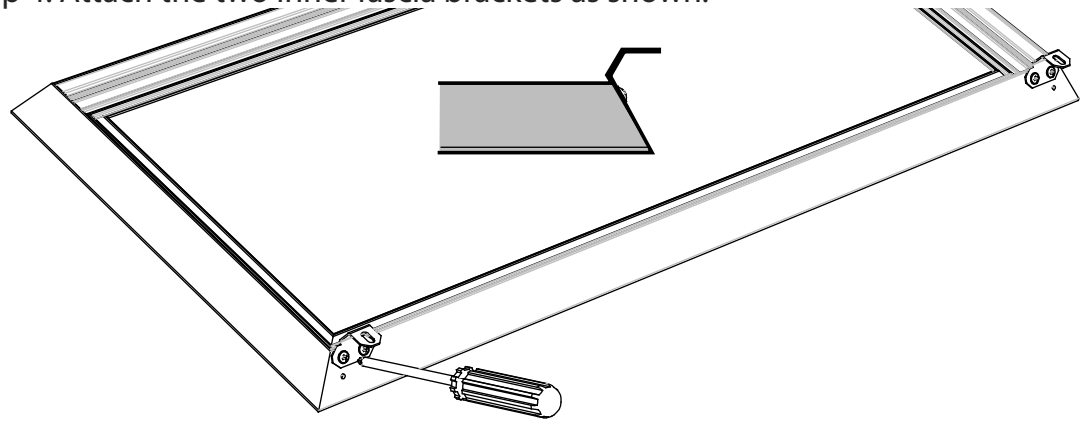
Step 1: Ensure the glass and all glass retainers are securely fitted
Note: If the glass gasket requires a replacement, call your nearest Escea agent who will ensure the part is replaced with the correct type. In the event that the glass is broken by impact, purchase the replacement from an authorised Escea agent only.

Step 2: Attach the Outer Fascia Bracket to the top lid as shown below

Step 3: Screw the two Outer Fascia studs into the two brackets at the bottom left and right of the appliance as shown below.

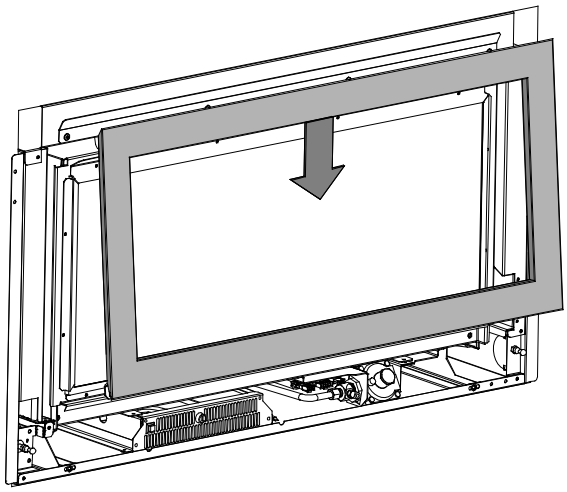


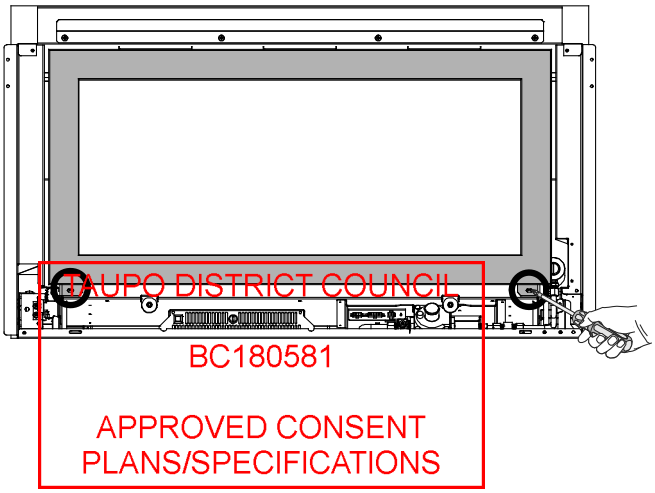
Step 4: Attach the two inner fascia brackets as shown:



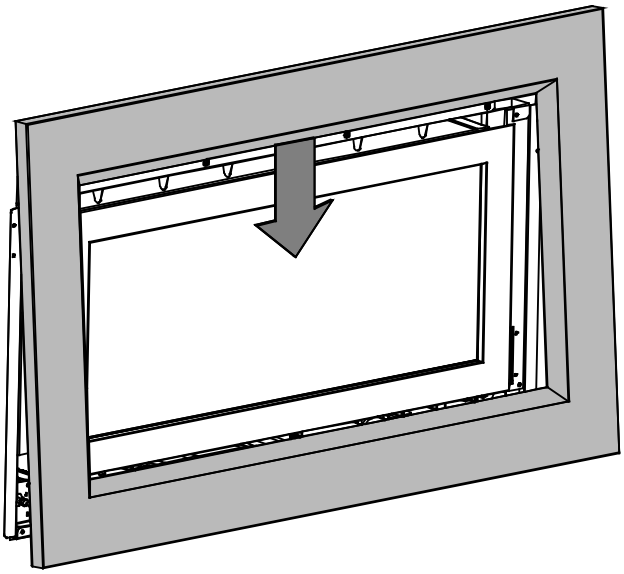
Step 5: Hang the Inner Fascia from the metal bracket on the front of the firebox.

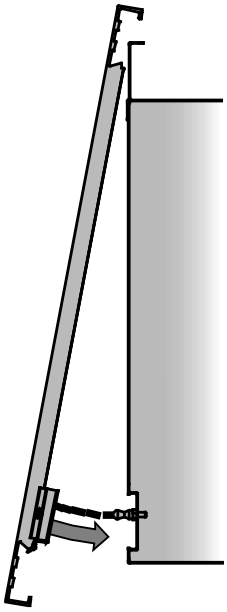
Step 6: Screw the Inner Fascia to the bottom left and right of the firebox as shown below.





Step 7: The Outer Fascia is now fitted over the top of the Inner Fascia. Hang the Outer Fascia (larger one) from the 30 degree flange at the top of the fireplace, being very careful not to damage either the Inner or Outer Fascias as there is not a lot of room to fit the Outer over the Inner. Once the Fascia is hung on this flange and clear of the Inner Fascia it will swing down and press firmly into place.



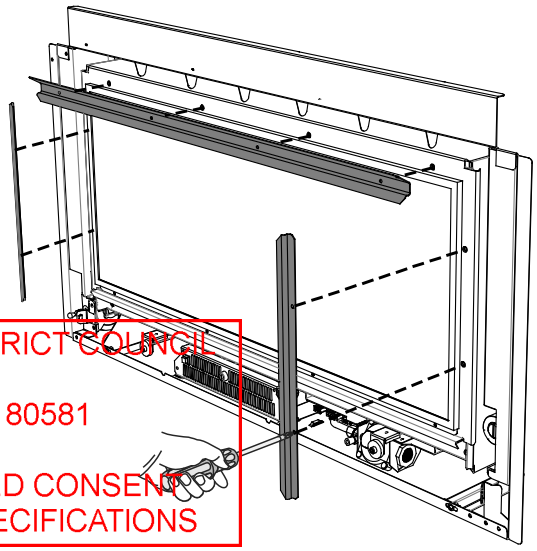


TAKE CARE: When securing the outer fascia, ensure it does not hit the inner fascia.

Step 8: Once it has clipped onto the fireplace check that the Fascia is parallel with the wall. The fascia installation is now complete.

F4 Fitting the Rado Fascia Panels

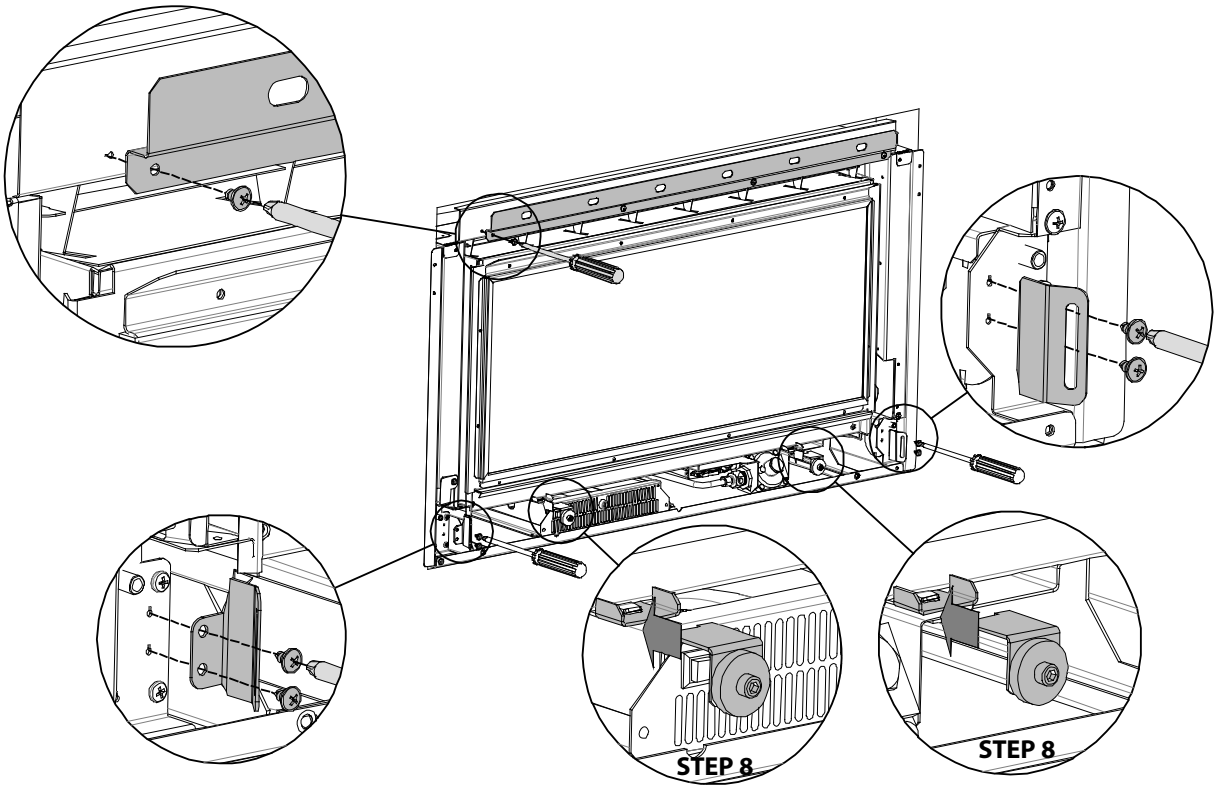
Step 1: Ensure the glass and all glass retainers are securely fitted. Note: If the glass gasket requires a replacement, call your nearest Escea agent who will ensure the part is replaced with the correct type. In the event that the glass is broken by impact, purchase the replacement from an authorised Escea agent only.



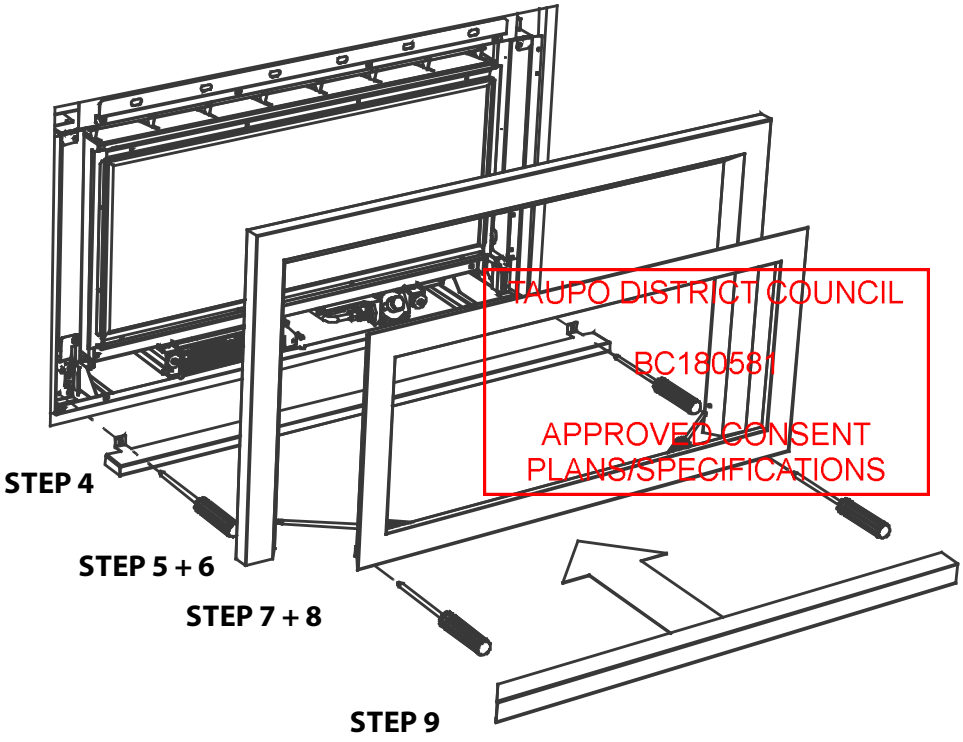
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Step 2: Attach the Rado Outer Fascia Bracket to the top lid as shown below. Note: Ensure the correct orientation of the bracket. If the bracket is installed upside down, the fascia will not fit.

Step 3: Fit the Rado Outer Fascia brackets to the bottom left and right sides of the appliance as shown below.

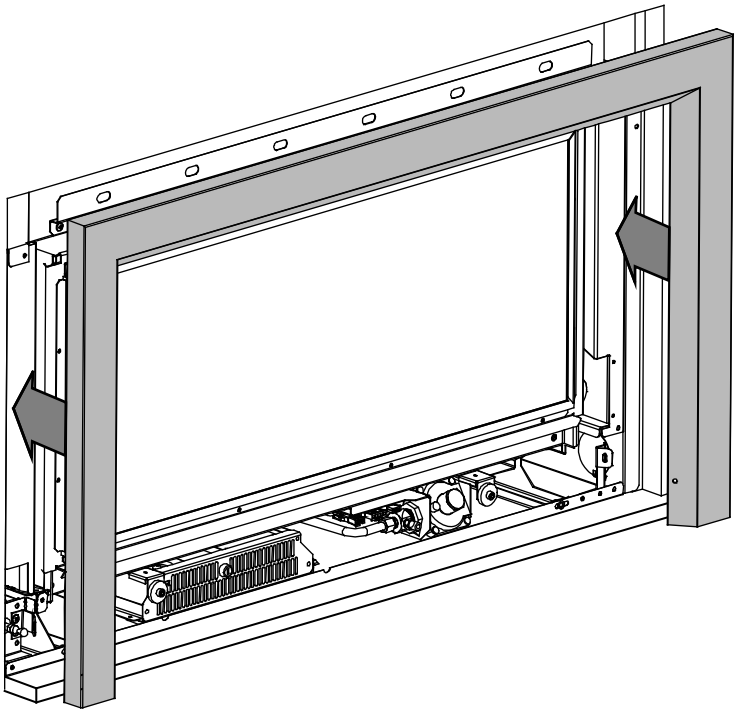


Step 4: Attach the lower foot to the fascia by screwing it in the positions shown below.



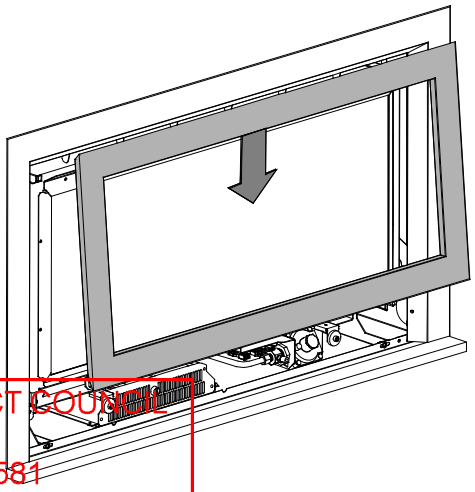
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Step 5: Hang the Outer Fascia from the magnet bracket attached to the top of the fire-box. Insert the fascia so that it is parallel with the front of the gas fireplace. The Hex-nuts attaching the magnets to the fascia will locate in the holes on the magnet bracket, securing the Outer Fascia in the correct position. If this fascia does not fit, check to make sure the magnet bracket installed above is in the correct orientation.



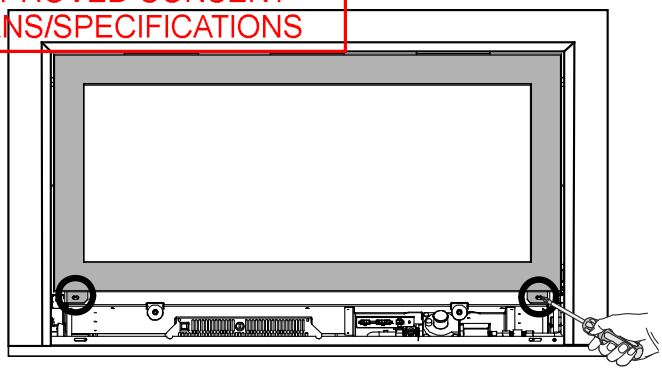
Step 6: Fit the two screws at the base of each side of this fascia. The heater may have to be adjusted in or out of the cavity to ensure fascia fits correctly.

Step 7: Attach the inner fascia brackets to the Inner Fascia as per the instruction page supplied with the fascia. Hang the top edge of the Inner Fascia from the lip that extends at 45 degrees from the top of the firebox. This fascia is attached to the fire at its base by two screws. Leave the screws loose enough to be able to adjust the Inner Fascia.

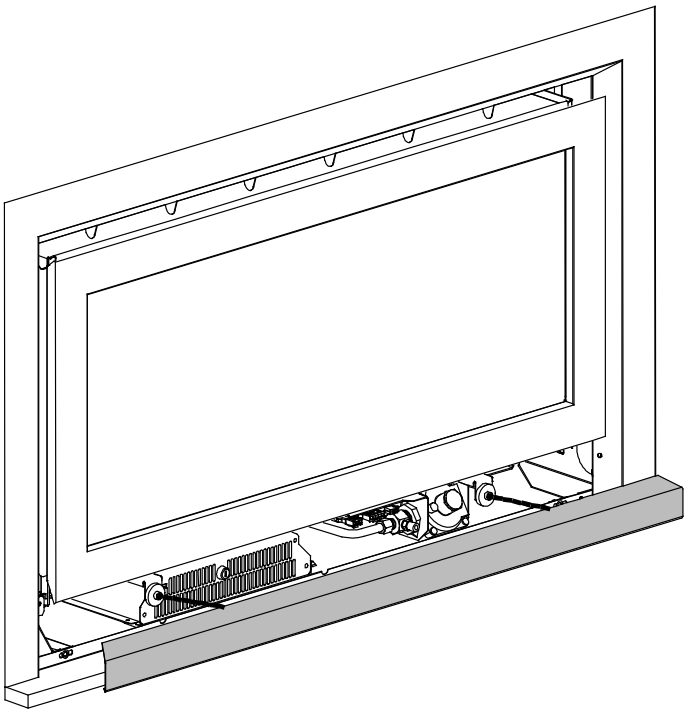


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Step 8: Check that the Inner Fascia is centred. If this panel is not centred, adjust the Inner Fascia side to side until the spaces on either side are even. Tighten the screws to fix the Inner Fascia in place.



Step 9: Push the supplied magnet brackets into position. Place the bottom fascia trim onto the magnets. If this panel does not fit, adjust the outer fascia side to side or the appliance in/out until the trim fits well.



F5 Locating Wall Mount Cradle for Wireless Control:

The appliance's remote contains the thermostat that will sense the room temperature and communicate this back to the heater via radio frequency.
A wall mount cradle has been provided for the wireless control and where possible the control should be housed in this cradle.

The location of this cradle should be decided by taking into account the following factors;

Simple, convenient access for the user
Away from air flow and drafts through the room
The parts of the room that people are likely to spend time
Away from direct sun light
A suitable distance away from the heater.
Ideally 1.2m to 1.5m from the floor

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The radio frequency signal will go through some walls but for best results Escea suggest that the cradle position is between 1 and 5 metres away from the heater.

Please ensure that cradle is screwed firmly onto the wall using the screws provided.

F6 Operating the Appliance for the First Time:

Remove the battery cover on the rear of the remote. Insert the new "AA" size batteries, paying attention to the polarity.
You should now see on the display of the remote the time showing "0:00".

To turn the fire on, press the "POWER" button once, and within a few seconds the appliance will begin its startup sequence.
NOTE: The appliance begins its startup with a thirty second pre-start purge, where the combustion fan runs on its own to clear the firebox before it tries to ignite. During the pre-purge the remote will alternately show the remote's "Set" temperature and a rotating segment indicator to show that the fire is in start up mode and will try to ignite.

When the appliance has lit, set the room temperature by pressing the 'plus' or 'minus' button repeatedly until the display is showing the desired temperature. The remote will then revert back to the 'current' room temperature 30 seconds after making the change.

Run the appliance on full for an hour with the windows and doors open in the dwelling. This will ensure any running-in smells have the chance to dissipate.

The appliance is turned off by pressing the "POWER" button once more. The remote will display the time only.

Run the appliance again and check the operation of the thermostat by increasing and reducing the set temperature. Check the Flame Effect function and the Fan Boost functions work correctly.

For further operation instructions please refer to the User Guide.

F7 Normal Operating Sounds and Smells:

Note: Each time the fire is lit from cold the glass may fog up with condensation. This is normal and the condensation will disappear within a few minutes once the glass heats up.

Sounds

It is possible that you will hear some sounds from your gas appliance. This is perfectly normal due to the fact that there are various types of materials used within your appliance. Listed below are some examples. These are all normal operating sounds and should not be considered as defects in your appliance.

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- **Fan:**
  Escea gas appliances use electric fans to push heated air further into the room. It is not unusual for the fan to make a "whirring" sound when ON. This sound will increase or decrease in volume depending on the speed setting of your fan.
- **Gas Control Valve:**
  As the gas control valves turn ON and OFF, a dull clicking sound may be audible, this is the normal operation of a valve. When the fire is switched off after being run for a while, there may be popping and fluttering noises as the residual gas in the burners burns away. These are normal and should be no cause for concern.
- **Unit Body/Firebox:**
  Different types and thicknesses of steel will expand and contract at different rates resulting in some "cracking" and "ticking" sounds being heard throughout the heating and cool down processes.

Smells:

The first few times the unit is operated, the unit may release an odour and the flames will appear orange caused by the curing of the paint, the burning off of the starch in the gas logs and the oils in the metal. This is a temporary curing process which will disappear with use.

F8 Cleaning the glass

A deposit on the inside of the glass, caused by the starch in the logs, may appear as a build up after several uses. If this film is not removed, it will bake on and may become difficult to remove. When the glass is cold, remove it and clean the inside with a non-abrasive cleaner.

DO NOT ATTEMPT TO CLEAN THE GLASS WHILE IT IS HOT. NEVER OPERATE THE UNIT WITH THE GLASS REMOVED.

END OF SECTION F

By the end of this section, you should have:

- ☐ A completely fitted fascia
- ☐ The remote control mounted on its cradle on a wall
- ☐ Operated the fire and verified that it lights reliably and safely
- ☐ Run the appliance on full for an hour with the doors & windows open
- ☐ Checked the operation of the thermostat, Flame Effect & Fan Boost functions

G Installation Checklist

Go through the following checklist to ensure you have installed the appliance correctly

- ☐ Correctly sized cavity to suit your fascia and flue configuration
- ☐ Correct clearances to combustibles and mantles around the fascia
- ☐ An electrical isolating switch to the appliance, accessible after finished installation
- ☐ Correctly sized gas supply with a pressure test point, ensuring adequate supply with all other gas appliances in the dwelling running
- ☐ A weather-tight installed Horizontal or Vertical Powerflue Terminal with clearance as specified by AS/NZ5601
- ☐ Reasonable access to the outside face of the Horizontal Powerflue Wall Terminal for maintenance purposes OR
- ☐ Access to the Vertical Power Flue Enclosure for maintenance purpose
- ☐ Flue attached to the rear/bottom of the Powerflue Terminal leading back to the appliance
- ☐ The electrical cable from the Powerflue Terminal attached to the rear of the installation and run back to the appliance cavity in an electrically safe manner
- ☐ The appliance fixed to the cavity base and wall lining
- ☐ The appliance plugged into a mains electricity supply
- ☐ All gas joints and pressure points leak tested, and soapy water and drop tests completed on gas pipework
- ☐ Gas type conversion process carried out if required
- ☐ Log, coal, river stone or crystalight fuel bed correctly installed
- ☐ Glass correctly fitted
- ☐ A completely fitted fascia
- ☐ The remote control mounted on its cradle on a wall
- ☐ Operated the fire and verified that it lights reliably and safely
- ☐ Run the appliance on full for an hour with the doors & windows open
- ☐ Appliance functions checked, including thermostat operation, Flame Effect and Fan Boost
- ☐ Dwelling owner shown how to operate the appliance correctly
- ☐ Warranty card filled in with installer details and appliance serial number
- ☐ User Guide made available for end user
- ☐ Plumbing Industry Commission Compliance Certificate given to end user

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S Service Manual

IMPORTANT:

- This appliance must be serviced every 12 months.
- Any service operation should be carried out only by a suitably qualified and trained person.
- Gas and electricity supply MUST be isolated before any service operation is carried out on this appliance.
- This manual should be left with the appliance.
- DO NOT MODIFY THIS APPLIANCE.

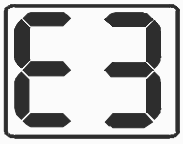
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S1 Error Codes:

This gas fire has been designed to show error codes to help explain and identify any fault situation that occurs. These codes will appear on the wireless remote control in the form of a large letter "E" with a number beside it. Codes can normally be reset by turning the heater off then on again at the mains power wall switch.

The following table shows what each code means and possible ways to rectify the situation. In the case of persistent or repeated shutdown errors, action must be taken immediately to find and repair the fault.

Error Code	Suggestion action
 Electronics Over Temp	• Excess lint and dust build-up on the front of the controller tray. • Possibly fascia panels installed incorrectly resulting in restricted air flow. • Room air fans may be slowed or stalled. Remove firebox, check that fans are plugged in, cleaned, and free turning Note: This error has a permanent lock out and will require the unit to be reset after the initial error (turning the power to the fire off "at the wall" then on again after a few seconds).
 Flame Failure or Power Flue trip	The fire has tried to light three times and failed. • Check gas supply and check other gas appliances to see if they are affected. If you have two separate propane cylinders, switch over to the full bottle or contact your gas supplier. You may need to retry igniting the fire a few times after re-establishing gas supply. • Check the electrode placement in relation to the pilot flame. Ensure it is well enveloped in flame as per the diagram in the installation instructions. Ensure no small coals have dropped onto the ignition electrodes between the burners. • Check that the fan inside the powerflue wall terminal is running during startup. This fan may need servicing if it is slowed or stalled.



Appliance Over Temperature Sensor Trip

The bimetallic snap disk mounted on the spigot seal plate at the rear of the fire has tripped. The possible causes for this could include:

- Possibly fascia panels installed incorrectly resulting in restricted air flow at the top of the fire.
- Room air fans may be slowed or stalled. Remove firebox, check that fans are plugged in, cleaned, and free turning
- The gas regulator being set too high resulting in excess heat build-up.
- The inlet flue not being connected and the appliance drawing warm air from the cavity. Check flues are securely connected at both ends.

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Valve Solenoid Check Failure

The valve solenoids have failed the pre-ignition test. This is to detect a faulty valve solenoid. However, it is possible a wire has dislodged.

- Check that the connections to each solenoid are secure and in place. It may be that the connections on the ends of the wires need to be tightened a little (e.g. with a pair of pliers) to ensure a robust connection to the valve terminal.
- Disconnect and reconnect the firebox connectors ensuring they are firmly pushed into place.
- It could also be that one of the solenoids on the valve inside the fire has failed. If this is the case the valve will need to be replaced.



Remote Cannot communicate with fire

The remote cannot communicate with the fire. Reasons for this could include:

- The fire being turned off "at the wall" i.e. a loss of power to the fire or the remote is outside of its effective radio frequency range (too far away from the fire). Typical remote range is 1m to 5m.
- Ensure there is power to the fire by pressing the auxiliary on/off (red) button on the fire, then press the on/off button on the remote to clear the error.



Combustion Air Flow Error

- Check whether the pressure switch is activating at startup (there is an orange indicator LED in the control tray which should be lit). If not check the pressure switch electrical connection is correct.
- Check that the hoses are connected at both ends. Ensure the hoses are not kinked.
- Ensure the pressure switch is mounted vertically and the diaphragm is operational. The grey hose should be connected to the low pressure port and the translucent to the high pressure port
- Check that both flues are securely connected at both ends to the appliance and the powerflue wall terminal and that the flue is not damaged

S2 Serial Number:

The serial number for the fire can be found in two places. The first is in the battery compartment of the wireless remote under the batteries. The second is on the data sticker on the chassis under the firebox on the left hand side.

S3 Checking Operating Pressure:

See section E14 of this manual.

S4 Cleaning the Log Set and Glass:

NEVER RUB THE FASCIA. The outside of the fascia's must only be cleaned with a clean damp cloth, dry off after cleaning. The high temp silver powder coating that is used on Escea fascia parts contains certain amounts of aluminium that when rubbed too hard will oxidise leaving a black smudge that cannot be removed. Always clean when cold.

This is a service procedure that will need to be carried out whenever soot builds up on logs and/or inside of glass. If soot build up becomes excessive or regular then one of the following actions may be required;

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- Reset gas pressure, pressure may be too high;
- Reposition log set so that front edge of each log is just behind each row of holes in burner top;
- Clear any blockage from primary air port of burner;
- Check flue tube is not damaged or disconnected.

For diagrams and further info on removing your fascia, reverse the steps found in section F.

- Remove fascia bottom panel by pulling it off the magnets that retain it to the fire. Remove the 2 screws holding the inner fascia, lift off the inner fascia by pulling the base of the inner fascia out and lifting it up and off.

- Unscrew the side and top glass retainers and remove them. Take care that the glass does not fall forwards at this stage.

- Lift out glass and place it carefully aside.

- Take out fuel bed and gently brush any soot from log with a soft hearth brush. The burner tops can be vacuumed to remove any excess material.

- Clean the inside and outside of glass with normal glass cleaning products. Use a CLEAN DRY cloth only. Stubborn marks may be cleaned with a ceramic glass cleaner.

- Replace in opposite order and test run heater.

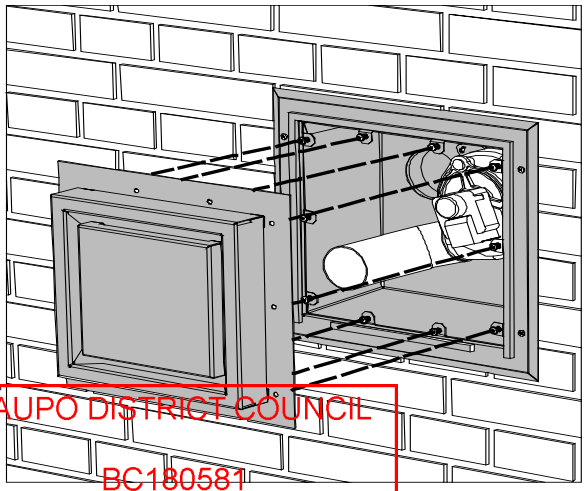
S5 Servicing the Horizontal Powerflue Wall Terminal

If the Horizontal Powerflue Wall Terminal needs servicing, the fan can be accessed from the outside of the installation.

Ensure the power to the Horizontal Powerflue Wall Terminal is off by disconnecting the power to the appliance inside. If the appliance has been running, allow the terminal to cool before attempting to service it.

Undo the ten screws holding the outer cowl in place and pull the whole plate and cowl

directly outwards. Note: Be careful of any flashing that may have been installed above the terminal.



Removing this plate gives complete access to the fan for servicing or replacement.

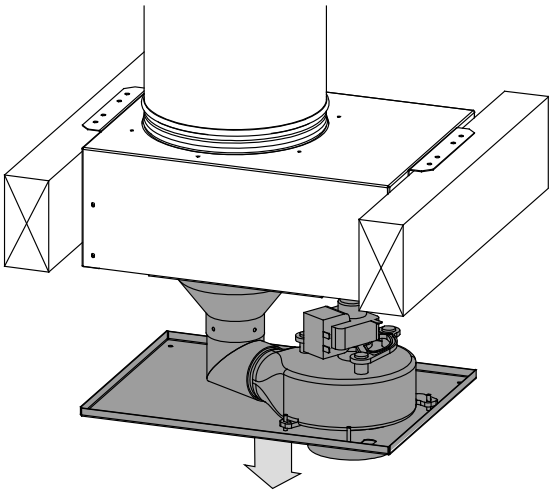
Check that all the seals are still intact. Check the fan electrical terminals, motor and impellor are not corroded. Ensure there is no signs of leakage in or around the terminal.

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When reassembling the terminal, line up the round silicon grommets with the outlet tube of the fan and push the cowl back into place. Ensure all seals are still in place and replace all of the screws to hold the cowl in the correct position.

Servicing a vertical Powerflue:

If the vertical Powerflue needs servicing the fan can be accessed without disturbing the final twin walled flue length or roof terminal.



To gain access to the fan and electrical terminals remove the eight screws that hold the base of the Powerflue to the lid, making sure to support the base while removing the screws.
Note: When inspecting or working on the Powerflue take care not to damage the two flexible flue pipes that connect to the Powerflue base.

Once the base has been removed clean away any dust or debris found and check that the fan electrical terminals, motor and impellor are not corroded. Also check for signs of leakage in or around the Powerflue.

When reassembling the Powerflue support the base under the lid and replace the 8 securing screws. After assembly check that the two flexible flue pipes are sealed and not damaged and that the twin walled final flue length and roof terminal are still sealed.

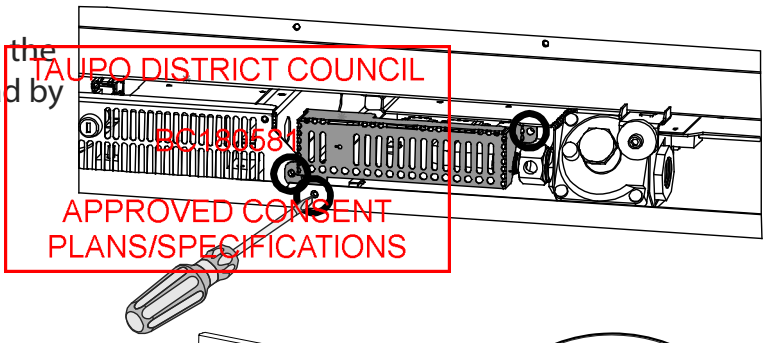
Note : Take care not to trap any wires between the base and lid of the Powerflue when reassembling.

S6 Removing or Cleaning Fan

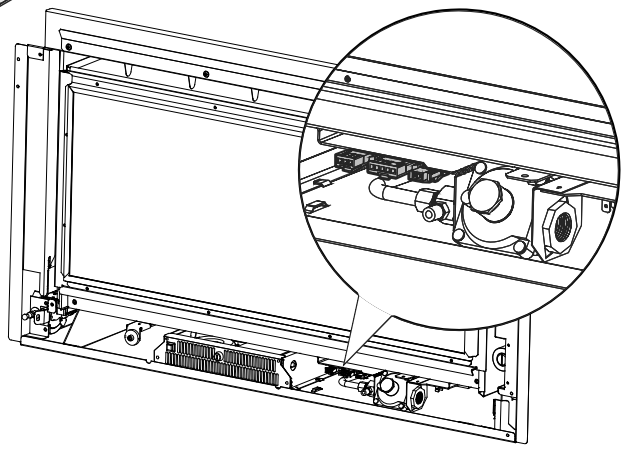
As part of regular service procedure, it is recommended that the fan is removed for cleaning. Dust will build up on the fan rotor and in the cavity where the fan is located. This can be removed by the service person using a hearth brush and a vacuum cleaner.
ISOLATE THE POWER AND GAS SUPPLY TO THE FIRE BEFORE COMMENCING THIS PROCEEDURE

Step 1: Remove the inner/outer fascia, front glass, and log set as described in section S4.

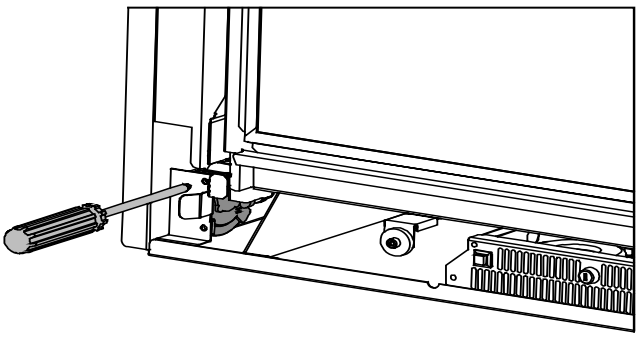
Step 2: Remove the guard covering the electrical connections and earth lead by removing the 3 screws.



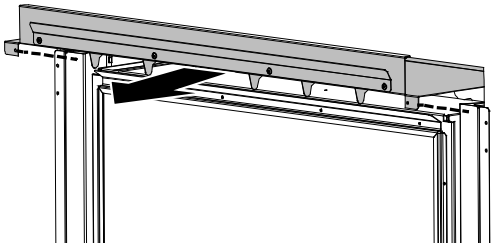
Step 2: Disconnect the gas supply from the fire and unplug the three wiring looms connecting the valve and spark electrode on the bottom right of the fire box. Unscrew the earth strap



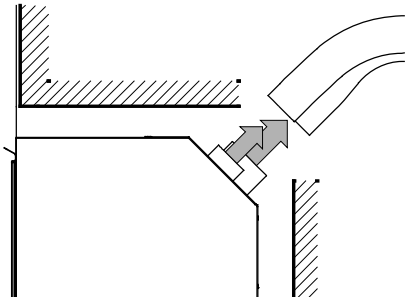
Step 3: Remove the 2 screws holding the pressure switch bracket. Carefully pull the switch out and remove the hoses from the rear of it.



Step 5: Remove outer shell top by removing the screws in each corner and sliding out.



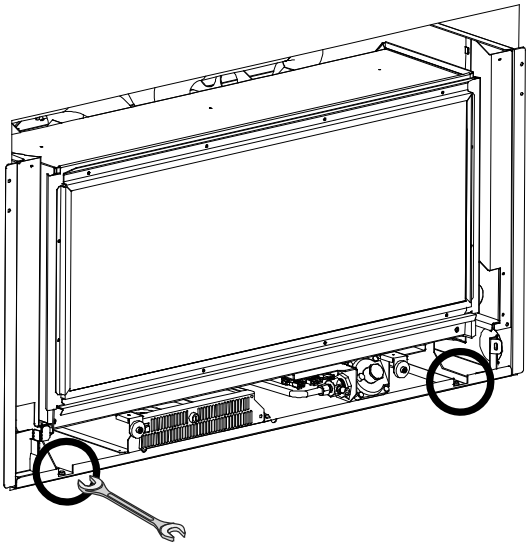
Step 6: Reach in and loosen the clamps holding the flexible inlet and outlet tubes and detach them from the fire.

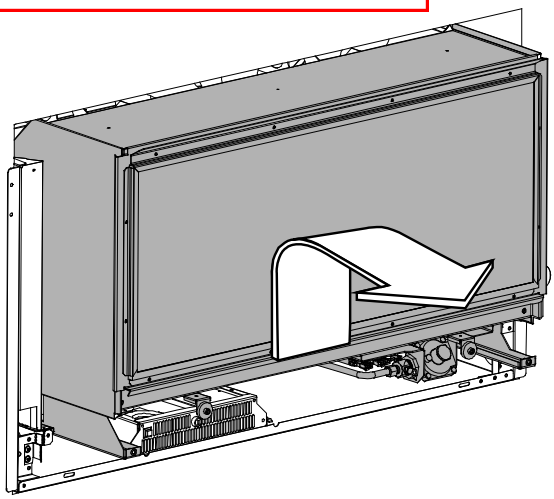


Step 7: Remove firebox from heater by taking out the screws from the bottom corners, lifting the firebox over the chassis lip and pulling firebox directly outwards (as shown).

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Note: Proceed with caution as the firebox assembly is heavy. Be aware of the components on the underside of the firebox that could easily be damaged.

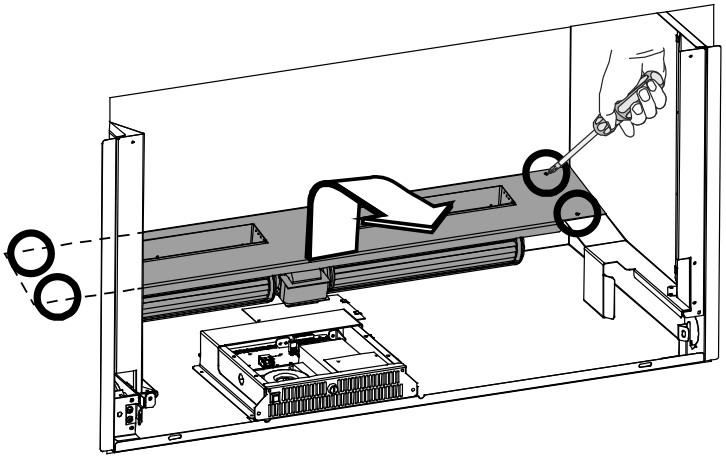




Step 8: Take out the 4 screws on top of fan plate assembly.

Step 9: Unplug wires lift the fan unit up and out to fully remove fan assembly.

Step 10: Clean fans, removing all dust build up.



Step 11: Replace fan assembly and firebox by repeating these steps in reverse order.

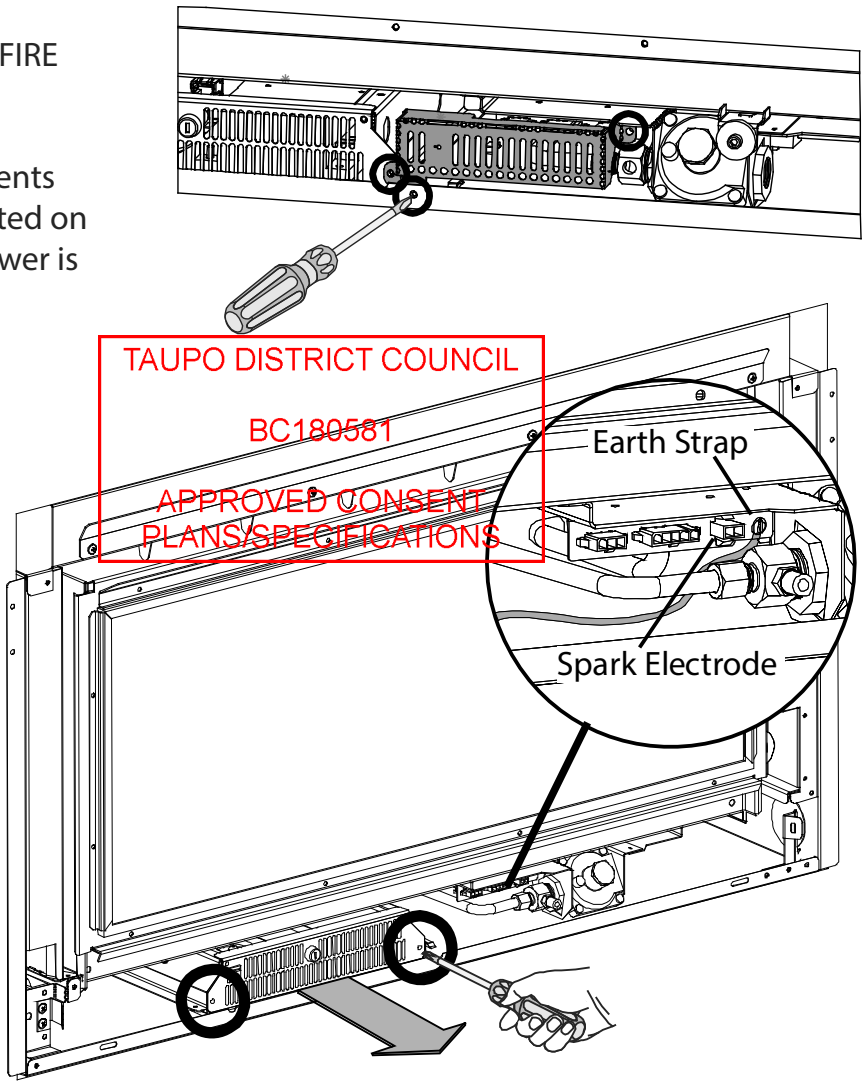
NOTE:

- ☐ Ensure the earth strap is reconnected (Screwed) into the electrical guard (step 2)
- ☐ Ensure the Pressure Switch hoses are connected to the correct nozzles without any kinks or restrictions. These can be identified by an "H" (high) and "L" (low) labelled on the hoses and the pressure switch. (step 3)

S7 Replacing Electronic Drawer

ISOLATE THE POWER TO THE FIRE BEFORE THIS PROCEDURE.

All of the electronic components of the heater have been located on a removable drawer. This drawer is located under the firebox, near the front left of the appliance. On the back of the drawer are two large connectors that unplug as the drawer is removed.

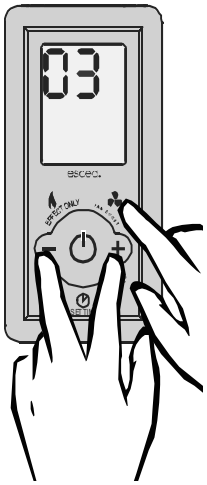


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Remove the protective grill from infront of the electrical connections (shown in first diagram) and unplug electrode wire from firebox and remove screw holding earth strap to firebox. Take out the two screws at each end of the electronic drawer and pull drawer outwards and up slightly to clear the chassis lip. If an ethernet / network cable is connected the lid of the drawer will have to be removed and the cable unplugged before the drawer is completely extracted from the fire.
Reverse this procedure to refit. Ensure drawer is fully seated into the draw housing.

S8 Replacing a Wireless Control:

If the wireless control becomes lost or damaged, a new one can be ordered from any Escea retail agent. When you have the new remote, the following procedure needs to be followed to "teach" the remote to only communicate with that fire.



1. Ensure the fire and remote are set to "Off" (only the time is displayed on the remote).

2. While the remote is in its "OFF" mode with only the time showing on the display, press the MINUS (4), PLUS (8) and FAN BOOST (7) buttons simultaneously (as shown right) until the characters "03" light up on the display. Release the buttons and the remote will count down and display "GO". The screen will then display all characters. This will put the remote into test mode and the two big temperature digits should begin counting from 0 to 99 repeatedly.

3. Press and hold the – (minus) button until the two large temperature digits reading 00 start to flash slowly. Release the – (minus) button. The remote control is now ready to be addressed to the fire.

4. Press and hold the red auxiliary on/off button (found on the front face of the fireplaces electronic drawer, shown on the left with an arrow) for a minimum of eight seconds, or until the two large temperature digits start counting upwards from 00 to 99 repeatedly on the remote control.

Note: Pressing the red auxiliary button on/off button will start the fire. Once the remote control is counting the fire can be turned off by pressing the red auxiliary button again.

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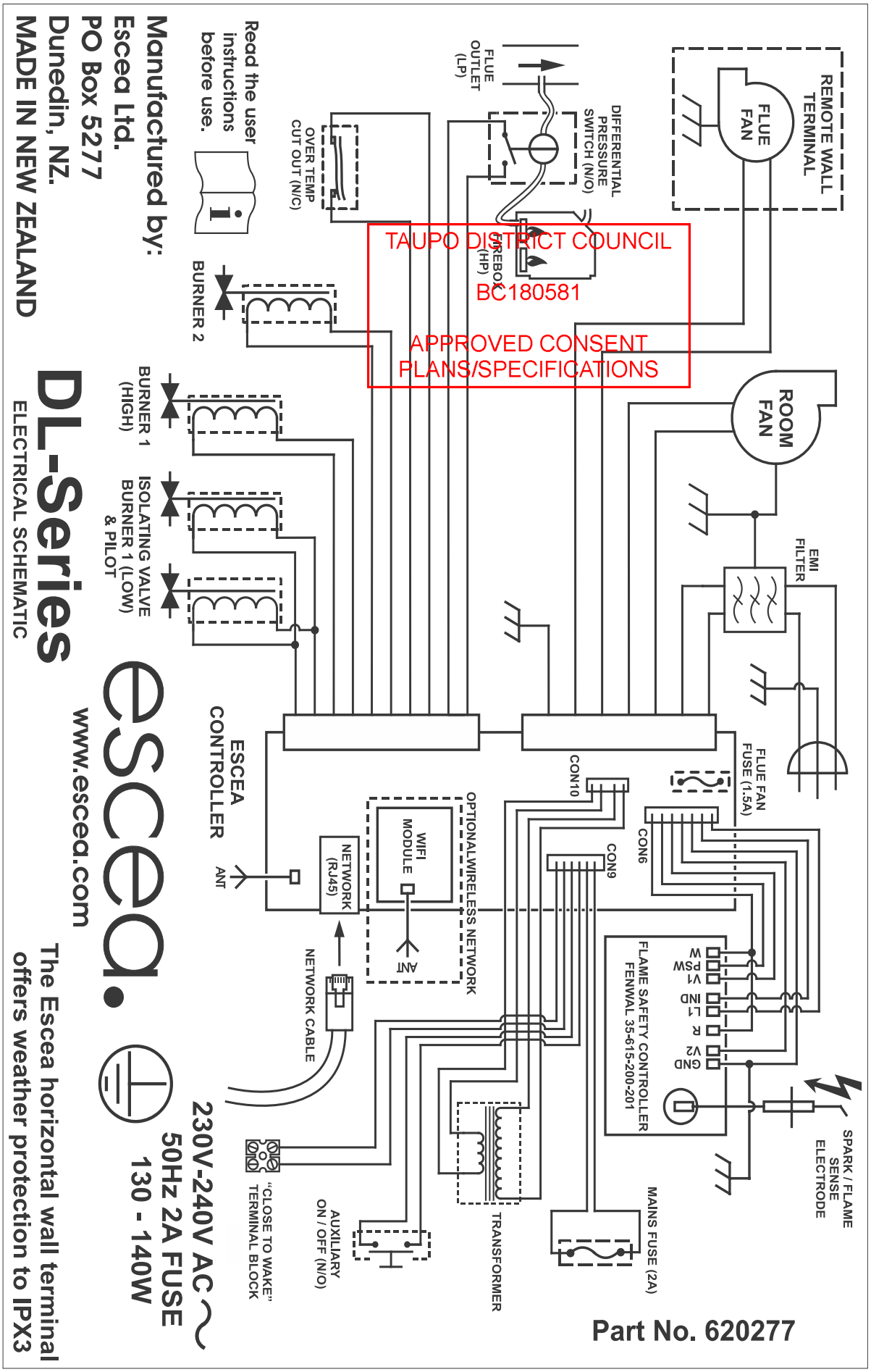
5. Press the large power button in the middle of the remote control to exit the test mode and return to normal operation. The remote should only be displaying the time. Check the fire will start using the remote control by pressing the large power button. Turn it off again using the remote control.

6. The fire is now re-addressed to the remote control.

S9 Annual service procedure:

- ☐ Isolate power and gas supply to fire.
- ☐ Remove front glass and clean inside of glass.
- ☐ Remove fuel bed and brush off any soot.
- ☐ Clean electrode and pilot hood of any carbon build up and ensure correct gaps between electrode and pilot hood
- ☐ Remove burners and blow compressed air through the burner ports.
- ☐ Remove jets and clean injector hole with solvent.
- ☐ Remove firebox to give access to fan, brush and vacuum any dust build up from fan blades.
- ☐ Vacuum any dust from the cavity that houses the fan and from the underside of the fire box around the valve and solenoids.
- ☐ If the gas piping includes a flexible hose connected to the regulator, check the hose for signs of wear (discolouration, loss of flexibility, cuts, worn covers, cracks, crushing, kinking, flattening or loose end fittings) and replace if worn, or more than five years old.
- ☐ Test all joints for gas tightness.
- ☐ Reassemble heater and check that operating pressure is correct. 2.3kPa Propane, 1.0kPa Natural Gas with all burners running.
- ☐ Check glass sealing tape and replace if necessary.
- ☐ Check to make sure that flue system is intact and not in any way blocked.
- ☐ Trial heater with several start/stop cycles and trial fan-boost, flame effect only and thermostat modes to ensure that all modes function correctly.
- ☐ Check and set the gap between the 3 pilot parts to 0.5mm as per diagram in section E9

S10 Wiring Diagram:



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Waterproofing Systems

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Technical Data Sheet

Dampfix Gold

Water Based Polyurethane Liquid Waterproofing Membrane

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DESCRIPTION

One part, highly elastic, Class 3, water-based polyurethane waterproofing membrane system that meets the requirements of AS3740 by complying with AS/NZ 4858.

This Technical Data Sheet may be revised, as appropriate, to comply with changes to relevant Australian and New Zealand Standards, reflect changes in Industry best practice in waterproofing procedures or include improvements to current technologies.

The Applicator is advised to reference the latest Technical Data Sheet issue, before commencing application, by visiting www.bostik.co.nz and following the Technical Data sheet links or by contacting Bostik Customer Service on 0508 222 272.

The **Bostik Dampfix Gold** waterproofing membrane system is specifically formulated for application on graded substrates that provide positive falls to drainage outlets. Overlaying tiling systems must comply with Guide to the Installation of Ceramic Tiles - AS3958.1).

This is a 2-coat system applied over primed porous & non-porous substrates. It is not recommended as a membrane system in immersed applications (such as pools or spas)

FEATURES

- √ Class 3, high elasticity.
- √ Fast drying.
- √ Recoat in 2 hours @ 20 ° C & 50% RH
- √ Early access for following trades.
- √ Tile next day in most conditions.
- √ May be tiled directly onto with approved ASA adhesives
- √ Reinforced with clump free fibres.
- √ No mixing.
- √ High resistance to detergents & bleach.
- √ Will not re-emulsify after curing.
- √ Does not embrittle with age.
- √ Excellent adhesion to concrete; rendered masonry; wet area plasterboard; FC sheet & plywood.
- √ Can be applied to damp substrates, i.e. no free water
- √ Brush, roller or trowel applied.
- √ Flood Test in 72 hours.

RECOMMENDED USES

- √ As a waterproofing membrane to internal wet area shower, bathroom, kitchen, laundry & toilet areas to AS/NZ 3740.
- √ As a waterproofing membrane to external balconies, rooftops & podium levels to AS/NZ 4654.2.
- √ All applications to be covered by tile or other surface wearing and protective systems by following trades.
- √ Suitable for concrete; cement rendered masonry; FC sheeting; water resistant plasterboard; and structural plywood (Type A Stamped “PAA JAS-ANZ” to AS/NZS2269-2004) substrates.

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APPLICATION INSTRUCTIONS

IMPORTANT NOTES

- The following instruction steps as detailed in this Technical Data Sheet may not be applicable in every application. They are provided as a guide to meet the requirements of AS/NZ3740 and AS/NZ4654.2.
- It is recommended that the installation should be carried out by a Bostik ASA trained Dampfix waterproofing course applicator.
- Bostik Technical Division must approve any modification or variances to this technical data sheet in writing followed by the issuance of an amended Technical Data Sheet.
- Wherever appropriate, the application must comply with AS/NZ 3740 'Waterproofing of Internal Wet Areas in residential buildings' & AS/NZ 4654.2 "Waterproofing membrane systems for exterior use – Above ground level".
- This product is specially formulated for brush, roller or trowel application to both small and large areas.
- A wet film gauge must be used regularly to ensure that minimum wet film builds are achieved for each coat.
- All vertical terminations, including perimeter walls, hobs and penetrations etc. must be of adequate height to satisfy AS/NZ 3740 for internal applications & AS/NZ 4654.2 for external applications.
- The minimum film build requirements are identical for horizontal applications and must be applied without slump or deformation when cured.
- Apply bond breaker joint to all horizontal/vertical junctions, e.g. wall/floor, wall/wall, hob/ floor, hob/wall & shower set downs etc., prior to all membrane applications (see note on suitable sealants).
- Allow 72 hours before flood testing the installed **Dampfix Gold** system.

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Suitable Sealants

ASA silicones or Bostik Industrial Silicone are suitable sealants for use as bond breakers.

Correct bond breaker selection and installation is vital to overall membrane performance. Using an unsuitable sealant can increase the risk of failure and must be avoided. **Contact Bostik for advice if unsure or if considering products not listed above.**

SUBSTRATE PREPARATION

- Read precautions prior to applying any component of the waterproofing system.
- Commencement of membrane system installation shall be taken as acceptance of the substrate suitability and preparation by the applicator.
- Check that the surface of all substrates to be coated are: structurally sound, clean, dry or damp with no free surface water, smooth and free of voids & protrusions, oils, grease, curing compounds, coatings, adhesive residues and are uncontaminated by preceding trade activities.
- Check that all composite substrates, such as wall & floor sheets are fully supported and installed to the manufacturer's instructions.
- Where platform floor sheeting, in particular particleboard, is installed check manufacturer's specification for suitability in wet area applications and ensure that protective coatings do not impair membrane adhesion.
- New concrete and render must have cured for a minimum 28 days.
- Sand & cement screeds and polymer modified renders must have cured for a minimum 7 days.
- Substrates that are not smooth or free of voids and protrusions must be ground and vacuumed clean. All remaining voids must be repaired using, **Bostik UL-Ultrafine**, making sure to follow instructions for preparation, application and curing time. Refer to **Bostik UL-Ultrafine** Technical Data Sheet
- **Bostik Multiprime** must be applied as a primer coat on all applications to porous substrates, e.g. concrete, screeds, renders. Refer **Bostik Multiprime** Technical Data Sheet.
- **Bostik N40** primer must be applied using "2 cloth method" on all applications to dry rigid plastic & metallic non-porous substrates, e.g., UPVC drainage outlets and penetrations; aluminium angle water stops, brass, copper and galvanised penetrations, stainless steel drains and gutters etc. Refer **Bostik N40** Technical Data Sheet.
- 2 coats of **Bostik Moisture Seal** must be used to seal concrete slabs subject to a hydrostatic head of pressure from the negative side. **Bostik Moisture Seal** must be clean, dry and smooth immediately prior to the application of **Bostik Dampfix Gold**. Refer **Bostik Moisture Seal** Technical Data Sheet.

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- Membranes should not be applied until all preparation steps have been completed.
- **Dampfix Gold** is not recommended for use in swimming pools, ponds or spas.

CRACKS & JOINT SEALING
CONCRETE & MASONRY SUBSTRATES

- Static cracks up to 2mm in width, i.e. cracks that do not move or continue to propagate, must be filled with **Bostik Dampfix Gold** or **Bostik UL-Ultrafine** after substrate priming and prior to the first full coat of **Bostik Dampfix Gold.**
- Static cracks greater than 2mm and less than 4 mm in width, i.e., cracks that do not move or continue to propagate, must be filled with **Bostik UL-Ultrafine** after substrate priming and prior to the first full coat of membrane**.**
- Cracks greater than 2mm that are subject to movement or propagation must be referred to the builder or engineer for structural assessment and method of rectification to perform as an expansion joint.
- Expansion joints must be a minimum 6mm in width and require a backer rod installed prior to the installation of a suitable sealant (see note on page 2) at a width: depth ratio of 2:1. See “Expansion Joints” below.

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FLOOR & WALL SHEET JOINS

- All floor and wall sheets must be installed to sheet manufacturer’s specification and primed with **Bostik Multiprime.**
- Internal or external sheet floor systems, suitable for wet area applications, require sealant application to seal sheet joins at the time of installation to comply with manufacturer’s instructions. The Waterproofer must confirm that the sealant used is compatible with all **Bostik Dampfix Gold membrane** system components.
- Floor sheet joins that use Polyurethane sealants at installation must have cured for a minimum 7 days prior to the application of the membrane.
- All sheet joins must be isolated from the membrane by a min 25mm wide bond breaker tape that covers the entire width & length of the sheet join.
- As floor sheet joins are more prone to movement over joist supports, apply an extra 1000-micron (1.0 mm) wet coat of **Bostik Dampfix Gold** extending a minimum 35mm either side of the bond breaker tape. A further 2 full coats, at 1000 microns each, must be applied to the remaining area to be waterproofed.

EXPANSION JOINTS

- All expansion joints must be isolated from the membrane by a minimum 25mm wide bond breaker tape that covers the entire width & length of the joint.
- An extra 1000-micron (1.0 mm) wet coat of membrane extending a minimum 35mm either side of the bond breaker tape must be applied as an extra coat. A further 2 full coats, at 1000 microns wet coat each, is required to the remaining area to be waterproofed.

PRIMING
POROUS SUBSTRATE

- A porous or absorbent substrate will allow a bead of water to easily soak into, and wet out, the surface of the substrate.
- To avoid pin holing **Bostik Multiprime** must be stirred and not shaken if colour separation is evident. Colour separation will not affect the performance of **Bostik Multiprime.**
- **Bostik Multiprime** must be applied as a primer coat on all **Bostik Dampfix Gold** applications to porous substrates.
- Refer **Bostik Multiprime** Technical Data Sheet.

NON-POROUS SUBSTRATE

- A non-porous or impervious substrate will cause a bead of water to be retained on the surface of the substrate as a raised droplet. The droplet does not easily soak into the surface of the substrate.
- **Concrete that is overworked or burnished** at the time of placement can present, when cured, as a non-porous substrate that will not easily absorb a bead of water. Mechanical abrasion, such as captive

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shot blasting or vacuumed grinding is required to open substrate pores prior to the application of **Multiprime** primer.

- **Rigid plastic and metallic substrates** require **Bostik N40** primer applied using the "2 cloth method" e.g., uPVC drainage outlets & penetrations, aluminium angle water stops, brass, copper or galvanised penetrations, stainless steel drains & gutters etc. Refer **Bostik N40** Technical Data Sheet.
- **"Two Cloth Method"** -.
    - Dampen a clean & dry cloth with N40 primer and spread evenly over the non-porous substrate using a cleaning/rubbing action.
    - With a second clean & dry cloth, immediately wipe all primer residues off with a buffing action.
    - Allow the substrate to dry for a minimum of 5 minutes before installing a suitable sealant (see note on page 2) and/or **Bostik Dampfix Gold** membrane.
    - Do not leave the primer longer than 4 hours before applying sealant/membrane.
    - Re-prime if 4 hours has elapsed without applying sealant/membrane.
    - Clean & Re-prime if the primed surface is contaminated with excavation spoil, water, condensation, dust or other contaminates before sealant or membrane can be applied.

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NB: For pre-treated surfaces, contact Bostik Technical Division for P.A.T.S. Service.

APPLICATION

MOIST OR DAMP SURFACES

- Membrane must be applied to a primed substrate.
- **Multiprime** can be applied to damp porous substrates, i.e. with no free water on the surface.
- **N40 Primer** must **not** be applied to a damp non-porous substrate.
- **Multiprime** must be used as a primer coat to porous substrates, e.g., concrete, renders, FC sheet, water resistant plasterboard & external grade plywood.
- **Dampfix Gold** is not a vapour barrier and is not designed to stop a negative hydrostatic head of pressure. Where a substrate is subject to a hydrostatic head of pressure from the negative side **Moisture Seal** must be applied and allowed to fully cure before the application of **Dampfix Gold** system. Refer **Moisture Seal** Technical Data Sheet.

BOND BREAKER & MEMBRANE INSTALLATION

- Internal wet area installation must comply with the minimum requirements of AS/NZ3740 Section 3, "Installation". As a guide, refer pages 12 to 33.
- External wet area installation must comply with the minimum requirements of AS/NZ4654.2, Section 2, "Design and Installation". As a guide, refer pages 7 to 30.
- When installing bond breakers only use sealants that have been approved for use in writing by Bostik. See the note on suitable sealants on pg 2 for more details or if unsure, contact Bostik before work commences.
- Bond breaker is to be installed over the dry primer coat where a bond breaker joint is required, e.g. to internal corners and changes in direction of substrate plane, such as wall/floor; wall/wall; hob/wall junctions, pipe penetrations, tap bodies, water stops, drainage outlets or similar.
- Bond breaker joints must be a minimum 12mm x 12mm coved bead of sealant applied by caulking gun continuously into all changes of substrate plane, such as, wall/floor, hob/floor, hob/wall and wall/wall corners to the minimum termination height required by AS/NZ3740 or AS/NZ4654.2 as applicable.
- The sealant must bridge all gaps and holes with a minimum 6mm contact onto the adjacent substrates.
- All bond breaker joint sealant profiles must be a minimum 6mm in depth at the mid point of the joint.
- Substrate gaps at drainage outlets, flashings, and water stops, nail/screw holes etc must also be sealed using sealant prior to membrane application.
- Applied, sealant must be spatula tooled smooth around fittings and at all changes of substrate plane to a minimum 12mm x 12mm coved joint. The sealant must be a minimum 6mm in depth at the mid point of the bond breaker joint and extend a minimum 6mm on either side of the joint or gap.
- Apply membrane as soon as the bond breaker joint can be over coated without deformation of the coved sealant profile.

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APPLICATION OF THE MEMBRANE

- Can be applied using a brush, roller or trowel.
- Should not be applied in excess of 2mm thick per coat.
- This is a 2-coat system.
- The 2nd coat should be applied perpendicular to the 1st coat.
- Each coat must be applied at a uniform minimum 1000 microns in thickness to achieve a total wet film thickness of 2.0mm.
- A wet film gauge should be used to regulate adequate membrane coverage during application of each coat. **(Refer table on page 5.)**
- As a further guide a 15Lt pail, applied at 1.0 litre/m² (1000 microns) will cover approx. 15m² per coat.
- A 15Lt pail will cover approx.7.5m² in 2 coats.

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MEMBRANE PROTECTION

- Membrane should be protected throughout the application process and during the initial 24-hour cure period by the placement of signs and barriers to deny access by following trades.
- Further temporary protection sheets must be installed securely, to protect the cured dry film from damage by following trades, until a protective screed or finished floor system is installed.

MEMBRANE RECOATING AND/OR REPAIR

RECOATING

- The surface must be cleaned free of all tile adhesive residue, surface dust and any form of contamination or substrate irregularity.
- The surface of membrane must be washed down with diluted **Bostik Sugar Soap,** thoroughly rinsed and allowed to dry.

REPAIRING

- The adjacent **Dampfix Gold** membrane must be sound with minimum dry film thickness of 1.2mm that is fully adhered to the substrate.
- Membrane must be thoroughly cleaned of all foreign material and left free of all cleaning agent residue, dust or contamination.
- Ensure that any exposed porous and non-porous substrates are correctly prepared, primed and sealed.
- Apply 2 coats of membrane as per “Coverage” instructions.
- Ensure that the membrane repair overlaps the existing membrane by a minimum 100mm.
- A consistent minimum 1.2mm dry film thickness is required over both previously coated and uncoated repair areas. **(Refer “Coverage” table below)**

COVERAGE

- **Bostik Dampfix Gold** is a min 2-coat system
- Each coat must be applied at 1.0 litre / m² or 1000-microns (1.0mm) thick resulting in a total wet film thickness of 2.0mm after 2 coats.
- A minimum of 2 hours should be allowed between coats.
- The 2nd coat should be applied perpendicular to the 1st coat.
- Extra coats may be applied if required at the same rate of 1000 microns (1mm thick) per coat.
- Do not thin with water or add fillers.
- The regular use of a wet film gauge during application is recommended to ensure correct wet film build per coat.
- The dry film thickness, after 2 coats should be a minimum of 1200-microns (1.2mm thick).
- Each 15Lt pail will cover depending on substrate conditions:
  - 15m² / coat.
  - 7.5 m² / 2 coats.

Application	Wet Film Thickness	Dry Film Thickness
1st Coat	1000 microns (1.0mm)	600 microns (0.6mm)
2nd Coat	1000 microns (1.0mm)	600 microns (0.6mm)
Total Film Thickness after 2 coats	**2000 microns (2.0mm)**	**1200 microns (1.2mm)**

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PRECAUTIONS

- **Must not** be installed directly on wet, contaminated, or friable substrates.
- Minimum dry film thickness after 2 coats is 1.2mm
- Regular checks with a wet film gauge during the application of each coat are advised.
- Do not apply any component of the system when air or substrate temperatures are below 5° C.
- Cold damp conditions will adversely effect application properties and slow rate of curing.
- Do not apply Bostik Dampfix Gold when air and substrate temperature is greater than 35°C or below 5°C .
- Membrane should not be used as an exposed finish or as top coating exterior membrane.
- When used in areas subject to ambient conditions below freezing special installation precautions must be taken. Contact Bostik for advice before commencing work.
- All 4654.1 **external** membrane applications covered with a reinforced tile bed or screed must be separated from the membrane by a minimum one layer of 200um plastic sheet as a separation layer in accordance with AS3958.1 - 3.3.2.3.
- The installation of protection board and ballast, such as river pebbles or similar loose laid unbound coverings, must be isolated from the membrane by a compatible drainage cell and filter fabric system.
- Must not be applied directly over lightweight concrete.
- Hobs constructed of autoclaved aerated blocks, e.g. Hebel, must be saturated with 2 coats of Multiprime to consolidate and seal the substrate. This is to prevent pin holing of the membrane and provide enough strength to support tiling of the hob.
- Autoclaved aerated block walls must be rendered prior to the application of the waterproofing system.
- Should not be used in constantly submerged applications such as swimming pools, ponds & spas.
- Not designed to withstand negative side substrate head of pressure.
- Use only suitable sealants (see note on page 2). Incorrect sealants will significantly increase the risk of failure.
- Any intended application of membrane outside of recommended installation should be referred to Bostik Technical Services for approval.
- Protect contents of pail from excessive heat, and freeze/thaw prior to use.
- Contact Bostik prior to work commencing if there is any uncertainty regarding suitability, installation or any other matters related to the system (including bond breakers).

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BOSTIK CO-OPERATIVE TEST PROGRAM

Bostik offers a service in which a programme has been established to eliminate potential field problems by pre-testing Bostik membranes with samples of the building materials to which the membrane will be applied. This service is available on large projects where pre-application testing will aid in determining the proper method to achieve optimum adhesion. Consult a Bostik representative for further information

PAINTABILITY

Bostik Dampfix Gold is paintable. Refer paint supplier recommendations.

PROPERTIES

Colour	Gold or Grey	**Tensile Strength**	1.5 – 2.0 MPa
Appearance	Smooth, brush/roller grade paste	**Dry Time per coat**	2 hours @ 25°C & 50% RH (min 2 coats)
Shore "A" Hardness	Approx 60	**Dry time following Trades**	24 hours @ 25°C & 50% RH
Elongation	>900%	**SG**	Approx 1.3
Minimum Dry Film Thickness	1.2mm	**Minimum Wet Film**	1.0mm / coat
2mm Crack Bridging	Pass	**Membrane Rating**	Class 3
Volume Solids	Approx 60%	**Moisture Vapour Transmission Rate**	1.24 grams / m2 / 24hours
Packaging	15L & 4L pails	**Flammability**	Non-flammable

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Dampfix Gold

Complies with AS3740 by meeting all requirements of AS/NZ4858
Wet Area Membranes

STORAGE & SHELF LIFE

Store between 5ºC and 30ºC. If stored, unopened within these temperature ranges, this product has a shelf life of **12 months**. Protect from excessive heat, moisture and freeze/thaw.

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HEALTH & SAFETY

SEE THE MATERIAL SAFETY DATA SHEET FOR ADDITIONAL INFORMATION.
TECHNICAL SERVICES TOLL FREE NUMBER: 0508 222 272 (Land lines only)
MSDS can be downloaded from www.bostik.co.nz

Clean-Up

Warm soapy water will remove **Dampfix Gold** from tools and equipment prior to full cure

PACKAGING

15 Litre & 4 Litre pails

VOC – 23 g/Lt

PRODUCT DETAILS

ITEM NO	ITEM NAME	Colour	SIZE
30804399	DAMPFIX GOLD	Yellow	4L
30804461	DAMPFIX GOLD	Yellow	15L

This datasheet is for the general help of users. It is provided in good faith. The data is current and accurate to the best of our knowledge. Differing materials, substrates, environments, site conditions, and product storage, handling and application may affect results. Users should carry out tests to decide the product's suitability for purpose. This data sheet and the properties of the product may change without notice. Users, suppliers and retailers should check that the data sheets they have are the latest. To the maximum extent permitted by law, Bostik disclaims all warranties in relation to manufacture and use of the product. Bostik is not liable for representations made by users, suppliers or retailers about the product. Bostik is not liable for any loss or damage resulting from incorrect, careless, or negligent use or storage of the product, including use of out of date product. Any liability arising from use of the product is limited to the replacement or purchase price of the product. Bostik does not exclude rights and remedies that cannot be excluded by legislation, for example under the Consumer Guarantees Act 1993. Sale of the product by Bostik is subject to the Bostik New Zealand Limited Conditions and Terms of Sale. For more information on Bostik, products, and conditions of use and sale visit www.bostik.co.nz

Certified System Quality ISO 9001 SAI GLOBAL

VOC COMPLIANT

Product: Dampfix Gold
Issue Date: 25/11/2014
Issue No.
Author: WK
Division: Construction
Total Pages: 7

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BRANZ Appraised

Appraisal No. 745 [2011]

DAMPFIX GOLD INTERIOR WATERPROOFING MEMBRANE



Appraisal No. 745 (2011)

Amended 31 January 2012

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Dampfix Gold Interior Waterproofing Membrane is a liquid applied waterproofing membrane for use under ceramic or stone tile finishes in internal wet areas.

Scope

2.1 Dampfix Gold Interior Waterproofing Membrane has been appraised for use as a waterproofing membrane for internal wet areas of buildings, within the following scope:

- on floor substrates of concrete, flooring grade particleboard, plywood, and fibre cement sheet tile underlay, and on wall substrates of wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
- when protected from physical damage by ceramic or stone tile finishes; and,
- where floors are designed and constructed such that deflections do not exceed 1/360th of the span.

2.2 The use of Dampfix Gold Interior Waterproofing Membrane on concrete slabs where hydrostatic or vapour pressure is present is outside the scope of this Appraisal.

2.3 Building structural movement and control joints in the substrate must be carried through to the tile finish. The design and construction of the substrate and movement and control joints are specific to each building, and therefore the responsibility of the building designer and building contractor and are outside the scope of this Appraisal.

2.4 Ceramic or stone tile finishes are outside the scope of this Appraisal.

2.5 The membrane must be installed by Bostik New Zealand Limited Trained and Approved Applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Dampfix Gold Interior Waterproofing Membrane 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 B2 DURABILITY: Performance B2.3.1 (b) 15 years. Dampfix Gold Interior Waterproofing Membrane meets this requirement. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Interior wet area floors and walls incorporating Dampfix Gold Interior Waterproofing Membrane will meet this requirement. See Paragraphs 11.1-11.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Dampfix Gold Interior Waterproofing Membrane meets this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

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.

Technical Specification

4.1 Materials supplied by Bostik New Zealand Limited are as follows:

- **Dampfix Gold Internal Waterproofing Membrane** - An elastomeric, one part, water based, fibre reinforced polyurethane membrane for waterproofing. It is supplied as a gold colour in 15 litre pails.
- **ASA Multiprime** - A synthetic latex based primer for a variety of porous substrates. It is supplied as an opaque white liquid in 1, 5 and 20 litre containers.
- **ASA Epoxy Prime 2 Part** - two part water based epoxy primer for non porous substrates. It is supplied for 4, 8 and 20 litre kits and is a uniform blue colour when mixed.
- **ASA Neutral Cure Silicone** - A flexible, neutral cure silicone for use as an expansion joint filler or bondbreaker. It is supplied as a white or coloured paste in 300 ml cartridges.

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Handling and Storage

5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and out of freezing conditions. The membrane products have a shelf life of 12 months from date of manufacture in the original unopened packaging. Once opened, the products must be used within 3 months.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Dampfix Gold Interior Waterproofing Membrane. 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 Dampfix Gold Interior Waterproofing Membrane is for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.

7.2 The membrane must be protected from physical damage by the application of ceramic or stone tile finishes.

7.3 Movement and control joints may be required depending on the shape and size of the building or room, and the tile finish specified. Design guidelines can be found in the BRANZ "Good Practice Guide Tiling".

7.4 Timber framing systems must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed 1/360th of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

Substrates

Plywood

8.1 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3 (CCA treated). LOSP treated plywood must not be used. The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction, fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres on the edges and 200 mm through the body of the sheets.

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.

Fibre Cement Compressed Sheet/ Fibre Cement Sheet Tile Underlay

8.2 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area substrate. Fibre cement sheet tile underlay must be covered by a valid BRANZ Appraisal for use in internal wet areas. Installation must be in accordance with manufacturer's instructions.

Particleboard

8.3 Particleboard must be specified for the end use in accordance with NZS 3602.

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Concrete and Concrete Masonry

8.4 Concrete and concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101 and NZS 3604 Concrete Slab-On-Ground Floors and Concrete Masonry to NZS 4229 and NZS 4230.

Wet Area Wall Linings

8.5 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588, and be covered by a valid BRANZ Appraisal Certificate for use in internal wet areas.

8.6 Fibre Cement Sheet must be covered by a valid BRANZ Appraisal for use in wet areas.

Durability

Serviceable Life

9.1 Dampfix Gold Interior Waterproofing Membrane, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tile finishes with a design service life of 15-25 years.

Maintenance

10.1 No maintenance of the membranes will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grouts and sealants.

10.2 In the event of damage to the membranes, the tiling must be removed and the membrane repaired by removing the damaged portion and applying as for new work.

10.3 Drainage outlets must be maintained to operate effectively, and ceramic or stone tile finishes must be kept clean.

Internal Moisture

11.1 Dampfix Gold Interior Waterproofing Membrane is impervious to water and when appropriately designed and installed will avoid the likelihood of water penetrating behind linings or entering concealed spaces.

11.2 Dampfix Gold Interior Waterproofing Membrane is suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of Code Compliance for overflow is given in NZBC Acceptable Solution E3/AS1, Paragraph 2.

11.3 Surfaces must be finished with ceramic or stone tile finishes. A means of Code Compliance to NZBC Clause E3.3.3 and E3.3.4 is given in NZBC Acceptable Solution E3/AS1, Paragraph 3.1.1 (b), 3.1.2 (b) and 3.3.1 (b).

11.4 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1500 mm out from the shower rose. Floor wastes must be provided and the floor must fall to the outlet.

11.5 The waterproofing membrane must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, BRANZ "Good Practice Guide Tiling", and flooring and wallboard manufacturers.

11.6 Where water resistant wall finishes such as prefinished sheet materials are used, they must flash over the membrane a minimum of 30 mm.

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.

Installation Information

Installation Skill Level Requirement

12.1 Installation of the membranes must be completed by Bostik New Zealand Limited Trained and Approved Applicators.

12.2 Installation of substrates must be completed by tradespersons with an understanding of internal wet area construction, in accordance with instructions given within the Bostik New Zealand Limited Technical Literature and this Appraisal.

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Preparation of Substrates

13.1 Substrates must be dry, clean and stable before installation commences. With surfaces that are even and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.

13.2 The relative humidity of the concrete must be 75% or less before membrane application. Concrete substrates can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 424.

13.3 All voids, cracks, holes, joints and excessively rough areas must be filled to achieve an even and uniform surface. Junctions of substrate abutments, such as at wall/floor and wall/wall junctions must have bond breaker installed as set out in the Technical Literature.

13.4 All substrates must be primed and the primer allowed to cure before the membrane is installed. Refer to the membrane supplier for primer specification.

Membrane Installation

14.1 Installation must not be undertaken where the substrate surface temperature is below 10°C or above 35°C.

14.2 Dampfix Gold Interior Waterproofing Membrane must be thoroughly stirred before application.

14.3 The membrane must be applied in a minimum of two coats to give a total dry film thickness of 1.2 mm. Subsequent coats must be applied at an opposite direction to the previous coat.

14.4 Application can be made by roller (medium/long nap), brush (long bristle), or a rubber or plastic float.

14.5 Clean up may be undertaken with water.

Tiling

15.1 The membranes must be fully cured before tiling. The cured membranes must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.

15.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ "Good Practice Guide, Tiling". The compatibility of tile adhesive must be confirmed with Bostik New Zealand Limited.

Inspections

16.1 Critical areas of inspection are:

- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- Moisture content of the substrate prior to the application of the membrane.
- Acceptance of the substrate by the membrane installer prior to application of the membrane.
- Installation of the membrane to the manufacturer's instructions, particularly installation to the correct thickness.
- Membrane curing and integrity prior to the installation of tiles including protection from mechanical damage during curing and prior to tile installation.

Health and Safety

17.1 Safe use and handling procedures for the membranes are provided in the Technical Literature. The materials must be used in conjunction with the relevant Material Safety Data Sheet.

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

18.1 The following testing of Dampfix Gold Interior Waterproofing Membrane has been undertaken by BRANZ: Testing to AS/NZS 4858 Appendix A including effect of bleach, detergent and water on tensile and elongation, cyclic movement resistance and water absorption.

18.2 The following testing of Dampfix Gold Interior Waterproofing Membrane was undertaken by the Commonwealth Scientific Industrial Research Organisation (CSIRO) Australia: Durability testing to AS/NZS 4858 Appendix A including effect of bleach, detergent and water on tensile and elongation, water vapour transmission to ASTM E96-92E water absorption to AS 3558.1 and cyclic movement resistance.

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18.3 Testing of Dampfix Gold Interior Waterproofing Membrane has been undertaken by by Thor Specialties Pty Limited for fungi resistance to the requirements of ASTM G21.

18.4 The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

19.1 An assessment was made of the durability of the Dampfix Gold Interior Waterproofing Membrane by BRANZ technical experts.

19.2 Site visits have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.

19.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

20.1 The manufacture of the membrane has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

20.2 The quality management system of membrane's manufacturer has been assessed and found to be satisfactory.

20.3 The quality of manufacture of the membrane is the responsibility of the manufacturer.

20.4 The quality of supply of the membrane system materials to the market is the responsibility of Bostik New Zealand Limited.

20.5 Quality on site is the responsibility of the Bostik New Zealand Limited Trained and Approved Applicators.

20.6 Designers are responsible for the substrate design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of the substrate manufacturer, Bostik New Zealand Limited and this Appraisal.

20.7 Building owners are responsible for the maintenance of the tiling or stone finishing systems in accordance with the instructions of Bostik New Zealand 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.

Sources of Information

- AS 2908.2: 2000 Cellulose-cement products - flat sheet.
- AS 3740 – 2010 Waterproofing of wet areas within residential buildings.
- AS 3958.1: 2007 Guide to the installation of ceramic tiles.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2269: 2008 Plywood - Structural.
- AS/NZS 4858 - 2004 Wet area membranes.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3602: 2003 Timber and wood-based products for use in buildings.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229:1999 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230:1990 Code of practice for the design of masonry structures.
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.
- Good Practice Guide Tiling, BRANZ, March 2004.
- Good Practice Guide Membrane Roofing, BRANZ, October 2003.

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Amendments

Amendment No. 1, dated 31 January 2012.

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011.

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, Dampfix Gold Interior Waterproofing Membrane 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 Bostik New Zealand Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

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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. Bostik New Zealand 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 Bostik New Zealand 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 Bostik New Zealand Ltd or any third party.

For BRANZ

Pieter Burghout
Chief Executive

Date of Issue:
31 August 2011

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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BRANZ Appraised
Appraisal No. 770 [2012]

SIKA BLACKSEAL ELASTIC DAMP PROOF MEMBRANE



Appraisal No. 770 (2012)

Amended 02 October 2015

BRANZ Appraisals

Technical Assessments of products for building and construction.

BUILDING TRUST

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Product

1.1 Sika BlackSeal Elastic is a water-based bitumen emulsion modified with acrylic latex polymer used as a damp proof membrane material behind basement and retaining walls to prevent water vapour penetrating to the interior.

Scope

2.1 Sika BlackSeal Elastic has been appraised as a damp-proof membrane behind concrete masonry basement walls complying with NZS 4229.

2.2 Sika BlackSeal Elastic has also been appraised for use as a damp-proof membrane on buildings subject to specific design within the following scope:

- where the design of the building will be the responsibility of the building designer; and,
- with clean, sound, continuous substrates of insitu or precast concrete complying with NZS 3101 or concrete masonry complying with NZS 4210; and,
- where the membrane is adequately protected against damage during backfilling and in service; and,
- where subsoil drainage and free draining granular backfill has been placed behind basement walls.

2.3 When used to meet the requirements of the New Zealand Building Code this product must be applied by a Licensed Building Practitioner (LBP). The LBP must be trained and registered with Sika (NZ) Ltd.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Sika BlackSeal Elastic 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 B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years. Sika BlackSeal Elastic meets this requirement. See Paragraph 11.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.3. Sika BlackSeal Elastic meets this requirement. See Paragraphs 13.1 – 13.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Sika BlackSeal Elastic meets this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

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.

Technical Specification

4.1 Materials Supplied by Sika [NZ] Ltd are:

- **Sika BlackSeal Elastic** is a water-based bitumen emulsion modified with acrylic latex polymer used as a damp proof membrane material behind retaining walls and as a damp proof membrane for underground structures. It is supplied in 4 and 20 litre containers.

Accessories

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- **Sika® Deckweb** is a spun bonded polypropylene reinforcement fabric. It is coloured white and is supplied in rolls 190 mm wide x 50 m long.
- **SikaProof® A - 12 Edge Sheet** is a preformed L-shaped SIKAProof A membrane sheet. It is available in a 1.0 m width folded 500 mm / 500 mm with a self-adhesive strip on both sides. It is coloured light yellow.
- **SikaProof® A Tape - 150** is a self-adhesive tape 150 mm wide for internal sealing and jointing of all detailing and transverse / cross joints.

Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the installer. Dry storage must be provided for the product and the product must be kept from freezing.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Sika BlackSeal Elastic. 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

Substrate Design

7.1 Substrate design must be in accordance with the NZBC to a relevant standard, such as NZS 3101 for concrete and NZS 4230 or NZS 4229 for concrete masonry.

7.2 The substrate must have a surface finish that is smooth, clean and free from defects or irregularities which may damage the membrane.

Control Joints

8.1 Where control or construction joints are formed in the substrate, Sika [NZ] Ltd must be consulted for use of the membranes over these joints.

Backfilling and Drainage

9.1 The membrane must be protected against damage by the placement of a BlackSeal protection sheet between the membrane and the granular fill.

9.2 The minimum requirement for backfilling is that a granular, free-draining material is used with the top of the backfill capped with an impervious clay fill that may be covered with topsoil if required. The impervious capping and topsoil must slope at a minimum of 1:30 fall away from the wall.

9.3 A minimum 100 mm diameter subsoil perforated drainage pipe must be installed at the bottom of the wall. The pipe must be covered with a geotextile filter fabric, be laid at a minimum 1:200 fall and discharge to a drainage outlet. Provision for cleaning the pipe must also be provided.

Durability

Serviceable Life

10.1 Sika BlackSeal Elastic is a suitable damp proof membrane material (polymer modified bitumen emulsion), therefore it is expected to have a serviceable life of at least 50 years provided it is installed and maintained in accordance with this Appraisal and is continually protected from sunlight and UV radiation.

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.

Maintenance

11.1 Annual inspections must be made of the membrane top edge seal and protection, the backfill capping, and the drainage pipe to ensure all are functioning as originally designed.

11.2 If required, the drainage pipe must be cleared to remove any sediment or silt build-up. The slope of the backfill capping must be maintained at all times.

External Moisture

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12.1 Sika BlackSeal Elastic, when installed in accordance with this Appraisal and the Technical Literature, will prevent water vapour from penetrating to the interior face of basement retaining walls in spaces where moisture may cause damage. The membrane has a vapour flow resistance of not less than 90 MN s/g.

12.2 All penetrations and construction joints should be made waterproof following the instructions in the Technical Literature before the application of the membrane. The membrane must be terminated at ground level as set out in the Technical Literature, and protected.

12.3 Building designers must ensure junctions with other membranes, such as at the floor/wall junction, form a waterproof joint. Junctions have not been assessed and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

13.1 Installation of the membranes must be completed by a Licensed Building Practitioner trained and approved by Sika (NZ) Ltd.

System Installation

Substrate Preparation

14.1 Prior to application of the membrane all prepared surfaces must be clean and free from any loose material. Contaminants such as dust, dirt, oil, grease, mould release agents and curing compounds must be removed before application.

Membrane Installation

14.2 Sika BlackSeal Elastic can be applied using a coarse whitewash brush, roller or squeegee. Apply two full undiluted coats of Sika BlackSeal Elastic at 2m^2 /litre/coat. The second coat must be applied in the opposite direction to the first coat. Backfilling must commence within 48 hours of application of the membrane and BlackSeal protection sheet being installed to ensure the system is not left exposed to sunlight or UV radiation.

Health and Safety

15.1 Safe use and handling procedures for the membrane system are provided in the Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

16.1 Various testing organisations have tested Sika BlackSeal Elastic for water vapour transmission, adhesion to concrete, low temperature flexibility, sag index resistance, static puncture resistance, storage stability, resistance to re-emulsification, tensile strength and elongation retention before and after heat aging. These have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

17.1 A durability opinion has been given by BRANZ technical experts.

17.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.

17.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

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.

Quality

18.1 The manufacture of the membrane has been examined by BRANZ and details regarding the quality and composition of the materials obtained by BRANZ show the processes to be satisfactory.

18.2 The quality management system of the membrane manufacturer has been assessed to ISO 9001: 2008.

18.3 The quality of materials supplied to the market is the responsibility of Sika [NZ] Ltd.

18.4 Quality of installation on site is the responsibility of the applicator.

18.5 Designers are responsible for the building design and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of Sika [NZ] Ltd.

18.6 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Sika [NZ] Ltd.

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Sources of Information

- AS/NZS 1170: 2002 Structural and design actions - General principles.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4210: 1989 Masonry construction: Materials and Workmanship.
- NZS 4229: 1999 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Design of reinforced concrete masonry structures.
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 02 October 2015.

This Appraisal has been amended to add the following accessories: Sika®DeckWeb and SikaProof® A.

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, Sika Blackseal Elastic Damp Proof Membrane 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 Sika (NZ) Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

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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. Sika (NZ) Ltd:
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   c) any guarantee or warranty offered by Sika (NZ) 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 Sika (NZ) Ltd or any third party.

For BRANZ

Pieter Burghout
Chief Executive
Date of Issue:
31 August 2012

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.

Other Items Relevant to this Project

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CERTIFICATE OF CONFORMITY

This is to certify that

RibRaft® Floor System

Product Description

The RibRaft® Floor System comprises of polystyrene pods, steel reinforcing rods, plastic spacers and Firth RaftMix concrete.

Product Purpose or Use

The RibRaft® Floor System is a method of concrete floor construction, offering an insulated floor with a quick, practical and efficient construction method.

Certificate Holder

Fletcher Concrete and Infrastructure Ltd
T/A Firth Industries
NZBN: 9429037777548
585 Great South Road
Penrose Auckland NZ 1061
Ph: 0800 800 576
W: www.firth.co.nz

Certification Body

CertMark International Pty Ltd
T/A CertMark New Zealand
ABN: 80 111 217 568
JAS-ANZ Accreditation No. Z4450210AK
PO Box 321 Tuakau 2121
www.CertMark.org

Complies with the Building Code of New Zealand:

1. NZBC Clause B1 Structure: B1.3.1, B1.3.2 & B1.3.3.
2. NZBC Clause B2 Durability: B2.3.1 (a).
3. NZBC Clause E2 External Moisture: E2.3.3.
4. NZBC Clause F2 Hazardous Building Materials: F2.3.1.
5. NZBC Clause H1 Energy Efficiency: H1.3.1. Refer to limitation c.

Subject to the following Conditions & Limitations:

a. Must be installed in accordance with the RibRaft® Technical Manual (CBI3100/3111/3112/4711) (Jan 12).
b. Specified products must be supplied by Firth Industries or an approved agency.
c. The energy efficiency rating of the RibRaft® Floor System relates only to NZS 4214:2006 - Methods of determining the total thermal resistance of parts of buildings and is applicable only to the thermal efficiency of the floor system.
d. This certification relates only the clauses of the NZBC as contained herein. Consequently the following clauses are excluded from the certification: C-E1-E3 these clauses are outside the scope of this Certificate. The need for compliance with the requirements of excluded clause in the use of the subject product are to be determined by the regulatory authority (building certifier or building surveyor).
e. This certification relates only to the product that is described above, and has to be read, considered and used as a whole document — it may be considered misleading and will be incomplete to be selective.
f. For futher information contact the certificate holder.

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BC 180581

Originally issued under CMNZ-2012-0522
Initially Issued 22/05/2012

John Thorpe
CertMark International Pty Ltd

22/05/2014
Date of Issue

CMA-CM40015 (Rev3)
Certificate Number
Revised May 2015

- This certificate is issued by an independent certification body accredited by the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation & Employment (MBIE) under the Building Act 2004. MBIE does not in any way warrant, guarantee, or represent that the building method or product the subject of this certificate conforms to the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. MBIE disclaims, to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate
- It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the MBIE website, www.mbie.govt.nz
- This certificate may only be reproduced in its entirety.

RIBRAFT®
TECHNICAL MANUAL

CBI 3100/3111/3112/4711
JAN 2012





INSTRUCTIONS ON THE USE OF THIS MANUAL

This Manual consists of three Sections:

Section 1: Firth RibRaft Floor System Design Information

Section 2: Firth RibRaft Floor System Installation Information

Section 3: Firth RibRaft Floor System Verification

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Section 1 contains information principally useful for the specifier or building designer. **Section 2** is primarily aimed at the person on site installing the Firth RibRaft Floor system. While **Section 3** describes the required verification checks.

This document contains design and installation information. A variation to any of the information given requires specific engineering design and is hence beyond the scope of this document.

Firth RibRaft Floor System can be constructed for all slab-on-ground concrete floors for domestic or residential buildings that fall within the scope of NZS 3604:2011 "Timber Framed Buildings" and Clause 3 "Scope" of Section 1 of this Manual. The design and installation details in this Manual shall be used to design and construct such a floor.

The Firth RibRaft Floor System is covered by the DBH Codemark®. This is conditional on the system being used as described in CertMark Australasia certification decision, which in turn requires design in accordance with Section 1 and installation in accordance with Section 2 of this Manual and on site Verification in accordance with Section 3.

Note that a DBH Codemark means that if this manual is rigidly followed the relevant Building Control Authority will automatically provide a building permit without the need for producer statements. To comply with the manual does mean that Firth Concrete must be used.

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FIRTH RIBRAFT FLOOR SYSTEM

SECTION 1: DESIGN INFORMATION

1 GENERAL

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This Section of this Manual contains design information not requiring specific engineering input for the Firth RibRaft Floor System (the system). Full information on the installation procedures is described in Section 2 of this Manual (Installation Information). Where Standards are referenced in this manual, these shall include the latest amendments.

2 TECHNICAL DESCRIPTION

2.1 Overview

The Firth RibRaft Floor System is a reinforced concrete waffle raft floor slab-on-ground. It consists of an 85mm thick slab supported by a grid of ribs normally 100mm wide at 1200mm x 1200mm centres. The overall depth is 305mm. Edge beams and ribs under load bearing walls are 300mm wide to provide for the extra load carried by these members. Where heating coils of less than 25mm diameter are embedded in the topping, the slab concrete thickness shall be 110mm meaning the overall thickness is 330mm.

2.2 Pods

Firth RibRaft polystyrene pods 1100mm square and 220mm thick 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. Pods may be cut to suit specific architecture layout and also to accommodate services. (300mm thick pods are available if needed for deeper edge beams and internal ribs for construction following specific engineering design. Such uses are outside the scope of this document.)

2.3 Steel

Reinforcing steel in the slab shall consist of Welded Reinforcing Mesh complying with AS/NZS 4671:2001 with a minimum weight of 2.27kg/m², a lower characteristic stress of 500MPa, square configuration of orthogonal bars between 150 to 300mm centres, and ductility class L or E, hereafter referred to as "665 mesh, or mesh". The reinforcing bars in the ribs and edge beams shall conform to AS/NZS 4671:2001 "Steel Reinforcing Materials". Specifically designed spacers are used to position the polystyrene pods and the rib and edge beam reinforcing steel bars in a secure manner until the concrete is placed. The reinforcing mesh is held in place by mesh chairs. Conventional timber or steel formwork is used to form the edge of the slab.

2.4 Concrete

One of the following Firth concrete products shall be used in the system:

1) Raftmix – a 20MPa 100mm slump structural mix available in either a 13mm or more usually a 19mm nominal aggregate size. This mix is normally placed in the floor straight from the concrete truck chute and if necessary by wheelbarrow over planks set up over the pods.

2) Raftmix Pump – a 20MPa 100mm slump pump mix available in either a 13mm or more commonly a 19mm nominal aggregate size. The selection of aggregate size may be determined either by the capability of the available concrete pump or by the concrete placer's preference.

The exception being 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) in which case one of the following Firth concrete products shall be used in the system:

1) Raftmix25 – a 25MPa 100mm slump structural mix available in either a 13mm or more usually a 19mm nominal aggregate size. This mix is normally placed in the floor straight from the concrete truck chute

and if necessary by wheelbarrow over planks set up over the pods.

2) Raftmix Pump25 – a 25MPa 100mm slump pump mix available in either a 13mm or more commonly a 19mm nominal aggregate size. The selection of aggregate size may be determined either by the capability of the available concrete pump or by the concrete placer's preference.

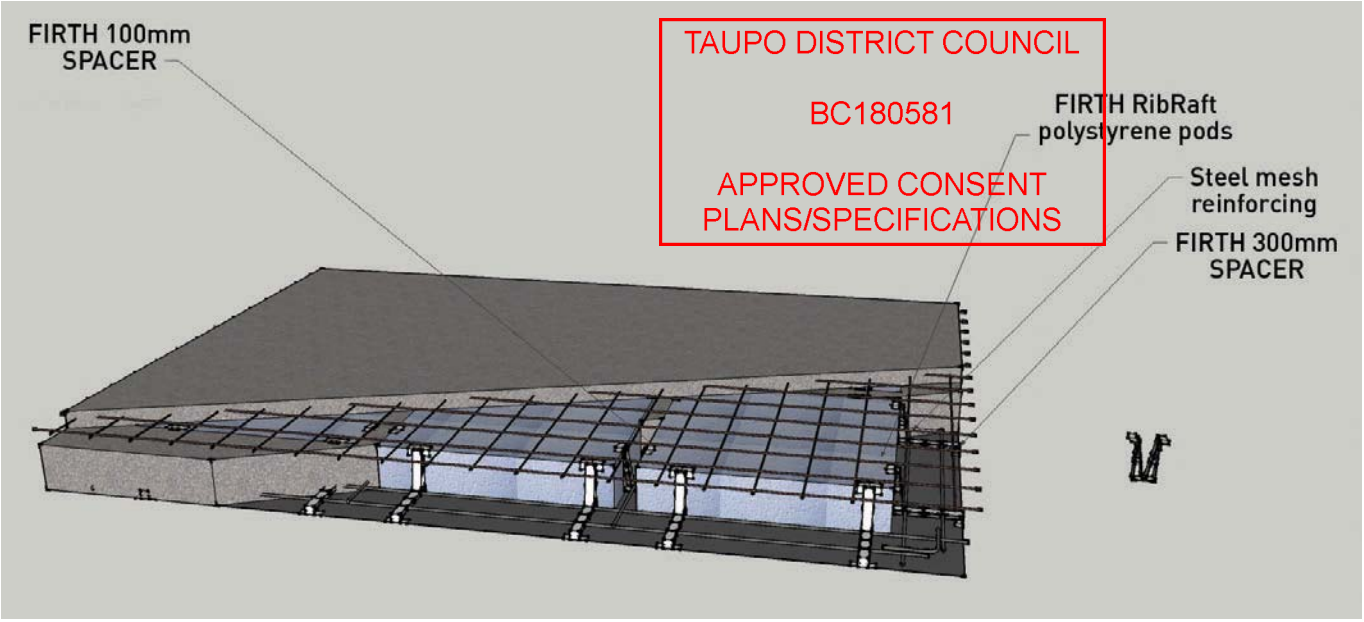


Figure 1 *The RibRaft System*

3 SCOPE

This Clause sets out the limitations that apply to the use of the system to ensure that specific engineering input is not required. The concrete floor slab for buildings or ground conditions that do not meet this scope must be subjected to specific engineering design to comply with the requirements of the New Zealand Building Code.

3.1 Structure Limitations

Specific engineering input shall not be required only where the structure supported by the system complies with the following criteria:

- The structure supported by the system is constructed in a location where the Seismic Hazard Factor Z (defined in NZ1170.5) is less than or equal to 0.45 (refer to figure 6).
- The system is laid level, and is not stepped.
- The structure supported by the system has no basement, part basement or foundation walls.
- The total height from the lowest ground level to the highest point of the roof shall not exceed 10m.
- The structure supported by the system has a roof pitch limited to 60 degrees maximum from the horizontal.
- The maximum height of each storey of the structure supported by the system is 3m.
- Only ground floor walls of the structure supported by the system are permitted to be "heavy external walls" (as defined in Clause 3.3).
- The roof truss span shall be less than or equal to 12m when the roof and ceiling loads are supported entirely by the external walls.
- Where internal load bearing walls are used to support the roof or floors, the loaded dimensions stated in Tables 8.2 and 14.10 of NZS3604:2011 shall apply, and the load bearing wall shall be supported on a 300mm wide load bearing rib as detailed in this manual.
- Floors may be of unlimited size provided that the maximum dimension between free joints shall not exceed 30m. Where free joints are required they should be detailed in accordance with NZS3604:2011.

3.2 Live Loading

The live loading cases of structures covered by these designs are:

- 1.5kPa and 3.0kPa as per NZS 3604:2011 "Timber Framed Buildings".
- 13kN concentrated load in garage over area of 0.3 x 0.3m (vehicle limited to 2500kg gross).

3.3 Dead Loading For Use With This Manual

The dead load cases of structures covered by these designs are:

- Light external walls with total mass not exceeding 60kg/m²– e.g. timber framing with weather boards and interior wall linings.
- Heavy external walls with total mass greater than 60kg/m² but not exceeding 290kg/m² – e.g. timber framing with masonry veneer or partially filled 20 series masonry blocks.
- Internal walls with total mass not exceeding 45kg/m² – e.g. timber framing and linings.
- Light roofs with total mass not exceeding 45kg/m² – e.g. ceiling linings and metal roof, including framing.
- Heavy roofs with total mass greater than 45kg/m² but not exceeding 85kg/m² – e.g. ceiling lining and concrete tiles or slates, including framing.
- Mid-floors with total mass not exceeding 60kg/m² – e.g. timber framing and flooring, including ceiling linings.
- Heavy internal walls and/or load bearing internal walls supported on a load bearing rib.

3.4 Building Types

The designs given in this Manual are limited to where the system supports Building Types A to D as described in Table 1. The classification of wall weights is as detailed in Clause 3.3 of this Section. Single and two storey shall be as defined in NZS 3604:2011.

Table 1 *Building Identifier*

Building Type	Description	Ground Floor External Walls	Second Storey External Walls
A	Single Storey	Light	
B	Single Storey	Heavy	
C	Two Storey	Light	Light
D	Two Storey	Heavy	Light

3.5 Foundation Soils

The system may be used when the supporting ground meets the definitions of "good ground" given in Section 3 of NZS 3604:2011: (as modified by B1 of the Building Compliance Documents). In addition, the system shall not be used for damp sites i.e. where it can be reasonably expected that the ground water level could come within 600mm of the underside of the system. The acceptability of the ground shall be verified in accordance with Clause 3.1.3 of NZS 3604:2011.

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Where the ultimate bearing capacity required of the supporting ground is verified by Scala Penetrometer testing in accordance with Clause 3.3 of NZS 3604:2011. The bearing capacity shall be considered adequate when the number of blows per 300mm depth of penetration below the underside of the system at each test site, exceeds the values given in Table 2 below. For RibRaft foundations compliance with Table 2 allows ultimate bearing capacities of less than 300kPa. However, with the exception of bearing capacity all other requirements in NZS3604:2011 for "good ground" shall be complied with.

Table 2 *Scala Penetrometer Blows Required For Determining Ultimate Bearing Capacity*

Building Type	Min. blows per 300mm depth
A	6
B	7
C	8
D	9

3.6 Flow Diagrams

The flow diagrams on the following pages (adapted from NZS 3604:2011) will help in determining whether the non-specific details for the system can be used for the purposes of the concrete floor slab construction. There are two checks in the process. The first is to determine whether the proposed building complies with the requirements set out in this Manual (Building Check), and the second is to determine whether the site complies with the requirements set out in this Manual (Site Check).

(Note: NZS 3604:2011 provides for parts of buildings to be considered as individual buildings. These flow diagrams apply to those parts of the building where slab-on-ground is being considered and where the part of the building can be considered as an individual building under NZS 3604:2011).

Figure 2 *Building Check Flow Diagram*

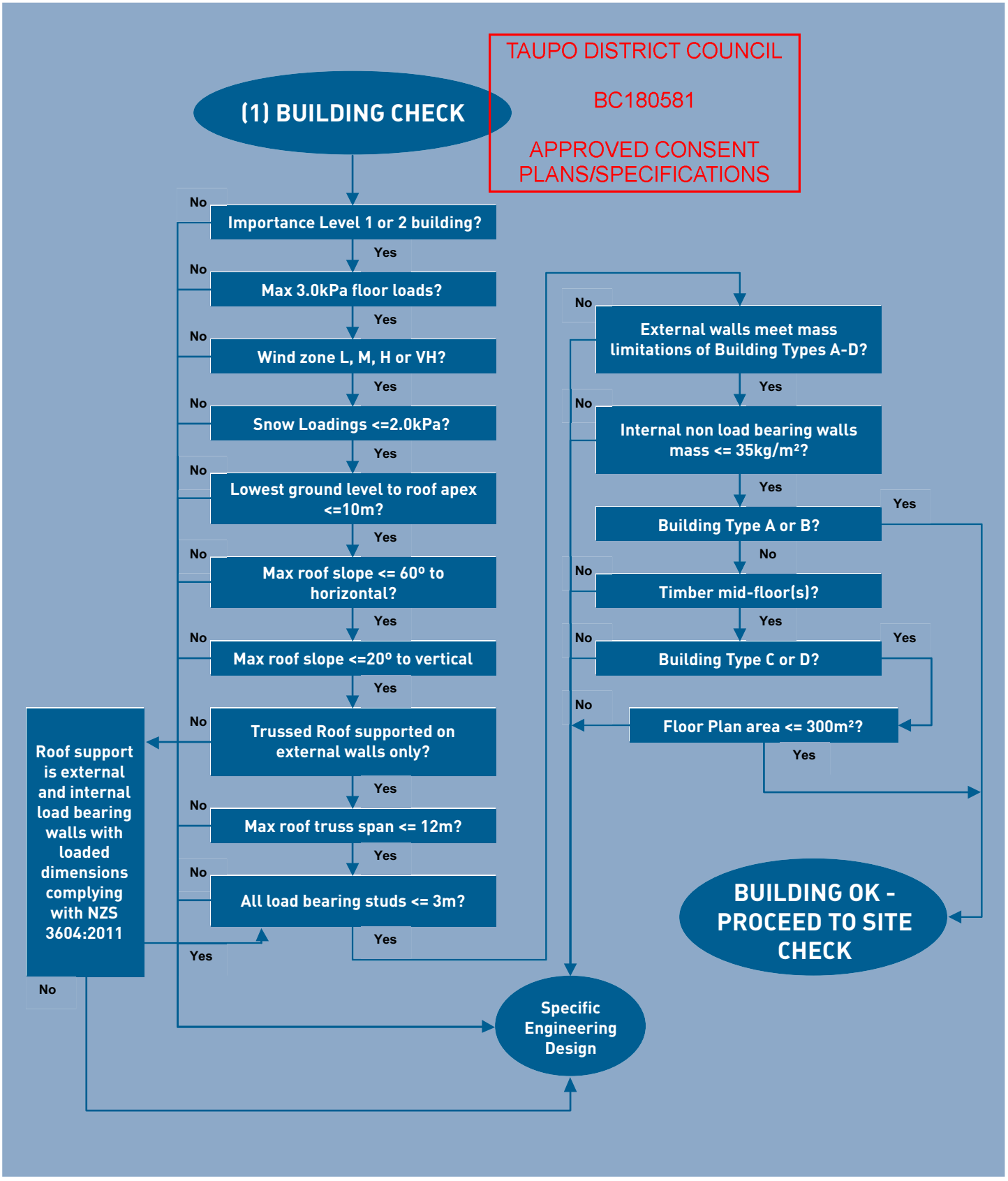
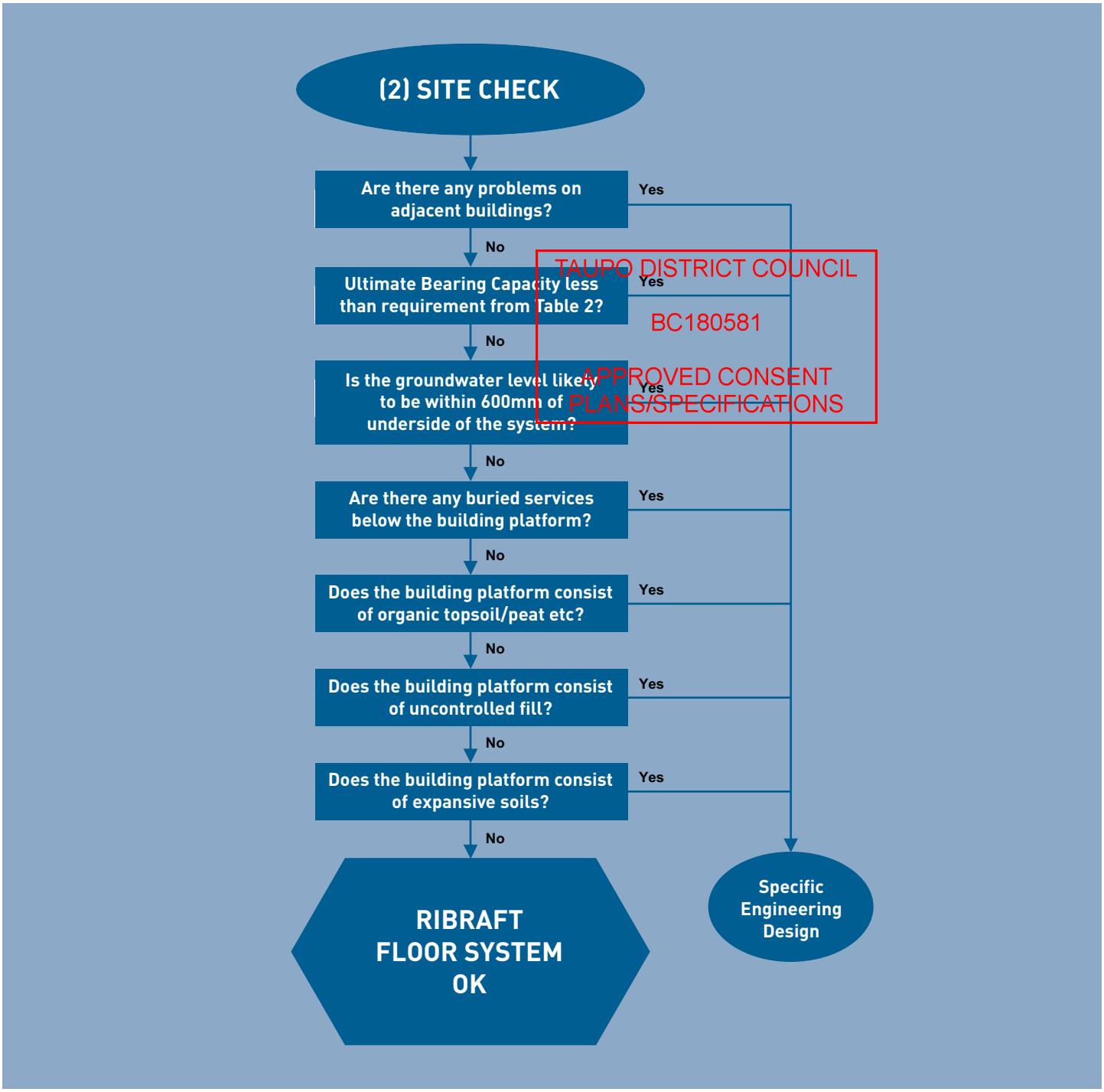


Figure 3 *Site Check Flow Diagram*



4 CONSTRUCTION DETAILS

Standard construction details for the system are provided here for buildings that fall within the above scope.

4.1 Pod Layout

RibRaft polystyrene pods supplied by Firth (1100 x 1100 x 220mm thick) shall be placed on levelled ground and arranged in a waffle pattern. The pods are used as void formers while the concrete is curing. These pods are an integral component of the system and shall not be substituted.

Pods shall be placed so as to provide the necessary spacing between the edge beams and ribs as described below. The first rib out from the edge beam shall have a maximum clear separation of 1100mm however in all other cases the centre to centre distance between the ribs, whether they are 100mm or 300mm wide, shall be 1200mm. In the case of 100mm ribs this centre to centre spacing is achieved by the 1100mm square pods however between 100mm and 300mm ribs, or between two 300mm ribs, the pods shall be cut down to suit. Pods may be cut down to size but shall not be added to, where this is necessary to suit the building layout,

penetrations or orientation of beams and ribs.

Figure 4 below shows a typical layout of the pods and ribs. Note the part pods around the edge, where the building shape dictates, and adjacent to the 300mm rib.

Firth suggests that when drawing the building plan, a generic RibRaft grid (100mm wide ribs at 1200mm centres) is set out using the corner of the building as a starting point. The location of any load bearing ribs are identified and pods cut to establish 300mm wide ribs. The most cost effective solution being a simple grid layout which requires minimum cutting of the pods. Ribs can be used at less than 1200mm centres, however it is more cost effective to use the 1200mm centres wherever practicable.

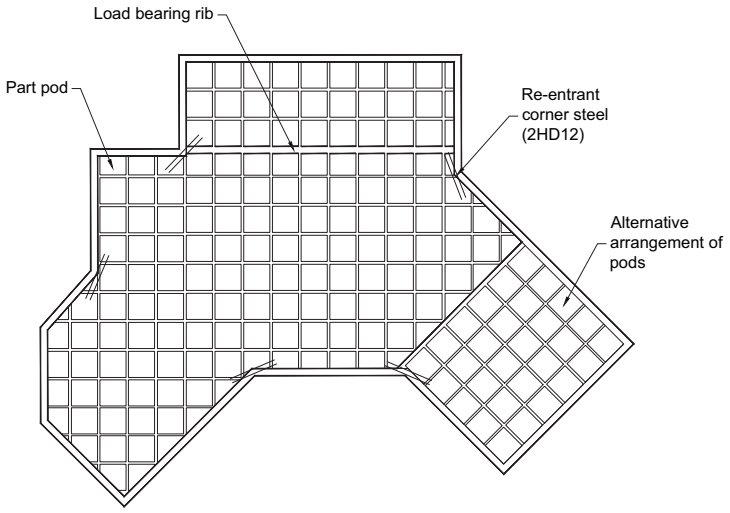


Figure 4 *Typical RibRaft Plan*

4.2 Edge Beam Width and Reinforcement

Edge beams around the perimeter of the floor slab shall be 300mm to provide bearing capacity for external load bearing walls, and contain 2-HD12 bars (Grade 500E) as bottom steel and 1-HD12 bar (Grade 500E) in the top. This top bar shall be tied to the underside of the reinforcement mesh. Refer Figure 5, below for construction details. The edge beam shall be rebated for brick veneers where necessary as shown in Figure 5(C).

4.3 Internal Ribs (non load bearing) Width and Reinforcement

Each standard internal rib shall be 100mm wide and shall contain 1-HD12 steel bar (Grade 500E) held in place at the bottom of the rib by a Firth spacer. Refer Figure 5E for construction details.

4.4 Internal Ribs (load bearing) Width and Reinforcement

For all load bearing walls and heavy internal walls, the pods shall be cut to create a 300mm wide rib directly under the load bearing wall, with 2-HD12 (Grade 500E) steel bars as bottom steel. Refer Figure 5(D) for construction details under load bearing walls.

Where the load bearing ribs meet and terminate at an edge beam or internal rib the bottom reinforcement from the load bearing rib shall be bent into the adjacent rib and tied together. The reinforcement shall lap for at least 720mm.

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4.5 Mesh Reinforcement

The entire floor slab shall be reinforced with 665 Mesh supported on 40mm mesh chairs sitting on the polystyrene pods.

4.6 Re-entrant Corners

In order to limit cracking at the re-entrant, or internal corners, extra steel shall be placed on top of the mesh. These shall be 2-HD12 bars (Grade 500E), 1200mm long tied to the top of the mesh at 200mm centres, with 50mm cover from the internal corner – refer Figure 4.

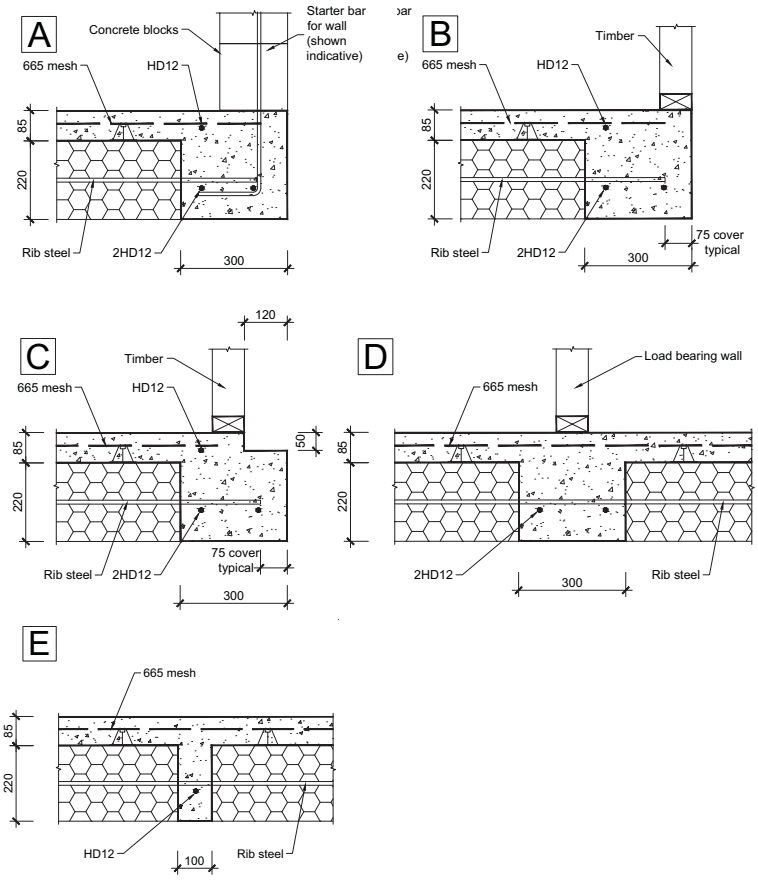


Figure 5 *Standard RibRaft Construction Details*

5 LATERAL RESISTANCE

5.1 Earthquake Resistance

Unlike conventional foundation systems, the Firth RibRaft system is not embedded into the ground.
Sliding resistance to horizontal seismic loads is provided by frictional contact with the soil.
In locations where the Seismic Hazard Factor, Z is greater than 0.45, shear keys may be required to resist seismic loads. Such buildings require specific engineering design and are outside the scope of this document. Refer to figure 6.

Depending on the wind zone and the weight of the building elements this frictional resistance may not be sufficient to provide sliding resistance to wind loads, and specific shear keys may be required, as detailed in clause 5.2.

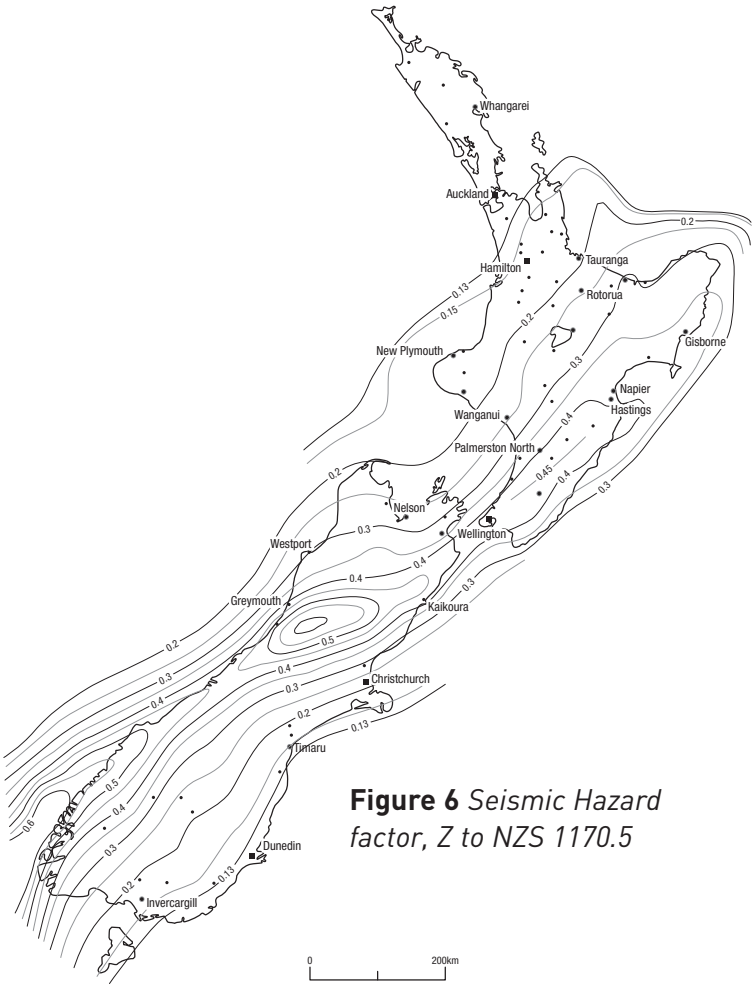


Figure 6 *Seismic Hazard factor, Z to NZS 1170.5*

For the purposes of this Manual, the ground shall be classified as clay or sand according to the following descriptions:

Clay: retains shape when moulded under hand pressure; may stick to boots and hands; cracks and becomes hard, but retains shape, when dried in direct sunlight; and when dug with a spade the cut vertical surface stands.

Sand: Individual particles visible to the unaided eye; when dry will run through the fingers and forms a conical mound if poured; when moist quickly dries out under direct sunlight; and when dug with a spade the vertical surface does not stand for long.

5.2 Wind Resistance

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The building bracing demand from wind loading shall be assessed from Section 5 of NZS 3604:2011 for both directions (i.e. along and across the building). The bracing capacity of the system must exceed the greater of the bracing demands determined.

The bracing capacity of the system shall be determined as the sum of the bracing capacity provided by frictional resistance (i.e. friction between the system and the ground) and the bracing capacity provided by the shear keys (if any) necessary to meet the requirements of Clause 5.2.

The bracing capacity provided by frictional resistance shall be determined from Table 6 depending on the building type, roof weight, and floor live loading.

The bracing capacity provided by the shear keys shall be the sum of the bracing capacity of the individual shear keys determined as follows. If the shear key is in clay, each shear key shall be considered to contribute 170 BU's. If the shear key is in sand, each shear key shall be considered to contribute 200 BU's.

If the bracing capacity of the system, determined from the frictional resistance and the shear keys as described above, is less than the bracing demand further shear keys shall be added until the bracing demand is met.

Building Type	Roof Type	BUs provided per 100m^2 for live loading of:	
		1.5kPa	3.0kPa
A	Light	1150	1267
A	Heavy	1267	1383
B	Light	1800	1917
B	Heavy	1917	2033
C	Light	1617	1833
C	Heavy	1717	1950
D	Light	2267	2483
D	Heavy	2367	2600

Table 6 *Bracing Capacity provided by Frictional Resistance per 100m² of ground floor area.*

5.3 Shear Keys

Shear key piles required by Clause 5.2 must be uniformly distributed around the perimeter of the building, and be located at the edge beam/internal rib junction. Where a shear key is required, the minimum number of shear keys shall be two per floor plan. Where two shear keys are used they shall be placed at diagonally opposite ends of the floor plan.

Construction details of the shear keys shall be as shown on Figure 7 below. Shear keys shall be a minimum of 900mm long. The holes shall be over-drilled at least 100mm and a polystyrene RibRaft Shear Key Support placed into the bottom of each hole. This will support only the plastic (wet) concrete and then allow movement of the shear key if settlement of the supporting ground occurs. The effective end bearing of the shear keys is therefore eliminated.

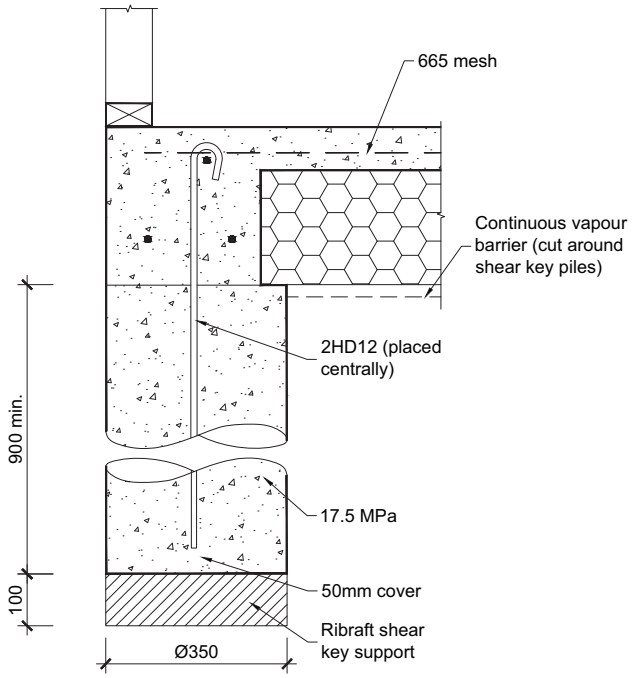


Figure 7 *RibRaft Shear Key*

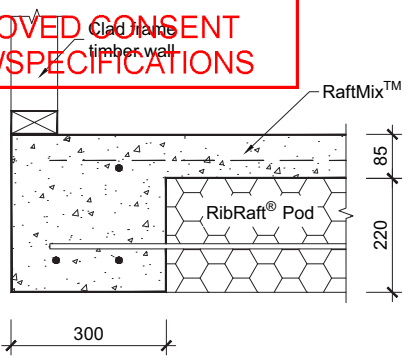
6 OTHER DESIGN DETAILS

6.1 R-Values

The insulation performance of a building element is measured by the "R-Value". The schedule method is the simplest method to achieve compliance with Clause H1 of the Building Code. Using this method the minimum R-Values required for floors are R1.3 for light timber frame construction, and typically R1.5 for masonry construction. R values of R1.3 can be used for masonry construction if glazing with greater insulation is used (refer NZBC, Clause H1). If in-floor heating is used the minimum required R-Value is increased to R1.9, and the resistance to thermal movement into the room must be one tenth of that to the outside environment.

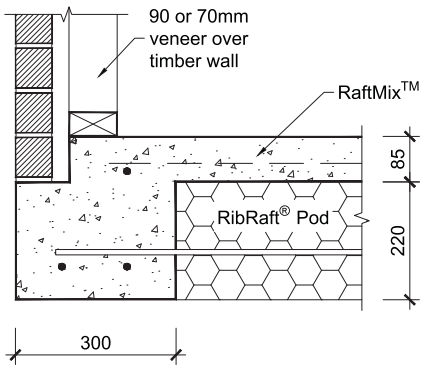
The R-Value of a RibRaft floor is dependent on the floor area to perimeter ratio, and the details of the floor perimeter. The R-Value for various solutions are illustrated below. The R-Values have been independently calculated using NZS4214:2006 "Methods of Determining the Total Thermal Resistance of Parts of Buildings," though modified for perimeter heat loss using recommendations from the Building Research Establishment.

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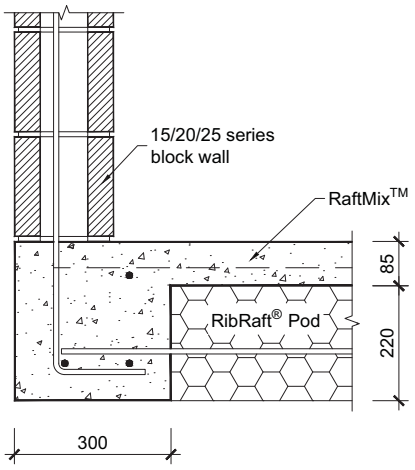
	Floor Area To Perimeter Ratio m^2/m										
	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value $m^2\,^oC/W$	1.39	1.51	1.63	1.74	1.85	1.96	2.07	2.18	2.28	2.48	2.68

Figure 8 *RibRaft R-Values for 90mm thick walls on the floor edge.*



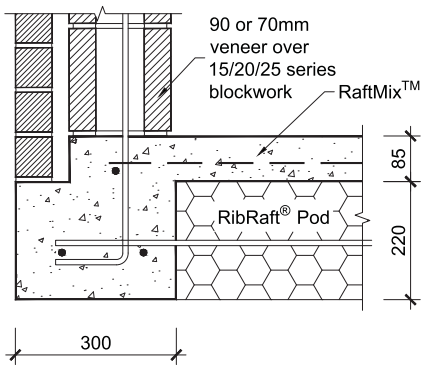
	Floor Area To Perimeter Ratio m^2/m									
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value $m^2\,^oC/W$	1.54	1.67	1.80	1.93	2.05	2.17	2.28	2.40	2.62	2.84

Figure 9 *RibRaft R-Values for 70-90mm thick veneer, cavity, and 90mm walls.*



	Block	Floor Area To Perimeter Ratio m^2/m										
		1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value $m^2\,^oC/W$	15 series	1.46	1.59	1.71	1.84	1.96	2.07	2.19	2.30	2.41	2.63	2.84
	20 series	1.52	1.66	1.79	1.92	2.04	2.17	2.29	2.40	2.52	2.75	2.93
	25 series	1.57	1.72	1.85	1.99	2.12	2.24	2.37	2.49	2.61	2.85	3.08

Figure 10 *RibRaft R-Values for various thicknesses of masonry walls.*



	Block	Floor Area To Perimeter Ratio m^2/m									
		1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value $m^2\,^oC/W$	15 series	1.59	1.73	1.86	1.99	2.12	2.24	2.37	2.49	2.72	2.95
	20 series	1.64	1.78	1.92	2.06	2.19	2.32	2.44	2.56	2.81	3.04
	25 series	1.69	1.83	1.98	2.11	2.25	2.38	2.51	2.64	2.88	3.12

Figure 11 *RibRaft R-Values for 70-90mm thick veneer, cavity, and various thicknesses of masonry walls.*

6.2 Shrinkage Control

Shrinkage control joints reduce the risk of unwanted cracks, and their placement needs to be carefully considered where cracking could be unacceptable. Factors to consider are the type of floor finish, the location of ribs and ground beams, underfloor heating and the effect of piles restraining shrinkage. Shrinkage control joints shall be saw cut after hardening. The saw cuts shall be cut to a depth of 25mm and shall be cut no later than 24 hours. The shrinkage control joints shall be positioned to coincide with major changes in floor plan. Where the concrete is to be exposed, or brittle covering placed over, the maximum intermediate bay sizes shall be limited to 6m.

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Bay dimensions formed by shrinkage control joints shall be limited to a maximum ratio of length:width of 2:1.

Shrinkage control joints shall be placed over 100mm wide internal ribs wherever possible. Where a shrinkage control joint runs along the line of a 300mm wide load bearing rib then the joint shall be located directly above one edge of the 300mm rib.

Supplementary reinforcing using 2-HD12 bars (Grade 500E) shall be used at all re-entrant corners as shown on Figure 4. These bars shall be 1200mm long, 200mm apart, tied to the top of the mesh, with 50mm side cover and shall not be placed across any shrinkage control joints.

6.3 Services Detailing

Ideally, services ducts shall be conveyed underground to their plan location then brought up through the polystyrene pod and the concrete floor slab, but this may not always be possible. 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.

The maximum diameter of the services shall be as outlined in Table 7.

Table 7 *Maximum Diameter of Pipe Services*

Element	Vertical Services	Horizontal Services
300m wide edge beam	50mm in a duct 50mm larger diameter than pipe	50mm in a duct 50mm larger diameter than pipe unless detailed as per note 2
500mm localised wide edge beam [1]	100mm in a duct 50mm larger diameter than pipe	50mm in a duct 50mm larger diameter than pipe, see note 2
300mm wide internal load bearing rib	50mm in a duct 50mm larger diameter than pipe	50mm in a duct 50mm larger diameter than pipe, see note 2
100mm wide internal rib	Nil	50mm in a duct 50mm larger diameter than pipe, see note 2
Slab	110mm in a duct 50mm larger diameter than pipe or for large services 450mm square [4] see also note 2.	Nil

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Notes

(1) For situations where a 100mm diameter pipe is required to pass through the edge beam, the edge beam shall be locally increased in width to a minimum of 500mm wide. This shall be achieved by keeping flush the outside face of the edge beam and removing 200mm from the pod. The width shall remain at 500mm for a distance of 600mm beyond the service pipe. Refer to figure 12 for details.

(2) The need for a duct 50mm larger than the service diameter can be deleted when the pipe work does not cross the interface between the bottom of the RibRaft system and the ground at any point along its length. An example would be services laid within the plane of the pods and passing through the edge beam and discharging to a gully trap or similar. In these cases the diameter of the service can be increased to a maximum of 100mm and a service duct is not required. The pipe work shall be wrapped in denso tape where it crosses concrete elements to prevent adhesion between the concrete and pipe work.

(3) Where a gas pipe line runs through the RibRaft floor system, in addition to the requirements above, the pipeline shall enter the building through the outside face of the perimeter foundation beam and be located in the plane of the pods. The aim being to ensure that damage to the gas pipe will most likely occur outside the building envelope should movement occur between the ground and RibRaft in a large earthquake.

(4) Larger penetrations or voids up to 450mm square (e.g. for shower waste/traps) are permitted through the slab provided all the conditions of this paragraph are met. These openings shall be trimmed with 1 HD12 (Grade 500E) bar 1500mm long placed along each side of the opening, tied to the mesh. One set of parallel bars shall be placed on top of the mesh and the other set placed under the mesh. These openings shall not be placed over a rib or edge beam. If necessary, the rib spacing shall be reduced or the pod layout altered to ensure that the opening occurs solely in the slab above a polystyrene pod. Penetrations such as these shall not be installed in garages or other areas where large (>3kN) point loads could be present. Only one penetration greater than 110mm is permitted in the slab above any single pod or part pod. Where two large openings are required to be in close proximity, an internal rib shall separate them. For these large penetrations/ voids in the slab, the services shall not be within 25mm of the edges of the void through which they pass, and the opening shall be sealed to prevent materials entering the subfloor cavities. (This type of opening is normally only required for a shower waste/trap and the installation of the shower will ensure that the void is sealed/covered).

Any services crossing ribs or the edge beam horizontally shall be placed only within the middle third of the member. Except as noted in figure 12, services crossing the ribs vertically shall also be constrained to the middle third of the width of the edge or internal load bearing rib. Except as noted in figure 12 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 ribs. The pods shall be cut to allow for this and if necessary, the spacing of the ribs shall be decreased locally. There shall be 600mm minimum clear spacing in each direction between penetrations through the system.

Except as noted in table 7, all services shall be placed centrally within an opening 50mm greater in diameter than the service duct/pipe, where they pass through the system. This is to allow seismic tolerances to reduce the probability of shearing of the services during a seismic event. Where the services pass through the slab, the opening shall be sealed to prevent materials entering the subfloor cavities. (This can be achieved with Denso tape

and a type of easily compressible foam). A pictorial of some of the above requirements is illustrated in figure 12:

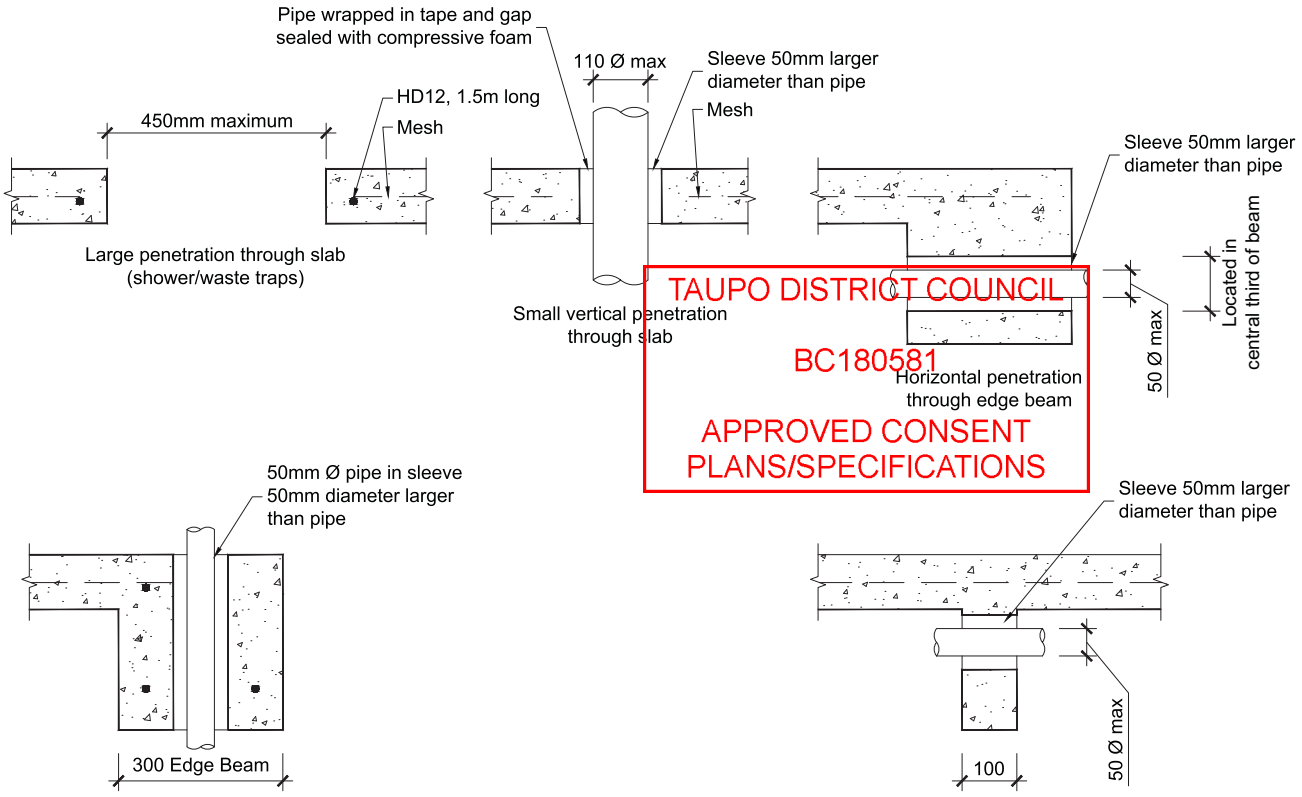


Figure 12 *Example of detailing requirements for services*

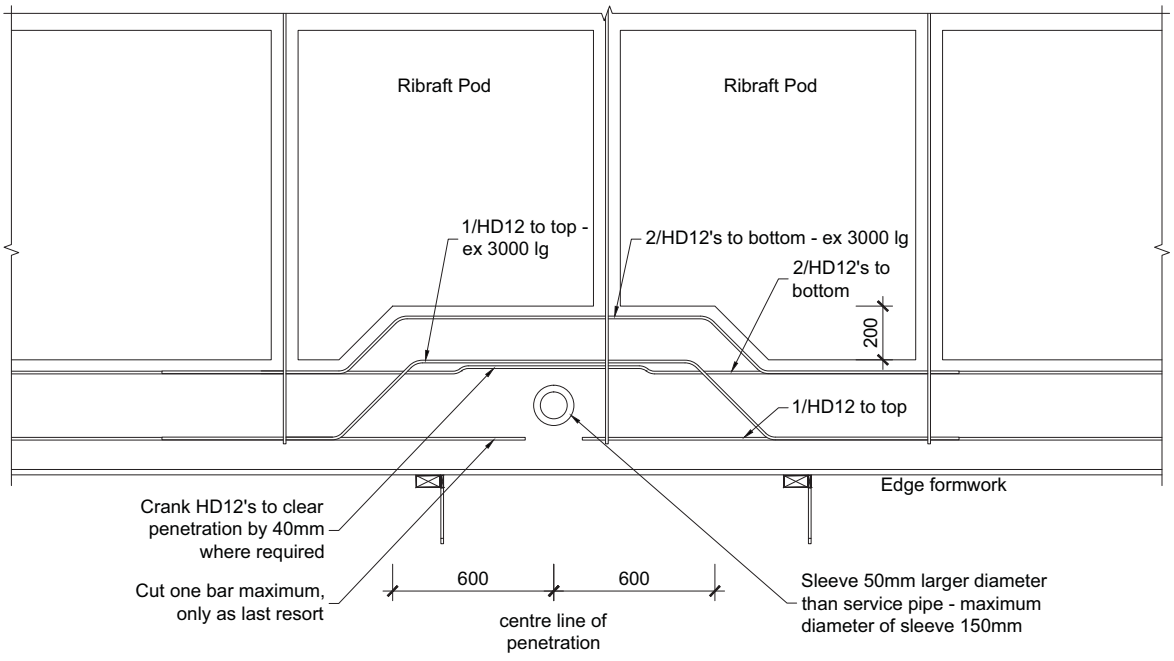


Figure 13 *Localised increase in width at edge beam where vertical services up to 100mm diameter are required*

FIRTH RIBRAFT FLOOR SYSTEM

SECTION 2: INSTALLATION INFORMATION

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1 GENERAL

This Section details the installation information required for the Firth RibRaft Floor System (the system). Full information on the design procedures not requiring specific engineering input, and requirements for the site assessment are described in Section 1 of this Manual (Design Information). Where standards are referenced in this manual these shall include the latest amendments.

2 SITE REQUIREMENTS

2.1 General

The site requirements of this Manual are concerned solely with the soil conditions under or immediately adjacent to the system. If a site does not comply with this Manual, the system shall be subject to specific engineering design.

This Section shall only apply for building sites such that:

- The ground is as specified in Section 1 of this Manual;
- Any system erected at the top of a slope (whether fill compacted in accordance with NZS4431, or natural ground) shall be located as shown in Figure 1 so that the finished ground is always outside the dashed line shown. (The vertical distance, V, shall be measured to 50mm below the underside of the slab).

Where the finished ground does not comply with Figure 1, the slope shall be retained by a specifically designed retaining wall.

2.2 Temporary Excavations

No excavation shall take place at a location or in a manner where the stability of the foundation material is likely to be compromised. The backfilled material shall match the compaction and strength of, and have similar properties to, the surrounding material. The sides of the excavation shall be propped as necessary.

Temporary excavations shall be open for no longer than 48 hours and shall take place only above the critical depth line as shown on Figure 2. Should temporary excavations be required below this line, specific engineering design is required.

2.3 Surface Water

Surface water from the site shall not flow across the slab platform. For example, on cut and fill sites the

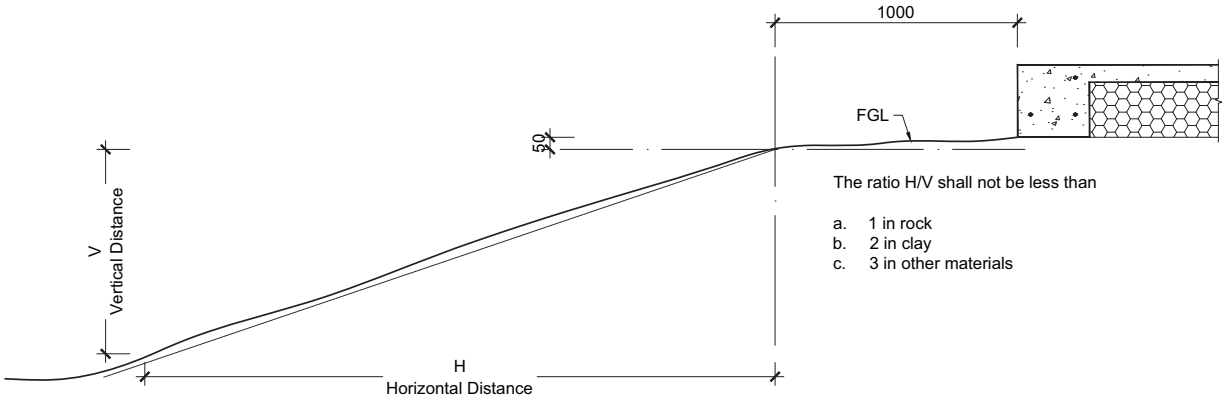


Figure 1 *Relationship of RibRaft to Sloping Ground Surface*

ground uphill from the system shall be graded to direct any surface run-off away from the system as shown in Figure 3.

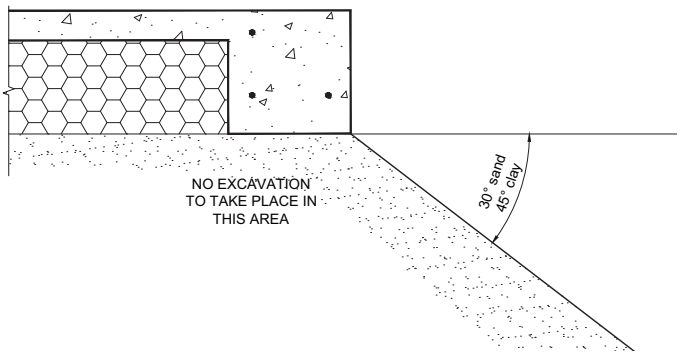


Figure 2 *Temporary Excavation Limited*

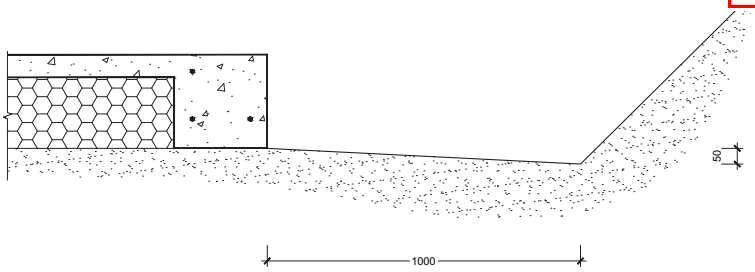


Figure 3 *Site Grading*

3 INSTALLATION PROCEDURE

3.1 Site Preparation

All vegetation, topsoil and other organic or deleterious material shall be removed from the area to be covered by the building (formation area) prior to commencing construction of the system.

3.2 Earthworks

The formation area shall be cut or filled to a level approximately 330mm below finished floor level. Where fill is required to achieve this level, the fill shall be certified by a geotechnical engineer (outside the scope of this Manual) or shall be granular fill in accordance with Clause 7.5.3 of NZS 3604:2011 "Timber Framed Buildings". The formation area shall also extend a minimum of 1000mm beyond the slab perimeter as shown in Figure 4 below. The installer shall confirm the acceptability of the ground over the entire building platform before proceeding with the construction. Refer to Clause 3.5 of Section 1 (Design Information) for requirements.

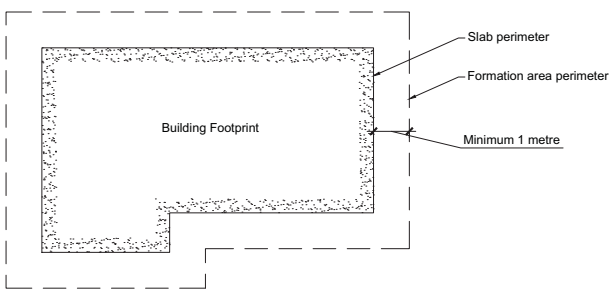


Figure 4 *Plan of Formation Area*

3.3 Shear Keys

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Where shear keys are required, the holes shall be drilled following the site clearing and earthworks, in accordance with Clause 4 below, and prior to the construction of the system commencing.

3.4 Plumbing and Services

Plumbing and services required beneath the system should preferably be conveyed underground to their plan location then brought up through the system. The trenching, placing, and bedding of the pipes/ducts and the backfilling of the trenches 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. The maximum diameters of the services/ducts shall be as dictated in clause 6.3 of Section 1.

Where required, the services can be installed by removing unnecessary polystyrene and placing pipes within the pod depth. All pipes shall be held firmly in place and have temporary end covers. Any services crossing ribs or the edge beam horizontally shall be placed only within the middle third of the member. Except as noted in figure 12 (section 1) services crossing the ribs vertically shall also be constrained to the middle third of the width of the edge or internal load bearing rib. Except as noted in figure 12 (section 1) 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 ribs. The pods shall be cut to allow for this and if necessary, the spacing of the ribs shall be decreased locally. There shall be 600mm minimum clear spacing in each direction between penetrations through the system.

Except as noted in 6.3 of section 1, services shall be placed centrally within an opening 50mm greater in diameter than the service duct/pipe, where they pass through the system. This is to allow seismic tolerances to prevent shearing of the services during a seismic event. Where the services pass through the top of the system, the opening shall be sealed to

prevent materials entering the subfloor cavities. (This can be achieved with Denso tape and a type of easily compressible foam).

Larger penetrations or voids that are required, up to 450mm square (e.g. for shower waste/traps), shall be installed in accordance with all the conditions of this paragraph. These openings shall be trimmed with 1 HD12 bar (Grade 500E) 1500mm long placed along each side of the opening, tied to the mesh. One set of parallel bars shall be placed on top of the mesh and the other set placed under the mesh. These openings shall not be placed over a rib or edge beam. If necessary, the rib spacing shall be reduced or the pod layout altered to ensure that the opening occurs solely in the slab above a polystyrene pod. Penetrations such as these shall not be installed in garages or other areas where large (>3kN) point loads could be present. Only one penetration greater than 110mm is permitted in the slab above any single pod or part pod. Where two large openings are required to be in close proximity, an internal rib shall separate them. For these large penetrations/voids in the slab, the services shall not be within 25mm of the edges of the void through which they pass, and the opening shall be sealed to prevent materials entering the subfloor cavities. (This type of opening is normally only required for a shower waste/trap and the installation of the shower will ensure that the void is sealed/covered).

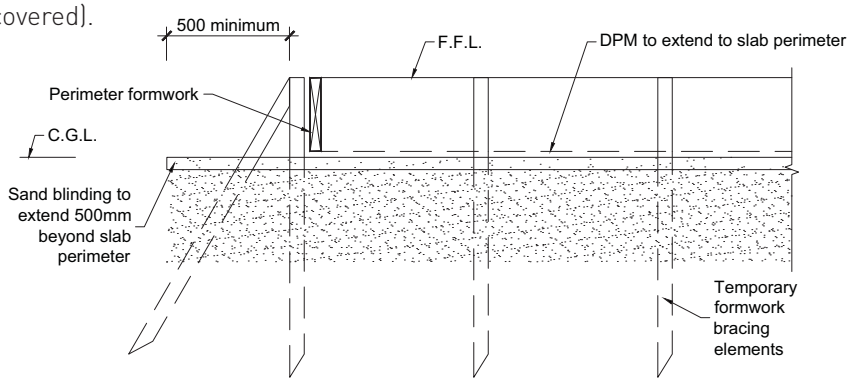


Figure 5 *Sand Blinding/DPM/Formwork Details*

3.5 Sand Blinding

A layer of sand shall be placed, screeded and compacted over the building platform, extending to at least 500mm beyond the system perimeter – refer Figure 5. The maximum thickness of this blinding layer shall be 50mm. The surface shall be level and a minimum of 305mm below finished floor level. A small plate compactor, vibrating roller or similar, should be used to compact the sand blinding layer. When the building platform is clay, it is essential that the blinding sand is compacted onto a clay surface that has not been softened by construction activities. If the clay has been softened (i.e. has a muddy surface layer due to construction activities), remove the softened material from under the RibRaft ribs before placing the sand. If excavation lowers the clay surface to more than 50mm below the underside of the RibRaft, fill shall be placed in accordance with Clause 7.5.3 of NZS 3604:2011 "Timber Framed Buildings". *The sand is required to be level to ensure that pods remain stable throughout the installation of the system.*

3.6 Damp Proof Membrane

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 the sand blinding layer, extending to the outside of the edge beam – refer Figure 5 below. The joins shall be lapped not less than 150mm 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. The installer shall ensure a square and tidy finish at the underside and at all corners of the edge beam.

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3.7 Edge Formwork

The edge formwork shall be constructed ensuring that the requirements of NZS 3109:1997 "Concrete Construction" are adhered to. The formwork shall be adequately supported and braced to prevent any buckling or warping. If the wall is to be constructed in masonry veneer, formwork for a masonry veneer rebate should be adequately fixed to the perimeter formwork.

Thorough cleaning of re-useable formwork and the use of release agents enhances the life and performance of formwork and maintains a quality surface finish.

3.8 Laying the Pods and Spacers

The Firth RibRaft polystyrene pods shall be laid out over the DPM in a regular waffle pattern ensuring direct contact with the ground across the entire pod. The edge beam shall be formed using the Firth approved 300mm spacers (refer figure 9). These shall be placed at a maximum of 1200mm centres along the perimeter of the slab and one per pod or part pod. Ribs supporting a load bearing wall shall be formed using a minimum of one Firth approved 300mm spacer along the edge of each pod or part pod.

Except where a 300mm wide rib is required, each pod or part pod shall always be separated by 100mm using a minimum of one Firth approved 100mm spacer along each edge of each pod or part pod. The ribs in both directions shall form a waffle pattern throughout the slab. It is essential that the ribs and edge beams are straight when the concrete is poured, i.e. the pods need to be lined up. Figure 6 shows a detailed layout of the pods and spacers.

Where the shape of the house plan dictates, it may be more practical to consider the floor to be made up of different segments. The pods in each segment shall be in a regular waffle pattern – refer right hand side of Figure 7. Where these segments meet, the pods shall be cut to suit and the ribs made to join. The non right-angle rib junctions created by this approach are acceptable.

Alternatively, it is also acceptable to keep the orientation of the pods constant throughout the plan and have non right-angle junctions between the ribs and edge beam – refer left hand side of Figure 7.

As can be seen from Figure 7, it is not necessary for the pods to line up perfectly with the edge beam. It is acceptable to cut the pods (i.e. use part pods).

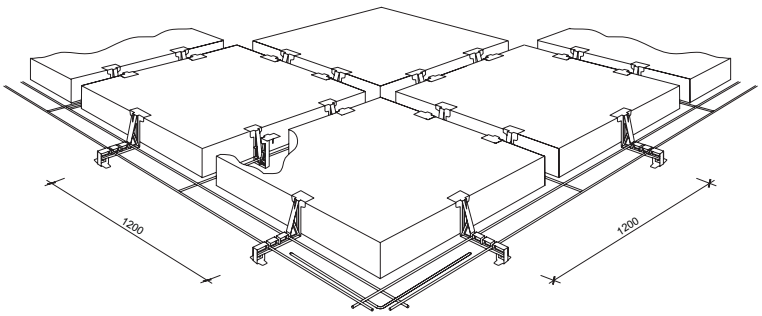
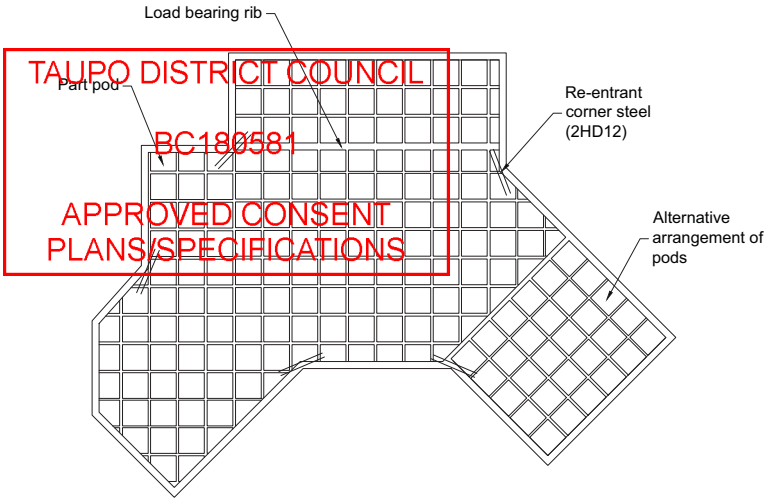


Figure 6 *Detailed Layout of Pods and Spacers (mesh and top steel omitted for clarity)*

3.9 Reinforcing Steel

Reinforcing bars shall conform to NZS 4671:2001 "Steel Reinforcing Materials". All bars shall be of deformed type (Grade 500E). All bends shall be made cold without fracture and in accordance with the bend diameters given in NZS 3109 "Concrete Construction". Welded lap joints are not permitted.



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Figure 7 *Typical Pod and Rib Layout*

Reinforcing steel in the slab shall consist of Welded Reinforcing Mesh complying with AS/NZS 4671:2001 with a minimum weight of 2.27kg/m², a lower characteristic stress of 500MPa, square configuration of orthogonal bars between 150 to 300mm centres, and ductility class L or E, hereafter referred to as "665 mesh, or mesh".
Figure 10 shows the detailed layout of the spacers and the steel in the edge beam and the standard ribs.

3.9.1 Edge Beam Steel

Two edge beam reinforcing bars shall be placed in the bottom of the edge beam and supported in the correct position by the Firth spacers, as shown in Figure 10. One edge beam bar shall be tied below the mesh at the perimeter of the area covered by the polystyrene pods as shown in Figure 10.

All steel shall be lapped a minimum of 60 bar diameters (720mm for 12mm steel). Tying of the edge beam steel is only required at corners. Figure 8 shows the layout for the edge beam bottom steel bars at the corner. The inner bottom bars and the top bars shall cross each other and extend to 75mm from the outside face of the edge beam as shown. These bars shall be tied together where they cross.

3.9.2 Rib Steel

Rib reinforcing steel shall be placed in the bottom of the internal ribs and supported in the correct position by the Firth or Wilton Joubert spacers (WJ). Figure 9 shows the detail of the Firth and WJ spacers, and Figure 10 shows a detailed section identifying how the steel is located in the spacers. The 300mm spacer shall be used for the 300mm wide internal ribs. These spacers ensure that cover to DPM below the base is greater than 45mm and cover to the exterior perimeter is 75mm.

All steel shall be lapped a minimum of 60 bar diameters (720mm for 12mm steel). At the junction with the edge beam, each rib steel bar shall sit on top of the edge beam bars, and extend to the outermost bar. The 75mm cover to the edge of the beam shall still be allowed for. One HD12 bar (Grade 500E) shall be placed in each 100mm wide rib and two HD12 bars (Grade 500E) shall be placed in the bottom of each 300mm wide rib. For perimeter 300mm Ribs a HD12 bar is also required in the top at the beam.

3.9.3 Mesh Reinforcing

665 Mesh reinforcing shall be placed over the pods and supported on 40mm mesh chairs spaced at a minimum of 1200mm centres, with at least two mesh chairs placed per pod and at least one per part pod. The mesh shall be lapped 225mm minimum and tied at all laps.

3.9.4 Re-entrant Corner Steel

Two HD12 bars (Grade 500E), 1200mm long shall be placed across the corner, tied to the top of the mesh at re-entrant corners at 200mm centres, with 50mm cover from the internal corner as detailed in Figure 7 (this steel is to control cracking at this potential weak point).

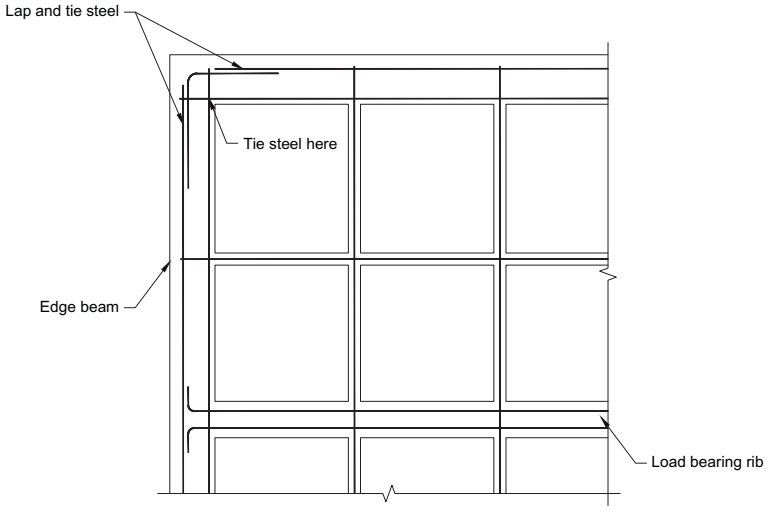


Figure 8 *Corner Steel Layout*

3.10 Concrete Installation

Concrete placing, finishing and curing shall be in accordance with NZS 3109:1997, Clause 7.

3.10.1 Placing

Only Firth Raftmix, Raftmix Pump, Raftmix25 or Raftmix Pump25 concrete shall be used in the floor. These two different concrete mixes shall be used in the following instances:

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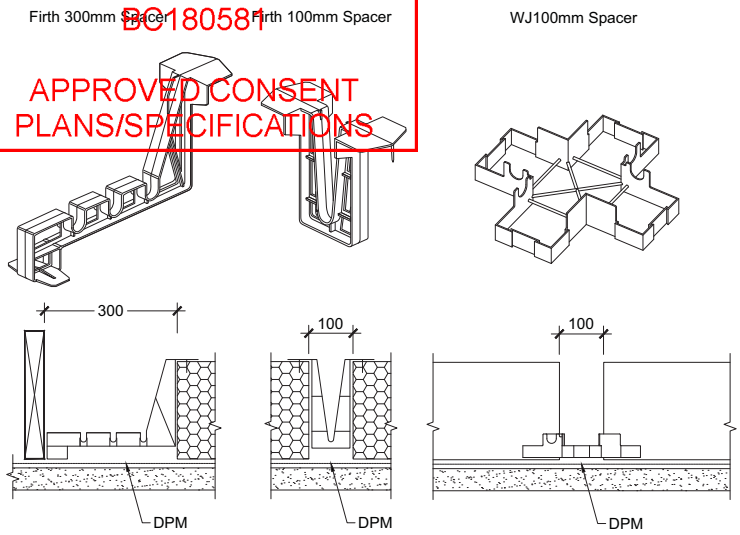


Figure 9 *Spacer Details*

- Raftmix – For placement in the floor directly from the concrete truck chute.
- Raftmix Pump – For placement in the floor by concrete pump.

Refer 2.4 of Section 1 for locations where RaftMix 25/ Raftmix 25 Pump is required.

The concrete supplied by Firth shall be poured in such a way to ensure that the pods remain in position during placing (Firth recommends that small amounts of concrete be placed on top of the pods prior to the ribs being filled). The concrete shall be compacted with the use of an immersion vibrator around all steel and into all corners of the formwork.

3.10.2 Finishing

Screeding with the aid of a level shall commence immediately after compaction. Unless specifically installed as a screeding datum, the top of the formwork shall not be assumed as level and thus shall not be used for screeding purposes. Final finishing with a trowel shall take place after all the bleed water has

evaporated. The edge of the slab and rebates shall be tooled to prevent chipping of the top of the slab.

Early age care of the slab shall be in accordance with good trade practice appropriate for the weather conditions. The surface shall be a blemish free surface to class U3 finish (refer NZS 3114:1987 "Specification for Concrete Finishes").

3.10.3 Curing

Proper curing of the concrete must take place immediately after finishing the concrete. One of the following methods of curing is recommended:

- Ponding or continuous sprinkling of water.
- Placing a wet covering or plastic membrane over the slab.
- The use of liquid membrane curing compounds.

When warm sunny days are followed by cool nights, the change in temperature can cause cracking. Immediate and continuous wet curing to reduce the maximum temperature and/or raise the minimum temperature can reduce the risk of this type of cracking.

3.11 Shrinkage Control Joints

Shrinkage control joints shall be saw cut after hardening. The saw cut shall be cut to a depth of 25mm and shall be cut no later than 24 hours in summer, or 48 hours in winter. The shrinkage control joints shall be positioned to coincide with major changes in floor plan. Where the concrete is to be exposed or brittle covering placed over, the maximum intermediate bay sizes shall be limited to 6m. Bay dimensions formed by shrinkage control joints shall be limited to a maximum ratio of length:width of 2:1.

Shrinkage control joint shall be placed over 100mm wide internal ribs wherever possible. Where a shrinkage control joint runs along the line of a 300mm wide load bearing rib then the joint shall be located directly above one edge of the 300mm rib. Supplementary reinforcing bars shall not be placed across any shrinkage control joints.

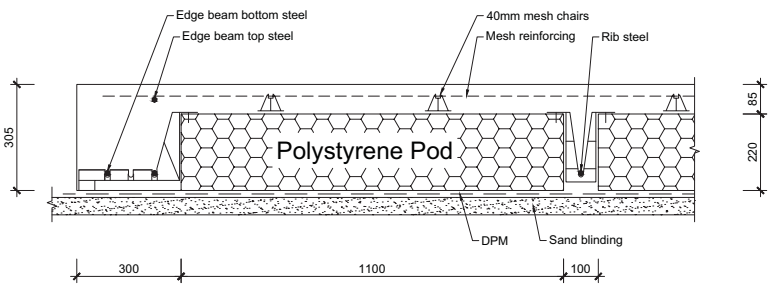


Figure 10 *Detailed Section*

3.12 Removal of Formwork

The formwork shall not be removed prior to 12 hours after the slab has been finished. No installation loads are to be placed on the system before adequate curing has taken place.

3.13 Masonry Veneer

Where the building is to be clad with masonry veneer, the rebate in the edge beam shall be waterproofed with a bituminous sealer due to the possibility of ponding of water. Firth recommends a Flintcote® or equivalent coating on both the vertical and horizontal faces of the rebate.

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3.14 Landscaping/Paving

Landscaping and/or paving adjacent to the slab shall be kept as a minimum the specified distance below finished floor level as required by NZS 3604:2011. The landscaping shall allow for large trees to be kept sufficiently away from the edge of the slab. This is to prevent the tree roots from disturbing the soil moisture conditions under the slab. As a guide, trees should be as far away from the edge of the slab as they are tall when fully grown.

3.15 Ongoing Maintenance

The building owner shall ensure that the ground surrounding the system be maintained so that the integrity of the system is not jeopardised. In other words, at no time shall the ground immediately adjacent to the system be allowed to settle away to expose the underside of the slab.

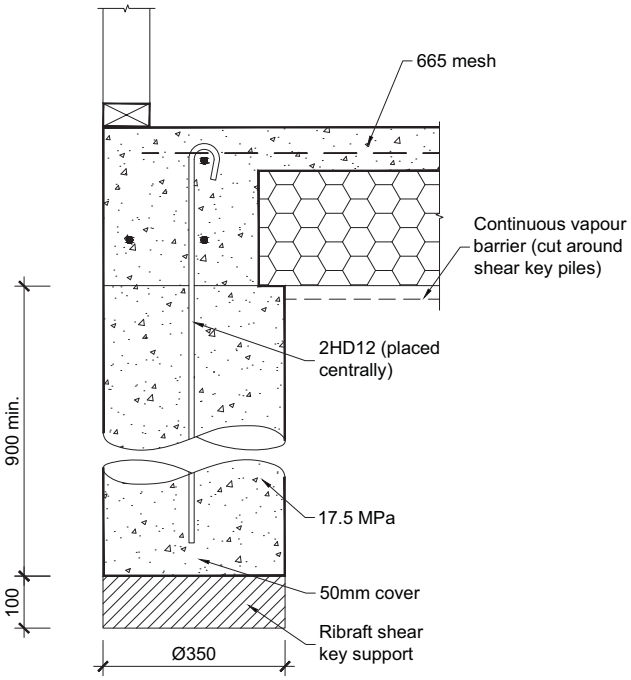
This can also be ensured by maintaining the landscaping or providing a paved surface or similar around the edge of the building.

4 SHEAR KEYS

Shear keys, if required, shall be provided to conform to the requirements of Section 1 of this Manual. Holes for the shear keys shall be drilled at least 1000mm deep. Into the bottom of each hole a RibRaft Shear Key Support shall be placed. Every precaution shall be taken to ensure that the shear key support is laid level and at the base of the hole. The minimum depth of concrete placed on the support shall be 900mm. Refer to Figure 11 for construction details.

The connection steel (2HD12 Grade 500E) shall be secured in place and held during pouring to ensure

the bars are correctly located. The concrete for the shear keys shall be placed separately to the rest of the floor and shall be finished level to the top of the sand blinding layer. The top surface of the shear key shall be finished rough to ensure a good join to the Raftmix concrete in the system and the DPM shall be neatly cut around the shear keys.



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Figure 11 *Shear Pile Construction Detail*

FIRTH RIBRAFT FLOOR SYSTEM

SECTION 3: VERIFICATION

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1 DESIGN

Verification that the design complies with the structural limitation outlined in this Manual is the responsibility of the designer, and shall be confirmed by the Building Control Authority issuing the Building Consent. Solutions outside the limitations outlined in this Manual will require specific engineering design.

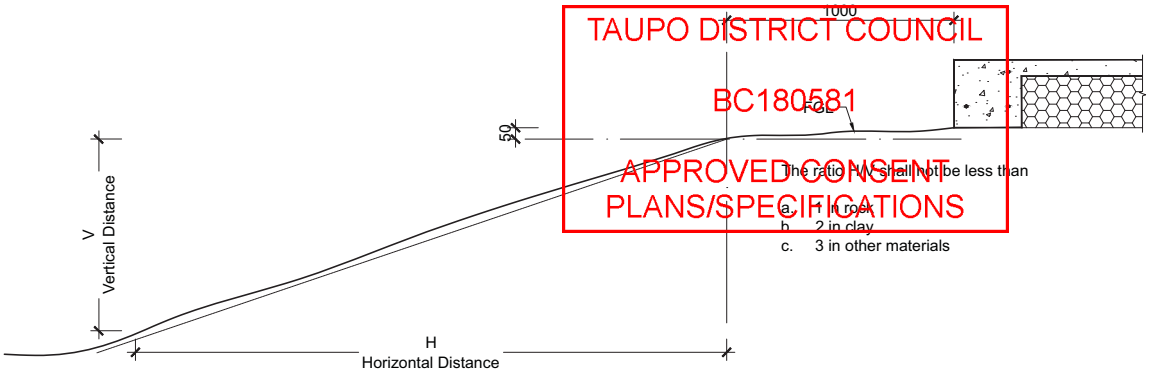
2 CONSTRUCTION

The RibRaft foundation system has been designed to accommodate structures complying with the non specific design standards NZS3604 or NZS4229. With these types of structures the Building Control Authority specifies the inspections required and often conducts these. A similar construction verification process shall be applied to the RibRaft system.

To assist inspection the following checklist has been prepared for structures complying with the limitation:

Pre-pour Inspection Check list

	Confirmed
Good Ground confirmed as per NZS3604, clause 3.1.3.	
Vegetation, topsoil, organic or deleterious material removed.	
Proximity to slope-ground surface is always above dash line shown in figure 1.	
Shear piles (where required) in place and reinforcement protruding.	
Formation area extends at least 1m beyond building footprint.	
No steps in the formation.	



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Figure 1 *Relationship of RibRaft to Sloping Ground Surface*

Pre-layout Inspection Check list

		Confirmed
Damp proof membrane in place.		
Perimeter foundation	Width 300mm [1].	
	Reinforcement 2 x HD12 bottom, 1 x HD12 top.	
	Firth supplied spacer used at 1.2m maximum centres.	
Internal Ribs	Width 100mm.	
	Reinforcement 1 x HD12.	
	Firth supplied spacer, max spacing of one per pod or part pod.	
Load Bearing ribs	Width 300mm.	
	Reinforcement 2 x HD12 bottom.	
	Firth supplied spacer, max spacing of one per pod or part pod.	
Pods	Firth supplied RibRaft pod.	
Mesh	40mm chairs, 1.2m max centres, min two per pod or one per part pod.	
	Mesh in place and 665 or equivalent area.	
	Mesh laps minimum of 225mm.	
Reinforcement	2 x HD12 bars 1.2m long provided at re-entrant corners.	
	Laps for 12mm reinforcement minimum of 720mm.	
Concrete	Cover to pods minimum of 85mm or 110mm if infloor heating used.	
	Firth Raftmix ordered.	
Service penetrations	No reinforcement (with exception of mesh) cut to allow passage of service pipes. Refer clause 6.3 of Section 1 for exceptions.	
	Diameter of opening for services 50mm greater that service pipe. Refer clause 6.3 of Section 1 for exceptions.	
	Diameter/size of penetrations as per Table 7, Section 1 of this manual.	

(1) At locations of service penetrations the width of the perimeter foundation maybe locally increased. Refer figure 12 section 1 for details.

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BRANZ Appraised
Appraisal No.775 [2012]

BRANZ Appraisals

Technical Assessments of products for building and construction

BRANZ APPRAISAL No. 775 (2012)

Amended 3 September 2013

3M ALL WEATHER FLASHING TAPE 8067

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Product

1.1 3M All Weather Flashing Tape 8067 is a flexible flashing tape for use around framed joinery openings as a secondary weather resistant barrier.

1.2 The tape is installed into and around the framed joinery opening over the building underlay and exposed frame to cover both the face and edge of the opening framing. 3M All Weather Flashing Tape 8067 is also used at joinery heads to seal flashing upstands to the building underlay.



Scope

2.1 3M All Weather Flashing Tape 8067 has been appraised as a flexible flashing tape 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; and,
- with flexible building underlays compatible with the flashing tape; and,
- situated in NZS 3604 Wind Zones up to, and including, 'Extra High'.

2.2 3M All Weather Flashing Tape 8067 has also been appraised as a flexible flashing tape 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 tape; and,
- with flexible building underlays compatible with the flashing tape and steel frame; and,
- situated in NZS 3604 Wind Zones up to, and including, 'Extra High'.

(Note: 3M All Weather Flashing Tape 8067 can be used with rigid air barrier systems that don't require a flexible wall underlay, but this aspect has not been addressed by this Appraisal and is outside its scope.)

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.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, 3M All Weather Flashing Tape 8067, 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. 3M All Weather Flashing Tape 8067 meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. 3M All Weather Flashing Tape 8067 contributes to meeting this requirement. See Paragraphs 7.1 - 7.4 and 11.1 – 11.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. 3M All Weather Flashing Tape 8067 meets this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance. See Paragraph 7.1.

Technical Specification

4.1 3M All Weather Flashing Tape 8067 is a pressure sensitive self-adhering tape with a release backing paper for use as a flexible flashing tape around window and door penetration openings in accordance with NZBC Acceptable Solution E2/AS1. The tape is supplied in rolls 152 and 76 mm wide x 22.8 m long.

Handling and Storage

5.1 Handling and storage of all materials supplied by 3M New Zealand Limited, whether on or off site, is under the control of the installer. 3M All Weather Flashing Tape 8067 must be protected from damage and weather. 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 the 3M All Weather Flashing Tape 8067. 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 3M All Weather Flashing Tape 8067 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). Two layers of 3M All Weather Flashing Tape 8067 must be installed on the horizontal sill surface. This installation method is an alternative solution to the installation method shown within NZBC Acceptable Solution E2/AS1, Figures 72(a) and 72(b).

7.2 The use of flexible flashing systems around window and door joinery openings is critical to assist the overall weathertightness performance of window and door joinery installations.

7.3 3M All Weather Flashing Tape 8067 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.

7.4 3M All Weather Flashing Tape 8067 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. 3M All Weather Flashing Tape 8067 is designed to be used in conjunction with air seals and joinery flashing systems, not as a substitute.

7.5 When the 3M All Weather Flashing Tape 8067 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.

7.6 3M All Weather Flashing Tape 8067 must not be exposed to the weather or ultra-violet light for longer than the permitted exposure of the selected flexible building wrap (typically 42 to 60 days) up to a maximum of 90 days.

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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 the 3M All Weather Flashing Tape 8067 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, 3M All Weather Flashing Tape 8067 is expected to have a serviceable life equal to that of the cladding.

Maintenance

9.1 No maintenance is required for 3M All Weather Flashing Tape 8067. 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 3M All Weather Flashing Tape 8067 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 Acceptable Solution E2/AS1, Paragraph 9.1.5(b), 3M All Weather Flashing Tape 8067 may be used.

11.2 Where a cladding manufacturer specifies the use of flexible flashing tapes to seal the upstands of head flashings to the building underlay in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3, 3M All Weather Flashing Tape 8067 may be used.

11.3 Where a cladding manufacturer specifies the use of flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11 to seal around pipes and services penetrations (in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.3), 3M All Weather Flashing Tape 8067 may be used.

Installation Information

Installation Skill Level Requirements

12.1 Installation of the 3M All Weather Flashing Tape 8067 must be completed by tradespersons with an understanding of flexible flashing tape systems, in accordance with instructions given within the 3M All Weather Flashing Tape 8067 Technical Literature and this Appraisal.

General

13.1 The selected flexible building underlay must be installed in accordance with the manufacturer's instructions, and must completely cover the joinery opening. The underlay 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 the 3M All Weather Flashing Tape 8067 is applied, the substrate surfaces must be clean, dry and free from any surface contaminants such as frost, dust and grease that may cause loss of adhesion.

Internal Corner Gusset

13.3 Cut a 150 mm long x 76 mm wide strip of 3M All Weather Flashing Tape 8067 for each of the bottom and top internal corners of the opening. Fold in half lengthways and after removing the backing strip, install tight into the corner starting flush with the back of the opening. Apply pressure to the tape to ensure adequate adhesion is achieved. The overhanging section of tape at the front of the opening must then be pulled over and adhered to the outside face of the building underlay sealing the corner junction.

Sill Tape

13.4 A length of 152 mm wide 3M All Weather Flashing Tape 8067 must then be cut to the length of the sill. The tape is aligned flush with the interior face of the opening and is applied along the entire length of the sill. The overhanging tape is then folded onto the face of the building underlay. Ensure that adequate adhesion of the tape is achieved and that the tape is installed tight into the sill/jamb junction. A second layer of 76 mm wide 3M All Weather Flashing Tape 8067 must then be installed along the entire length of the sill. The tape is installed flush with the exterior face of the opening. This is a mandatory requirement for horizontal surfaces to ensure nail penetrations self seal. *(Note: 3M All Weather Flashing Tape 8067 does not need to be applied to the sills of window and door openings that finish on a concrete slab. Refer to the Technical Literature for guidance.)*

Jamb / Sill

13.5 Measure vertically up the jamb from the internal corner of the sill allowing minimum 50 mm cover onto the building underlay (minimum 100 mm overall). Cut a 152 mm wide piece of 3M All Weather Flashing Tape 8067 to this measurement for each jamb. Remove the backing strip and install starting tight into the sill/jamb junction. Align flush with the interior face of the opening and fold the overhanging tape onto the face of the building underlay.

Jamb / Head

13.6 Measure vertically down the jamb from the jamb/head junction allowing minimum 50 mm cover onto the building underlay (minimum 100 mm overall). Cut a 152 mm wide piece of 3M All Weather Flashing Tape 8067 to this measurement for each jamb and the same for the lintel on each side of the opening. Remove the backing strip and install starting tight into the jamb/head junction. Align flush with the interior face of the opening and fold the overhanging tape onto the face of the building underlay.

(Note: Where flexible building underlay is not used, such as with some proprietary Rigid Air Barrier systems, all exposed timber around the opening must be protected with 3M All Weather Flashing Tape 8067.)

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13.7 After installation of the window or door joinery head flashing, a continuous length of 75 mm wide 3M All Weather Flashing Tape 8067 can be used to seal the head flashing upstand to the building underlay.

13.8 3M All Weather Flashing Tape 8067 must not be stretched. To avoid wastage, the tape can be lapped 100 mm minimum onto itself without reducing the performance of the 3M All Weather Flashing Tape 8067.

13.9 If the 3M All Weather Flashing Tape 8067 is exposed to the weather or UV light for more than 90 days, then it must be replaced with new material.

Installation Temperature

13.10 The 3M All Weather Flashing Tape 8067 must not be installed where the ambient air and substrate temperatures are less than -5°C. *(Note: 3M New Zealand Ltd approve the installation of 3M All Weather Flashing Tape 8067 within the temperature range of -18°C to +49°C. This has not been addressed by this Appraisal and is outside its scope.)*

Inspections

13.11 The Technical Literature must be referred to during the inspection of 3M All Weather Flashing Tape 8067 installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

14.1 Testing of 3M All Weather Flashing Tape 8067 has been completed by BRANZ to the requirements of ICC Evaluation Service Acceptance Criteria for Flashing Materials AC148: 2001. The adhesion of 3M All Weather Flashing Tape 8067 to black bituminous Kraft building paper complying with the requirements of NZBC Acceptable Solution E2/AS1, Table 23 and selected other synthetic building underlays has been tested and found to be satisfactory.

Other Investigations

15.1 An assessment was made of the durability of the 3M All Weather Flashing Tape 8067 by BRANZ technical experts.

15.2 The practicability of installation was reviewed by BRANZ and found to be satisfactory.

15.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

16.1 The manufacture of the 3M All Weather Flashing Tape 8067 has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory.

16.2 The quality of supply to the market is the responsibility of 3M New Zealand 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 underlays 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 3M New Zealand Ltd.

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Sources of Information

- ICC Evaluation Service, Inc, AC148 Acceptable Criteria for Flashing Materials, July 2001.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendment No. 1, dated 3 September 2013.
This Appraisal has been amended to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels.

BRANZ

In the opinion of BRANZ, 3M All Weather Flashing Tape 8067 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 3M 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. 3M 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 3M 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 3M New Zealand Limited or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 6 August 2012

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BRANZ Appraised
Appraisal No. 329 [2005]

SUPERCOURSE 500 DAMP-PROOF COURSE AND CONCEALED FLASHING

Appraisal No. 329 (2005)

This Appraisal replaces BRANZ Appraisal No. 329 (1996) issued October 1996.

Amended 30 August 2013.



BRANZ Appraisals

Technical Assessments of products for building and construction.

Product

1.1 Supercourse 500 is a single layer black polyethylene, 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 brick veneer cladding.

Scope

2.1 Supercourse 500 has been appraised for use as a damp-proof course within the following scope:

- for separating timber, wood-based products and metal from concrete, masonry or brick; and,
- as a moisture barrier and flashing in masonry veneer constructed in accordance with NZS 3604 and NZS 4229.

2.2 Supercourse 500 has also been appraised for use as a concealed flashing at jambs and sills of aluminium window and door joinery in masonry veneer walls constructed in accordance with NZS 3604.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Supercourse 500 Damp-Proof Course and Concealed Flashing, if used, designed, installed and maintained in accordance with the statements and conditions of this Certificate, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 (a), 50 years. Supercourse 500 meets this requirement. See Paragraph 8.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2 and E2.3.3. When used as a DPC, Supercourse 500 will meet the requirements of E2.3.3. When used as a flashing as part of a masonry veneer cladding system, Supercourse 500 will contribute to meeting the requirements of E2.3.2. See Paragraphs 11.1 and 11.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Supercourse 500 meets this requirement and will not present a health hazard to people.

3.2 This Certificate appraises an **Alternative Solution** in terms of the New Zealand Building Code compliance.

Thermakraft Industries (NZ) Ltd
PO Box 58 112
Greenmount
Auckland
Tel: 09 273 3727
Fax: 09 273 3726
Free phone: 0800 806 595
www.thermakraft.co.nz

BRANZ
1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
branz.co.nz

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.

Technical Specification

4.1 Supercourse 500 is 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. Supercourse 500 is supplied in rolls 20 m long and is available in widths of 50, 75, 90, 100, 150, 200, 250, 300, 400, 500 and 1000 mm. Other widths are available upon request.

4.2 Each roll is labelled with the product name, dimensions, standards reference, and manufacturer's information.

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Handling and Storage

5.1 Handling and storage of the product, whether on 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 Refer to the Appraisals listings on the BRANZ website for details of the current Technical Literature for Supercourse 500. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

Design Information

General

7.1 Supercourse 500 is a suitable moisture impermeable alternative to bituminous DPC's and flashings. It is intended for use as a DPC separating timber and wood-based products from concrete or masonry elements, or where required, timber jack studs or bearers from timber piles, e.g. where required by NZBC Acceptable Solution E2/AS1, Paragraph 10.2.3, or NZS 3604, Paragraph 2.3.3.

7.2 When used as a DPC, the roll width selected must enable the Supercourse 500 to extend at least 6 mm beyond each face of the timber in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 10.2.3(b), or NZS 3604, Paragraph 2.3.3(b).

7.3 Supercourse 500 is also suitable for use as a flashing material for weather sealing window and door joinery installations in masonry veneer wall claddings as detailed in the Technical Literature.

Timber Treatment

7.4 Supercourse 500 when used as a DPC or concealed flashing, is suitable for use in contact with timber treated with light organic solvent preservative (LOSP) or water-based timber preservatives.

Durability

Serviceable Life

8.1 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 Certificate and the Technical Literature, provided it is not exposed to the weather or ultra-violet (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 Damp-proof courses and flashings are exempt from the surface finish requirements of NZBC Acceptable Solutions C/AS1 – C/AS6 by NZBC Acceptable Solution C/AS1 Paragraph 4.2.2 e), and NZBC Acceptable Solutions C/AS2 – C/AS6 Paragraph 4.17.6 e).

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.

Prevention of Fire Occurring

10.1 Separation or protection must be provided to Supercourse 500 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

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11.1 Supercourse 500, when used as a DPC in accordance with this Certificate, 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 Clause E2.3.3.

11.2 Supercourse 500, when installed as a flashing in accordance with the Technical Literature and this Certificate, will assist in the masonry veneer cladding system meeting the performance requirements of Clause E2.3.2.

Installation Information

Installation Skill Level Requirements

12.1 Installation must always be carried out in accordance with the Technical Literature and this Certificate, by competent tradespersons with an understanding of DPC and flashing installation.

Supercourse 500 Installation

General

13.1 Strips of 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, 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.

Flashing Installation

13.5 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 Supercourse 500 by Amdel Ltd, a NATA Certified laboratory: 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.

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.

Other Investigations

15.1 Durability and weathertightness opinions were given by BRANZ technical experts.

15.2 The practicability of installation has been assessed by BRANZ and found to be satisfactory.

15.3 The Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

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Quality

16.1 The manufacture of Supercourse 500 has been examined by BRANZ, and details of the methods adopted for quality control and the quality of the materials used, have been obtained.

16.2 The quality management system of the Supercourse 500 manufacturer, Cromford Pty Ltd, has been assessed and registered as meeting the requirements of ISO 9001: 2000 by SAI Global, Certificate Number QEC8059.

16.3 The quality of supply to the market is the responsibility of Thermakraft Industries (NZ) Ltd.

16.4 Building designers are responsible for the design of the building, and for the incorporation of Supercourse 500 into their design in accordance with the instructions of Thermakraft Industries (NZ) Ltd.

16.5 Quality of installation is the responsibility of the installer in accordance with the instructions of Thermakraft Industries (NZ) Ltd.

Sources of Information

- AS/NZS 2904: 1995 Damp-proof courses and flashings.
- AS/NZS 4347 Damp-proof courses and flashings - Methods of test.
- NZS 3604: 1999 Timber Framed Buildings.
- NZS 4229: 1999 Concrete masonry buildings not requiring specific engineering design.
- Compliance Document for the New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 30 August 2013.

This Appraisal has been amended to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels.

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, 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 Thermakraft Industries (NZ) Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

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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. Thermakraft Industries (NZ) 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 Thermakraft Industries (NZ) 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 Thermakraft Industries (NZ) Ltd or any third party.

For BRANZ

P Robertson
Chief Executive

Date of Issue:
23 September 2005

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.

TAUPO DISTRICT COUNCIL

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WELL LINERS

NORTHERN AND CENTRAL REGION

TAUPO DISTRICT COUNCIL
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PLANS/SPECIFICATIONS

- Made Of 'Blue Chip'
- Strong & Durable



D5.11 WELL LINERS NORTHERN AND CENTRAL REGION **OCTOBER 2013**

0800 WE PIPE (93 7473)
www.***hynds***.co.nz

HYNDS

Hynds well liners are strong and versatile with various sizes available to suit all applications. Originally designed for Rural water wells Hynds well liners are also used for soak holes.

The overall design incorporates a concrete band at the top and bottom for extra strength. An excellent use for well liners is at traffic areas, as they can carry a heavier class lid and therefore heavier loads than the standard pumice units that are often used. It is important in this instance to use an oversized lid so the weight is carried by the surrounding ground. Well liners are built to last, mainly consisting of reo, blue chips and cement. The soakage ability depends on the amount of water entering the soak pit.

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Applications

- Subdivisions
- Traffic areas
- Rural

Features

- Durable
- Strong
- Made of 'Blue Chip'
- Can be stacked as high as six metres

Installation

Whilst all liners should be handled carefully, pumice liners require extra care. They are a lot lighter than comparable pre-cast concrete units.

Once the hole has been dug or drilled, where possible level the bottom of the hole. The liners should then be stacked to the required height.

A normal well would consist of three to four porous liners, with two solid liners on top. These can then be covered with one of our lid options. Sizing of soak holes are normally determined by catchment area and soil type.



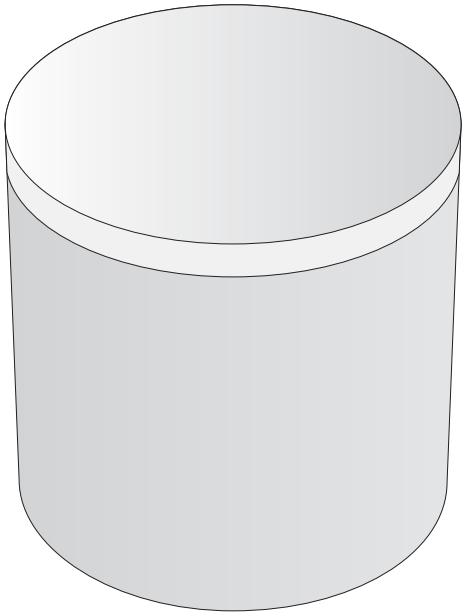
Well liner

900mm Diameter Well Liners			
Product Code	**Concrete Type**	**Size (mm)**	**Weight (kg)**
WLS0900PF	Porous	900 x 1000	623
WL09001000S	Solid	900 x 1000	519
WL0900500S	Solid	900 x 500	260
WL09100500	Porous	910 x 500	220
WL09101000	Porous	910 x 1000	420
WL09101000B	Solid	910 x 1000	350
900mm Well Liner Lids			
WLL0900100	Closed	900 x 100	209
WLL0900100.100	100PVC	900 x 100	209
WLL0900150	Closed	900 x 150	313
WLL0900150.150	150PVC	900 x 150	313

750mm Diameter Well Liners			
Product Code	**Concrete Type**	**Size (mm)**	**Weight (kg)**
WL07500300	Porous	750 x 300	130
WL07500300S	Solid	750 x 300	130
WL07500450	Porous	750 x 450	207
WL07500450S	Solid	750 x 450	254
WL07500600	Porous	750 x 600	250
WL07500600S	Solid	750 x 600	221
WL07500750	Porous	750 x 750	345
WL07500750S	Solid	750 x 750	277
WL07501000	Porous	750 x 1000	415
WL07501000S	Solid	750 x 1000	450
750mm Well Liner Lids			
WLL0750075	Closed	750 x 75	128
WLL0750100	Closed	750 x 100	153
WLL0750150	Closed	750 x 150	230

Pumice Soak Ring			
Product Code	**Concrete Type**	**Size (mm)**	**Weight (kg)**
SRP6000450	Porous	600 x 450	46
SRP6000450S	Solid	600 x 450	58
SRP6000600S	Solid	600 x 600	74
SRP6000900	Porous	600 x 900	84
SRP6000900S	Solid	600 x 900	116
SRP9000450	Porous	900 x 450	78
SRP9000450S	Solid	900 x 450	102
SRP9000900	Porous	900 x 900	156

Offal Hole Lid		
Product Code	**Description**	**Weight (kg)**
OHP105075	1050mm Offal Hole Lid c/w 75mm plug	11
OHP122075	1220mm Offal Hole Lid c/w 75mm plug	15
OL1350PF	1350mm Offal Hole Lid	19

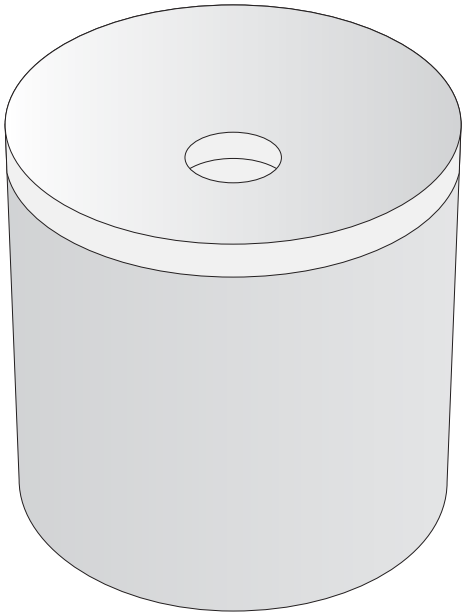


Well liner and lid

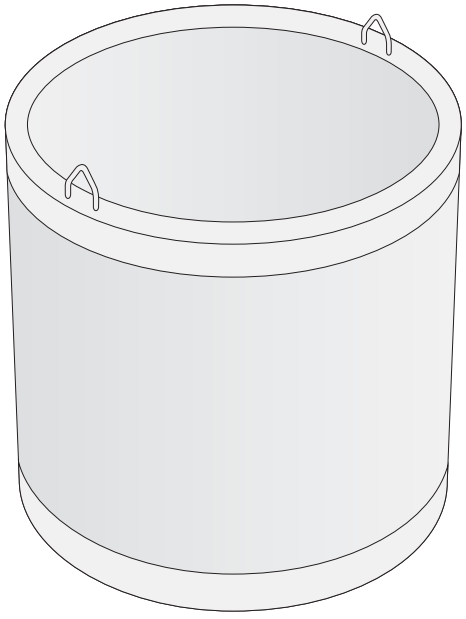


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Pumice Soak Rings stacked. Well liner and lid pictured front, right hand side.



Well liner and lid with penetration



Well liner

Application form - A2249574

Taupo District Council
46 Horomatangi Street, Taupo
Private Bag 2005, Taupo 3352
New Zealand

Telephone 00 64 7 376 0899
Fax 00 64 7 378 0118
Email info@taupo.govt.nz
Website www.taupodc.govt.nz

GREAT LAKE TAUPŌ
Taupō District Council

Application for Building Consent/PIM (including Amendment &Temporary Structures)

Reference Number:	REF180530177
Submitted On:	30/05/2018 01:05
Submitted By:	willie robinson

Property Selection

Property ID	0730164798
Address	6 Mayfly Grove, Taupo
House Number	
Street	
Suburb	
Area Description	
Legal Description	Lot 196 DP 509197
Location	Map
Property Type	
Valuation Number	
Property Ward	

Application &Project

Nature of application:	Residential
Application Info	Building Consent &Project Information Memorandum (PIM)
Project Information Memorandum	
MemoAvailable	• Alterations to land contours (e.g. digging out the site for a building platform) • New or altered connections to public utilities (e.g. Council sewer, stormwater or water mains) • New or altered locations and/or external dimensions of buildings • New or altered access for vehicles • Disposal of wastewater or stormwater
Is there an existing PIM?	No
National Multi-Use Approval	No
Building name:	
Location of building within site/block number:	
Level/Unit number:	

Number of levels:	1
Floor area:	183.52
Current, lawfully established use:	Housing
Year first constructed:	
Add number of occupants per level and per use if more than one:	
Description of the building work:	New three bedroom dwelling
Will the building work result in a change of use of the building?	No
Intended life of the building, if less than 50 years:	
List any previous building consents/PIMs for this project, if applicable:	
Estimated value of the building work on which the building levies will be calculated (including GST):	406500.00
Does the building/site have any cultural significance, or is a Marae?	No
Is there a new swimming pool or spa pool proposed for this project?	No
Will the building work include any restricted building work?	No
Accept TandC	Yes

Applicant Details

Privacy Statement	
Name of owner(s)	Penny Homes Ltd
Contact person	
Mailing address	1 Jarden Mile, Nukuhau, Taupo 3330
Street address/registered office	
Landline	
Mobile	027 533 4252
Daytime	
After hours	
Fax	
Email address	willie@pennyhomes.co.nz
Confirm email address	willie@pennyhomes.co.nz
Website	
The following evidence of ownership is attached	Council to provide Certificate of Title (cost associated)
Does a consent notice exist for this property?	No
Is there an agent working on behalf of the applicant?	No
First point of contact for technical queries related to the processing of this application	Owner

The person specified below will be responsible for all debt associated with this building consent.

In ticking this box I agree that I will pay, or arrange payment, of all fees payable in respect of this application. I acknowledge that a cancellation fee may be payable if this application is withdrawn before a building consent is issued	Yes
Please specify the billing details for this application	Owner

Building Code

For further information on the below Building Code Clauses please visit the following website address: www.dbh.govt.nz/compliance-documents

Please complete all applicable building code clauses	
B1 Structure	Yes
Please select all that apply to your project:	• NZS3604
Please select all applicable verification methods	• B1/VM1
Alternative solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
B2 Durability	Yes
Please select all that apply to your project	• B2/AS1
Please select all applicable verification methods	• B2/VM1
Alternative solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
C1-C6 Fire Safety Classes	Yes
Please select all that apply to your project	• C/AS1
Please select all applicable verification methods	• C/VM1
Proposed Inspector	Council
D1 Access Routes	Yes
Please select all that apply to your project	• D1/AS1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
D2 Mechanical Installation for Access	N/A
E1 Surface Water	Yes
Please select all that apply to your project	• AS3500
Please select all applicable verification methods	• E1/VM1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
E2 External Moisture	Yes
Please select all that apply to your project	• E2/AS1
Please select all applicable verification methods	• E2/VM1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
E3 Internal Moisture	Yes
Please select all that apply to your project	• E3/AS1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
F1 Hazardous Agents on Site	N/A

F2 Hazardous Building Materials	Yes
Please select all that apply to your project	• F2/AS1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
F3 Hazardous Substances and Processes	N/A
F4 Safety from Falling	N/A
F5 Construction and Demolition Hazards	Yes
Please select all that apply to your project	• F5/AS1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
F6 Visibility in Escape Routes	N/A
F7 Warning Systems	Yes
Please select all that apply to your project	• F7/AS1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
F8 Signs	N/A
G1 Personal Hygiene	Yes
Please select all that apply to your project	• G1/AS1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
G2 Laundering	Yes
Please select all that apply to your project	• G2/AS1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
G3 Food Preparation and Prevention of Contamination	Yes
Please select all that apply to your project	• G3/AS1
Alternative Solution?	No
Waiver/Modifications?	No
Proposed Inspector	Council
G4 Ventilation	Yes
Please select all that apply to your project	• G4/AS1
Please select all that apply to your project	• G4/VM1
Alternative Solution?	No
Please upload supporting documents	**No files uploaded**
Waiver/Modification?	No
Proposed Inspector	Council
G5 Interior Environment	N/A
G6 Airbourne Impact Sound	N/A

G7 Natural Light	Yes
Please select all that apply to your project	• G7/AS1
Please select all that apply to your project	• G7/VM1
Alternative Solution?	No
Waiver/Modifications	No
Proposed Inspector	Council
G8 Artificial Light	N/A
G9 Electricity	Yes
Please select all that appyly to your project	• G9/AS1
Please select all that apply to your project	• G9/VM1
Alternative Solution?	No
Waiver/Modification?	No
By certification only	
G10 Piped Services	Yes
Please select all that apply to your project	• G10/AS1
Please select all that apply to your project	• G10/VM1
Alternative Solution?	No
Waiver/Modification?	No
By certification only	
G11 Gas as an Energy Source	Yes
Please select all that apply to your project	• G11/AS1
Alternative Solutions?	No
Waiver/Modifications?	No
By certification only	
G12 Water Supplies	Yes
Please select all that apply to your project	• G12/AS1
Please select all that apply to your project	• G12/VM1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	Council
G13 Foul Water	Yes
Please select all that apply to your project	• AS3500
Please select all that apply to your project	• G13/VM1
Alternative Solution?	No
Waiver/Modification?	No
Proposed Inspector	• Council
G14 Industrial Liquid Waste	N/A
G15 Solid Waste	N/A
H1 Energy Efficiency	Yes
Please select all that apply to your project	• H1/AS1
Please select all that apply to your project	• H1/VM1
Alternative Solution?	No
Waiver/Modification?	No

Proposed Inspector	Council

Compliance Schedule

SS16 - Cable Cars	Not Applicable

Application Checklist

Use this checklist when finalising your building drawings/plans to assist you to lodge a complete application and to avoid delays in processing. Your application will be accepted based on this checklist to ensure that is has sufficient information to commence processing. All items on this checklist must be circled to show that they are either provided or are not applicable to your project (N/A).

Later additional information may be requested during the processing of your building consent to confirm compliance with the Building Act, Building Code, District Plan and any other relevant legislation. Processing time will be suspended until information is received.

General Documentation Required

Owner authorisation provided	N/A
Form 2A Certificate of Design Work	Yes
All drawings must meet the minimum requirements of the technical drawings standard AS/NZS1100 with a minimum font size of Microsoft Word text size 8. Index provided for plans and specifications.	Yes
Are you applying for owner/builder exemption? If yes, the appropriate documentation including Form 2B is to be supplied	N/A
All documents including photocopies must be legible	Yes
All plans are to be titled and dated (or version number)	Yes
Comments	

Legal Documentation Required

Evidence of ownership provided.	N/A
Comments	

Site/Location Plan

Site/Location Plan	Yes
North point	Yes
Road frontage indicated and street named	Yes
Location of all existing and proposed buildings	Yes
Distance of buildings to boundaries and distance between existing and proposed buildings including eaves and gutters.	Yes
Site levels and finished floor levels relative to Moturiki Datum survey point (if applicable)	Yes
Existing contours (proposed cut or fill also needs to be shown).	Yes
Building line restrictions and easements, if applicable	Yes
Site boundaries/exclusive area boundaries for cross lease properties and common areas clearly shown	Yes
Show calculations and percentage of net site coverage	Yes
Labelled points on boundaries where overshadowing is taken from.	Yes
Existing and proposed crossings/driveways, also showing berms and footpaths.	Yes
Sediment control plan	N/A

If building under or near transmission lines, please show transmission plan area or location of power lines.	N/A
Comments	

Retaining Walls/Site Works

Retaining Walls/Site Works	N/A
Comments	

Foundation Plan

Foundation Plan	Yes
Foundation details	Yes
For timber floors and decks, show the location of piles, pile type, sub-floor bracing calculations, foundation perimeter walls and internal piling system where applicable.	N/A
Concrete floor details provided	N/A
Control joints shown/saw cuts.	N/A
Bearer layout for floors and decks	N/A
Access/ventilation to subfloor space.	N/A
Comments	

Floor Plan

Floor Plan	Yes
Plan of all floors describing the function of each room	Yes
Show all doors, windows and ventilation including enclosed space ventilation	Yes
Stairs, handrails and decking shown showing dimensions and details	N/A
Smoke alarm positions shown	Yes
For additions and alterations, the existing shall be shown separately to the proposed and to the same scale for comparison	N/A
Chimneys and solid fuel heaters	N/A
Lintel sizes/beam sizes and proprietary systems.	Yes
Comments	

Framing Plan/Bracing Plan

Framing Plan/Bracing Plan	Yes
Bracing calculations/details - type and fixings	Yes
Framing plan, including size, centres, grade and treatment of members.	Yes
Bottom plate, top plate, stud, lintel fixing details.	Yes
Floor joist layout for floors and decks.	N/A
Upper storey floor design, if applicable.	N/A
Comments	

Roof Plan

Roof Plan	Yes
Roof plans and roof bracing.	Yes
Truss types/roof framing layout, design statement and manufacturers PS1.	Yes
Truss/Rafter and purlin fixings.	Yes

Comments	

Specific Design Engineering

Specific Design Engineering	N/A
Comments	

Elevations

Elevations	Yes
North, South, East and West elevations.	Yes
Overshadowing labelled to correspond with points on site plan shown on all elevations	Yes
Height from ground level to apex of building	Yes
Show existing finished ground levels/floor levels and proposed finished ground levels/floor levels (sub-floor ventilation and access).	Yes
Stairs, handrails and decking shown	N/A
Cladding systems, roofing type and any other relevant details	Yes
Window schedule	Yes
Roof pitch and chimneys (show height of chimney in relation to ridge)	Yes
Alterations to land contour, retaining, cut and fill and batters	Yes
Comments	

Specifications &Other Documentation

Specifications and Other Documentation	Yes
Technical specifications for proprietary systems/products e.g. tile showers, membranes, claddings systems and foundation systems etc.)	Yes
H1 calculations	Yes
E2 Risk Matrix	Yes
Natural hazard assessment report, where applicable (erosion, falling debris, subsidence, inundation, slippage).	N/A
Comments	

Plumbing &Drainage

Plumbing and Drainage	Yes
All existing SEWERS, sewer connections and sewer drains shown including Territorial Authority services	Yes
All existing STORMWATER drains and connections shown including Territorial Authority services	Yes
Proposed sewer and stormwater drains/soak holes, terminal vents shown.	Yes
Existing and proposed potable water supply.	N/A
All existing and proposed sanitary fittings including pipe sizes and gradients (isometric)	Yes
Wastewater design and on-site soil evaluation to show compliance with Waikato Regional Council rules.	N/A
Specifications for hot water heating system including seismic restraints.	Yes
Stormwater disposal design and calculations.	Yes
Comments	

Swimming Pool/Spa Pool

Swimming Pool/Spa Pool	N/A
Comments	

Fireplace

Solid Fuel Heater	N/A
Comments	

Solar Heating

Solar Heating	N/A
Comments	

Cross Section

Cross sections	Yes
Drawings showing constructional details of foundations, floor systems, wall, ceiling, stud heights and stud sizes, roof construction, balustrades and barriers.	Yes
Surface finishes to wet areas (walls and floor to laundry, kitchen and bathroom).	Yes
Location and type of insulation.	Yes
Details for all penetration in walls, roof (i.e. windows, doors, meter boards, skylights etc.)	Yes
Cavity construction details, where applicable.	Yes
Comments	

Relocatable Buildings

Relocatable buildings	N/A
Comments	

Attachments

<u>Please ensure all documents are correctly and adequately named prior to uploading.</u>

Please upload the plans related to the proposed work as **one PDF (not as individual sheets):**	• **JT STAGE 19 --- Lot 196 - BC.pdf (3334794 bytes)**
Please upload all generic specifications related to proposed works as **one PDF (not as individual sheets):**	• **SMARTSPEC - LOT 196.pdf (686800 bytes)**
Please upload the project specific specifications related to proposed works as **one PDF (not as individual sheets):**	• **PROJECT APPENDIX - Stage 19 Lot 196.pdf (8920800 bytes)**
Please upload any additional documents not yet provided:	• **DESIGN MEMO - Lot 196.pdf (133991 bytes)**
Once issued I would like to receive my consent documentation by:	Pickup electronic copy - On a USB memory stick, extra $10.00 fee

Building plans - A2249575

GREAT LAKE TAUPŌ
Taupō District Council

REQUIRED ITEMS FOR BUILDING CONSENT BC 180581

Inspections Required

The following inspections are required:

1	Siting & Foundation	(pile holes, footings, reinforcing steel, ground bearing, earth fill etc)
1	Prefloor Plumbing and Drainage	(under slab/floor drains and plumbing)
1	Prefloor Building	(polythene, mesh, reinforcement, bracing connections etc)
1	Sanitary Sewer/Drainage	(sewer connection, storm-water, materials, septic tank, falls etc)
1	Framing Inspection	(wall and roof framing, connections and fittings, timber sizes & treatments, bracing and fixings)
1	Rigid Air Barrier fixings inspection	
1	Pre-Ext Cladding Systems-Building	(cavities, head, jamb, sill flashings & wraps penetrations, cavities fixings etc prior to installation of exterior cladding. Brick veneer at ½ height)
1	Half High Brick	(brick veneer at ½ height)
1	Preline Plumbing	(internal plumbing and fittings, pressure test)
1	Preline Building	(exterior claddings & joinery, insulation, bracing, timber moisture content, fire protection glazing, building systems etc)
1	Post Lining	(wall bracing, fixings, fire protection, etc)
1	Code Compliance - Building (Single Dwelling Only)	(Surface finishes, access & egress, fire safety features, weathertightness, as per approved plans etc)
12	Total Inspections	

Documentation Required

The following documentation is required:

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS

CCC application form
Drainage as-built
Stormwater as- built
PS3 for stormwater drainage (soakhole/ soakpit) including photos
Electrical Certificate
Gas Certificate
Correct siting form
Pre-floor plumbing as built
PS3 General — External coating PS3
PS3 Fireplace
Roof Cladding Memorandum (E2)
Water Proofing Certificate - External (E2) Membrane butynol
Water Proofing Certificate - Internal (E3) Tilers membrane — bathroom

The above list is an indication only of the inspections that may need to be carried out to ensure the work complies with the building consent. Additional inspections may be required to satisfy the requirements of Section 90 of the Building Act 2004. Persons carrying out building work are to ensure that adequate inspections are carried out to enable the Building Consent Authority to be satisfied the work complies with the consent as required by Section 94(1)(a) of the Building Act 2004.

Please ensure that all relevant components are inspected and 'signed off' by Taupō District Council building control staff before progressing to the next stage and all conditions/notes are complied with.

Inspection Bookings:
*For **Taupō & Mangakino** phone (07) 376 0899*
*For **Turangi** phone (07) 386 7017*

Licensed Building Practitioner Forms Required

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

Design 1	W Thomson
Carpentry 1	
Bricklaying and Blocklaying 1	
External Plastering 2	Resene Graphex cladding system
Roofing 1	

Advice Notes

#When all building work authorised by this building consent is complete, electronic application should be made to Taupo District Council for a CODE COMPLIANCE CERTIFICATE and submit the documentation requested as part of this consent. This application and documentation must be submitted and approved prior to booking the final inspection. If no application has been made, Taupo District Council must decide whether to issue the CCC after 2 years of the building consent being granted. An application form for this purpose is enclosed.

LBP Building Work
Section 87 Building Act 2004
If not stated on the application form the owner must notify the Council in writing of the names and LBP numbers of ALL licensed building practitioners engaged in this project before building work commences
LBP related building inspections will not take place until Council has been notified of all the LBP's engaged in the project.

#Drainage/as built plans including stormwater drains and soakholes, are to be provided, drawn to scale, and all parts clearly identified at the time of inspection. Failure to do this may result in the inspection not being carried out. A recheck will then be required, which will incur further charges.
All AS/NZS3500:2:2: underslab plumbing to be inspected and tested with as-built supplied before pipe work is covered up

PLEASE NOTE: All external cladding's and internal linings that contribute to B1 - Structure, C3 & C6 - Protection from Fire, E2- External Moisture, E3 - Internal Moisture, & G6 - Acoustic and Impact Sound requirements of the Building Code must be installed in strict accordance with the manufacturers specifications and details except where details have been proposed and approved as alternative solutions as part of this consent.

#Prior to a Code of Compliance Inspection being undertaken, an Energy Works certificate shall be provided to the Taupo District Council to demonstrate compliance with Clause G9 and/or G10 and G11 of the NZBC.

#As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for
RCS graphex panel coatings exterior cladding system
- Copy of the applicators approval certificate
- A producers statement from the Applicator
- Copy of Manufacturers' warranty

#As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for
ASA waterproofing membrane for bathroom
- Copy of the applicators approval certificate
- A producers statement from the Applicator
- Copy of Manufacturers' warranty

#As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for
Ardex Butyol roofing membrane exterior gutters
- Copy of the applicators approval certificate
- A producers statement from the Applicator
- Copy of Manufacturers' warranty

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT
PLANS/SPECIFICATIONS

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT
PLANS/SPECIFICATIONS

The above list is an indication only of the inspections that may need to be carried out to ensure the work complies with the building consent. Additional inspections may be required to satisfy the requirements of Section 90 of the Building Act 2004. Persons carrying out building work are to ensure that adequate inspections are carried out to enable the Building Consent Authority to be satisfied the work complies with the consent as required by Section 94(1)(a) of the Building Act 2004.

Please ensure that all relevant components are inspected and 'signed off' by Taupō District Council building control staff before progressing to the next stage and all conditions/notes are complied with.

Inspection Bookings:
*For **Taupō & Mangakino** phone (07) 376 0899*
*For **Turangi** phone (07) 386 7017*

APPROVED CONSENT COPY
THESE PLANS AND SPECIFICATIONS ARE APPROVED SUBJECT TO THE PROVISIONS OF THE BUILDING ACT 2004 AND IT'S REGULATIONS. A FULL (PRINTED) COPY OF DRAWINGS AND SPECIFICATIONS ARE TO BE RETAINED ON SITE IN GOOD ORDER AND PRODUCED UPON REQUEST.

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS

DRAWING CONTENTS SHT

SITE & DRAINAGE PLAN	1
FOUNDATION PLAN	2
FLOOR PLAN	3
ELEVATIONS	4
CROSS SECTIONS	5
STUD SIZES, LINTELS & FIXINGS	6
BRACING PLAN	7
ELECTRICAL PLAN	8
DETAILS	9-10
ROOF CLADDING DETAILS	11
WALL CLADDING DETAILS	12-17
WATERPROOFING DETAILS	18

REVISION -

NEW RESIDENCE

LOT 196 MAYFLY GROVE - TAUPO

PENNY HOMES
BUILT TO BE AWARDED

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TOWN PLANNING INFORMATION:

Site Area:	542 m²		
Floor Area over Frame:	183.52 m²		
Floor Area over Foundation:	190.54 m²		
Driveway as Coverage:	43.24 m²		
Building Coverage:	192.32/542	=35.48%	(<30%)
Total Coverage:	192.32+41.61		
	233.93/542	=43.16%	(<50%)
Plot Ratio:	233.93/542	=43.16%	(<40%)
Max Cut: 0.2m			
Max Fill: 0.5m			
Max Earthworks Disturbance:	267.93 m²	= 49.43%	(<50%)

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS

N

LOT: 196
DP: 509197
AREA: 542m²

RL 408.00

RL 408.00

EXISTING 0.5m TIMBER RETAINING WALL

EXISTING 0.9m TIMBER RETAINING WALL

RL 407.00

WATER CONNECTION

Building restriction line

MAYFLY GROVE

PLATFORM RL 407.50

ROCK FILLED SOAKPIT
3m x 3m x 2m DEEP
(198m²)

PAVING 14.36m²

80ø DP (54)

RL 407.60

ROCK FILLED SOAKPIT
2m x 2m x 1.5m DEEP
(68m²)

PAVING 11.88m²
RL 407.60

SEWER CONNECTION

IP

100ø uPVC SS DRAIN @1:60 GRADIENT

80ø DP (50)

NEW RESIDENCE
FFL 407.70

ENTRY

RL 407.60

50ø VENT

80ø DP (59)

100ø uPVC SW DRAIN @1:120 GRADIENT

CATCH PIT (32)

TRAFFICABLE GRATE + CHANNEL

65ø

100ø

65ø

50ø VENT

65ø

100ø

65ø

80ø DP (35)

100ø

65ø

65ø

65ø

ORG

IP

IP

IP

IP

IP

IP

100ø uPVC SS DRAIN @1:60 GRADIENT

CONCRETE 43.24m²

80ø DP (36)

1505

PAVING 3.79m²

RL 407.00

EXISTING 0.9m TIMBER RETAINING WALL

5075

ACCESS TO MARABOU CRESCENT

ENERGY EFFICIENCY OF HOT WATER SYSTEM:

INSTALLATION OF HOT WATER SYSTEMS AND PIPES TO COMPLY WITH **NZS4305:1996** WITH REGARD TO PIPE SIZES AND PIPE INSULATION REQUIREMENTS.
WATER PIPE FROM WATER HEATER TO KITCHEN SINK TO BE INSULATED ALONG ENTIRE LENGTH. PROVIDE SUITABLE PROTECTION TO PIPES IN EXPOSED LOCATIONS, BURIED UNDERGROUND OR EMBEDDED WITHIN CONCRETE.

ACCESS ROUTE REQUIREMENTS:

ACCESS ROUTE TO MAIN ENTRANCE, REFER TO NZBC D1 2.0 & TABLE 2 FOR ACCEPTABLE SURFACE MATERIALS AND FINISHES.

SITE PLAN AND DRAINAGE NOTES:

ALL PLUMBING AND DRAINAGE TO BE INSTALLED AND TESTED BY A REGISTERED TRADESPERSON IN ACCORDANCE WITH **AS/NZS3500.2** AND **NZBC E1/AS1** WHERE APPLICABLE. WATER SUPPLY TO **NZBC G12/AS1**.

AS/NZS 3500.2
MINIMUM TRAP & DISCHARGE PIPE SIZE ABOVE SLAB

FIXTURE	FU's	PIPE Ø
Basin	1	40Ø
Shower	2	40Ø
Bath	4	40Ø
Kitchen Sink	3	65Ø
Laundry Tub	5	65Ø
WC Pan	4	100Ø

DRAIN SIZES AS SHOWN ON DRAWING

EROSION & SEDIMENT CONTROL PLAN:

PROVIDE SILT FENCING AND OTHER METHODS OF SEDIMENT CONTROL LIKE MULCHING STRAW AS DETERMINED NECESSARY & APPLICABLE ON SITE.

USE EROSION CONTROL TECHNIQUES TO PREVENT SEDIMENT GENERATION SUCH AS:
- RE-VEGETATION
- MINIMIZATION OF EARTHWORKS
- TIMING
- STAGING OF EARTHWORKS OPERATIONS

PENNY HOMES
BUILT TO BE ADMIRED

Penny Homes Ltd
PO Box 708, Taupo
ph | 07 377 0154 fax | 07 377 0155
email: john@pennyhomes.co.nz
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www.pennyhomes.co.nz

TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **SITE & DRAINAGE PLAN**

CONSENT COPY
REV A

SCALE: 1:100

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: 10.07.18

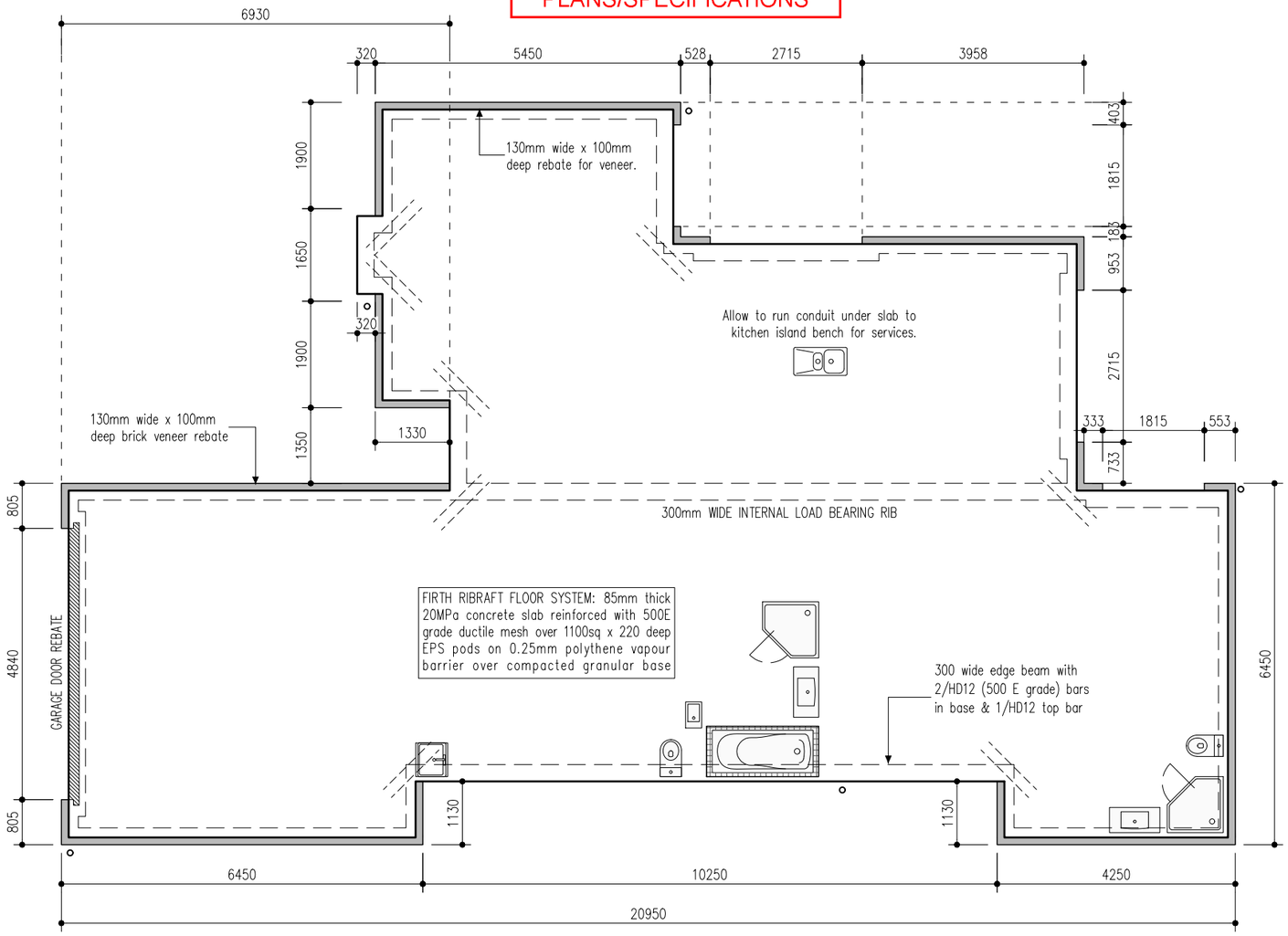
REVISION:
A –SH1 RELOCATE ORG.
–SH3,6–8 DETAIL CEILING ACCESS.
–SH4 DETAIL REFERENCE.
–SH7 AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET 1
OF: 18
JOB No. -

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS



FOUNDATION PLAN NOTES:

REFER TO FIRTH RIBRAFT TECHNICAL MANUAL - JAN 2012 FOR FURTHER DESIGN AND CONSTRUCTION INFORMATION.

CHECK DIMENSIONS AGAINST FINAL FRAMING PLAN PRIOR TO SETTING OUT FOUNDATION.

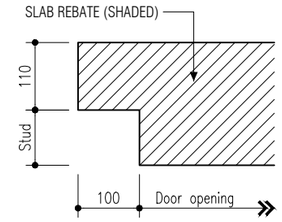
5-6mm FRAMING OVERHANG IS REQUIRED FOR DIRECT FIXED JAMES HARDIE HOMERAB - AS DIMENSIONED ON FOUNDATION PLAN.

OVERALL DIMENSIONS ARE TO OUTSIDE EDGE OF FOUNDATION WITH REBATES DIMENSIONED SEPARATELY.

SLAB REBATES FOR FULL HEIGHT JOINERY:

CONTRACTOR TO CONFIRM DOOR AND WINDOW JOINERY PROFILES WITH JOINERY MANUFACTURER PRIOR TO SETTING OUT SLAB TO ALLOW FOR ACCURATE SLAB REBATES WHERE REQUIRED.

FLOOR COVERINGS NEED TO BE CONSIDERED IN ALL SITUATIONS TO ENSURE A FLUSH FINISH WITH THE JOINERY.



GARAGE DOOR REBATE DIAGRAM

2/HD12 1200mm long supplementary reinforcing bars

PENNY HOMES
BUILT TO BE ADMIRED

Penny Homes Ltd
PO Box 708, Taupo
ph | 07 377 0154 fax | 07 377 0155
email: john@pennyhomes.co.nz

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www.pennyhomes.co.nz

TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **FOUNDATION PLAN**

CONSENT COPY

SCALE: 1:100

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/----

REVISION: -

SHEET **2**

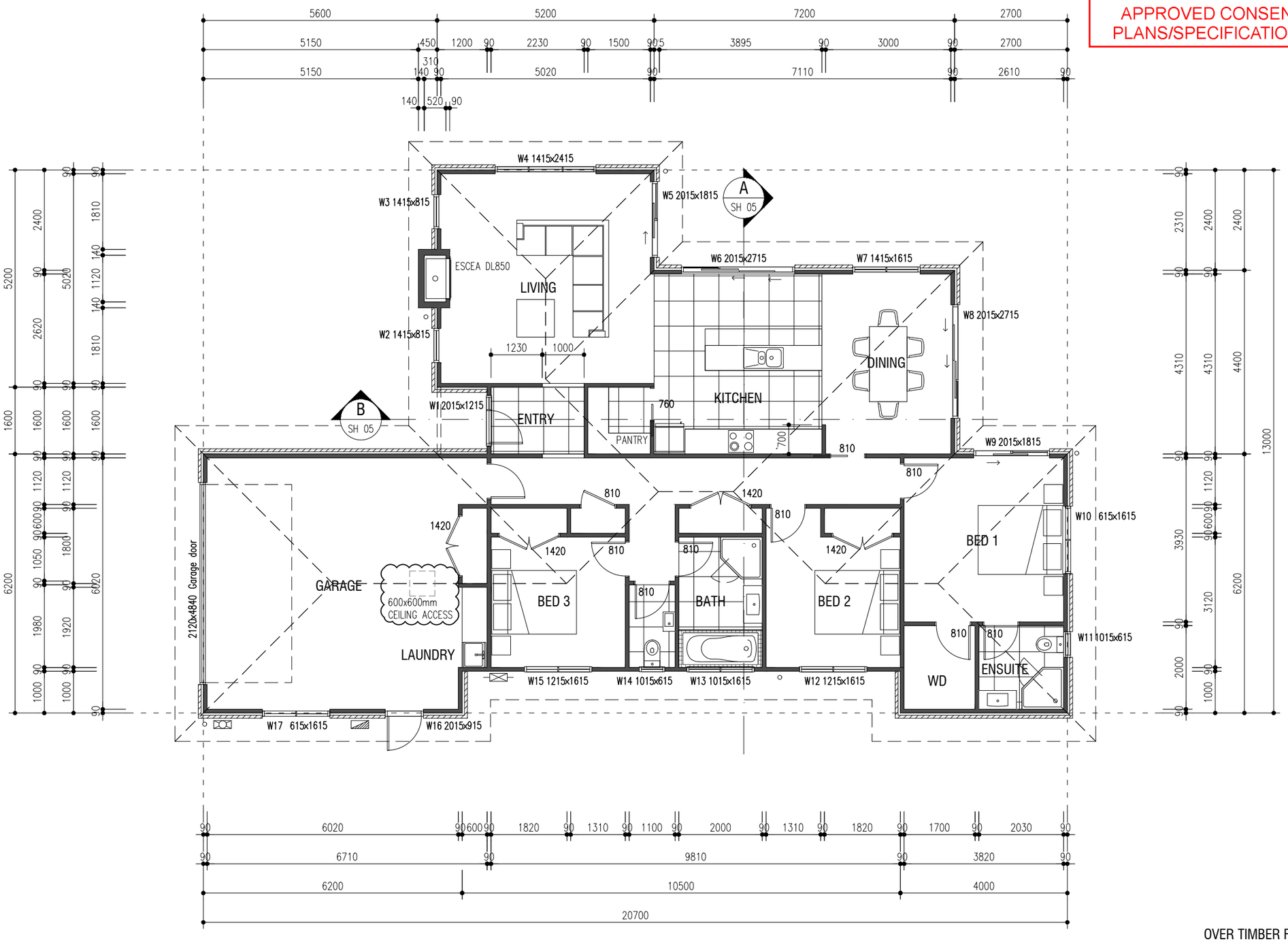
OF: 18

JOB No. -

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS



OVER TIMBER FRAME: 184sqm
OVER FOUNDATION: 190sqm

PENNY HOMES BUILT TO BE ADMIRED	Penny Homes Ltd PO Box 708, Taupo ph | 07 377 0154 fax | 07 377 0155 email: john@pennyhomes.co.nz © Copyright www.pennyhomes.co.nz	TITLE: **NEW RESIDENCE** LOT 196 MAYFLY GROVE, NUKUHAU	DRAWING: **FLOOR PLAN** CONSENT COPY REV A	SCALE: 1:100 DRAWN: JO DATE: AUG 2017 All dimensions to be checked and verified by the Contractor before commencement of any work E&OE	NOTES: Wind Zone = HIGH Eq Zone = 2 Exposure Zone = B	DATE: 10.07.18 REVISION: A –SH1 RELOCATE ORG. –SH3,6–8 DETAIL CEILING ACCESS. –SH4 DETAIL REFERENCE. –SH7 AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.	SHEET 3 OF: 18 JOB No. -

ROOF BRACING:

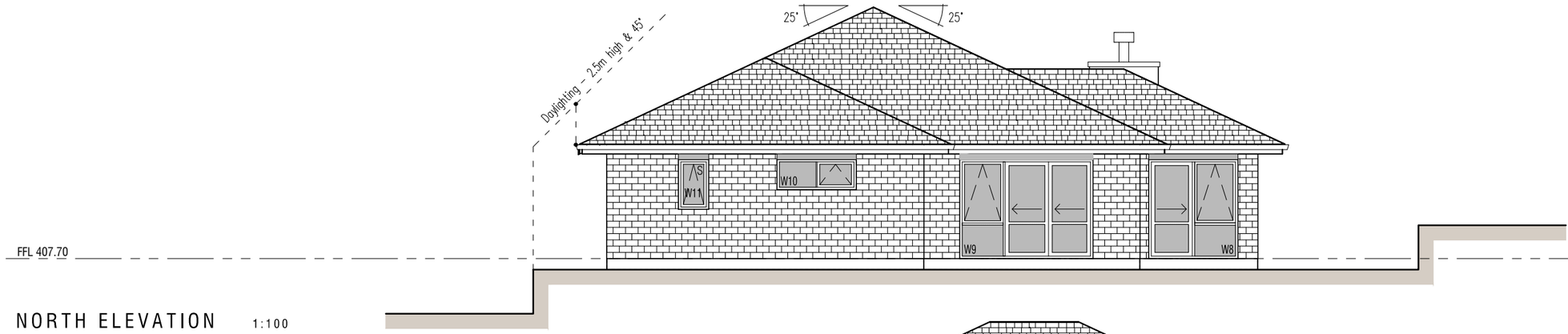
LIGHT WEIGHT HIPPED ROOF SHALL BE BRACED WITH A MINIMUM OF 2x HIP OR VALLEY RAFTERS TO EACH RIDGE LINE.

HIP OR VALLEY RAFTERS THAT RUN FROM WALL TO RIDGE MAY BE COUNTED AS A ROOF PLANE BRACE

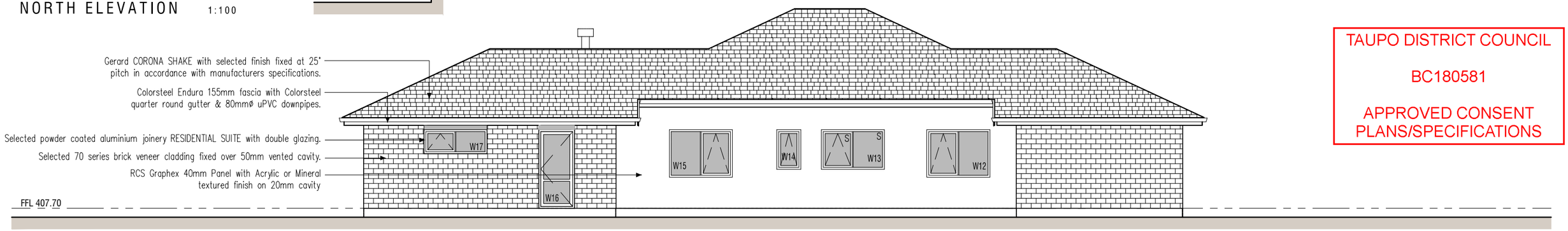
GLAZING NOTES:

ALUMINIUM JOINERY MANUFACTURER TO SITE MEASURE OPENINGS PRIOR TO MANUFACTURE OF ALL JOINERY.
ALL JOINERY POWDERCOATED TO SELECTED COLOUR.
COLOUR MATCHED HARDWARE.

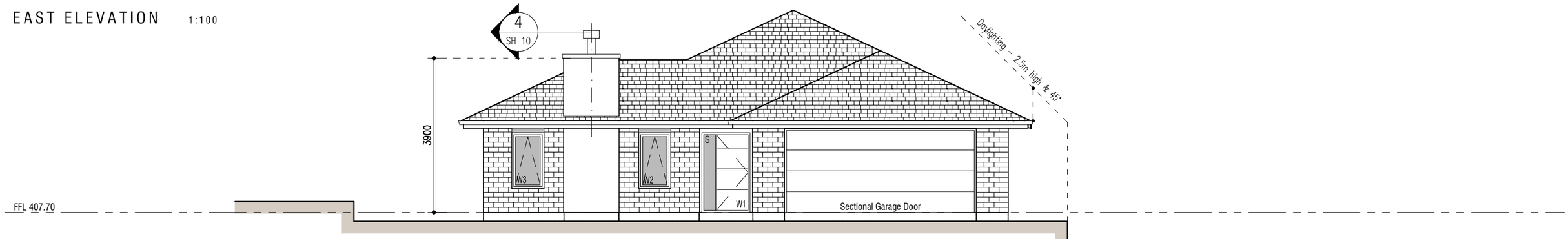
S = GRADE A SAFETY GLAZING



NORTH ELEVATION 1:100



EAST ELEVATION 1:100



SOUTH ELEVATION 1:100



WEST ELEVATION 1:100

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **ELEVATIONS**

CONSENT COPY
REV A

SCALE: 1:100

DRAWN: JO

DATE: AUG 2017

NOTES:
Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

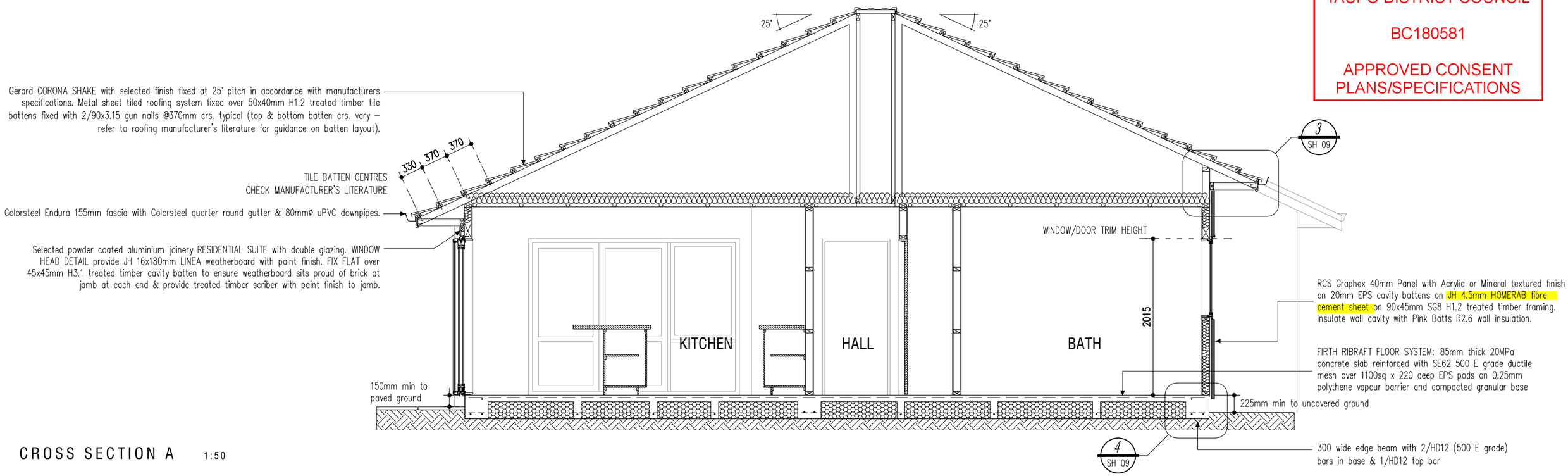
DATE:		REVISION:	
10.07.18	A	-SH1	RELOCATE ORG.
		-SH3,6-8	DETAIL CEILING ACCESS.
		-SH4	DETAIL REFERENCE.
		-SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET 4
OF: 18
JOB No. -

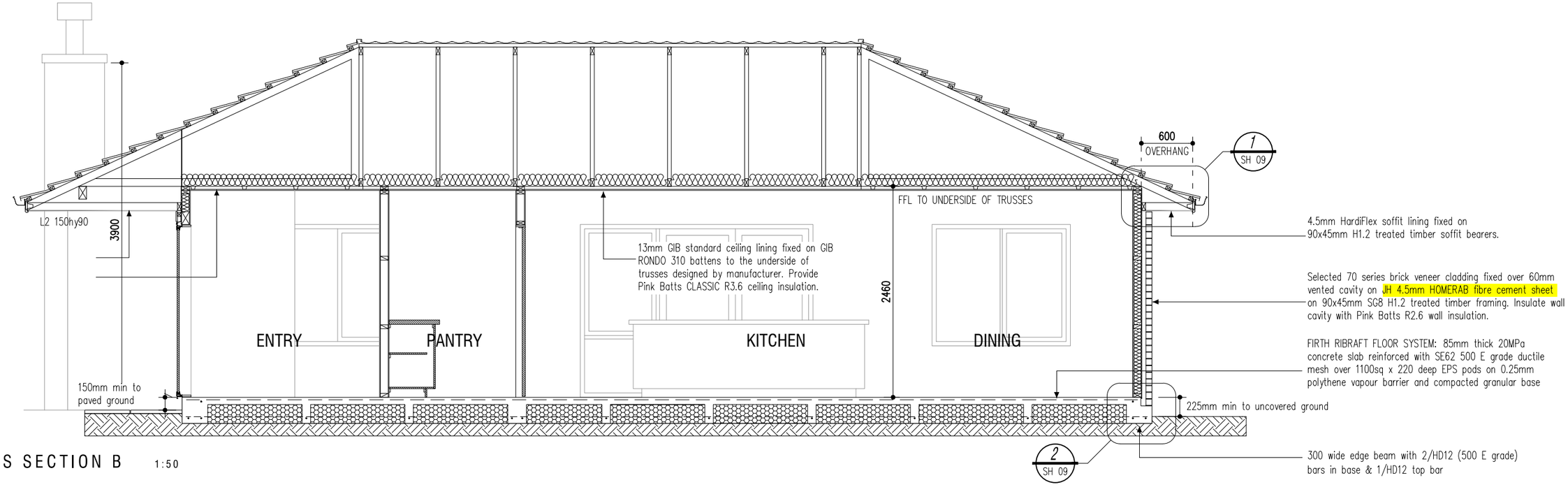
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CROSS SECTION A 1:50



CROSS SECTION B 1:50

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **CROSS SECTIONS**

CONSENT COPY

SCALE: 1:50

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/---- REVISION: -

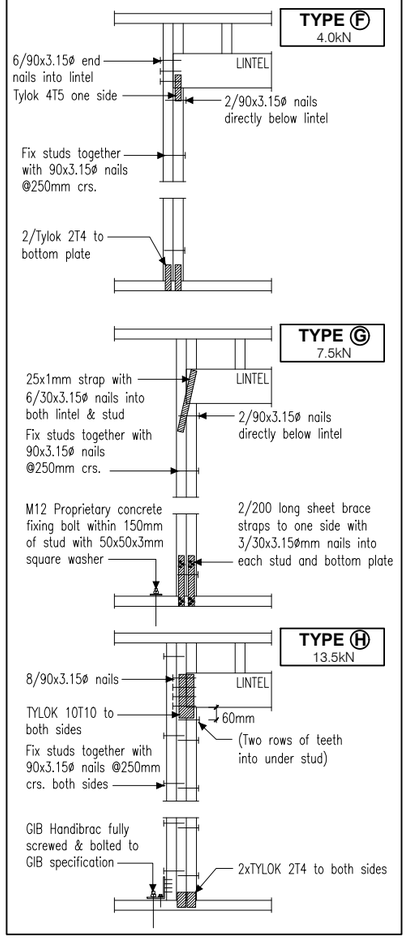
SHEET 5

OF: 18

JOB No. -

LINTEL FIXING TYPES

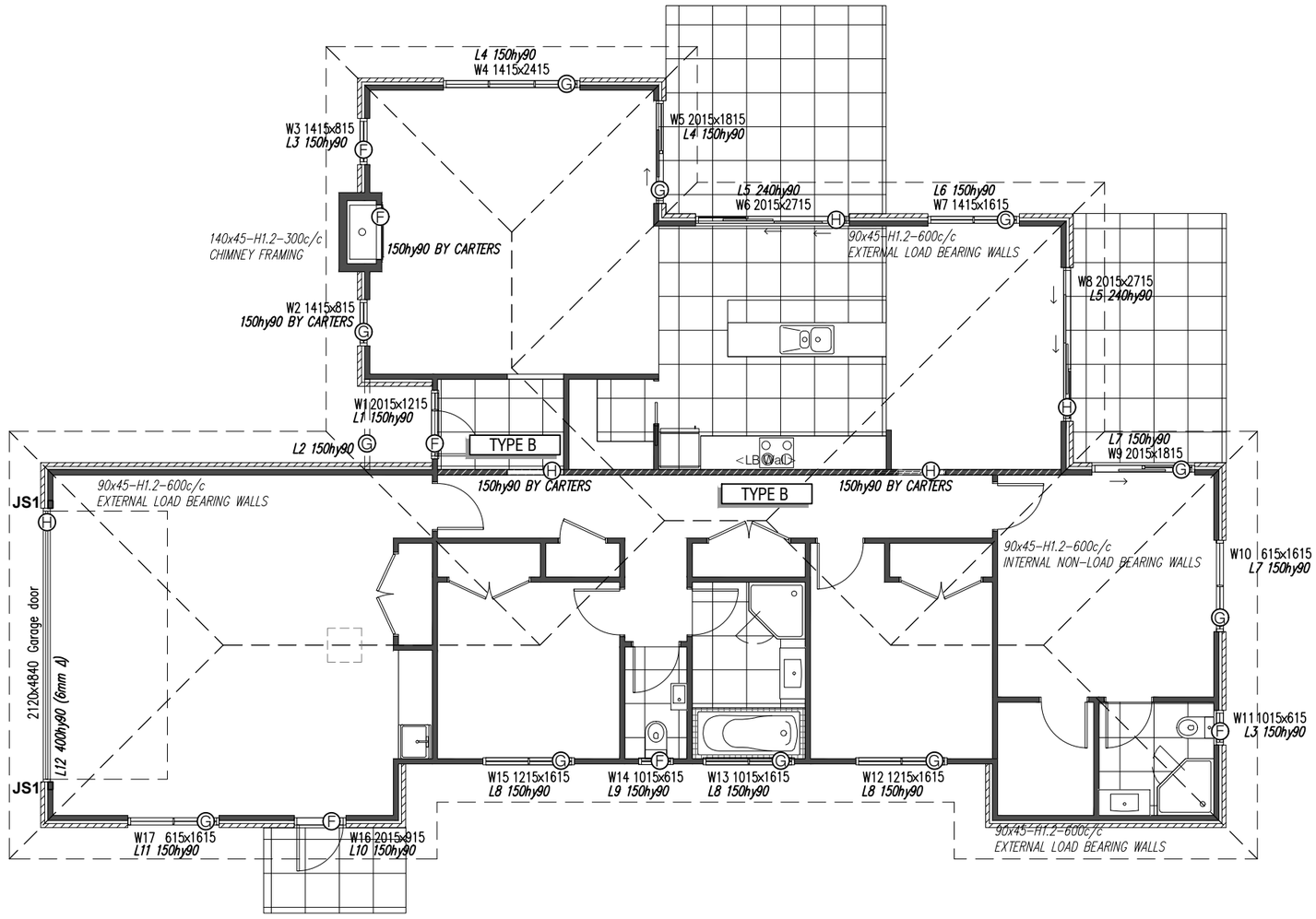
IMPORTANT NOTE: trimming stud numbers shown are indicative only



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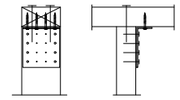
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LOADBEARING WALLS - STUD TOP PLATE FIXING

TYPE B (internal wall)
4.7kN

2/90x3.15 dia. plain steel wire nails driven vertically into stud.



plus
LUMBERLOK 6kN Stud Anchor
(CPC80 Purlin Cleat)

STUD TO TOP PLATE FIXING

ALTERNATIVE TO NZS3604:2011 TABLE 8.18
(Refer to James Hardies Rigid Air Barriers Installation manual)

4.7kN fixing = Fix HomeRAB using 40 x 2.8mm Hardiflex nails at 75mm crs. maximum to top plate with a minimum edge distance of 20mm.

TYPE B = TYPE B fixing @ 600c/c max

NOTE: Δ = DEFLECTION OF BEAM
LB Wall = INTERNAL LOAD BEARING WALL

BATTEN FIXING REQUIREMENTS:

NZS 3604:2011 Table 10.12 for tile batten fixing requirements.

50x40mm H1.2 battens - Achieve fixing *Type S (0.8kN)* 2/90 x 3.15 gun nail

TRIMMING STUDS TO OPENINGS:

NZS 3604:2011 Fig. 8.5 and Table 8.5 to determine the number of trimming studs required for window and door openings.

TRIMMING STUDS: OUTSIDE SCOPE OF NZS 3604:2011

As per DesignIT calculations and where indicated on plan:

JS1 3/90x45 HyCHORD trimming studs

BOTTOM PLATE FIXINGS TO CONCRETE:

BOTTOM PLATE TO STUD CONNECTION TO COMPLY WITH NZS 3604:2011 table 8.19 AND AS REQUIRED FOR LINTEL FIXINGS.

PROPRIETARY ANCHORS SHALL HAVE A MINIMUM CAPACITY WHEN TESTED IN ACCORDANCE WITH NZS3604 7.5.12.3

EXTERNAL WALLS AND INTERNAL LOAD BEARING WALLS: M12 ANCHOR BOLTS @ 0.9m CTRS SET NOT LESS THAN 90mm INTO CONCRETE.

INTERNAL WALLS: M12 ANCHOR BOLTS @ 0.9m CTRS SET NOT LESS THAN 90mm INTO CONCRETE OR 8x75mm DRIVE PIN & WASHER @ 0.6m CTRS.

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **STUD SIZES, LINTELS & FIXINGS**

CONSENT COPY
REV A

SCALE: 1:100

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE:	REVISION:		
10.07.18	A	–SH1	RELOCATE ORG.
		–SH3,6–8	DETAIL CEILING ACCESS.
		–SH4	DETAIL REFERENCE.
		–SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET **6**
OF: 18
JOB No. -

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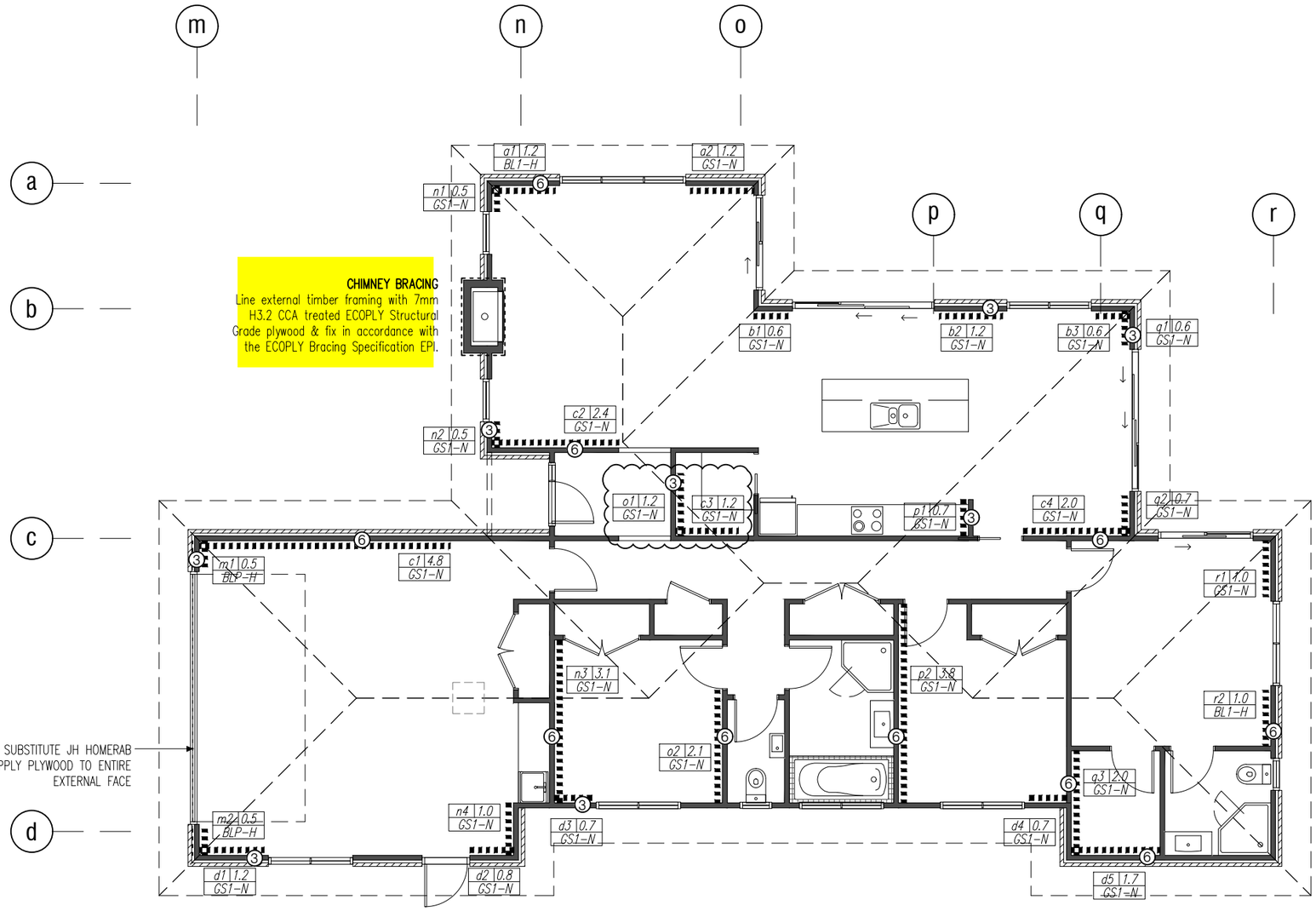
APPROVED CONSENT PLANS/SPECIFICATIONS

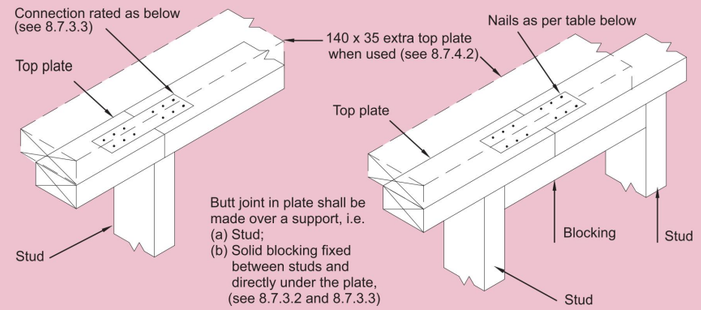
TOP PLATE CONNECTORS WITH BRACE ELEMENTS:
NZS 3604:2011 Clause 8.7.3.3
NZS 3604:2011 Figure 8.15 & 8.16 can be used where the top plate of the wall that contains one or more wall bracing elements shall be jointed according to the bracing capacity.

CAPACITY REQUIREMENT KEY:

③ 3kN Connection as per Figure 8.15
OR other approved solution equivalent with capacity.
Where bracing capacity does not exceed 100B/U's.

⑥ 6kN Connection as per Figure 8.16
OR other approved solution equivalent with capacity
ie; LUMBERLOK PLATE-LOK fixed in accordance
to product specifications.
Where bracing capacity exceeds 100B/U's.





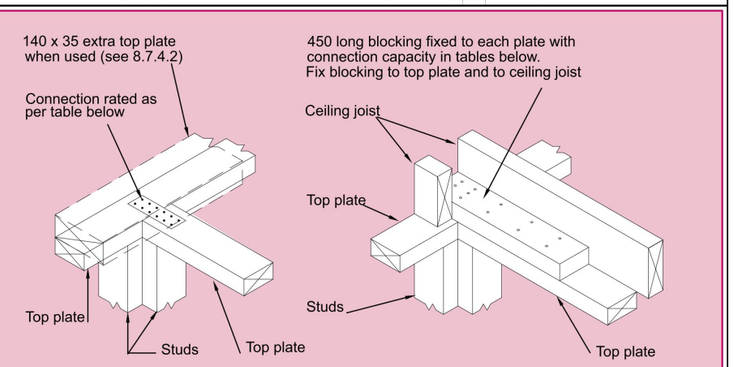
Capacities of metal plate joints(2)	
Up to 3 kN	3 / 30 x 3.15 mm nails per side
Up to 6 kN	6 / 30 x 3.15 mm nails per side

Capacities of nailed joints(2)	
Up to 3 kN	3 / 100 x 3.75 mm nails per side
Up to 6 kN	6 / 100 x 3.75 mm nails per side

NOTE –
(1) See section 4 for durability requirements.
(2) Not required when extra top plate is used.

Unless otherwise stated, all dimensions are in mm.

Figure 8.15 – Connecting top plates in line – Walls containing bracing (see 8.7.3.3)



Capacities of metal plate joints	
Up to 3 kN	3 / 30 x 3.15 mm nails per side
Up to 6 kN	6 / 30 x 3.15 mm nails per side

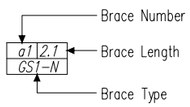
Capacities of nailed joints	
Up to 3 kN	3 / 100 x 3.75 mm nails per side
Up to 6 kN	6 / 100 x 3.75 mm nails per side

NOTE – See section 4 for durability requirements.

Unless otherwise stated, all dimensions are in mm.

Figure 8.16 – Connecting top plates to external walls at right angles – Walls containing bracing (see 8.7.3.4)

Bracing Symbol



OVER TIMBER FRAME: 184sqm
OVER FOUNDATION: 190sqm

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TITLE: **NEW RESIDENCE**
LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **BRACING PLAN**
CONSENT COPY
REV A

SCALE: 1:100
DRAWN: JO
DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE:		REVISION:	
10.07.18	A	-SH1	RELOCATE ORG.
		-SH3,6-8	DETAIL CEILING ACCESS.
		-SH4	DETAIL REFERENCE.
		-SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

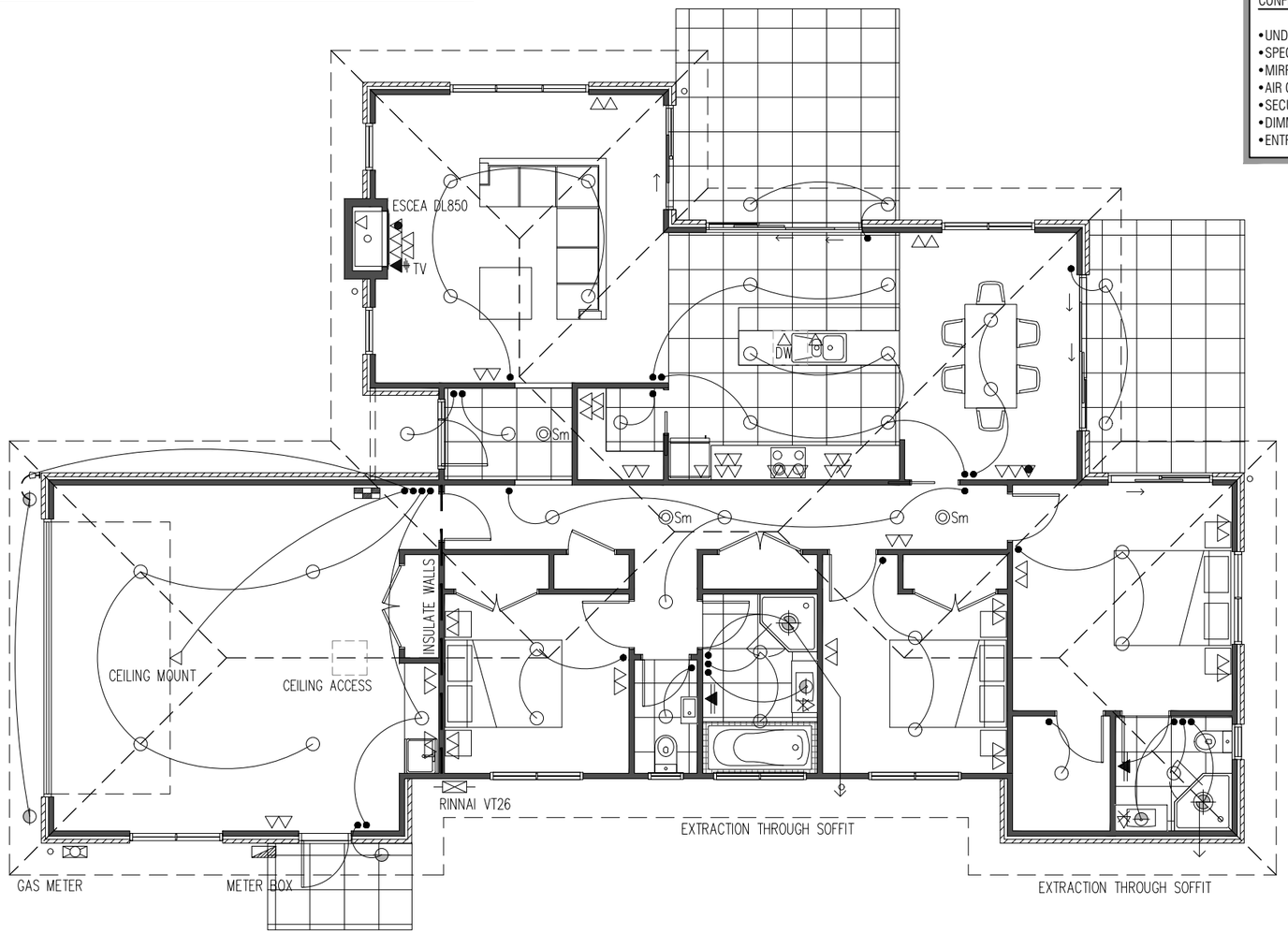
SHEET 7
OF: 18
JOB No. -

PROPOSED R-VALUES - SCHEDULE METHOD				
LOCATION	**COMPONENT**	**SCHEDULE METHOD MINIMUM**	**R-VALUE ACHIEVED**	**INSULATION DESCRIPTION & REFERENCE**
WALLS	90x45 @600crs. Brick veneer over cavity	2	2.24	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	90x45 @600crs. RCS 40mm Graphex over cavity	2	3.05	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	140x45 @300crs.RCS 40mm Graphex over cavity	2	3.47	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	90x45 @600crs.Gib lining both sides	2	2.18	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
ROOFS	Timber trusses @900crs.	3.3	3.37	Pink Batts R3.6 ceiling insulation ***Refer to Design Navigator Calculations in Appendix***
FLOOR	Ribraft slab on ground	1.3	1.30	No insulation ***Refer to Branz House Insulation Guide Fifth Edition***
GLAZING	Aluminium joinery with double glazed windows	0.26	0.26	Standard aluminimum joinery with double glazed windows ***Refer to Branz House Insulation Guide Fifth Edition***

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APPROVED CONSENT
PLANS/SPECIFICATIONS



NOTE:

CHECK KITCHEN APPLIANCE POSITIONS AND TYPES BEFORE INSTALLATION WITH FINALIZED KITCHEN PLAN.

CHECK POSITIONS AND TYPES OF ALL FITTINGS PRIOR TO INSTALLATION.

ALLOW PC SUMS FOR SPECIALIST FITTINGS WHERE APPLICABLE.

ALL RECESSED DOWNLIGHTS TO BE CA RATED. TYPES: ICF, IC, CA80, CA135.

SMOKE ALARMS TO BE TYPE 1 WITH HUSH AND TEST FACILITY IN ACCORDANCE WITH NZBC F7/AS1.

CONFIRM IF THE FOLLOWING ARE REQUIRED:

- UNDER TILE HEATING
- SPECIALIST FITTINGS
- MIRROR DEMISTERS
- AIR CONDITIONING SYSTEM IF APPLICABLE
- SECURITY SYSTEM
- DIMMERS TO SELECTED LIGHTS
- ENTRY CONTROL SYSTEM

LEGEND:

- Distribution Board
- Meter Box
- Gas Meter Box
- Rinnai VT26 HWH
- Light Sensor
- Recessed LED
- Wall Mounted Light
- Manrose Extraction Fan
- Sm Smoke Detector
- Power Outlet
- Double Power Outlet
- Earth Leakage point
- Heated Towel Rail
- Phone Outlet
- Light Switch
- TV Outlet

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LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **ELECTRICAL PLAN**

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DATE: AUG 2017

NOTES:
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Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

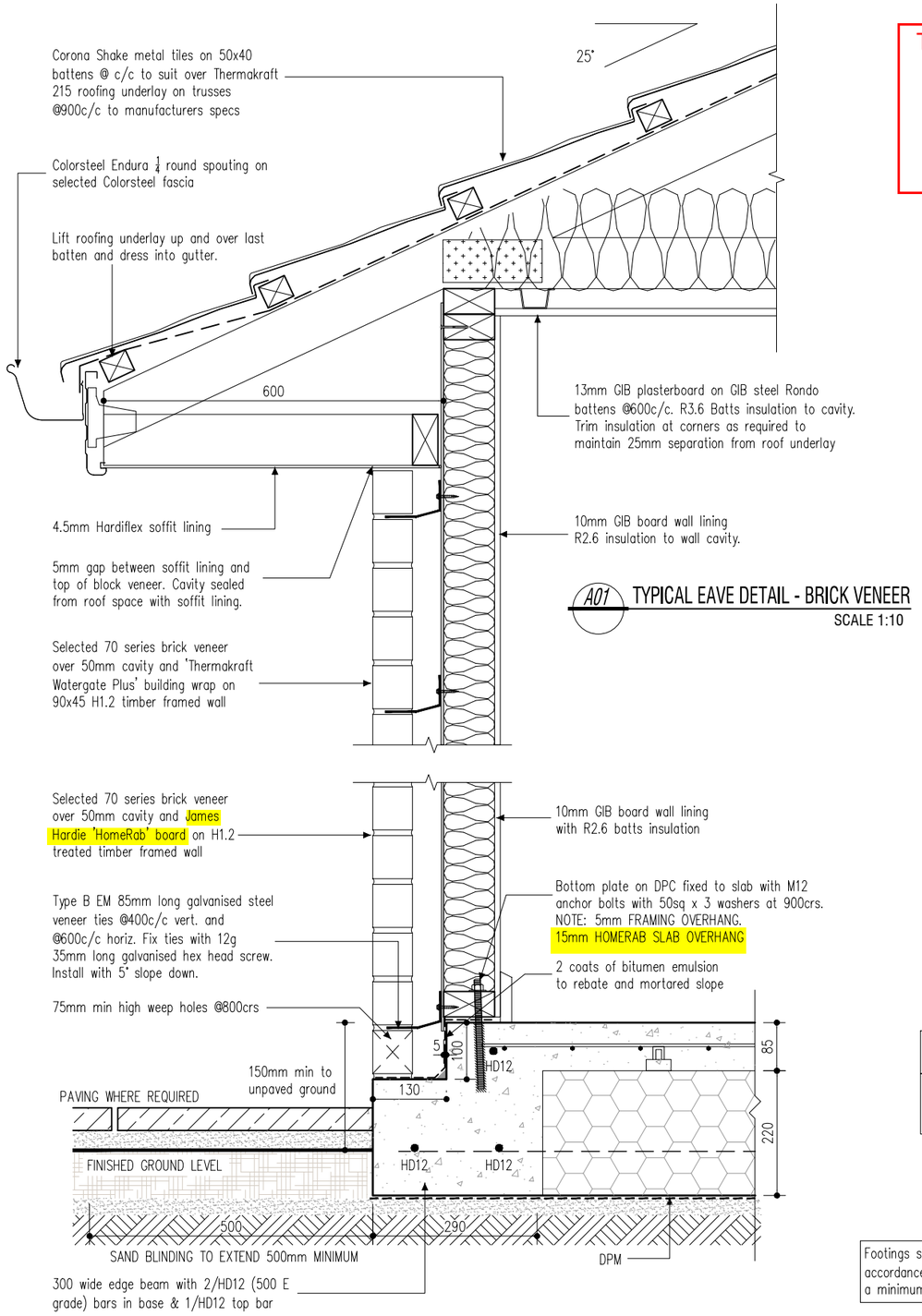
DATE:	REVISION:		
10.07.18	A	-SH1	RELOCATE ORG.
		-SH3,6-8	DETAIL CEILING ACCESS.
		-SH4	DETAIL REFERENCE.
		-SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET **8**
OF: **18**
JOB No. -

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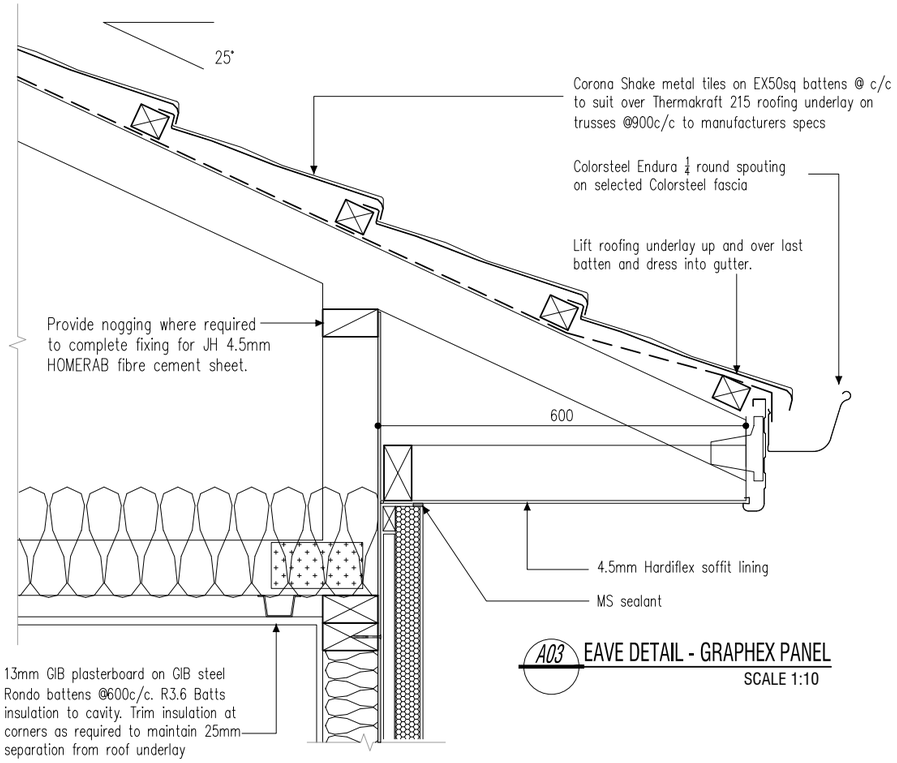


A01 TYPICAL EAVE DETAIL - BRICK VENEER
SCALE 1:10

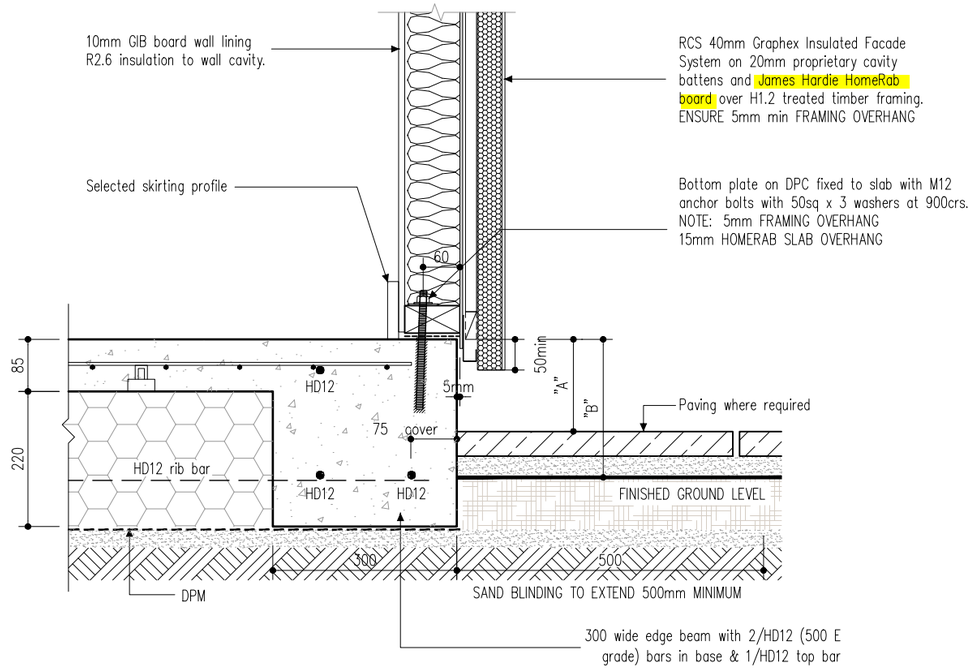
A02 TYPICAL FOOTING DETAIL - BRICK VENEER
SCALE 1:10

"A" = 150 MIN TO PAVING
"B" = 225 MIN TO UNCOVERED GROUND

Footings shall bear on "GOOD GROUND" in accordance with NZS3604 (SECTION 3) having a minimum bearing capacity of 300kPa.



A03 EAVE DETAIL - GRAPHEX PANEL
SCALE 1:10



4 TYPICAL FOOTING DETAIL - GRAPHEX PANEL
SCALE 1:10

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LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **DETAILS**

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SCALE: 1:10

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

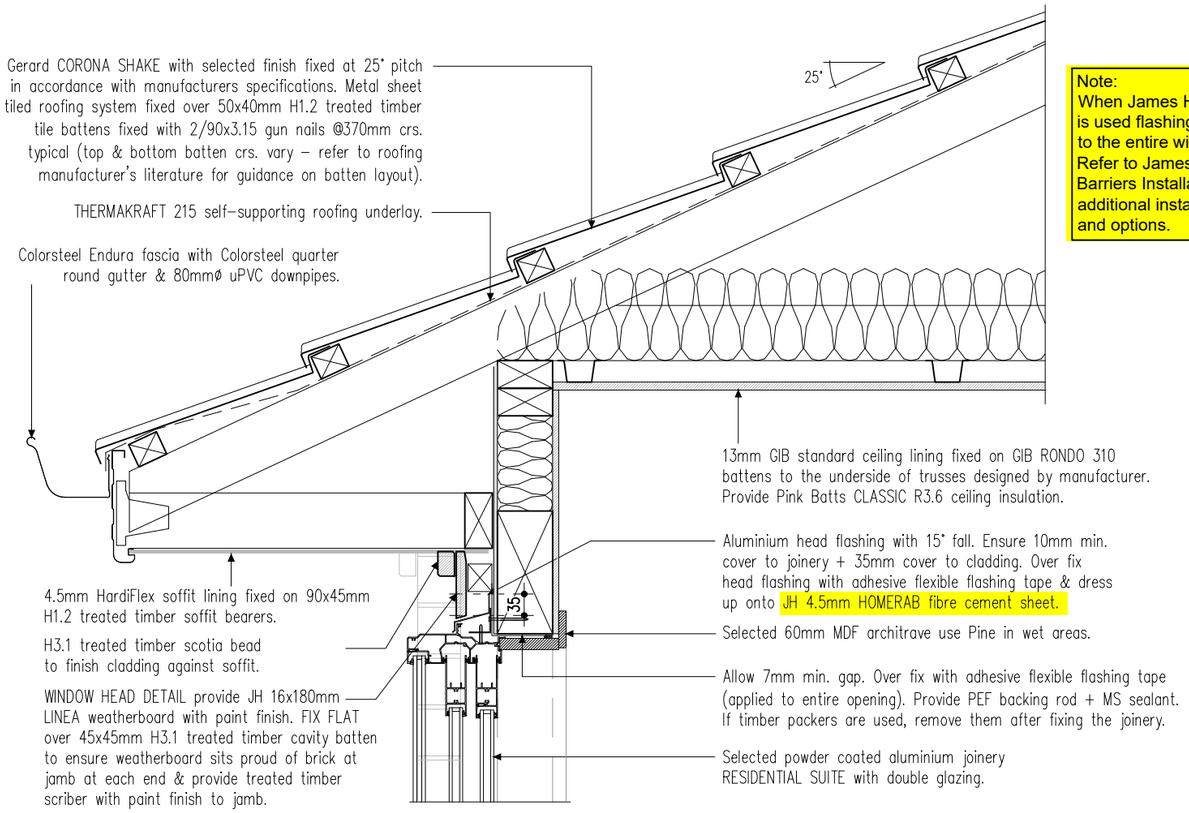
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DATE: --/--/---- REVISION: -

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OF: 18

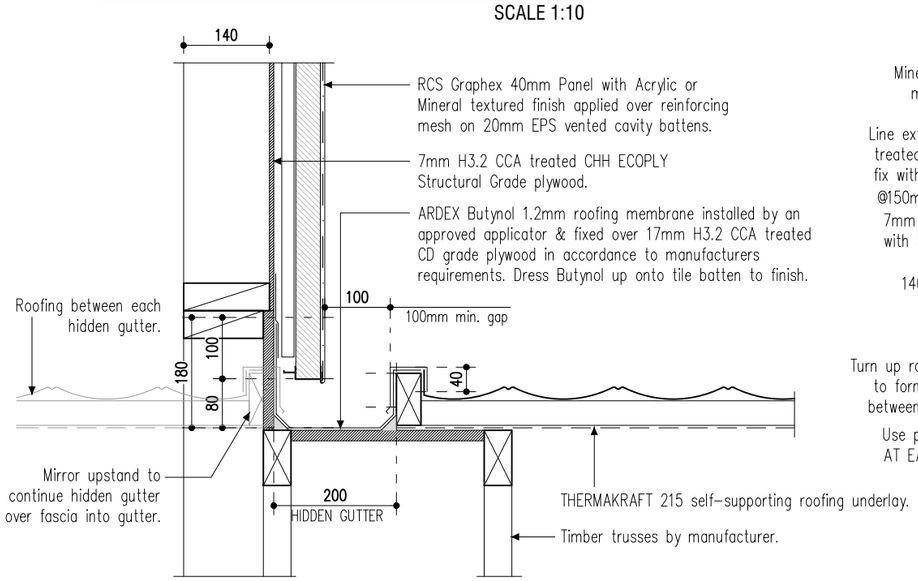
JOB No. -



Note:
When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.
Refer to James Hardie Rigid Air Barriers Installation Manual for additional installation instructions and options.

WINDOW HEAD DETAIL - JH LINEA WEATHERBOARD

SCALE 1:10

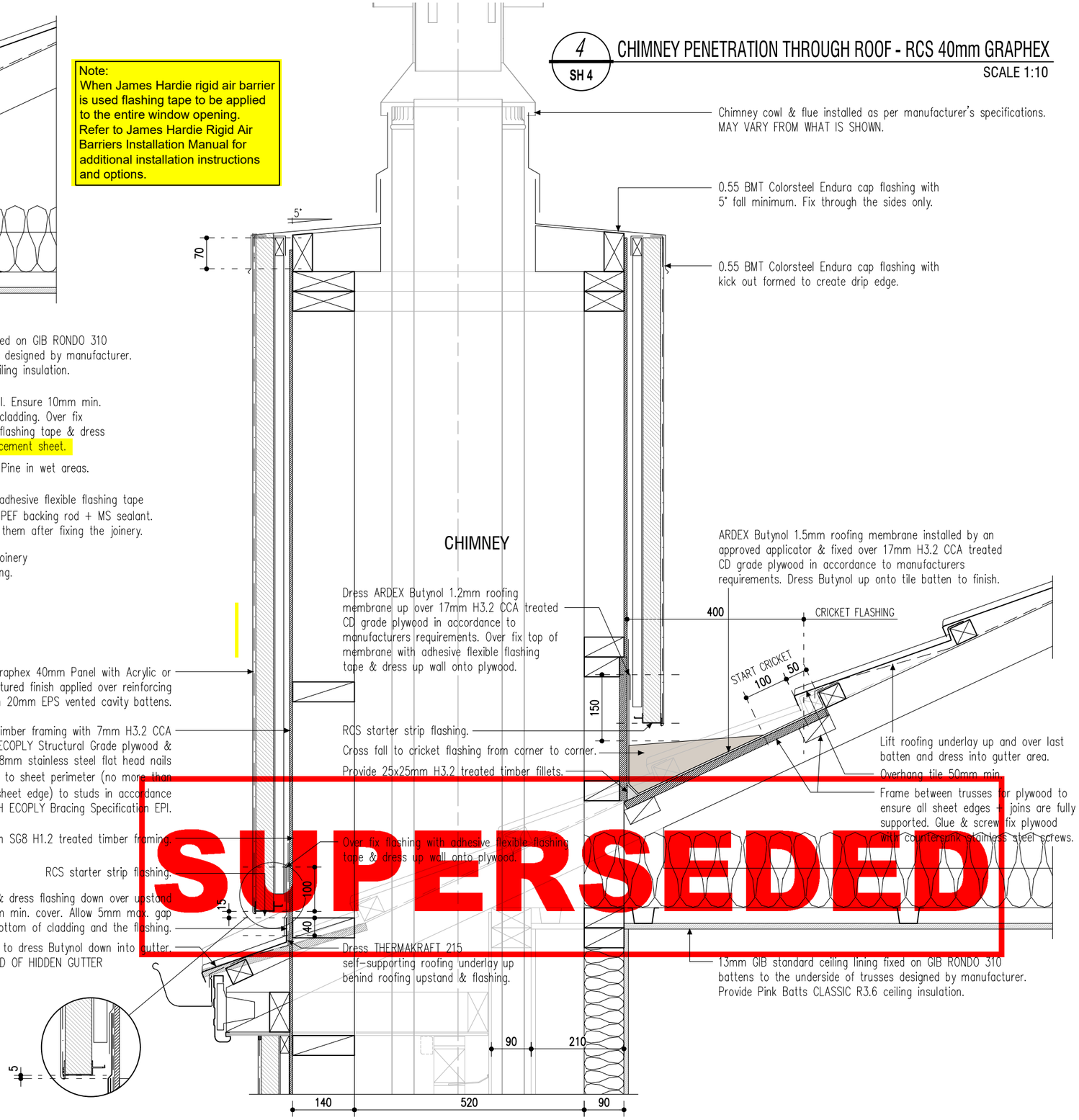


CHIMNEY PENETRATION PARALLEL APRON FLASHING - RCS 40mm GRAPHEX

SCALE 1:10

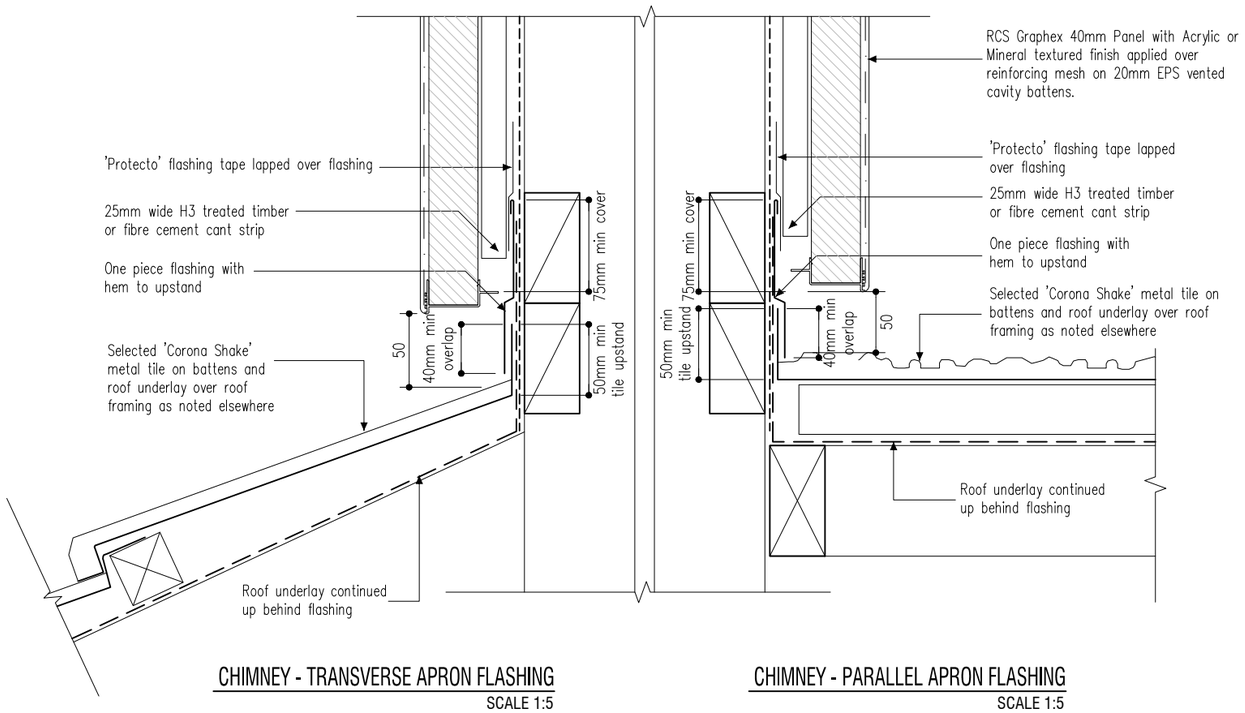
4 SH 4 CHIMNEY PENETRATION THROUGH ROOF - RCS 40mm GRAPHEX

SCALE 1:10



SUPERSEDED

Penny Homes Ltd PO Box 708, Taupo ph | 07 377 0154 fax | 07 377 0155 email: john@pennyhomes.co.nz © Copyright www.pennyhomes.co.nz	TITLE: **NEW RESIDENCE** LOT 196 MAYFLY GROVE, NUKUHAU	DRAWING: **DETAILS** CONSENT COPY	SCALE: 1:10 DRAWN: JO DATE: AUG 2017	NOTES: Wind Zone = HIGH Eq Zone = 2 Exposure Zone = B All dimensions to be checked and verified by the Contractor before commencement of any work E&OE	DATE: --/--/---- REVISION: -	TAUPO DISTRICT COUNCIL BC180581 APPROVED CONSENT PLANS/SPECIFICATIONS	SHEET 10 OF: 18 JOB No. -

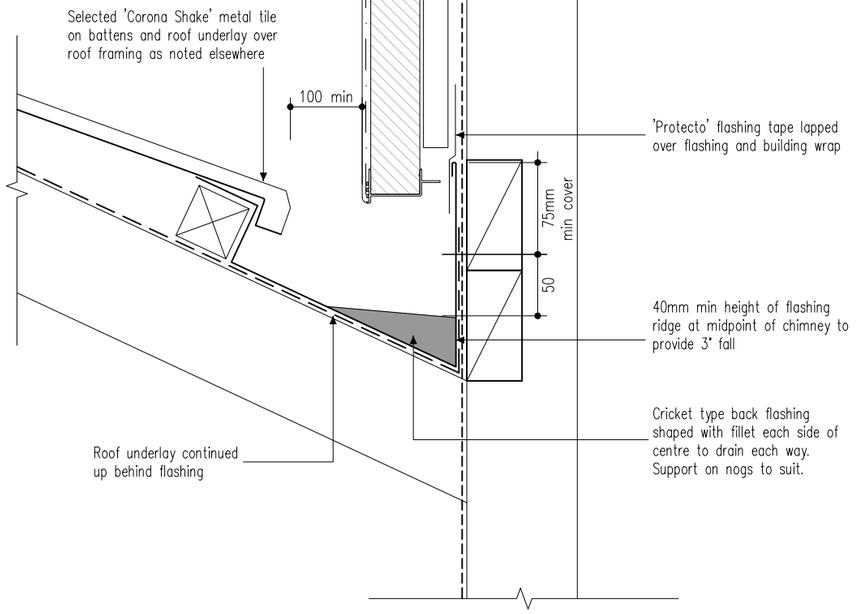


CHIMNEY - TRANSVERSE APRON FLASHING

SCALE 1:5

CHIMNEY - PARALLEL APRON FLASHING

SCALE 1:5



CHIMNEY - BACK FLASHING

SCALE 1:5

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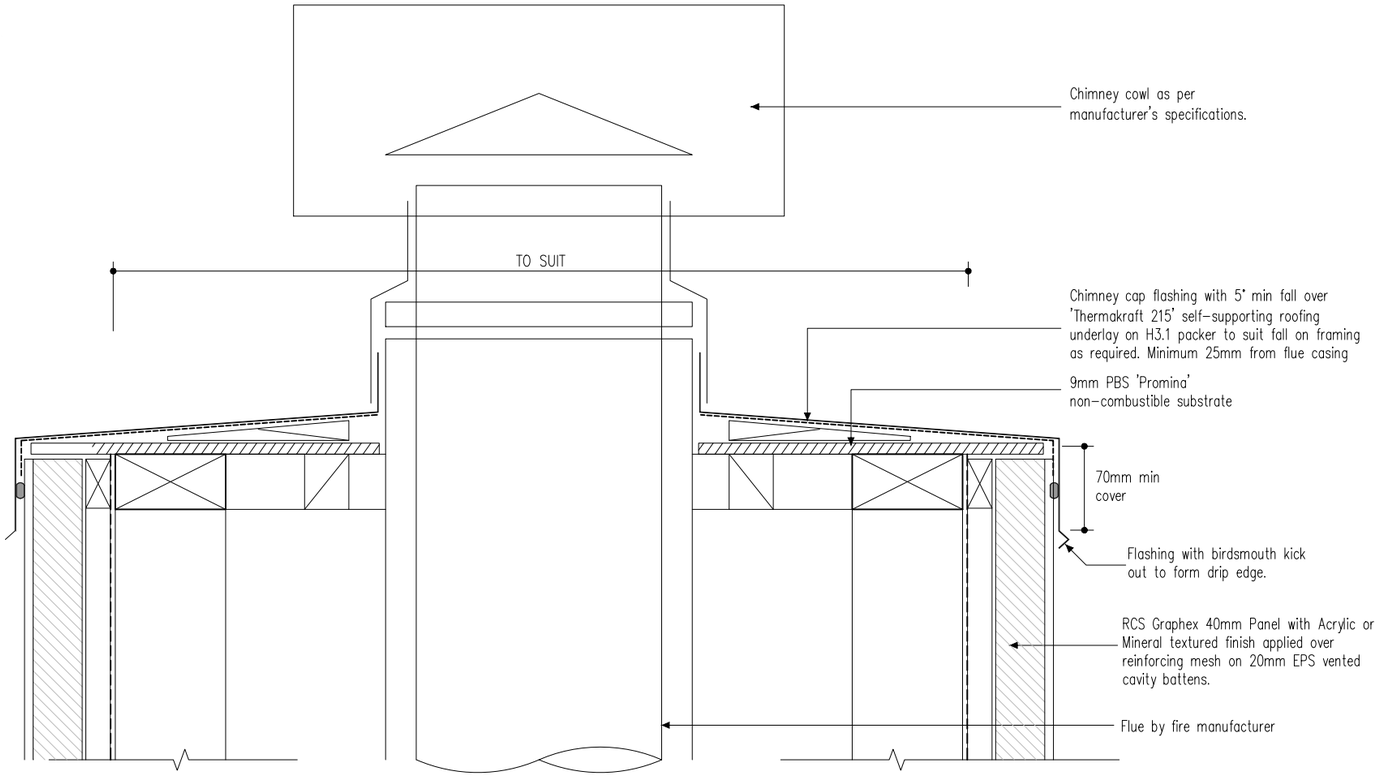
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VARIATION APPROVED

14 Dec 2018

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CHIMNEY CAP DETAIL

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DRAWING: **DETAILS**

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REV A

SCALE: 1:10

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

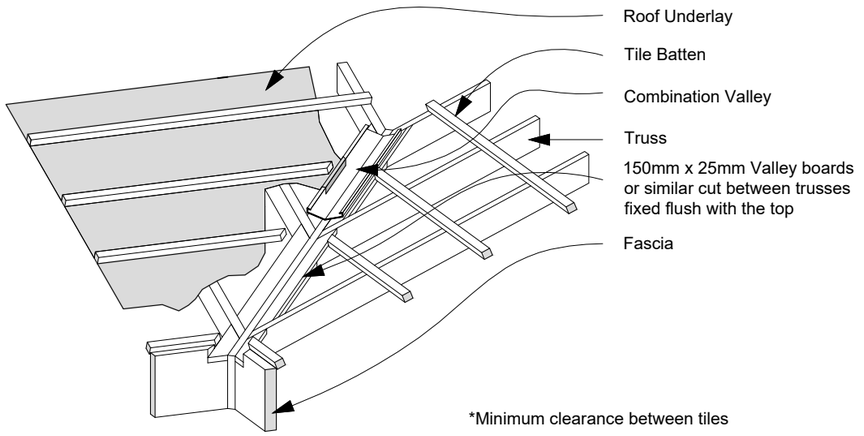
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DATE:		REVISION:	
10.07.18	A	-SH1	RELOCATE ORG.
		-SH3,6-8	DETAIL CEILING ACCESS.
		-SH4	DETAIL REFERENCE.
		-SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.
14.12.18	B	-SH10	AMENDED CHIMNEY FLASHING DETAILS.

SHEET 10

OF: 18

JOB No. -

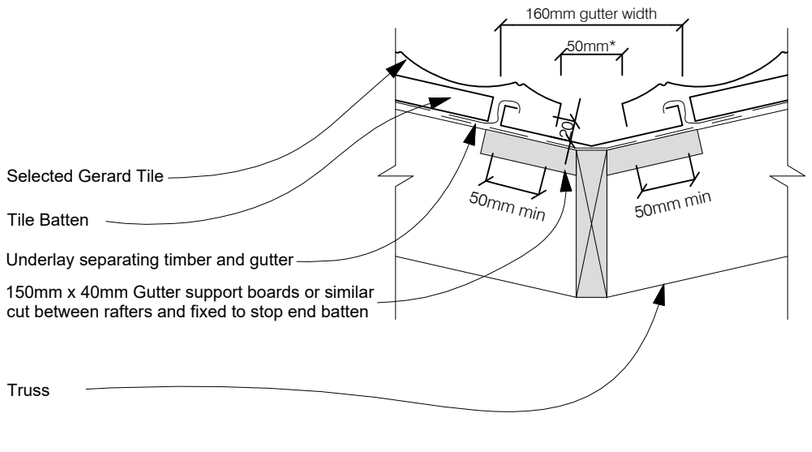


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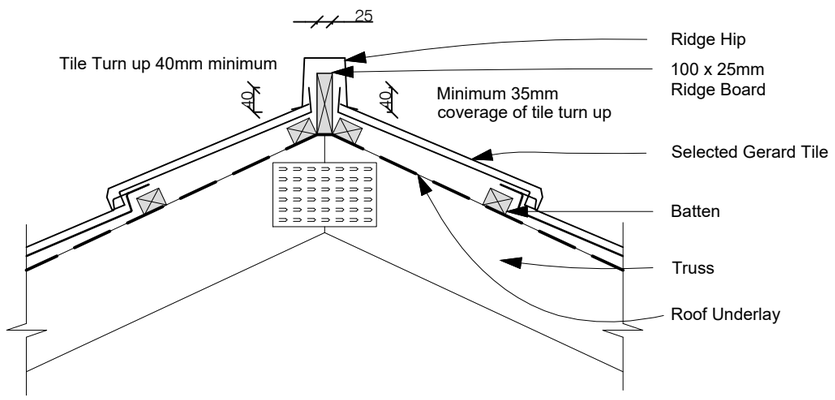
APPROVED CONSENT PLANS/SPECIFICATIONS

*Minimum clearance between tiles



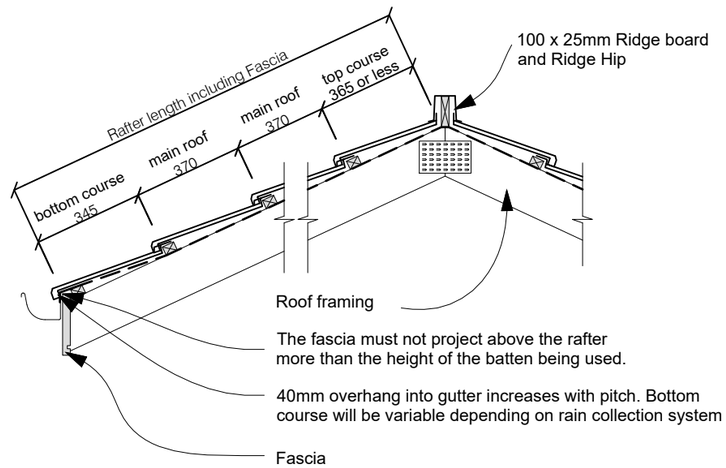
TYPICAL VALLEY DETAIL - GERARD TILE

SCALE 1:10



TYPICAL RIDGE DETAIL WITH BOX TRIM - GERARD TILE

SCALE 1:10



TYPICAL BATTEN SPACING LAYOUT - GERARD TILE

SCALE 1:20

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email: john@pennyhomes.co.nz

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **ROOF CLADDING DETAILS**

CONSENT COPY

SCALE: 1:10, 1:20

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/---- REVISION: -

SHEET 11

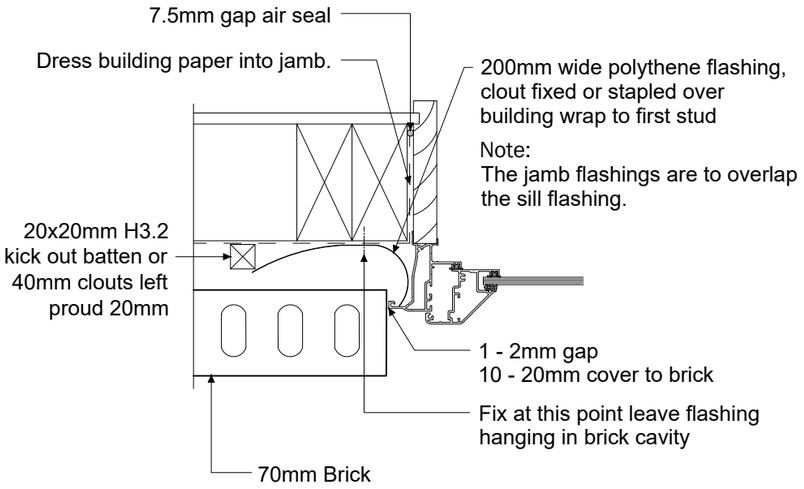
OF: 18

JOB No. -

TAUPO DISTRICT COUNCIL

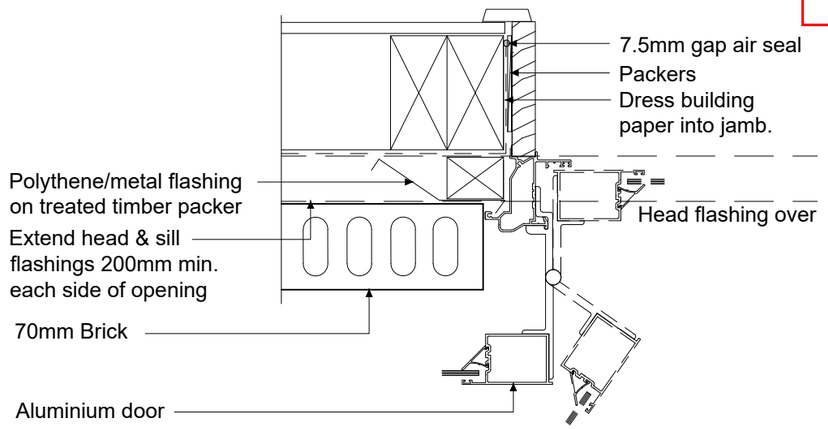
BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS



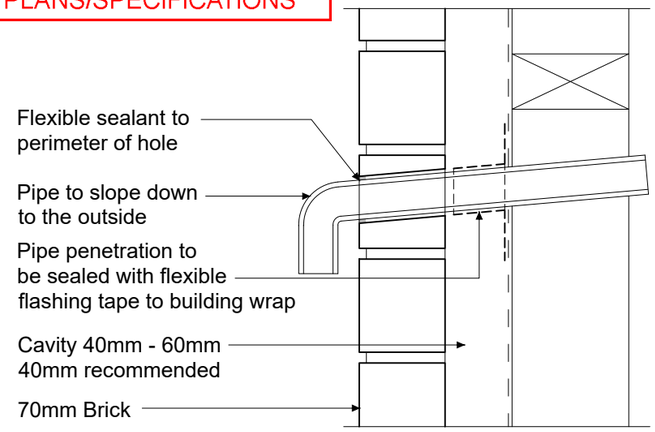
WINDOW JAMB DETAIL - BRICK CLADDING

SCALE 1:5



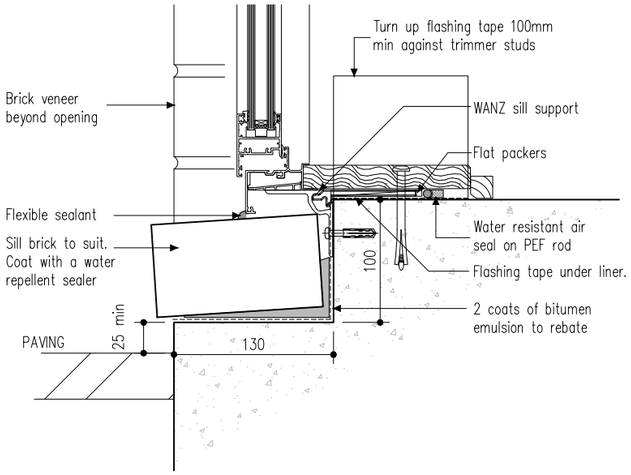
DOOR JAMB DETAIL - BRICK CLADDING

SCALE 1:5



PIPE PENETRATION DETAIL - BRICK CLADDING

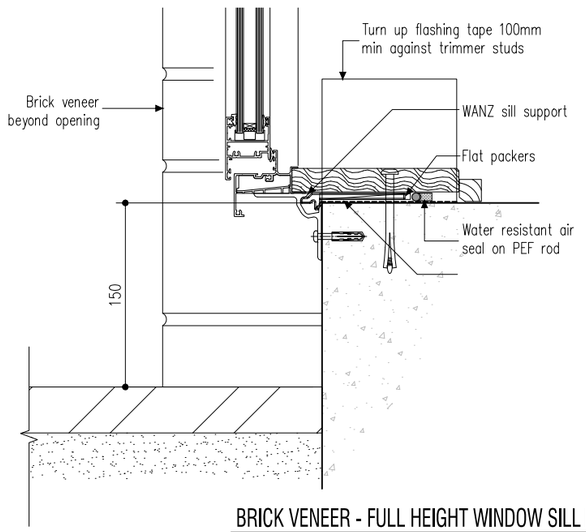
SCALE 1:5



BRICK VENEER - LAUNDRY DOOR SILL DETAIL

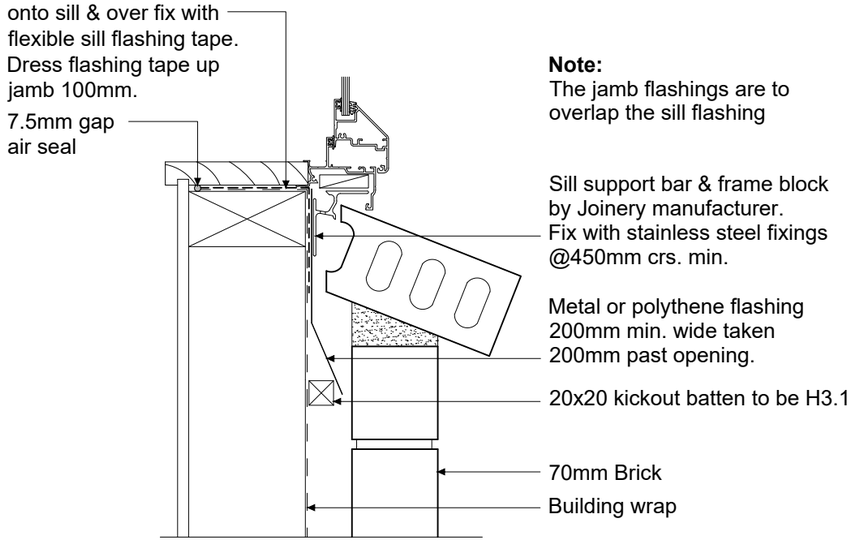
SCALE 1:5

Note:
When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.
Refer to James Hardie Rigid Air Barriers Installation Manual for additional installation instructions and options.



BRICK VENEER - FULL HEIGHT WINDOW SILL DETAIL

SCALE 1:5



WINDOW SILL DETAIL - BRICK CLADDING

SCALE 1:5

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **WALL CLADDING DETAILS**

CONSENT COPY

SCALE: 1:5

DRAWN: JO

DATE: AUG 2017

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

DATE: --/--/----

REVISION: -

SHEET 12

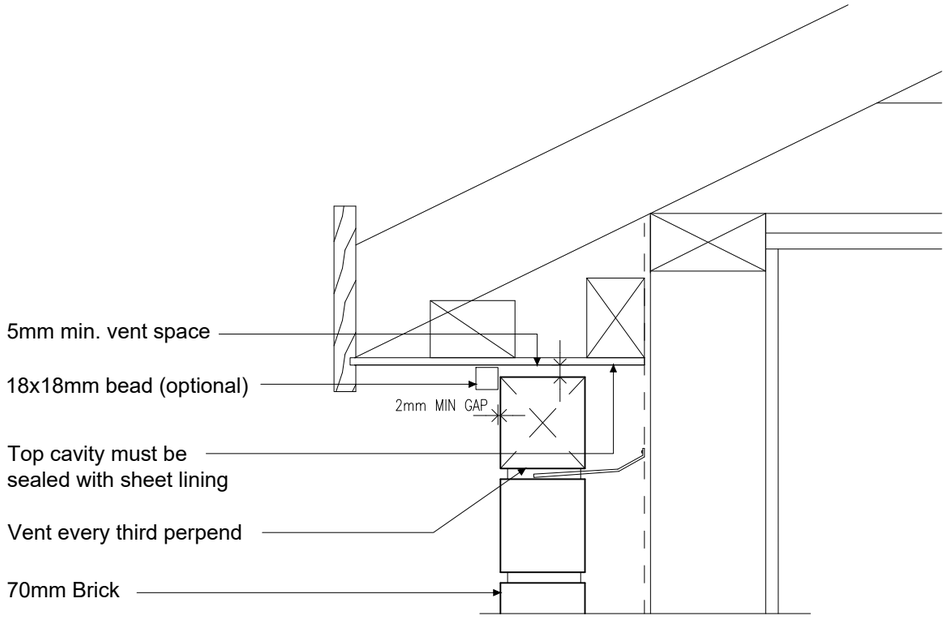
OF: 18

JOB No. -

TAUPO DISTRICT COUNCIL

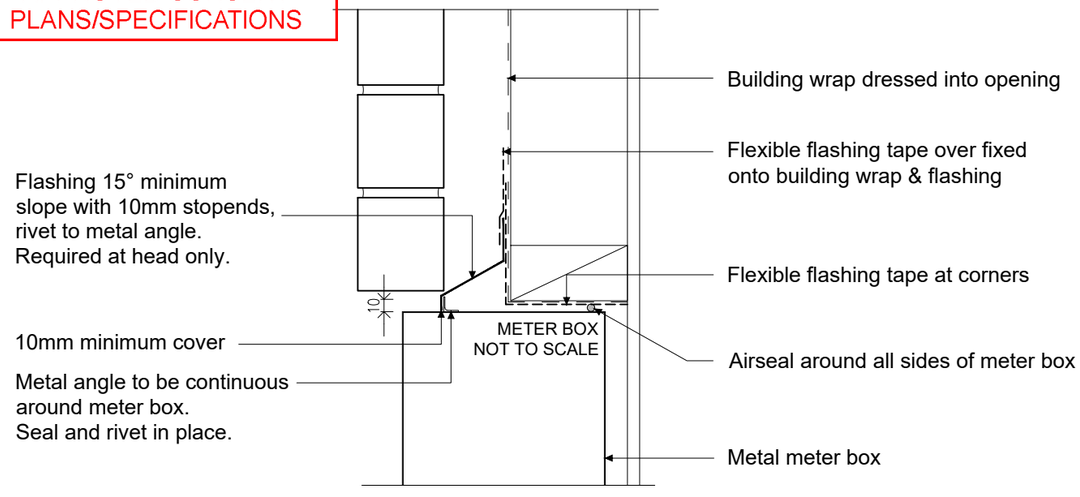
BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS



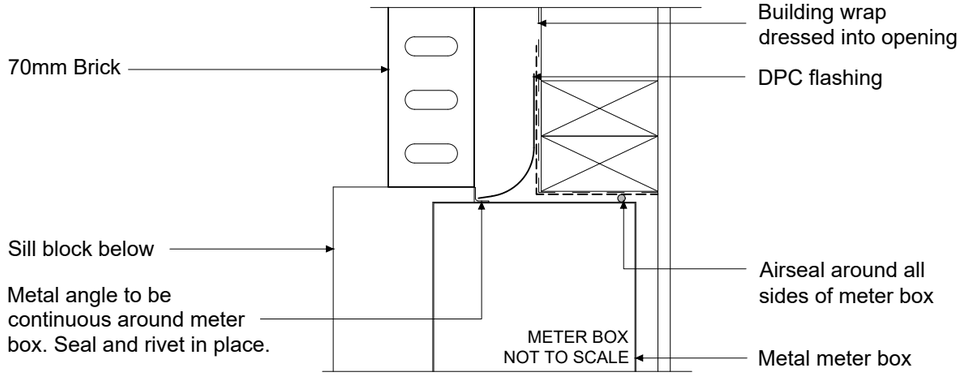
FLAT SOFFIT DETAIL - BRICK CLADDING

SCALE 1:5



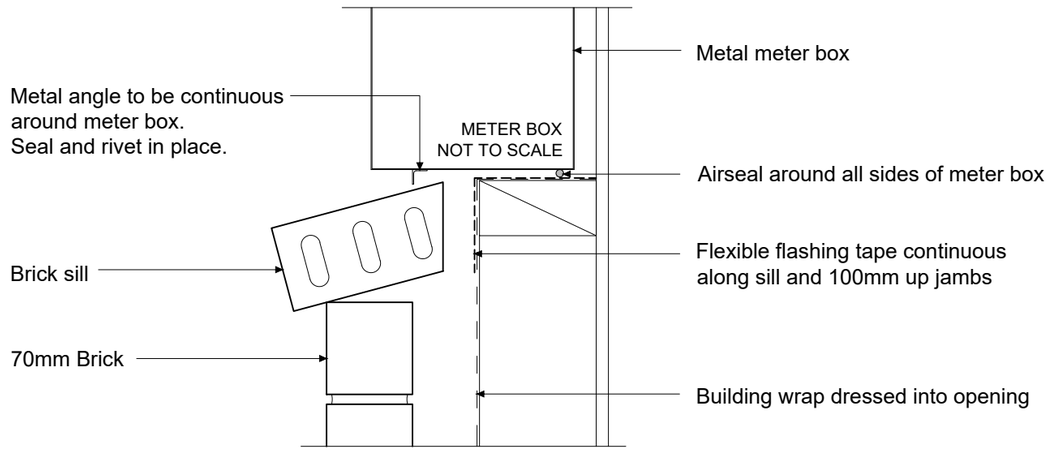
METER BOX INSTALLATION AT HEAD - BRICK CLADDING

SCALE 1:5



METER BOX INSTALLATION AT JAMB - BRICK CLADDING

SCALE 1:5



METER BOX INSTALLATION AT SILL - BRICK CLADDING

SCALE 1:5

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **WALL CLADDING DETAILS**

CONSENT COPY

SCALE: 1:5

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/----

REVISION: -

SHEET 13

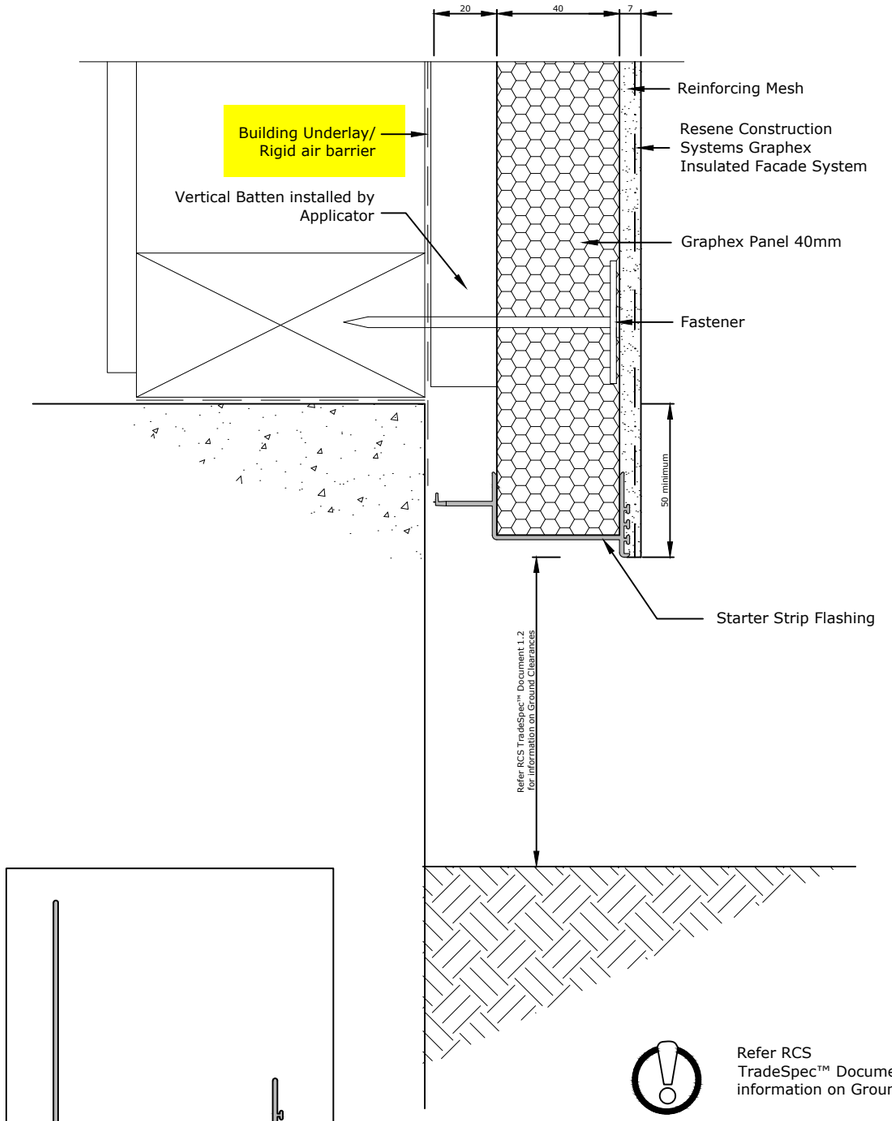
OF: 18

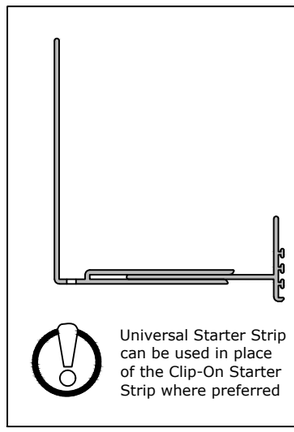
JOB No. -

TAUPO DISTRICT COUNCIL

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APPROVED CONSENT PLANS/SPECIFICATIONS

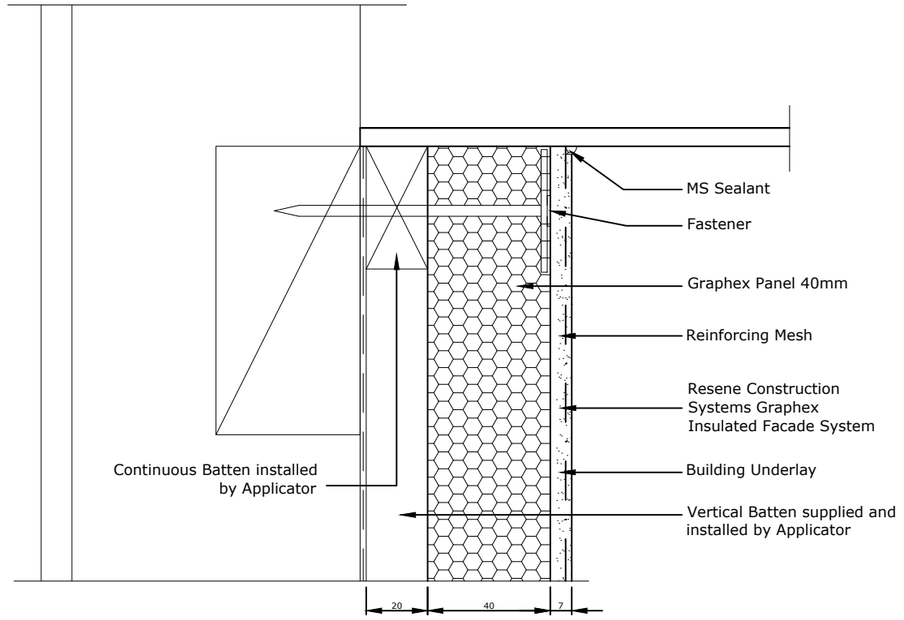




Refer RCS TradeSpec™ Document 1.2 for information on Ground Clearances

FOUNDATION BASE DETAIL - RCS 40mm GRAPHEX PANEL

SCALE 1:2

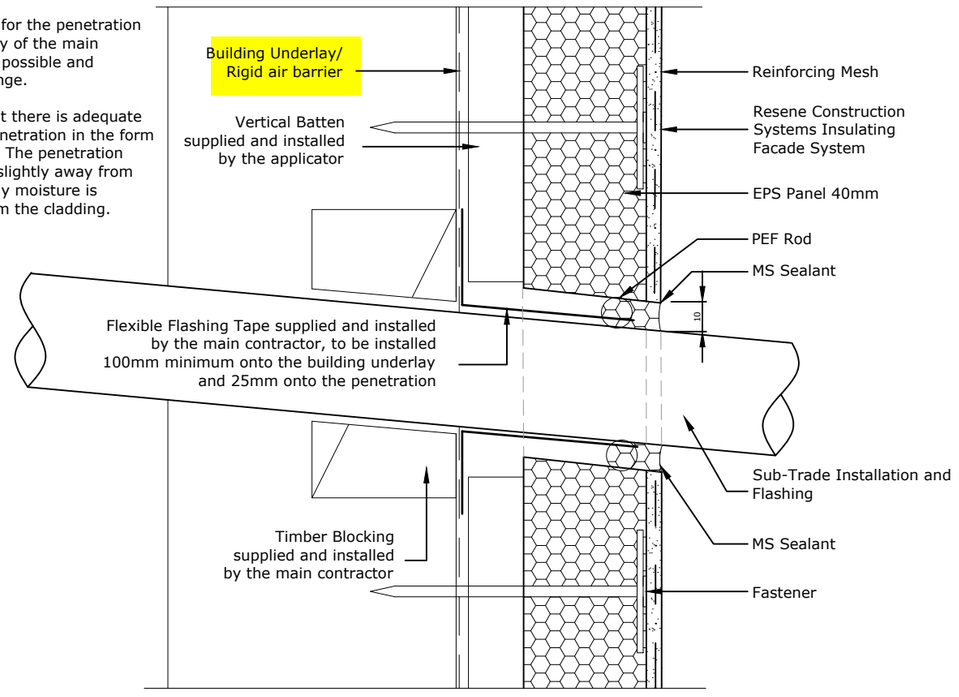


SOFFIT DETAIL - RCS 40mm GRAPHES PANEL

SCALE 1:2

The responsibility for the penetration is the responsibility of the main contractor, where possible and practical use a flange.

It is important that there is adequate support for the penetration in the form of timber packing. The penetration should be angled slightly away from the cladding so any moisture is diverted away from the cladding.



PIPE PENETRATION - RCS 40mm GRAPHEX PANEL

SCALE 1:2

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **WALL CLADDING DETAILS**

CONSENT COPY

SCALE: 1:2

DRAWN: JO

DATE: AUG 2017

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

DATE: --/--/----

REVISION: -

SHEET **14**

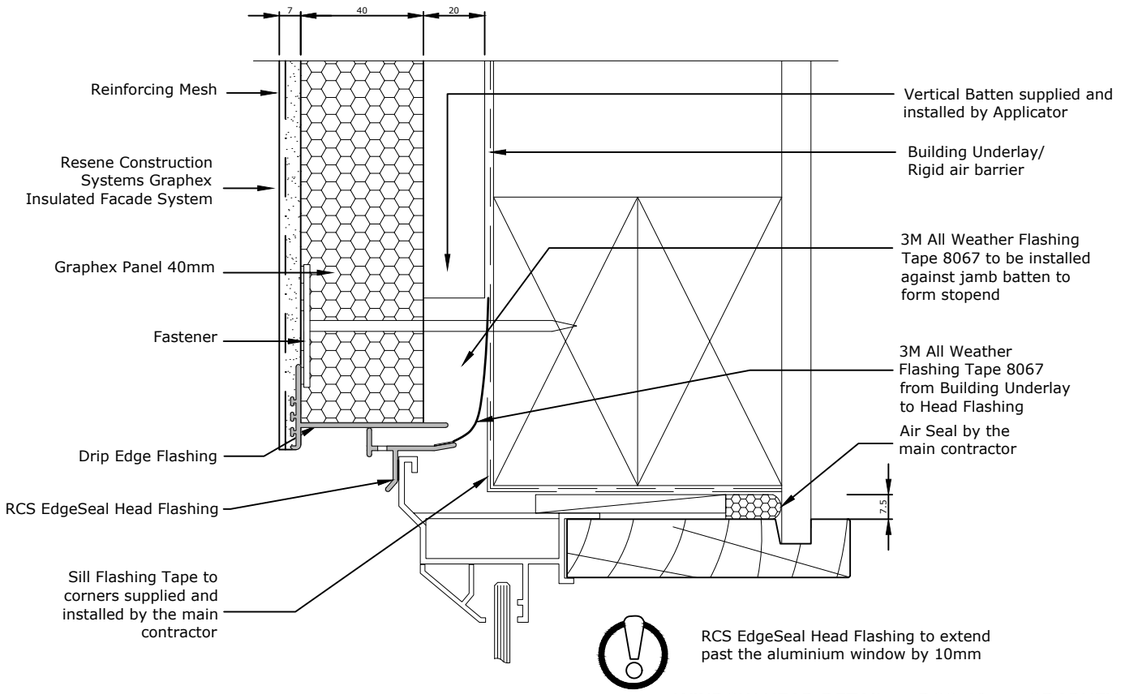
OF: 18

JOB No. -

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS

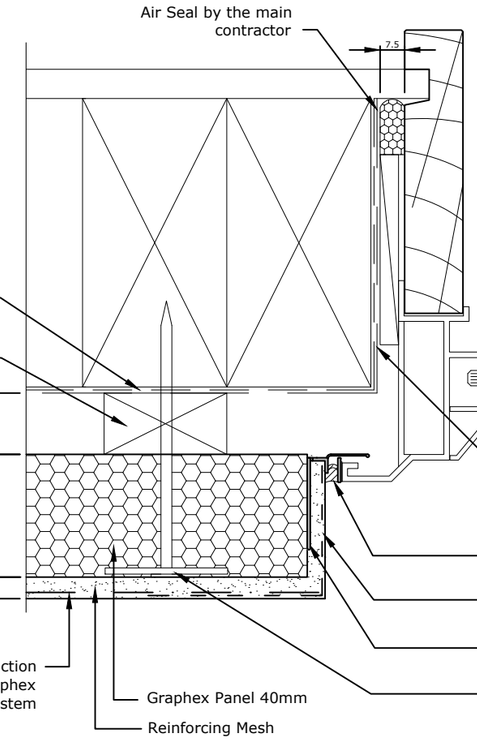


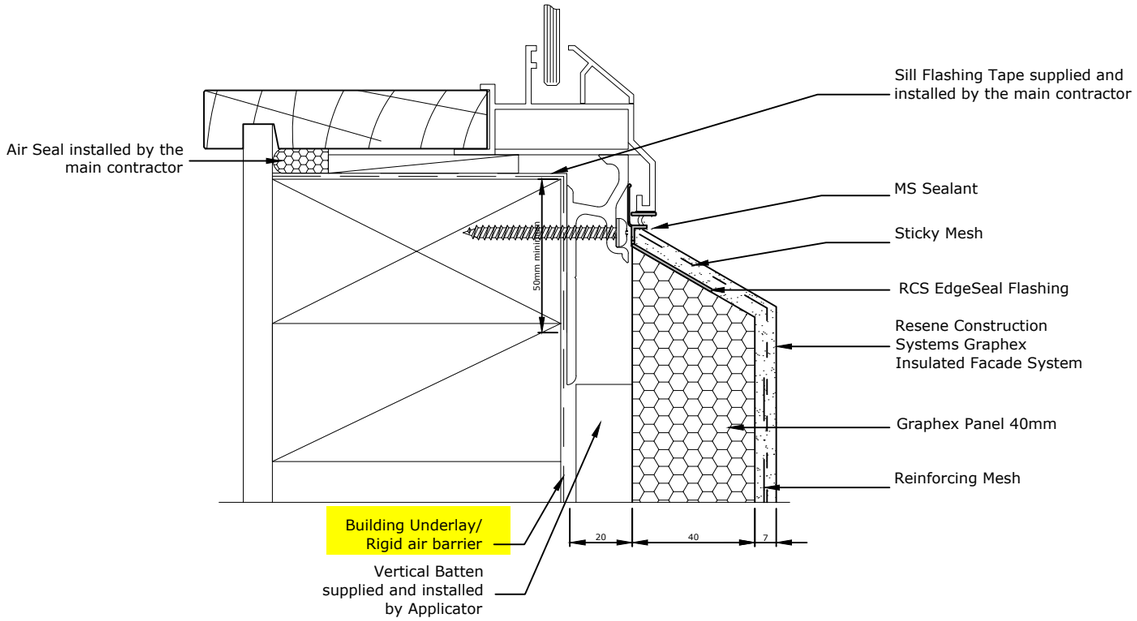
RCS EdgeSeal Head Flashing to extend past the aluminium window by 10mm

WINDOW HEAD DETAIL - RCS 40mm GRAPHEX PANEL

SCALE 1:2

Note:
When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.
Refer to James Hardie Rigid Air Barriers Installation Manual for additional installation instructions and options.





Allow a 25mm Gap between the back of the joinery and external facing timber framing to allow the sill flashing to fit.

WINDOW SILL DETAIL - RCS 40mm GRAPHEX PANEL

SCALE 1:2

Allow a 25mm Gap between the back of the joinery and external facing timber framing to allow the jamb flashing to fit.

WINDOW JAMB DETAIL - RCS 40mm GRAPHEX PANEL

SCALE 1:2

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **WALL CLADDING DETAILS**

CONSENT COPY

SCALE: 1:2

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/---- REVISION: -

SHEET 15

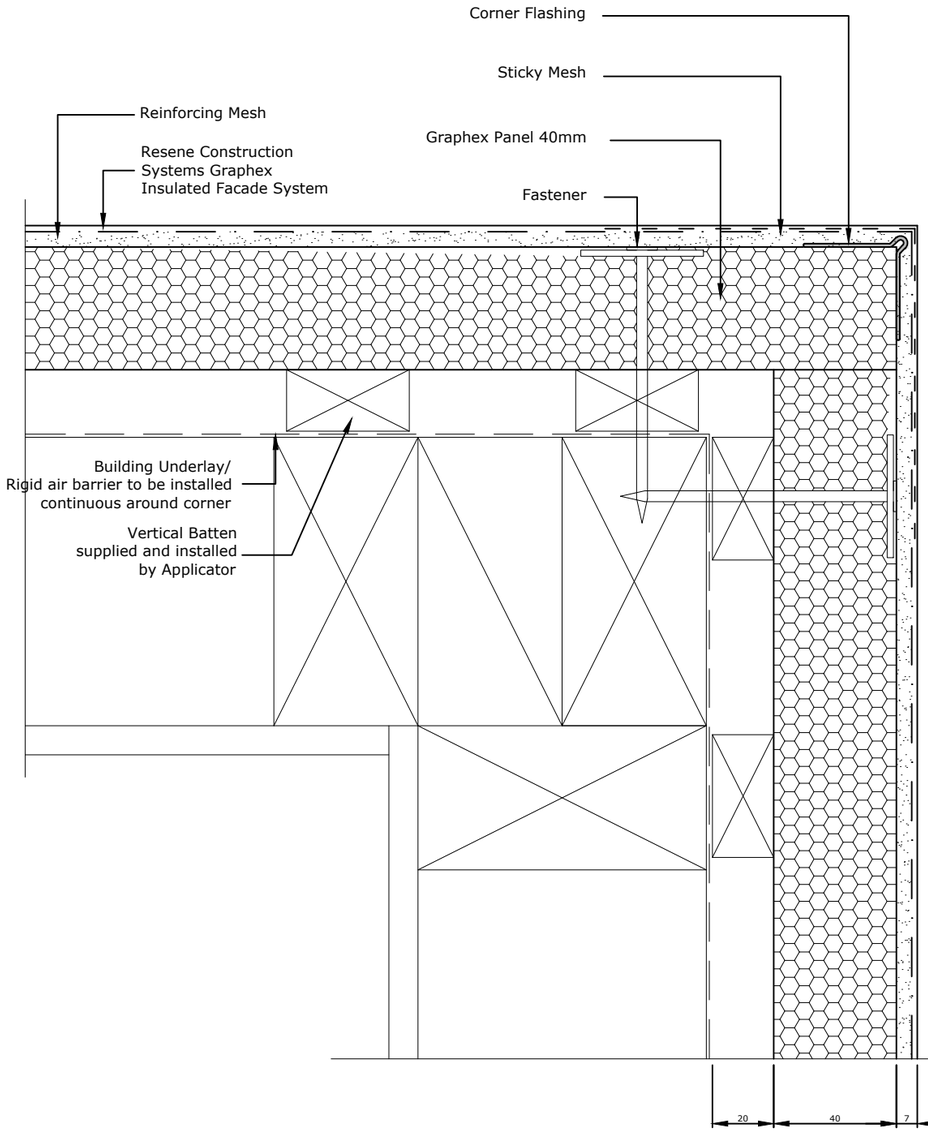
OF: 18

JOB No. -

TAUPO DISTRICT COUNCIL

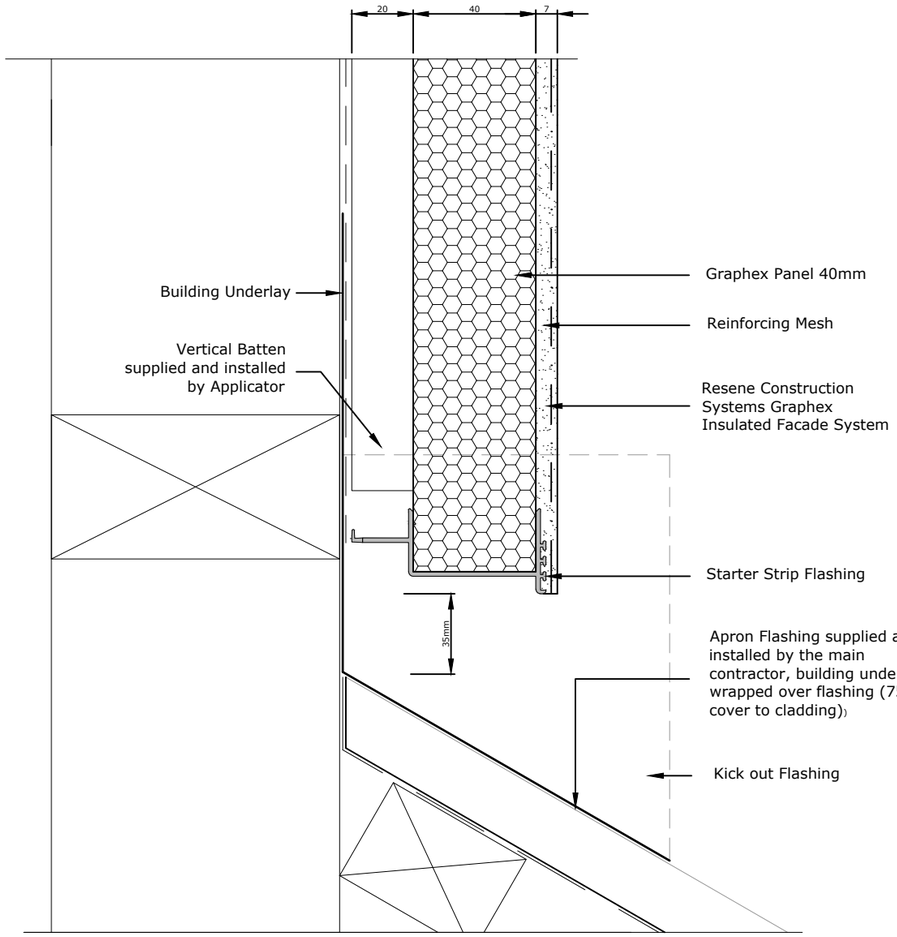
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APPROVED CONSENT
PLANS/SPECIFICATIONS



EXTERNAL CORNER DETAIL - RCS 40mm GRAPHEX PANEL

SCALE 1:2



Refer RCS
TradeSpec™ Document 1.2 for
information on Roof Clearances

Metal flashing must be taped to the
Building Underlay by the main
contractor/window installer

ROOF TO WALL APRON FLASHING - RCS 40mm GRAPHEX PANEL

SCALE 1:2

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **WALL CLADDING DETAILS**

CONSENT COPY

SCALE: 1:2

DRAWN: JO

DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/----

REVISION: -

SHEET 16

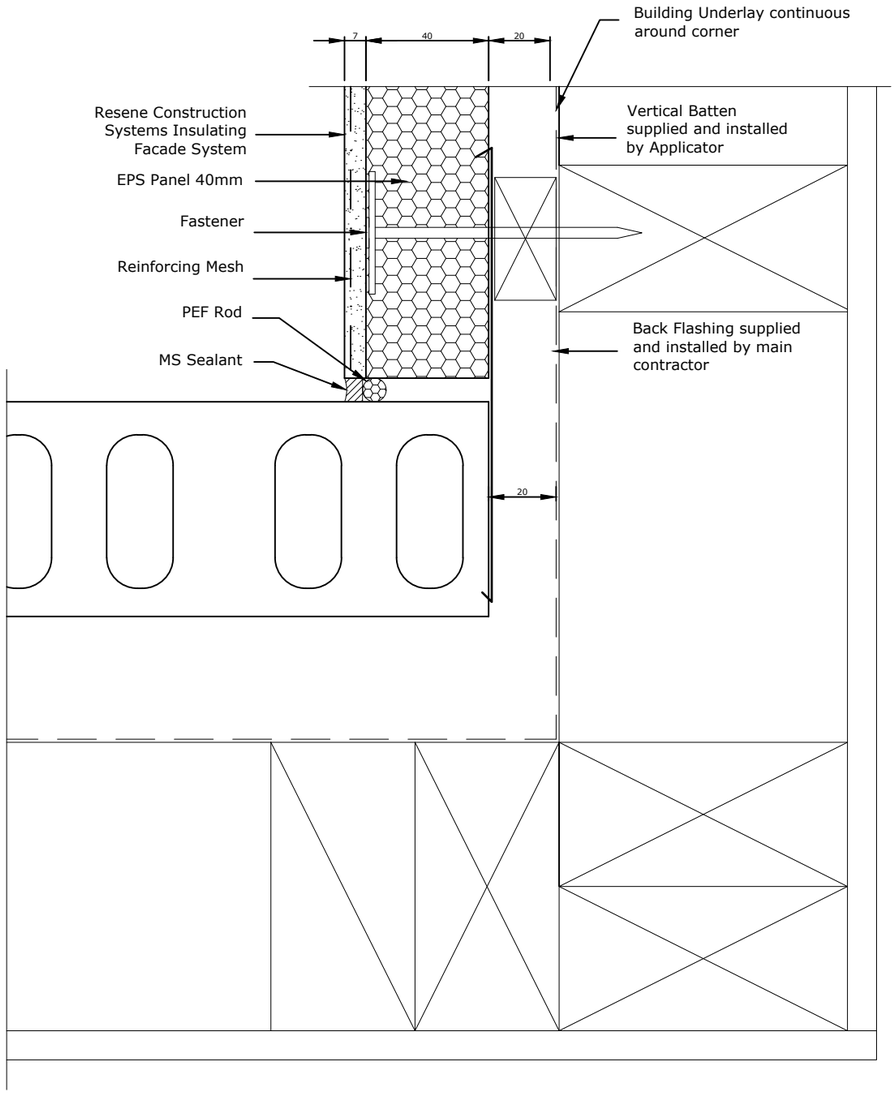
OF: 18

JOB No. -

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT
PLANS/SPECIFICATIONS



INTERNAL CORNER WITH BRICK VENEER - RCS 40mm GRAPHEX PANEL

SCALE 1:2

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **WALL CLADDING DETAILS**

CONSENT COPY

SCALE: 1:2

DRAWN: JO

DATE: AUG 2017

NOTES:
Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/----

REVISION: -

SHEET **17**

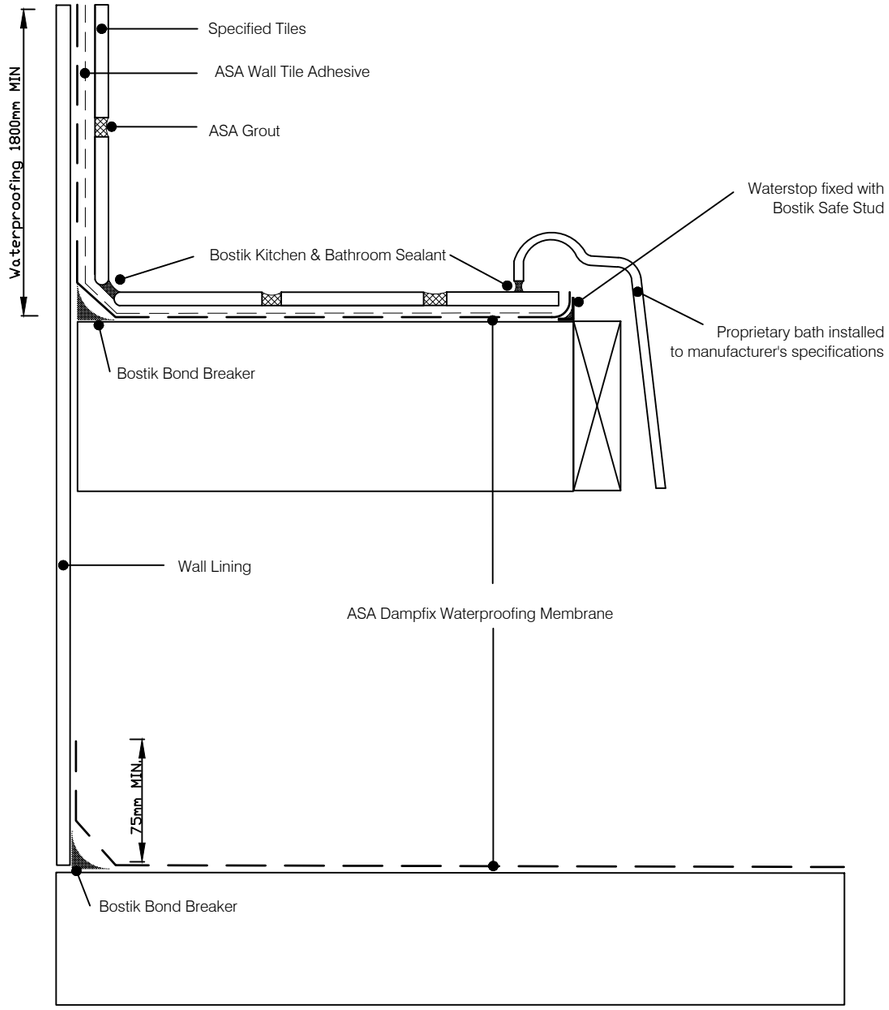
OF: 18

JOB No. -

TAUPO DISTRICT COUNCIL

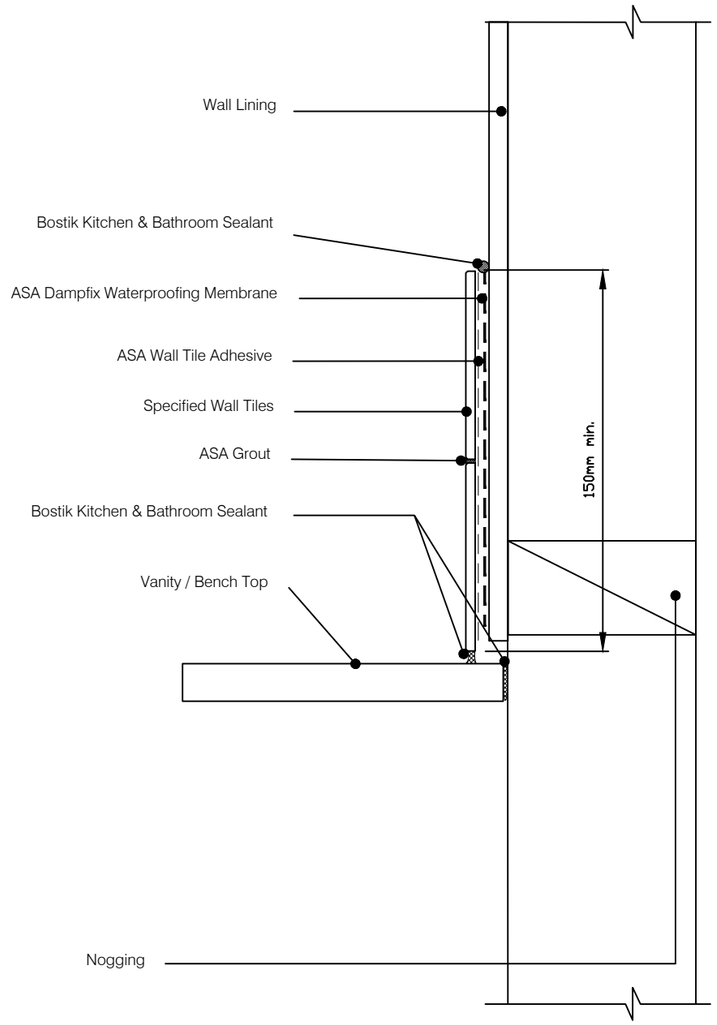
BC180581

APPROVED CONSENT
PLANS/SPECIFICATIONS



NOTE: Refer to specifications for selected ASA waterproofing, grout and tile adhesive

18 Bath Plinth Detail Bostik ASA July 2010



NOTE: Refer to specifications for selected ASA waterproofing, grout and tile adhesive

03 Tiled Vanity / Bench Top Upstand Bostik ASA July 2010

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TITLE: **NEW RESIDENCE**
LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **WATERPROOFING DETAILS**
CONSENT COPY

SCALE: NTS
DRAWN: JO
DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: --/--/----
REVISION: -

SHEET **18**
OF: 18
JOB No. -

Memo from LBP - A2249576

Form 2A

Memorandum from licensed building practitioner: Certificate of design work

Section 30C or Section 45, Building Act 2004

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

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

THE BUILDING	
Street address: Lot 196 Mayfly Grove	
Suburb: Nukuhau	
Town/City: Taupo	Postcode: 3330

THE OWNER	
Name(s): c/o Penny Homes	
Mailing address:	
Suburb:	PO Box/Private Bag: PO Box 708
Town/City: Taupo	Postcode:
Phone number: 07 377 0154	Email address: john@pennyhomes.co.nz

BASIS FOR PROVIDING THIS MEMORANDUM	
I am providing this memorandum in my role as the: Please tick the option that applies (✓)	
( )	**Sole** designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design myself – no other person will be providing any additional memoranda for the project.
( )	**Lead** designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and no other person will be providing any additional memoranda for the project.
(✓)	**Lead** designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the other designers will provide their own memoranda relating to their specific RBW design.
( )	**Specialist** designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work.

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)			
I William James Thomson carried out / supervised the following design work that is restricted building work.			
Design work that is restricted building work	Description	Carried out/ supervised	Reference to plans and specifications
Tick (✓) if included	If appropriate, provide details of the restricted building work	Specify whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
PRIMARY STRUCTURE: B1			
All RBW design work relating to B1 ( )		( ) Carried out ( ) Supervised	
Foundations and subfloor framing (✓)	*Ribraft slab on ground to NZS3604:2011*	( ) Carried out (✓) Supervised	
Walls (✓)	*SG8 framing & fixings to NZS3604:2011* *Lintels to DesignIT PS1*	( ) Carried out (✓) Supervised	
Roof (✓)	*Roof framing to NZS3604:2011. Truss layout by SED*	( ) Carried out (✓) Supervised	
Columns and beams (✓)	*To NZS3604:2011*	( ) Carried out (✓) Supervised	
Bracing (✓)	*Gib Plasterboard sheet bracing to Gib Ezybrace*	( ) Carried out (✓) Supervised	
Other ( )		( ) Carried out ( ) Supervised	

EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2			
All RBW design work relating to E2 ( )		( ) Carried out ( ) Supervised	
Damp proofing (✓)	*DPM under slab and DPC under framing*	( ) Carried out (✓) Supervised	
Roof cladding or roof cladding system (✓)	*Metal tile roofing on self-supporting underlay*	( ) Carried out (✓) Supervised	
Ventilation system (for example, subfloor or cavity) (✓)	*Graphex EPS panel cladding & brick veneer both on vented cavity*	( ) Carried out (✓) Supervised	
Wall cladding or wall cladding system (✓)	*20mm vented cavity for Graphex panel cladding.* *50mm vented cavity for brick veneer.*	( ) Carried out (✓) Supervised	
Waterproofing (✓)	*Waterproofing of brick veneer rebates*	( ) Carried out (✓) Supervised	
Other ( )		( ) Carried out ( ) Supervised	

FIRE SAFETY SYSTEMS: C1-C6			
Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other ( )		( ) Carried out ( ) Supervised	
Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.			

WAIVERS AND MODIFICATIONS	
Are waivers or modifications of the building code required? ( ) Yes (✓) No	
If Yes, provide details of the waivers or modifications below:	
Clause (List relevant clause numbers of building code)	**Waiver/modification required** (Specify nature of waiver or modification of building code)

ISSUED BY	
Name: William James Thomson	LBP or Registration number: BP115814
The practitioner is a: (✓) Design LBP ( ) Registered architect ( ) Chartered professional engineer	
Design Entity or Company (optional): JTDesign Architecture Ltd.	
Mailing address (if different from below):	
Street address / Registered office: Level 1, 32 Tuwharetoa Street	
Suburb:	Town/City: Taupo
PO Box/Private Bag: P.O. Box 1267	Postcode: 3330
Phone number: 07 377 1998	Mobile: 0274 820 881
After Hours:	Fax:
Email address: james@jtdesign.co.nz	Website: www.jtdesign.co.nz

DECLARATION

I William James Thomson *(name of practitioner),* LBP,

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

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

Signature: 

Date: 30/08/2017

Specifications - A2249578

APPROVED CONSENT COPY
THESE PLANS AND SPECIFICATIONS ARE APPROVED SUBJECT TO THE PROVISIONS OF THE BUILDING ACT 2004 AND IT'S REGULATIONS. A FULL (PRINTED) COPY OF DRAWINGS AND SPECIFICATIONS ARE TO BE RETAINED ON SITE IN GOOD ORDER AND PRODUCED UPON REQUEST.

Penny Homes Ltd

TAUPO DISTRICT COUNCIL

BC180581

APPROVED CONSENT PLANS/SPECIFICATIONS

PROJECT SPECIFICATION

Lot 196

Mayfly Grove
Nukuhau
Taupo

Issued for Construction

July 2017

PROJECT OVERVIEW

Scope

To construct new single storey dwelling comprised of a mixture of wall claddings and profiled metal roofing over treated timber framing on Ribraft slab floor.

Address

Site Address	Mayfly Grove
City	Taupo

TAUPO DISTRICT COUNCIL

BC180581

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Site Conditions

Wind Zone	H - High Wind Speed
Earthquake Zone	Zone 2
Exposure Zone	Zone B - Low
Snow Loading Zone	Zone N0

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1 PRELIMINARIES & GENERAL

1.1 Project Overview

1.1.1 Contract Documents

Contract Documents

The Contract Documents are complementary and comprise this Specification, the accompanying drawings, the NZ Standards Contract together with Schedules as specified below, any written documentation clarifications issued during tendering/estimating, any manufacturer/supplier information issued with this Specification, any list of agreed Subcontractors, the contract establishment letter and any other relevant correspondence, and any Site Instructions or additional details or instructions issued as Variations. (The NZ Standards Contract will be emailed upon request).

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These Project Specific Conditions supersede the Standard Conditions where they are in conflict. Refer any ambiguity or apparent discrepancy within or between any Contract Documents to the Architect/Designer, whose interpretation shall be binding on all parties.

Ensure that all Trades are aware of all Conditions and that subcontract prices are accepted on this basis, and in a form acceptable to the Registered Master Builders Federation or the Certified Builders Association. Ensure that all persons engaged on the works are aware of all items in this specification and on the drawings that may in any way affect their section of the works.

1.1.2 Site

Site

Relevant site conditions are believed to be correctly represented in the Contract Documents, however the Contractor (and Subcontractors where appropriate) are requested to inspect the site to ascertain for themselves the nature and extent of the works and the rights and interests that may be interfered with in the execution of the works, as no claims for additional payment will be recognised on the grounds of insufficient description.

1.1.3 Adjacent Owners

Adjacent Owners

Carry out whatever actions or precautions are required to avoid or to absolutely minimise noise, dirt, dust, access, etc. inconvenience or disruption of any nature to the adjacent owners or tenants. Indemnify the Principal against any claims arising from this source.

1.1.4 Protection

Protection

Take all appropriate precautions to protect all third party property, services, etc., and indemnify the Principal against any claims arising from the construction operations. Any damage to third party property caused by construction activities or failure to protect shall be rectified as soon as possible by the person causing the damage, or by appropriately qualified trades-persons employed by the person responsible for the damage if necessary.

Suspend operations during weather which would affect the quality of work in progress. Secure the

works as soon as possible against adverse weather, dust and vandals. Avoid structural damage that is caused by overloading.
Adequately protect all finished work and maintain until the date of Practical Completion. Each trade shall protect the work of all other trades, and each trade is responsible for making good any damage they cause to finished works. Arrange special protection as required for windows and doors, finished timber work, plumbing fittings and hardware, cabinets and other joinery, and similar items.

1.1.5 Responsibility

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Responsibility

The Contractor will be held responsible for the full period of his legal responsibility in connection with this Contract for ensuring that all work execution, materials, and fittings, are completely in accordance with Contract requirements.
The Contractor is responsible to the Principal for the appropriateness and fitness, in relation to a reasonable expectation or requirement, of all of the materials and workmanship incorporated into the works by himself or his subcontractors; for this reason few specific guarantees are required in these contract documents. The terms and conditions of any warranty or guarantee required or provided shall not in any way negate the minimum remedies available under common law as if no warranty or guarantee had been furnished.
No apparent expression of the Architect's/Designer's reasonable satisfaction shall be deemed to be acceptance of defective materials or workmanship within the terms of the Contract or to be an authority for any Variation except where such Variation is authorised as provided for in the Contract. Instructions that are given verbally are deemed to be instructions for proper execution of the works and do not involve extra charges.

Workmanship in all trades is required to be equal to or better than recognised good trade practice. The Contractor shall provide all necessary setting out information and component dimensions for subcontractors and shall check and be responsible for the accuracy of their work.

Should any tradesperson consider that the surface finish or general conditions of previous work are unsatisfactory to ensure a proper finish for their own work thereon, that tradesperson shall give immediate notice to the Contractor or Architect/Designer as appropriate and shall not proceed until all necessary improvements have been made. Failing such notice the trade concerned will not be relieved of responsibility for a poor finish due to such unsatisfactory condition.
Specialist Finishes Subcontractors are responsible for ensuring that substrates are completely appropriate for them to achieve first class results, and to this end shall, in sufficient time, instruct the Contractor with regard any fixings, primings, sealings or whatever for the substrate that vary in any way from the substrate manufacturer's standard recommendations. The Contractor shall advise the Architect/Designer with regard these variances, and not proceed until the Architect/Designer has agreed to them.

The Contractor and all Subcontractors affected shall be jointly and severally responsible for completion of the whole of the works in a completely watertight condition and shall therefore examine all details to be satisfied that this condition can be achieved. If any detail is considered unsatisfactory the Architect/Designer shall be notified immediately and he/she will then either

interpret the detail to the Contractor's satisfaction, or accept responsibility for watertightness at the points in question, always assuming reasonable workmanship.

Ensure that all materials or items incorporated into any particular construction or finish are compatible and that their individual use is approved by the manufacturers and/or suppliers of the other parts of the system.
For all electronic/electrical/mechanical operating systems all work and all necessary materials and items incidental to the primary item specified, that are incorporated into the works, shall be such as to leave a neat, efficient, easily maintained and robust installation, completely in accordance with all of the recommendations of the primary items' manufacturers. Where appropriate, source all parts of a system from a single supplier or manufacturer.

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1.1.6 Specification

Specification

This Specification covers contract administration, standards, materials quality, workmanship and the scope of works only: the exact nature of the works and all specialist items, descriptions, etc., are contained on the drawings, which also take full precedence.
All clauses in all specification sections apply to their full extent and meaning to the entire Contract.
Trade sections and paragraphs have been introduced into this specification for reference only and it shall not be construed that each trade section is a complete segregation of the materials and labour of that trade. The onus is on all trades to be conversant with any and all clauses which in any way affect their work.
(Be aware that the 'scope' noted in the 'Project Overview', and scope and general extent clauses within this specification, are included to provide a general indication only and must NOT be interpreted as schedules of quantities - the exact nature and extent of all aspects of the works are shown on the drawings).

1.1.7 Standards

Standards

New Zealand Standards (NZS), Australian Standards (AS), Joint Standards (AS/NZS), British Standards (BS), Acts of Parliament, Regulations made thereunder, Codes of Practice, and any specific Manufacturer's Instructions or Manufacturer's Recommendations that are referred to in these Contract Documents shall all be deemed to be the latest published edition thereof at the time of drawings issue, and shall be followed by the Contractor and all Subcontractors to the full extent applicable consistent with the intent of this Contract. Documents cited within other cited publications are deemed to form part of this specification.
Where Standards have a number of Divisions, e.g. AS/NZS 3500.1, AS/NZS 3500.2, etc., each of the Divisions relevant to this project is deemed to form part of this specification.
Retain current copies of significant cited documents and manufacturer's technical literature on the site.

1.1.8 Authorities and Charges

Authorities and Charges

Comply with all relevant provisions of the NZ Building Code, and with all relevant territorial or statutory authority regulations, by-laws, obligations, etc. Give all required notices.

The Principal has obtained a Land Use Consent. The Principal has applied for and paid for the Project Information Memoranda, the Building Consent and other approvals required for the works to start. The PIM and Building Consent will be forwarded to the Contractor as quickly as possible after they are issued by the Territorial Authority. Note: It is an offence under the Building Act to carry out work not in accordance with a Building Consent.

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Should the Building Consent be subject to any conditions which modify the requirements of the Contract Documents in any way, the Architect/Designer reserves the right to negotiate any or all of these modifying conditions with the Building Consent Authority. If after these negotiations additional work is required, it will be handled as a Variation to the Contract.

1.1.9 Code Compliance Certificate

Code Compliance Certificate

The Principal will apply for the Code Compliance Certificate (CCC) and any other licenses or approvals for the building to be used. However, Practical Completion will NOT be certified until the CCC inspection has occurred and any additional works required by the local Building Consent Authority have been completed. To this end it is recommended that the Contractor obtains all required certificates, guarantees, as-built drawings, etc., required for the CCC application as work proceeds, to facilitate application for the CCC as soon as the works are completed. For his part, the Principal hereby undertakes to apply for the CCC within one day of all required material being in hand. Likewise, the Contractor should have capacity available to attend as quickly as possible to any items identified by the Building Consent Authority as being required prior to the issue of the CCC.

1.1.10 Co-ordination of the Works

Co-ordination of the Works

Co-ordinate the works of all trades to ensure efficient progress of the works. Ensure that all holes, sleeves, penetrations, supports, etc., that are required for services are correctly incorporated as work proceeds. Identify and sufficiently forward-notify the appropriate persons of all deadlines for the supply of fittings, components, information, etc.

1.1.11 Documents Interpretation

Documents Interpretation

Except where they are clearly to the contrary, all dimensions are deemed to be to the bare surface of concrete, masonry, timber framing or other basic construction material. All figured dimensions take precedence over scaled sizes. Where any detail is included in more than one drawing the larger scale detail takes precedence. Where any ambiguity exists refer to the Architect/Designer for interpretation.

The word ‘provide' and the word ‘fix' used separately in the Documents shall be taken to mean ‘provide and fix' unless otherwise stated.

When the term ‘allow' occurs in the Documents, except with reference to Monetary Allowances, the cost of the item shall be at the risk of the Contractor.
The terms ‘approved', ‘directed', and ‘selected' when used in the Documents refers to the approval, direction or selection of or by the Architect/Designer. Please give adequate notice of when these decisions are required. ‘Architect/Designer' shall mean the Architect or Designer, their representative or any Consulting Engineer engaged by the Architect/Designer.

1.1.12 Work Shown and Mentioned

Work Shown and Mentioned

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The Contract Documents show the extent and nature of the works but there is no warranty expressed or implied that they show each and every minor detail or item required to be included by the Contractor. Should any material, structural member, fixing, or item of work appear to be inadequately described, yet obviously necessary for the neat, strong and satisfactory completion of the work, it shall be incorporated into the Contract Works.

1.1.13 Site Safety

Site Safety

Comply with all of the requirements of the New Zealand Building Code, and in particular with Approved Documents F1 - F5 inclusive. Comply with all relevant Worksafe NZ Approved Codes of Practice and Information and Guidance requirements, particularly those for construction and building maintenance. Comply with any other relevant safety legislation and/or regulations.

Take all practical steps to make the site and the contract works safe and to provide and maintain a safe working environment. Ensure that all those working on or visiting the site are aware of the site safety rules and are not unnecessarily exposed to hazards.

In compliance with the Health and Safety in Employment Act 1992 the Contractor shall have:
a). A safety programme that shall include selection and training standards, monitoring of compliance, safety performance measures and safety rules.
b). A safety register to record accidents, injuries, operational safety, ACC claims, and so forth.
c). A health and safety plan specific to the contract works, which will address methods of identifying and controlling hazards, protective clothing and equipment to be used, staff training and supervisory requirements, management of subcontractors and their staff, and restricted areas and site security. Notify the Ministry of Business, Innovation and Employment in writing of the Certified Safety Supervisor responsible for safety aspects of the works.

Scaffolding shall comply with all Statutory and Local Authority Regulations, with the Ministry of Business, Innovation and Employment's 'Best Practice Guidelines for Scaffolding', with AS/NZS 1576 (Scaffolding equipment), AS/NZS 4576 (Guidelines for Scaffolding), and AS/NZS 4994 (Roof edge scaffolding), shall be maintained for the duration, and shall be removed on completion.

The use of ballistic fixings must absolutely comply with all relevant safety recommendations at all times. No rubbish fires are allowed on site. Portable/personal disc/tape players, radios and iPods must not be used anywhere on the site. No smoking on site, except in the designated location in

accordance with the Smoke Free Environments Act 1990, the location of which will be determined by the Contractor, with the approval of the Principal.

1.1.14 Variations

Variations

The Architect/Designer will issue Site Instructions (SI) to amend or clarify the works. Upon receipt of a SI the Contractor shall immediately notify the Architect/Designer if he believes there are price or timing adjustment implications. The Architect/Designer will then issue a Variation Price Request (VPR) for pricing of the possible Variation by the Contractor, within the time stipulated, or within 10 days if no time is stipulated. If the Contractor does not return the VPR within the time stipulated the Architect/Designer will assess it at reasonable rates. Once agreement is reached on price and/or timing a Variation Order (VO) for the item will be issued. Note that works covered by a SI or a VPR must NOT be actioned until the VO is issued.

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When a Variation is contemplated and timing does not allow SI and VPR action the Contractor is to advise, and record in the site diary, an estimate of price and timing implications. If accepted by the Architect/Designer, a VO will be issued immediately. The Contractor shall then co-operate with the Architect/Designer to establish agreed pricing.

Claims for Variations neither priced nor estimated prior to being put in hand (but considered valid) will be incorporated into Progress Payment Certificates or the Draft Final Accounts as claimed and accepted but with a proviso allowing 5 (five) days for written objections by either the Principal or the Contractor, to any aspect of them, for further consideration.

The Main Contractor's Variations Margin agreed pre-contract will be the maximum accepted for any trade unless higher rates are nominated pre-contract and are accepted. The Main Contractor's agreed Variations Margin shown shall be deemed to include all preliminary and general costs, overheads, variation processing costs, and profit. If no margin is given, a 5% overall margin will be applied.

Note that 'loss of anticipated profit' claims consequent upon reduction of works extent will NOT be recognized, and that the cost of processing Variations is deemed to be included in the P & G Allowance.

Also note that for Variations pricing all materials shall be charged at the actual net invoiced cost plus margin; i.e. recognised 'Trade Price', volume discounted where appropriate.

1.1.15 Progress Claims

Progress Claims

Progress Claims shall be in writing, shall be in accordance with the requirements of the Construction Contracts Act 2002, and shall include all of the following:

- The overall amount claimed.
- The percentage completion and amount claimed for each Subcontractor. For accurate claim verification please ensure that this breakdown exactly matches the trades costs breakdown agreed-to pre-contract.
- The total Contract Sum Adjustment for any/all Variations authorised prior to the claim.
- Items covered by Monetary Allowances listed separately.

- And, if specifically requested, confirmation that amounts previously claimed on behalf of Subcontractors, certified by the Architect/Designer, and paid by the Principal, have actually been paid to the Subcontractor (apart from normal retentions).
Note that retentions will be held exactly in accordance with the Conditions of Contract.

1.1.16 Cleaning and Completion

Cleaning and Completion

Clear construction debris and rubbish from the works at regular intervals, and additionally if so instructed by the Architect/Designer. Clean each space thoroughly before commencing any finishing works.

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In preparation for the Practical Completion inspection carry out the following:
- Clean the works thoroughly, removing all debris, surplus materials, splashes, marks, temporary markings, etc. (All cleaning methods and materials shall be as recommended by the manufacturer of the item being cleaned).
- Remove protective wrappings and coverings unless otherwise directed.
- Touch up minor painting faults, carefully matching colour, and brushing out edges. Repaint any badly marked surfaces back to suitable break-lines.
- Adjust, ease and/or lubricate as required all doors, drawers, controls and other moving parts to ensure their efficient operation.
- Any other works required to leave all spaces ready for immediate occupation and all electronic/electrical/mechanical systems fully operational.
- Clean out all spoutings, gutters, downpipes, and gullies and flush out all drains.
- Clean all sanitary appliances and check all aspects of the water services.
- Thoroughly re-inspect all aspects of the works (and have any defects fully rectified) to be certain that the works are completely ready for the Practical Completion inspection - if an unreasonable number of items are noted by the Architect/Designer during the inspection it will be terminated and then rescheduled for at least a week forward to allow proper completion to be achieved.
(Note that a Code Compliance Certificate must be obtained before Practical Completion will be certified. Obtain all required certificates, guarantees, as-built drawings, etc., as work proceeds to enable the CCC application to be submitted as soon as construction is completed).

2 CONCRETE

2.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

2.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

3101.1&2:2006(NZS)	Concrete Structures Standard
3104:2003(NZS)	Specification for concrete production
3109:1997(NZS)	Concrete construction
3112.1:1986(NZS)	Methods of test for concrete - Tests relating to fresh concrete
3114:1987(NZS)	Specification for concrete surface finishes
3121:1986(NZS)	Specification for water and aggregate for concrete
3122:2009(NZS)	Specification for Portland and blended cements (General and special purpose)
3124:1987(NZS)	Specification for concrete construction for minor works
3604:2011(NZS)	Timber-framed buildings
4455.1:2008(AS/NZS)	Masonry units, pavers, flags and segmental retaining wall units - Masonry units
4671:2001(AS/NZS)	Steel reinforcing materials

2.3 Materials

2.3.1 Damp Proof Membrane

Polythene DPM

Polythene damp proof membrane shall be 0.25mm thick and shall be continuous under slabs on grade or fill and under foundations. All joints lapped 200mm and continuously sealed with pressure sensitive tape. Tape seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

2.3.2 Reinforcement

Grade

Reinforcing grades are identified by bar diameters prefixed with letters thus:

D indicates Grade 300E deformed bar R
indicates Grade 300E plain round bar
HD indicates Grade 500E deformed bar

HR indicates Grade 500E plain round bar
RB indicates Grade 500 Reidbar (uniquely deformation patterned bars)

Quality
Imported reinforcing steel will not be accepted without the prior approval of the Engineer. Reinforcing free of loose rust, mill scale, dirt, paint, oil, etc. and stored clear of the ground. Accurately place reinforcing and tie securely to prevent displacement during pouring of concrete. Tie wires must not project into specified concrete cover. Welding of reinforcing is not permitted unless specifically approved by the Engineer.

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Installation
All terminal ends of reinforcing bars shall be hooked. Intersecting walls, beams and foundations shall contain return longitudinal reinforcement, as detailed for the intersecting members, all to NZS 3109 unless shown otherwise on the drawings.

Continuous
Unless detailed otherwise all bars assumed to be continuous, with lap lengths not shown otherwise to be 40 diameters for grade 300 steel, 60 diameters for grade 500 steel, 250mm for mesh. Bars shall generally have minimum bends of five times their diameter.

Supports
Support slab steel at 1 metre maximum centres. Use plastic spacers for fairface concrete. Co-operate with others to accurately place all block/brick starters, as the bending of starters to the core position will not be permitted.

2.3.3 Concrete Cover

Concrete Cover
Concrete cover not shown otherwise to be:
-Foundations - 75mm where poured against ground, 35mm where poured against formwork.
-Beams and columns - 40mm (for main reinforcing).
-Slabs - 50mm where poured on ground, 40mm where exposed to weather, 20mm elsewhere.
-Walls - 40mm where exposed or against ground, 25mm elsewhere.

2.4 Ribraft Concrete Floors

2.4.1 Scope

Scope
Supply the required/selected Firth RibRaft components and construct the concrete on-ground floor slab as shown on the drawings. All aspects of this work shall be in accordance with the Firth RibRaft Technical Manual Manual (check www.firth.co.nz or call 0800 800576 for the latest edition), a copy of which must be held on site (and referenced for any aspect where there is the slightest uncertainty), the RibRaft Floor System CodeMark Certificate of Conformity - Certificate No:CMA-CM40015 (Rev3), and as shown on the drawings.

No Substitutions are permitted for Firth RibRaft Floor System.

2.4.2 Selections

220mm Pod Thickness - Non-specific Design

Pods thickness: 220mm

DPM: as per NZS 3604:2011

Slab thickness above pods: 85mm

Slab finish: U3

2.4.3 Installation

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Installation

All RibRaft installation work shall be carried out by experienced and competent tradesmen, familiar with the techniques and materials specified, in accordance with Firth RibRaft Technical Manual and as shown on the drawings. All handling, preparatory blinding DPM, formwork and reinforcing, and concreting and finishing techniques shall be exactly as recommended by Firth Industries Ltd. Notify the BCA for inspection of the excavation and of the Ribraft slab ready for pouring, and keep whatever records or test results they may require.

Check that all topsoil etc. has been removed from the RibRaft slab location and that the excavated (or hardfill made-up where necessary) platform is level and approximately 330mm below the required finished floor level. Co-ordinate with other trades to ensure that any wastewater drains or other piped or wired service lines are correctly incorporated (and fully operationally tested as appropriate) as work proceeds.

Place and compact any hardfill or basecourse required by the Engineer for specific design. Blind the surface with up to 50mm of sand, and compact (and adjust if necessary) to accurately level, carrying the sand blinding to at least 500mm beyond the RibRaft perimeter. (Install shear key piles if required or specified).

Lay the specified DPM over the entire platform and extending at least 200mm beyond the RibRaft perimeter, with strips lapped 150mm and 50mm PVC adhesive tape sealed, and any services penetrations tape sealed. Tape repair any damage to the DPM as soon as it occurs, and re-inspect/repair just before pouring. Construct the slab perimeter formwork as specified above and as detailed, including edge rebates and any slab cut-outs required.

Unload and handle components carefully to avoid any damage, and keep them clean until installed. Place the RibRaft pods in the grid pattern as shown on the layout plan, with Firth 300mm spacers to the perimeter and under loadbearing walls, and Firth 100mm spacers between all other pods. Neatly cut pods as required to infill where the shape or size of the slab does not match the 1.2m pods module.

Reinforce as specified and as noted on the drawings, ensuring the bars are positioned in the spacer lugs, install plumbing waste pipes etc. as required, and then install the reinforcing mesh over the top of the pods, seated on mesh chairs, and install the re-entrant corner steel (Grade 500E) across internal corners as noted. Install starters as detailed for any subsequent masonry walls, ensuring accurate positioning (as bending to masonry core positions is not acceptable).

Pour Firth RaftMix (or pump Firth RaftMix Pump), and vibrate and screed and finish as specified, and cure and install shrinkage control joints as specified or noted.
Remove trade debris from the area progressively; on completion leave the works area completely clean.

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3 BRICKWORK

3.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

3.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

2699.1:2000(AS/NZS)	Built-in components for masonry construction - Wall ties
3103:1991(NZS)	Specification for sands for mortars and plasters
3604:2011(NZS)	Timber-framed buildings
4210:2001(NZS)	Masonry construction: Materials and workmanship
4236:2002(SNZHB)	Masonry veneer wall cladding
NZBC B2	Durability
NZBC E2/AS1	External Moisture

3.3 Brickwork

3.3.1 Scope

Scope

Supply and lay the selected bricks to form the brick elements as shown on the drawings. All aspects of this work shall be in accordance with the related compliance documents and as shown on the drawings.

3.3.2 Workmanship

Qualifications

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All work shall only be carried out by Licensed Building Practitioners - Bricklaying and Blocklaying, and conform to the requirements of NZS 4210.

Submit evidence on request of experience, relevant qualifications, LBP Licence - Bricklaying & Blocklaying, New Zealand Masonry Trades Association (NZMTA) Member Registration.

Co-ordination

Co-operate with the concretor and carpenter in the setting out of the works.
Co-operate with other trades to ensure that all preliminary and preparatory works, including all

framing, membranes, wraps, rigid air barriers, and flashings, all relevant clearances, and any other related works, are completed to specification and as shown on the drawings.
Co-ordinate with trades the locations of pipes, outlets, cables, meter boards and other fittings installed by others.

Construction Quality

All brick veneer walls shall be true to line, level and plumb, and within the tolerances tabled in NZS 4210 and SNZ HB4236. All brickwork laid to stretcher bond pattern, with joints width 10mm +/- 3mm.

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3.3.3 Installation

Damp Proof Course

Install all brickwork related damp proof courses in accordance with the requirements of NZBC E2/AS1 and to the details shown on the drawings.

Mortar

Mortar shall have a minimum compressive strength of 12.5 MPa, and be manufactured from cement, sand, lime, and admixtures, and be accurately measured and mixed in accordance with NZS 4210. Mineral oxide pigment dosages shall be to NZS 4210.

Brickwork

Form all necessary openings, reveals, sills, weepholes, separation and control joints, and cavities to the locations and details shown on the drawings, and in accordance with the requirements of NZBC E2/AS1 and NZS 4210. Install necessary vermin stops. Weatherproof all separation joints to the details shown on the drawings.

Wall Ties

Wall tie type, durability, spacing, fixing and installation shall be as defined in NZBC E2/AS1 Tables 18A, 18B, 18C, and NZS 4210.

Flashings

Install all necessary flashings to openings, and other locations as required, to the details shown on the drawings and in accordance with NZBC E2/AS1 requirements.

Protection

During the progress of work every care must be taken to prevent moisture penetration of the bricks. No bricklaying shall proceed during wet weather. Upon completion of each days work, exposed tops of brick veneers shall be protected from inclement weather.
Comply with NZS 4210 Cold Weather Construction and Hot Weather Construction requirements.

Completion

On completion or the works leave brickwork clean and free of marks and staining. All brickwork cleaning shall be done to the brick manufacturer's recommendations.
Thoroughly clean all other surfaces affected by the brickworks.

3.3.4 Mortar Pointing

Concave Pointing

Mortar joints shall be concave, tooled to a depth not exceeding 6mm and burnished after the initial stiffening has occurred.

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4 CARPENTRY

4.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

4.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

1170.2:2011(AS/NZS)	Structural design actions - Wind actions
1170.5:2004(NZS)	Structural design actions - Earthquake actions - New Zealand
1491:1996(AS/NZS)	Finger jointed structural timber
1859.1:2004(AS/NZS)	Reconstituted wood-based panels - Specifications - Particleboard
1859.2:2004(AS/NZS)	Reconstituted wood-based panels - Specifications - Dry-processed fibreboard
2269.0:2008(AS/NZS)	Plywood - Structural - Specifications
2270:2006(AS/NZS)	Plywood and blockboard for interior use
2271:2004(AS/NZS)	Plywood and blockboard for exterior use
2295:2006(NZS)	Pliable, permeable building underlays
2588:1998(AS/NZS)	Gypsum plasterboard
2589:2007(AS/NZS)	Gypsum linings - Application and finishing
2785:2000(AS/NZS)	Suspended ceilings - Design and installation
2904:1995(AS/NZS)	Damp-proof courses and flashings
2908.2:2000(AS/NZS)	Cellulose-cement products - Flat sheets
3602:2003(NZS)	Timber and wood-based products for use in building
3603:1993(NZS)	Timber Structures Standard
3604:2011(NZS)	Timber-framed buildings
3617:1979(NZS)	Specification for profiles of weatherboards, fascia boards, and flooring
3618:1984(NZS)	Mechanical stress grading of timber
3622:2004(NZS)	Verification of timber properties
3631:1988(NZS)	New Zealand timber grading rules
3640:2003(NZS)	Chemical preservation of round and sawn timber
4200.1:1994(AS/NZS)	Pliable building membranes and underlays - Materials
4200.2:1994(AS/NZS)	Pliable building membranes and underlays - Installation requirements
4219:2009(NZS)	Seismic performance of engineering systems in buildings

4389:1996(AS/NZS)	Safety mesh
4859.1:2002(AS/NZS)	Materials for the thermal insulation of buildings - General criteria and technical provisions
AWCI Code of Practice	For Design, Installation and Seismic Restraint of Suspended Ceilings
NZBC B2	Durability
NZBC E2	External moisture
NZBC E2/AS1	External Moisture
NZBC E3	Internal Moisture

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4.3 General

This section includes the receiving, stacking and storage of all Carpenter's materials and the fabrication, erection and fixing of all framing, sheathings and finishing timbers, including all work incidental to neatly finishing in other trades and all temporary work and temporary bracing.

The Carpenter shall attend upon all trades, and shall supply and fix all obviously necessary but not specifically mentioned fixings and materials.

4.4 Bostik Sealants

4.4.1 Scope

Scope

Supply and install the selected Bostik Sealants and Adhesives, complete with accessories, to the works as identified on the drawings and described below. All aspects of this work shall be in complete accordance with Bostik sealants and adhesives guides and technical manuals, (check 0508 222 777 for the latest editions), and other relevant product manufacturer's recommendations, and as shown on the drawings.

No substitutions are permitted for Bostik Sealants or Adhesives.

4.4.2 Interior Sealants - Wet Areas

Wet Area Installations

Bostik Kitchen & Bathroom Silicone to shower, bath, and basin floor and wall joints.

Location:

Wet Area Shower Panel Adhesive

Bostik Gold Ultra to joints between acrylic shower panel and timber frame.

Location:

4.4.3 Installation

Installation

Co-operate with other trades to ensure that all other associated works, fittings and fixturers are completed and installed to specification and as shown on the drawings.

All sealant and adhesive work, including preparation, shall be carried out by experienced and competent applicators, familiar with the techniques and materials specified, approved by the manufacturer. All substrate and surface preparation, sealing and adhesive accessories and materials, application techniques, and clean-up shall be exactly as recommended by Bostik and as noted on the drawings. Apply continuous sealant beads to the required depth and tool finish neatly with clean edges. Remove any masking tape, clean contaminated surfaces as recommended by the manufacturer leaving sealant beads undamaged and surrounding surfaces clean.

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Issue to the Main Contractor a copy of the Bostik specific maintenance requirements together with the Bostik NZ Ltd 10 Year Warranty for the completed works.

4.5 GIB® Plasterboard Sheets

4.5.1 Scope

Scope

Supply and install the selected GIB® Plasterboard sheets, complete with all accessories, as sheet lining material to the walls, ceilings and other elements identified on the drawings. All aspects of this work shall be in complete accordance with Winstone Wallboards Ltd technical literature and installation guidelines (phone the Winstone Helpline on 0800 100 442 or www.gib.co.nz for the latest editions) and other relevant product manufacturers' recommendations.

Substitution of any specified GIB® system, GIB® System component or GIB® plasterboard is not permitted.

4.5.2 Components

GIB® plasterboard as a Component of a 'General' Wall or Ceiling Lining Element

To the areas noted on the drawings as 'general plasterboard wall or ceiling lining', shall additionally comply with all relevant aspects of the GIB® Site Guide January 2010 literature, complete with all recommended components and accessories and other relevant manufacturers recommendations.

GIB® plasterboard as a Component of a Wet Area Element

To the areas noted as 'Wet Area' on the drawings, additionally comply with all relevant aspects of the GIB Aqualine® Wet Area Systems March 2007, complete with all system accessories, and other relevant product manufacturers' recommendations.

GIB® plasterboard as a Component of a Bracing Element (Timber Framing)

To the timber framed areas noted as 'Bracing' on the drawings, shall additionally comply with all relevant aspects of the GIB EzyBrace® Systems 2011 literature and GIB Ezybrace® software 2011 to

the specified bracing unit rating, complete with all system accessories, and other relevant product manufacturers' recommendations.

4.5.3 Co-operation

Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Co-ordinate with other trades to ensure that appropriate clearances are allowed from adjacent internal linings, fixtures, products, and associated services, etc, that the sheets correctly allow for door and window installation, and that services penetrations are correctly handled to maintain sheet integrity.

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4.5.4 Level of Plasterboard Finish

Level of Finish

To the areas noted as a specific Level of Finish (3-5) on the drawings, additionally comply with all relevant aspects of Winstone Wallboards Ltd literature and AS/NZS 2589, complete with all system accessories, and other relevant product manufacturers' recommendations.

NOTE: Unless stated otherwise, Level 4 is the default Level of Finish.

Control Joints

To the areas noted as ‘control joint’, comply with all relevant aspects of Winstone Wallboards Ltd literature and AS/NZS 2589.

4.5.5 Preparation

Preparation

Check that the timber framing elements are in accordance with NZS 3604, or in accordance with NZS 3603 and AS/NZS 1170 for specific design, and otherwise in accordance with the specified Level of Finish and Winstone Wallboards Ltd requirements. Framing shall be plumb and in true alignment, complete and suitable for the sheets, and maximum moisture content 18% or as recommended by Winstone Wallboards Ltd. Ensure that the framing is true to line and plane and with no projections due to structural and bracing bracketry etc. Ensure that all framing brackets, plates, braces and hold-downs etc. are correctly installed.

Check that the building has been completely finished to all penetrations including doors, windows, services, etc so that the sheets can be installed without being affected by any weather conditions. Check junctions to all other building elements and ensure that all necessary works have been completed eg. flooring, setout of services, etc. that will enable the sheets and accessories to be installed. Clear building debris and rubbish from framing voids and keep clean until GIB sheet linings are installed.

4.5.6 Workmanship

Workmanship

All installation work shall be carried out by experienced tradesmen familiar with the techniques and materials specified and in accordance with the current requirements of Winstone Wallboards Ltd.

4.5.7 Delivery & Handling

Delivery & Handling

Store GIB® plasterboard sheets undercover inside a watertight building and keep sheets dry at all times. Stack sheets flat on a dry level surface in accordance with Winstone Wallboards Ltd recommendations. Avoid damage to sheet edges, ends, and surfaces. Carry all sheets on edge. Do not use damaged or faulty sheets.

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4.5.8 Installation

Installation

Install the sheets, complete with all accessories, to the framing in accordance with the relevant Winstone Wallboards Ltd recommendations and literature, and as noted and detailed on the drawings.

4.5.9 GIB Plasterboard

GIB® Standard, 10mm

GIB® Standard plasterboard, 10mm thick.

Location: to all dry area walls

GIB® Standard, 13mm

GIB® Standard plasterboard, 13mm thick.

Location: to all dry area ceilings unless otherwise noted on plans

GIB Aqualine®, 10mm

GIB Aqualine® plasterboard, 10mm thick.

Location: to all wet area walls - refer to lastest version of Gib site guide

GIB Aqualine, 13mm

GIB Aqualine® plasterboard, 13mm thick.

Location: to all wet area ceilings

GIB Braceline® / GIB Noiseline®, 10mm

GIB Braceline® / GIB Noiseline® plasterboard, 10mm thick.

Location: refer to bracing plan and calcs for locations and requirements

4.5.10 Fixings

GIB® Grabber® Screws

Fix sheets with adhesive and GIB® Grabber® drywall screws in accordance with Winstone Wallboards Ltd requirements.

GIBFix® All-Bond Adhesive

GIBFix® All-Bond adhesive. Use to adhere the sheets and accessories to the framing in accordance with Winstone Wallboards Ltd requirements.

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4.5.11 Completion

Completion

Ensure that the sheets have been cut, fitted and joined, and fixed correctly. Check for damage and replace as necessary.

Clean up thoroughly on completion and remove all waste and rubbish from site.

Provide a copy of the Winstone Wallboards Ltd maintenance requirements to the owner.

4.6 Thermakraft Underlay, DPM & DPC

4.6.1 Scope

High Wind Zone

Supply and install the selected Thermakraft Industries Underlays and Membranes to the locations identified on the drawings, complete with all accessories. All aspects of this work shall be in complete accordance with Thermakraft Industries Ltd technical information and installation requirements (check www.thermakraft.co.nz or call 0800 806 595 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Thermakraft Industries Underlays and Membranes.

4.6.2 Damp-Proof Membrane

Thermathene Black (250um)

Thermathene Black (250um): 250 micron thick (0.25mm), tear resistant, polythene film sheet concrete underlay. Installed over nominal 10mm (max. 25mm) thick compacted sand blinding layer, over a properly prepared base course, as a moisture vapour barrier under concrete slabs on-ground (prior to concreting), in accordance with the manufacturer's requirements and as shown on the drawings. Coloured black.

All joints lapped 200mm and continuously sealed with Thermakraft White General Purpose Tape. Tape-seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

Location:

4.6.3 Damp-Proof Course

Supercourse 500 DPC - 0.75mm Embossed Polyethylene

Supercourse 500 DPC: 0.75mm thick, single layer embossed Polyethylene waterproof membrane, installed as a damp proof course (DPC) for separating timber and wood-based products and metal from concrete, masonry, brick, and stone surfaces, and as a moisture barrier and concealed flashings in masonry veneer wall as required by NZS 4229 and NZBC E2/AS1, in accordance with the manufacturer's requirements and as shown on the drawings.

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4.6.4 Roof Underlay

Thermakraft 215 - Bitumen Building Paper

Thermakraft 215 Building Paper: self-supporting, absorbent, breathable, bituminous impregnated non-synthetic underlay (non-fire retardant), heavy class, nominal weight 400g/m2.
Installed over timber or steel roof framing as a roof underlay in accordance with the manufacturer's requirements and as shown on the drawings.
Thermakraft 215 can be used directly under direct-fixed roof claddings, or directly under roof tile battens in accordance with Thermakraft requirements.
Thermakraft 215 must installed in a manner that prevents ponding of water. Provide additional support at no more than 300mm centres when Thermakraft 215 is installed on roofs with slopes less than 10°.
Do not leave Thermakraft 215 exposed for more than 7 days before covering.

Location: As per drawings

4.6.5 Co-operation

Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.
Co-ordinate with other trades to install Thermakraft Underlays, DPMs, and DPCs as required.

4.6.6 Workmanship

Workmanship

Where required by the NZ Building Amendment Act 2012 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All installation work shall be carried out by experienced and competent tradesmen, familiar with the specified products and installation techniques, in accordance with the manufacturer's installation requirements, and as noted and detailed on the drawings.

4.6.7 Delivery & Handling

Delivery & Handling

Store underlay rolls on ends, undercover on a flat surface. Keep dry and out of direct sunlight and protect from damage. Handle products in accordance with the manufacturer's requirements.

4.6.8 Preparation

Under-Slab Basecourse

Check that the under-slab basecourse has been correctly laid and compacted as specified, and that the surface has been prepared, rolled to a smooth flat surface to the required levels, to the manufacturer's requirements and as shown on the drawings. Ensure that any required sand blinding is free of aggregate, sharp protrusions, hollows, and any ponded water prior to laying the under-slab membrane.

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Timber Framing

Check that timber framing has been completed as shown on the drawings, complies with NZS 3604 or AS/NZS 1170 for specific design for timber framing, and is in accordance with Thermakraft requirements. Ensure that framing is securely fixed, true to line and plane, is plumb and level where required, and is trimmed at edges, openings and penetrations as required, has a maximum moisture content of 20% at the time of installation, and that there are no projections due to structural bracing and bracketry etc.

4.6.9 Roof Underlay Installation

Thermakraft 215 Building Paper

Thermakraft 215 Building Paper shall be installed without support on roofs with slopes 10° or greater (unless specified otherwise), run horizontally across the roof slope and over the purlins, starting from the gutter/lowest point up to the ridge/highest point, extending maximum 20mm into gutters, with minimum 150mm side and end laps, lapped such that any water will be shed to the outside of the underlay, and sufficiently tensioned without sagging.
Fix at maximum 300mm centres to purlins, with 8mm - 12mm stainless steel staples or 20mm large-head galvanised clouts or galvanised proprietary grippers.

For tiled roofs, lay Thermakraft 215 over the anti-ponding board and rafters/trusses, and fix at maximum 300mm centres to the rafters/trusses before the tile battens are installed.

Finish Thermakraft 215 along roof edges and junctions, valley gutters, and at the ridge as shown on the drawings. Carefully cut underlay at roof openings at 45º angle away from each corner and lap-tape closed to framed up-stands, ducts and other services penetrating the underlay in accordance with Thermakraft requirements and as detailed. Leave underlay minimum 50mm distance clear of the outer liner of flue stacks.

4.6.10 Completion

Completion

Check that all underlay has been installed correctly, and is correctly supported, and that all edges, joins and ends are correctly finished prior to closing off with claddings. Check for damage and repair or replace as necessary. Remove rubbish from the site.

Issue to the Owner a copy of the Thermakraft maintenance requirements and the Thermakraft product warranties for the installed products.

4.7 Timber Framing

4.7.1 Scope

Scope

Supply and install timber framing to the floors, walls, roofs, and other timber framed elements, as identified and detailed on the drawings. All aspects of this work shall be in accordance with NZS 3604, product manufacturers' recommendations, and as shown on the drawings and the specification.

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4.7.2 Workmanship

Workmanship

Where required by the NZ Building Amendment Act 2012 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All work shall be carried out to current best trade practise by experienced and competent tradesmen, familiar with the materials and installation techniques, in accordance with NZS 3604 and as shown on the drawings.

Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings prior to installing timber framing.
Co-ordinate with other trades to install timber framing as required.

4.7.3 Timber Framing

Timber Grade and Quality

Unless otherwise noted or specified on the drawings or specification all framing timber shall be minimum structural grade SG 8 Radiata pine in accordance with NZS 3622.
Framing timber shall be seasoned or kiln dried, and be straight and true and free from wind, warp and distortion, and in lengths suitable for the members required, and shall have a moisture content of between 12% and 18% before installation.
Do not used damaged, faulty or defective materials.

Timber Treatment

Timber framing shall be appropriately treated against moisture and/or insect decay by a member of the NZ Timber Industry Federation Inc. Preservative treatment shall be to the requirements of NZS 3602 as an absolute minimum, and treated framing shall be identified and marked accordingly.
Carefully manage treated framing during installation to avoid accidental use of timber with a lower performance or durability treatment than that required or specified.

Storage & Handling

Check timber framing upon delivery and reject sub-standard or damaged material.
Store timber framing dry under cover, fillet stacked and well clear of the ground, and protect from damage, moisture, and contamination.
Ensure all appropriate personal protection equipment is worn at all times when handling and cutting treated framing.

Framing Installation

All timber framing members, including all dwanging, strutting, blocking, bracing etc, shall be sized, setout, fitted and fixed to the requirements of NZS 3604 and as shown on the drawings to accommodate structural loadings, cladding and lining setout and support, and the installation of other building components, fixtures and fittings.

All framing shall be erected without deviation, true to line, level, angle and plumb, and evenly aligned and square, and within the tolerances allowed in NZS 3604 Table 2.1. Framing members accurately cut, lapped, housed, joined, and seated so as to provide full contact over the bearing surfaces.

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Temporarily prop, brace, tie, and secure framing members and elements as required until the framing is complete and self supporting. Leave in place for safety purposes as long as required.

Protect timber framing as required during installation against damage and moisture, and against significant variation of moisture content until ready for lining. Avoid ponding of water around floor plates.

Concrete Separation

Separate timber framing with an approved continuous damp proof course when in direct contact with concrete or masonry. Ensure that the DPC material is compatible with the timber treatment.
Free draining separations to external vertical faces shall be 12mm minimum and as noted on the drawings.

Timber Re-treatment

All cut or drilled surfaces of H4 and H5 treated timber framing shall be flood coat re-treated, with a suitable product recommended by the original treatment plant, before installation.

Edge Notching and Centre Holes

The notching, checking, and boring of framing members shall be in strict accordance with the requirements of NZS 3604.
Avoided checking and cutting where possible and keep to such dimensions so as not to prejudice the purpose for which the member is used. Keep edge notching to a minimum and where possible use centrally bored holes instead.
Concealed services pipes and wiring shall not project beyond the framing face and where possible shall be beyond the lining's fixing reach.

Framing Protection

Protect timber framing as required during installation against damage and moisture, and against significant variation of moisture content until ready for lining. Avoid ponding of water around floor plates.

Built-up Framing Members

Except for jack studs, bottom plates and top plates, framing members may be substituted with built-up members in accordance with the limitations of NZS 3604 2.4.4.7 with the prior approval of the Architect/Designer only.

4.7.4 Steel Fixings

Fastenings and Connectors

Unless otherwise noted or specified timber framing fastenings and connectors shall be as specified in the relevant fixing schedules of NZS 3604 or have an equivalent capacity as specified therein. Timber framing connectors and fixings shall comply with the product information as required in NZS 3604 2.4.6, and shall be used and installed in accordance with the manufacturer's recommendations. Pre-drill nail holes in split-prone framing as necessary.

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Durability of Fixings & Fastenings

Unless otherwise noted or specified the minimum durability of timber framing fixings and fastenings, excluding nails and screws, shall comply with the durability requirements of NZS 3604 Table 4.1.
Galvanised steel fixing components, excluding nails and screws, shall have galvanised coating masses in accordance with NZS 3604 Table 4.2.
Unless noted or specified otherwise the materials for nails and screws shall be as given in NZS 3604 Table 4.3.
Steel fixings and fastenings in contact with timber treated with copper based timber preservatives (H3.2 or higher) shall be in accordance with NZS 3604 4.4.4.
Stainless steel nails shall be minimum Grade 304 unless otherwise specified or noted.

Bolts and Coachscrews

Unless specified or shown otherwise all bolted and coach screwed connections shall be M12 or M16 in accordance with the relevant fixing requirements given in NZS 3604.
Bolted and coach screwed connections shall have either a 50mm x 3mm square, or a 55mm x 3mm round, washer to each head and nut for M12 and M16 fixings. Washers shall be of the same material and durability as the bolt or coach screw.

4.7.5 Wall Framing

Plates

Top and bottom plates shall be to the dimensions and layout shown on the drawings. Unless specified or shown otherwise top and bottom plates shall be fixed in accordance with NZS 3604 7.5.12 and Tables 8.18 and 8.19, true to line and level or angle.
Joints in top plates shall be made over a stud or over blocking between studs, and all top plate connections shall be in accordance with NZS 3604 8.7.3. Form all holes and edge notches in top and bottom plates in accordance with NZS 3604 8.7.5.

Studs

Studs shall be to the dimensions and spacings shown on the drawings, and installed true to line and plumb in both directions between top and bottom plates.
Unless noted otherwise non-load bearing wall studs shall be to the spacings given in NZS 3604 Table 8.4, stud width as shown on the drawings.
Form all holes and edge notches in studs in accordance with NZS 3604 8.5.1.5. Do not notch, check, cut, or bore holes in the middle third of any trimming stud.
Should the need arise studs shall be straightened in accordance with NZS 3604 8.5.3 with prior approval from the Architect/Designer only.

Lintels

Lintels shall be to the dimensions and locations shown on the drawings and DesignIT calcs where laminated veneer lintels are specified, and installed true to line and level, and shall be supported by a 45mm thick doubling stud or jack stud fixed to a trimming stud, and secured against uplift in accordance with NZS 3604 8.6.1.8 as required.

The thickness of a lintel may be made from two or more members, where each member is the length of the lintel, in accordance with NZS 3604 2.4.4.7.

Sill & Head Trimmers

Unless specified or shown otherwise sill and head trimmers to openings shall be the same width as the wall stud and to the thickness given in NZS 3604 Table 8.15, and installed at the required opening height true to line and level, and supported by a 45mm thick doubling stud or jack stud fixed to a trimming stud.

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Dwangs

Dwangs shall be the same width and thickness as the wall stud, and installed at the centres noted on the drawings, and accurately cut and fixed in place true to line and level and flush with stud edges. Dwangs fixed in accordance with NZS 3604 Table 8.19.

4.7.6 Posts

Timber Posts

Timber posts shall be to the sizes and locations shown on the drawings, and installed true to line and plumb each way, and supported at the base by steel post brackets as detailed.

Base bracket brand name & type: Bowmac bracket or similar approved

4.7.7 Roof Framing

Rafters

All rafters (including hip, valley and jack rafters) shall be to the dimensions, spacings, pitch, and layout shown on the drawings.

Rafters shall be aligned and paired at the required spacings to ridge boards, ridge beams, hip rafters and valley rafters, and as shown on the drawings, and installed parallel, true to line, pitch and plane, and fixed in accordance with NZS 3604 Table 10.1.

Any required jointing of rafters shall be made over supports shown on the drawings only.

Unless shown otherwise rafter seating to top plates, beams, and lintels shall have a minimum bearing of 32mm without reducing the rafter depth to less than 65mm, or 80%, at the birds mouth.

Extend rafter ends to form eaves where possible or scab a 90x45 member to side of rafter as detailed on the drawings and in accordance with NZS 3604 10.2.1.14.

Fly rafters and outriggers installed to form gable verges as detailed on the drawings and in accordance with NZS 10.2.1.15.3

Verandah Beams

Verandah beams shall be to the dimensions and locations shown on the drawing and installed true to line and level. Unless shown otherwise all verandah beam jointing and connections to timber posts shall be in accordance with NZS 3604 Table 9.2.

Tie bracket brand name & type: Bowmac bracket or similar approved

Valley Boards

Valley boards shall be sized to the dimensions and installed to the supporting framing as detailed on the drawings.

Ceiling Joists

Unless specified or shown otherwise ceiling joists shall be to the dimensions and spacings given in NZS 3604 Table 10.3.

Ceiling joists shall be installed parallel true to line and plane, and shall be joined directly over framing supports and lapped minimum 300mm, or butted and flitched, in accordance with NZS 3604 10.2.1.6.5.

Do not support ceiling joists from a strutting beam.

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Tile Battens

Tile battens shall be to the dimensions and spacings shown on the drawings and to suit the roofing tiles, and fixed to rafters and/or trusses in accordance with NZS 3604 Table 10.12. Tile battens shall be continuous over a minimum of two spans.

Tile battens laid directly over sheet sarking, or ceiling lining, shall be fixed and installed as shown on the drawings.

Roof Trusses

Roof trusses shall be Specific Engineering Design (SED) in accordance with NZBC B1/VM1 and manufactured by an accredited fabricator, and shall comply with all aspects of NZS 3604 10.2.2. Roof trusses shall be fabricated to meet the specific design requirements of the roof including, but not limited to; roof layout, pitch, and details, in accordance with the drawings and specification.

Roof trusses shall be supported and fixed to the truss fabricators specifications but shall be no less than that required by NZS 3604 Tables 10.14 and 10.15. Roof trusses shall be braced as shown on the drawings and in accordance with NZS 3604 10.3.

Roof Bracing

Roof bracing shall be as shown on the drawings and in accordance with NZS 3604 10.3 and 10.4 as necessary.

4.7.8 Ceiling Framing

Ceiling Framing

Ceiling framing shall be to the dimensions, layout, spacings, and details shown on the drawings, and shall be installed true to line, level and plane, and securely fixed in accordance with NZS 3604 Table 13.3.

4.8 Workmanship & Materials

4.8.1 Workmanship

Supervision

Where required by the NZ Building Amendment Act 2012 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner. It is the main contractor's responsibility to ensure that the construction of all structural timber complies in all respects with the drawings and the specification.

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All non-restricted building work shall be carried out by or under the direct supervision of competent tradespersons, suitably qualified for the work undertaken, and in accordance with the best and latest trade practice.

Timberwork

All timber shall be worked and cut to be true and square and free from wind and warp with all joints matching and mating to a proper contact fit over the full surface of the joint. All connections whether nailed screwed, glued, mortised or dovetailed shall be accurately made and properly executed to provide sound satisfactory connections for the class of work required.

Timber containing unacceptable defect or distortion shall not be cramped to provide mating at connections but shall be discarded and replaced by true defect-free timber before connections are made. Distribute any acceptable defects in timber so as not to impair the strength or the appearance of the finished work. Do not cut studs across the grain to straighten them.

The checking and cutting away of timbers shall be avoided where possible and shall be limited to such dimensions as will not prejudice the purpose for which the timber is used. Observe NZS 3604 restrictions on holing and checking of timber joists and beams. Concealed services pipes and wiring shall not project beyond the framing face and where possible shall be beyond the linings/claddings fixings reach.

Neatly punch exposed nailing to the diameter of the nail head below the surface. Completley remove bruises and tool marks, and replace all split timbers and hammer-marked finishing timbers.

Fit a 3-ply bituminous DPC or a single layer high impact polyethylene DPC at all timber to concrete junctions to provide complete separation. Ensure that the DPC material is compatible with the timber treatment.

Clean out framing voids before fixing sheathings or linings. Ensure framing voids are fully vermin proofed to the exterior. Build in as necessary all required flashings (supplied by others) to windows, doors, roof edges, etc.

Roof Underlay

Install heavyweight building paper or breathable/absorbent roof underlay behind roof cladding as detailed, with minimum 150mm side and end laps, lapped such that any water will be shed to the outside of the underlay, and sufficiently tensioned in a manner that prevents sagging or ponding.

R1 class roof underlays shall be fully supported on nylon straps or non-corrosive netting/mesh; R2 class self-supporting underlays shall be laid to maximum 1200mm span between adjacent supports.
Run roof underlay horizontally or vertically up the roof slope on roof pitches above 10° pitch, and horizontally on roof pitches 10° or less.
Fix roof underlay at maximum 300mm centres to purlins, with 6mm - 8mm stainless steel staples or 20mm large-head galvanised clouts or proprietary underlay fixings.
For tiled roofs, lay the roof underlay over the anti-ponding board and no-corrosive support netting/mesh, and fix at maximum 300mm centres to the rafters/trusses before the tile battens are installed.
Finish roof underlay along roof edges and junctions, valley gutters, and at the ridge as shown on the drawings. Carefully cut underlay at roof openings at 45º angle away from each corner and lap-tape closed to framed up-stands, ducts and other services penetrating the underlay in accordance with the underlay manufacturer's requirements and as detailed. Roof underlay must be separated from chimneys and flues in accordance with the requirements of the NZBC C1-C6 Acceptable Solutions.
Any damaged underlay shall be made good by lapping in a new section.
Do not leave roof underlays exposed before covering with the roof cladding for more than the manufacturer's recommended duration.

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Window Installation

Prepare window and external door framing openings for joinery installation by neatly cutting the building wrap at 45º into corners, returning turning the wrap through the frame depth and fixing to the inside face.
Over-flash the underlay along the sill with a flexible flashing tape, installed full frame depth and length of the opening, returned minimum 100mm up the jambs, and with minimum 50mm return over the outside edge.
Over-flash the underlay at head/lintel corners with a flexible flashing tape, extending minimum 100mm each way from the corner, full frame depth, and with minimum 50mm return over the outside face.

Install external joinery frames with metal flashings as detailed and/or as required to completely weatherproof all frame-to-cladding junctions.
Unless shown otherwise, head flashings shall be carried minimum 75mm up behind claddings, extended at 15º out over the joinery head or facing board and returned down to cover the joinery or facing board minimum 10mm and finished with a 5mm, 45º 'kick out' drip-edge.
Neatly dress down the head flashings at the ends of the facings - for drained cavity construction, also form up-turned stop-ends in-line with the outside edge of cavity above.
Install metal (as specified) head flashings, fixed over the wall underlay, with the flashing upstand over-flashed minimum 50mm with a flexible flashing tape against the underlay, or with an additional piece of underlay extended over and lapped behind the underlay above, behind the inter-storey flashing or sill flashing above, or to the underside of the eaves.
Unless shown otherwise, sill flashings, where required, shall have a minimum 5º slope, minimum 8mm rear upstand with sealed sloping stop-ends, and be carried down minimum 35mm over the lower cladding and finished with a 5mm, 45º 'kick out' drip-edge.

Take delivery of window and door joinery. Check substrates for correct profile and alignment and that the joinery is fabricated to the correct wall construction set-out and depth. Set shims or pack as

necessary to install joinery exactly true and square. Use appropriate separators between aluminium and other materials, and fix securely with due regard for any anticipated movements and for linings, trim, etc.

Install neat sealant beads as detailed or required.

After joinery installation, install closed cell backing rods as required and expanding foam seal the gap between the opening substrate and joinery liners/reveals (all round, from the inside).

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On completion ensure that all sashes and doors neatly fit the openings with regular tolerances to all edges, and that all moving components and hardware are correctly adjusted and operating smoothly, without binding, to the required functionality.

Joinery Installation

Take delivery of all scheduled joinery items (doors, cabinets, shelves, etc.) and install in the positions shown, accurately aligned, true to level, plumb and square, and securely fastened as noted and in accordance with best trade practice and with due regard for adjacent linings, finishes and trim, and anticipated movements.

Cabinets scribed and/or recessed packers scribed to adjacent surfaces as detailed or directed. Protect all installed Joinery from damage including surface marking and contamination, dirt and dust, and moisture until completion. Do not use Joinery items for working supports or platforms or for storage of materials or tools and equipments.

On completion ensure that joinery item doors and drawers all neatly fit the openings with regular tolerances to all edges, and that all moving components and hardware are correctly adjusted and operating to the required functionality.

4.8.2 Timber

Timber Materials

All timber shall be graded in accordance with NZS 3631 - Structural Grade MSG8 or better for all framing timber - (to meet the requirements of Table 2.3 of NZS 3603 for mechanically graded timber), and Dressing Grade for all finishing timber. Timber that is deemed below standard, in the opinion of the Architect/Designer, shall be removed from the site.

All non-durable timber, including components in manufactured items, shall be appropriately treated against moisture and/or insect decay by a member of the NZ Timber Industry Federation Inc.
Treatment of timber and wood-based building products shall be to the requirements of NZS 3602 as an absolute minimum, and all treated timber shall be identified and marked as required.
Ensure that similar timbers with different treatment levels are carefully managed during construction to avoid accidental use of an H1 treated item where H3 hazard class treatment is required by the NZS 3602.
Do not use LOSP (light organic solvent-based preservative) treated timber that has not adequately 'flashed-off'.

Ensure that all cut or drilled surfaces of H4 and H5 hazard class treated timbers are flood coat re-treated, with the product recommended by the original treatment plant, before installation.

All timber shall be seasoned or kiln dried, to the stable moisture content, be straight and true and free from wind, warp and distortion, and in lengths suitable for the members required and the location in the finished construction. All framing timber shall have a moisture content between 12% and 18 % before being installed. If the use of inadequately seasoned timber results in damage or opening joints in the finished building the timber shall be replaced. Fixing of internal linings shall be delayed after closing in until the timber framing has dried back below 20% moisture content and to allow for the maximum settling of substrates.

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All kiln dried, dressed and/or finishing timbers shall be stacked under cover on delivery to the site, and all timber shall be full to the nominal sizes shown or specified, subject only to normal cutting and dressing tolerances.
All finishing timber shall have machine marks, stains and roughness removed and shall be sanded smooth.

Ensure that enclosed surfaces and ends of paint-finished exterior finishing timbers are fully primed before fixing. If this trade (Carpentry) carries out the priming it shall be to the specification and standard required of the Painter.

Unless specified otherwise, exposed framing timbers shall be unfinished to the exterior, and be fine bandsawn milled, treated with a minimum of discolouration, handled carefully at all times to avoid surface damage, and delivered free of crayon or pencil or other markings. Hazard class treatment markings shall be on the ends, NOT on the faces.

Timber Cavity Battens

To wall areas as noted install H3.1 treated ex.50mm x 25mm timber battens to form a drained vertical cavity complying with E2/AS1 in all respects. Ensure that flexible wall underlay and flexible flashing tape are completely and correctly installed before fixing battens in place. Fix the battens with 60mm hot-dip galvanised flat head nails at maximum 400mm centres, ensuring that the batten set-out completely fulfils the cladding's fixing requirements. Install 1:12 sloping horizontal cavity spacers where required to suit claddings, keeping the ends 50mm clear of the vertical battens.

Other Materials

Materials shall be delivered to site with the packaging and labelling intact, shall be of the same type, finish or colour to maintain continuity, shall be stored, and conditioned if required, in accordance with manufacturer's recommendations, and shall be protected from damage, contamination, and moisture - as appropriate.
Handle all materials in accordance with best practice and the manufacturer's requirements, and in a manner that prevents damage or deterioration to the material. Do not use damaged or defective materials or products, or products that are beyond their designated shelf life.

4.8.3 Laminated Veneer Lumber

Laminated Veneer Lumber

Laminated Veneer Lumber (LVL) shall comply with AS/NZS 4357.0. Each piece of structural LVL shall be branded at least once with the manufacturer's logo and a registered brand or marking that clearly identifies the structural properties that apply to the product and its limitations on end use; all in conjunction with associated published literature.

Structural properties identified in the associated published literature shall be:

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- details of marking specific to the product
- veneer details
- physical properties including
  - modulus of elasticity
  - bending stress
  - tension stress parallel to grain
  - compression stress perpendicular to grain
  - compression stress parallel to grain
  - shear stress
- joint group
- density
- dimensional tolerances
- adhesives used
- limitations on end use

The storage and handling of LVL shall comply with Appendix A of AS/NZS 4357.0. In particular:

- LVL should be kept dry during storage and transit
- LVL should be stacked on bearers well clear of the ground and arranged so that their supporting surfaces are in the one plane
- Bearers should be spaced sufficiently close so that LVL spanning between them does not deflect excessively under its own weight.
- Bearers or spacers within a stack should be located near direct vertical alignment
- Care should be taken in lifting and handling LVL in order to avoid mechanical damage
- Wrapping should avoid and prevent entrapment of moisture
- LVL should not be used in high humidity conditions or exposed to the weather.

4.8.4 Proprietary Sheet Bracing Systems

Proprietary Sheet Bracing Systems

Proprietary sheet bracing systems to walls, ceilings and sub-floor foundations shall be installed in strict accordance with the manufacturer's technical literature and design guides. No materials specified in the manufacturer's technical literature and design guide can be substituted without the written approval from the Architect/Designer.

4.8.5 Proprietary Roof Trusses

Proprietary Roof Trusses

Roof trusses shall be of proprietary design, complying with the requirements of NZS 3603, NZS 3604, and AS/NZS 1170, and manufactured by suitably qualified fabricators.

Make allowance for all notching and holing to timber members to accommodate roof bracing etc., in the design of member sections of the roof trusses. Allow for all additional rafters, purlins, fixings and bracing necessary to complete the roof framing system with all accessories and incidental items necessary for proper installation even where not specifically shown on the drawings.

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Proprietary roof trusses shall be designed to carry all imposed gravity and lateral loads. Refer to the approved design drawings for truss set-out and specified design loads. Roof trusses are assumed to be generally at 900mm centres spanning clear between walls or roof beams as shown on the drawings. The Main Contractor is responsible for the design of proprietary roof trusses, including their layout and interaction with and dependence on adjoining elements.

Provide all necessary design information and shop drawings for all proprietary roof trusses to be incorporated in the works for review prior to fabrication.

Provide Producer Statements from a Charted Professional Engineer covering the design and construction of the roof trusses. Provide all information required by the Territorial Authority for the purpose of obtaining a Building Consent.

4.8.6 Fixings

Nails

Comply with the requirements of NZS 3604 Section 2.4.4 and the Nailing Schedules of NZS 3604 as applicable. Unless noted or specified on the drawings or elsewhere in this specification, all nails fixing exterior timbers shall be Grade 304 or 316 stainless steel. Nails that will be covered with plaster or any similar material shall be hot-dipped galvanised, unless noted or specified otherwise.

Finishing brads to all finishing timbers shall be set out neatly and punched to the diameter of the nail below the surface. Bore slightly undersize holes for nailing that could cause splitting of the timber. Power-driven staples are completely unacceptable in finishing timbers.

Screws

Screw fastenings shall be of suitable gauge, head type, thread design, and length to provide secure fastening into the substrate material, and be suitable for the assembly/construction of the fixed item/element and the substrate material.

Unless noted or specified otherwise, screws exposed to the exterior shall be Grade 304/316 stainless steel or hot-dipped galvanised, and hot-dipped galvanised or similar corrosion resistant for damp situations.

Self-drilling screws shall be in accordance with AS 3566 for fastener type and corrosion resistance class.

Unless noted or specified otherwise, screws fixing hardware or similar shall be of the same material and finish as the hardware. Except where raised head screws are shown or specified, screws shall be countersunk flush or recessed where stopped/filled.

Bolts

Where bolts are used they shall be complete with nuts and washers unless specified otherwise. All bolts, nuts and washers are to be hot-dipped galvanised finish unless noted otherwise. The diameter of a hole for a bolt shall not be less than the bolt diameter nor exceed it by 1.5mm.

For the following bolt diameters use washer sizes as below unless noted otherwise on the drawings:

up to M8 - 25x 25 x 1.5mm
up to M12 - 50 x 50 x 3mm
up to M20 - 65 x 65 x 5mm
up to M20 - 75 x 75 x 6mm

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Round washers may be used proving they are of a thickness and area not less than those specified above.

Unless noted otherwise on the drawings, holding down bolts shall be M12 galvanised, spaced at maximum 900mm centres and within maximum 300mm from each end of the timber, set minimum 150mm into concrete, and located centrally on the timber.
Framing - timber/timber and timber/steel - Unless noted otherwise on the drawings, M16, hot-dipped galvanised, hexagonal head mild steel and with 50 x 50 x 3mm washers.
Timber/concrete (dry situations) - Unless noted otherwise on the drawings, Ramset Trubolts, T12140 at maximum 900mm centres - for damp or exterior situations use stainless steel Trubolts.
Bolts shall be tightened until the washer just indents the timber surface. Exposed bolts shall be re-tightened just prior to Practical Completion to remove any slack consequent on timber shrinkage.
Allow to countersink bolt heads and nuts as necessary to clear linings.

Framing Hardware

Proprietary timber framing hardware and fixings, including multigrips, joist shoes, Z nails, gang nails and similar hardware, may be used where specifically approved, or where required on the drawings or by NZS 3604 schedules, in accordance with the manufacturer's requirements.
Proprietary timber framing structural brackets and ties, including post and bearer brackets, beam supports, angle brackets, tie cleats and similar hardware, shall be as noted on the drawings and installed in accordance with the manufacturer's requirements.
Refer to Metalwork or Structural Steel section of this specification for specific design engineered fabricated steel components that connect structural timber framing.

Adhesives

Aliphatic PVA for dry timber applications - all other adhesives for timber jointing are subject to specific approval or as specified. Check surfaces are in appropriate condition to receive adhesive, and that adhesives are used strictly in accordance with the manufacturer's instructions. Clamp adhesive-jointed timber connections and check alignment of members before the adhesive has set.

4.8.7 Sealants

Sealants

For critical joints such as primary water/weatherproofing seals, precast panels primary seals, structural floor slab control joints, structural glazing, immersion or hydrostatic pressure seals, etc.,

either use the sealant noted on the drawings or obtain a reputable sealant manufacturer's recommendation for the precise situation, and submit the manufacturer's specifications covering all relevant criteria and characteristics of the proposed sealant, primers, joint surfaces preparation, etc. to the Architect/Designer for review and confirmation to proceed.
If so requested, additionally submit a sample of the proposed sealant made up into a demonstration joint, incorporating the same materials, preparation, finish tooling, etc. After confirmation to proceed with the proposed sealant install a sample joint to approval, length approximately 2% of the overall length of the joints required, with a minimum length of two metres; when accepted this joint becomes the quality control sample for all subsequent similar joints.

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For less critical joints such as those in covered or protected situations, and bathroom and kitchen ceramics and sanitaryware etc., either use the sealant noted on the drawings or select the sealant from a reputable manufacturer's range for the substrate materials involved, with due regard for the flexibility required, acid or neutral curing, mould resistance, paintability or clear or standard colours, slumping characteristics, temperature range expected, etc. - silicone, polymer or polyurethane sealants are anticipated.
For all simple gap-filling and draught sealing situations, either use the sealant noted on the drawings or select from a reputable manufacturer's range for a paintable acrylic sealant with good adhesion characteristics for the substrates involved - pay particularly care in the sealant selection where bare metal, polycarbonate, polystyrene or similar substrates or where bituminous-based membranes are adjacent or where exposure to solvents is possible.

All joint surfaces preparation and priming and all sealant application work shall be exactly in accordance with the sealant manufacturer's recommendations, and carried out by competent and experienced applicators familiar with the materials and techniques required.
Ensure that the sealant is being used within the manufacturer's stated design parameters, particularly with regard joint design and anticipated cyclic movement.
Check that the joint faces are sound, completely dry, and frost free, clean and free of dirt, rust, oil, grease, laitance, etc., and they are primed to suit the surface porosity - particularly for critical locations.
Insert a polyethylene tape slip layer at the back of the joint or a closed cell polyethylene PEF backer rod where required and to the sealant manufacturer's recommendations. Mask off joint edges where a clean straight finish line is required.
Check the toxicity of the selected sealant and handle it appropriately. Check that the temperature during sealant installation is within the manufacturer's guidelines.
Apply the sealant and tool the filled joint's surface smooth and even, utilising a lubricant as necessary and strictly within the manufacturer's guidelines.
Remove any masking tape immediately after tooling, clean up all adjacent surfaces using the recommended cleaning agents as required, and protect the finished joint until the sealant has properly cured.

4.8.8 Interior Finishing Trim

Finishing General

All interior finishing trim shall be cut to the exact dimensions and fine sanded smooth, and with lightly sanded arrisses, and all fixed with plated finishing pins. Machine staple fixing is NOT acceptable.

Note that even traces of planer marks are unacceptable on architraves. Margins between interior trim and other elements shall be exactly even, and all mitres shall be exact and tight.

Scotia - option 1

No scotia (all square stopped).

Architraves - option 2

Architraves 60mm x 18mm, finger jointed finishing Radiata, square profile, sand arrissed to wet areas, 65mm x 18mm square profile MDF elsewhere.

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Skirting - option 1

60 x 10mm single bevelled MDF and pine to wet areas

4.8.9 Garage Door

Garage Door - option 2

Garage door(s) as shown and noted on the drawings, installed complete with automatic opening door gear including integrated light(s), wall switch and two remote car activators per door.

4.8.10 Sundry Items

Sundry General

Supply and install, complete with all normal incidentals, and in total compliance with the item manufacturer's recommendations and instructions and with all of the appropriate preceding clauses:

Air Exhaust Fan Trimming Out - option 1

Carry out all necessary trimming out, etc. flashing and finishing required for installation of the kitchen, bathroom, shower room and laundry air exhaust fans.

4.9 James Hardie Eaves & Soffits

4.9.1 Scope

4.5mm HardieFlex Eaves Lining

Supply and install James Hardie 4.5mm thick HardieFlex Eaves Lining as a fibre-cement sheet lining material to the eaves and soffits identified on the drawings, complete with all accessories. The sheets are to be finished with a paint system. All aspects of this work shall be in complete accordance with James Hardie Eaves And Soffits Installation Manual (check www.jameshardie.co.nz, or call 0800 808 868 for the latest edition) and other relevant product manufacturers' recommendations.

4.9.2 Co-operation

Co-operation

Co-ordinate with other trades to ensure that the panels correctly allow for fascia and wall cladding installation and associated flashings etc., and that services penetrations are correctly handled to maintain full weathertightness and sheet integrity.

Ensure that other trades are aware of the James Hardie Safe Working Practices.

4.9.3 Preparation

Preparation

Check that the timber framing elements are in accordance with NZS 3604, or in accordance with NZS 3603 and AS/NZS 1170 for specific design, and in accordance with James Hardie requirements. The fascia and framing shall be in true alignment, complete and suitable for the sheets, and maximum moisture content as per NZS 3602. Ensure that the framing is true in line with no projections due to structural and bracing bracketry etc. Ensure that any hold-downs from the roof framing to the wall framing are correctly installed.

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Check that the building underlay or rigid air barrier to the wall framing has been installed in full accordance with the manufacturer's requirements and the drawings. Check junctions to all other building elements and ensure that all necessary works have been completed eg. flashings etc that will enable the sheets and all accessories to be installed.

4.9.4 Flexible Sealant

SIKA Silaflex MS

Flexible silicone sealant to be SIKA Silaflex MS. Use to seal the sheets and accessories in accordance with the sealant manufacturer's recommendations and to James Hardie requirements. Ensure sealant compatibility with selected finish.

4.9.5 Workmanship

Workmanship

All installation work shall be carried out by an LBP, or supervised by an LBP, in accordance with James Hardie Eaves And Soffits Installation Manual and other relevant product manufacturers' recommendations.

4.9.6 Delivery & Handling

Delivery & Handling

Carry all sheets on edge. Stack sheets flat on a level platform off the ground ie. use the supplied delivery pallet on level ground (if no pallet then evenly spaced bearers on level ground at 600mm crs maximum). Keep sheets and accessories dry at all times. Avoid damage to sheet edges, ends, and surfaces. Keep uPVC flashings etc. out of direct sunlight, and store all accessories on flat and avoid damage. All installers to be familiar with and comply with the James Hardie Safe Working Practices in the Installation Manual, to use appropriate safety gear, and in particular to be aware to avoid breathing silica dust. Do not use any damaged or blemished sheets or accessories.

4.9.7 Installation

Installation General

Install the sheets to the framing in accordance with the Installation Manual, complete with all accessories eg. mouldings, sealant, underflashings, etc.

Ensure that all cut edges of panels are primed prior to installation with Dulux Primacryl, Resene Quick Dry, or similar. Ensure that the bottom edge of the fascia forms a drip edge of 15mm minimum to the sheet. Seal around services penetrations to maintain weathertightness and air pressure resistance.

Timber Trim Details

Install H3.1 finger-jointed pine timber trim, scribers, eaves moulds, etc. to complete the sheet junctions as shown on the drawings.

4.9.8 Fixings

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HardieFlex Sheet 4.5mm, Durability Zone B or C

Fix sheets with galvanised nails in accordance with James Hardie requirements.

4.9.9 Completion

HardieFlex Sheet

Ensure that the sheets have been fixed correctly, that all joints and accessories have been completed correctly, and that all penetrations have been taped correctly. Check that no damage has occurred to any installed sheet element or associated component, replace as necessary. Ensure that the sheets are painted within 90 days of the sheet installation, complete with all accessories and flashings. Hand over a copy of the latest edition of the James Hardie HardieFlex Eaves Lining Product Warranty to the client. Hand over a copy of the latest James Hardie Eaves And Soffits Installation Manual to the client for their maintenance information.

4.10 James Hardie Pre-Cladding

4.10.1 Scope

HomeRAB Pre-Cladding

Supply and install HomeRAB Pre-Cladding fibre-cement sheet as a rigid air barrier to the walls identified on the drawings, complete with all accessories. All aspects of this work shall be in complete accordance with James Hardie Rigid Air Barriers Installation Manual (check www.jameshardie.co.nz, or call 0800 808 868 for the latest edition), BRANZ Appraisal No.611 (2011), and other relevant product manufacturers' recommendations.

4.10.2 Co-operation

Co-operation

Co-ordinate with other trades to ensure that appropriate clearances are allowed from roofing products and associated flashings etc, that the panels correctly allow for door and window installation, and that services penetrations are correctly handled to maintain full weathertightness and panel integrity.

Ensure that other trades are aware of the James Hardie Safe Working Practices.

4.10.3 Preparation

Preparation

Check that the timber framing elements are in accordance with NZS 3604, or in accordance with NZS 3603 and AS/NZS 1170 for specific design, and in accordance with James Hardie requirements. Framing shall be plumb and in true alignment, complete and suitable for the panels, and maximum moisture content as per NZS 3602. Ensure that the framing is true in line with no projections due to structural and bracing bracketry etc. Ensure that the bottom plate hold-downs are correctly installed.

Check that the ground levels are sloping away from the building in accordance with E1/AS1, with no ponding water against the building, and that the ground will be remain clear of the sheet by at least 100mm at all times.

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4.10.4 Workmanship

Workmanship

All installation work shall be carried out by an LBP, or supervised by an LBP, in accordance with James Hardie Rigid Air Barriers Installation Manual and other relevant product manufacturers' recommendations.

4.10.5 Delivery & Handling

Delivery & Handling

Carry all sheets on edge. Stack sheets flat on a level platform off the ground eg., use the supplied delivery pallet on level ground, or minimum 4 evenly spaced bearers on level ground. Keep sheets and accessories dry at all times. Avoid damage to sheet edges, ends, and surfaces. Keep uPVC flashings and jointers out of direct sunlight, and store all accessories on flat and avoid damage to any. All installers to be familiar with and comply with the James Hardie Safe Working Practices in the Installation Manual, to use appropriate safety gear, and in particular to be aware to avoid breathing silica dust. Do not use any damaged or blemished sheets or accessories.

4.10.6 Installation

HomeRAB Pre-Cladding

Fix sheets vertically directly to framing in accordance with the Installation Manual.

Vertical joints on framing to be sealed with a joint sealing tape, for both non-bracing and bracing applications.

Vertical joints off framing formed with a uPVC jointer, for non-bracing applications only. Jointer to be in a single piece extending from bottom of board to top of board with no joins.

Ensure that all cut edges of sheets where exposed are primed prior to installation with Dulux Primacryl, Resene Quick Dry, or similar. Ensure that the bottom edge of the sheet overhangs below the bottom plate by 15mm, and is clear of the ground surface by at least 100mm; the finished ground clearance shall be in accordance with E2/AS1. Install flexible flashing tape to all junctions and

penetrations (including cables etc), with the addition of a pipe bandage for pipes to maintain weathertightness and air pressure resistance. Do not use sealant.

4.10.7 Horizontal Joints

All Durability Zones

Horizontal joints to be formed at floor joist level with a uPVC flashing. Ensure that the sheets are not fixed to the floor joists.

4.10.8 Fixings

Durability Zone B or C

Fix sheets with galvanised nails in accordance with James Hardie requirements.

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4.10.9 Completion

Completion, HomeRAB Pre-Cladding

Ensure that the sheets have been fixed correctly, that all vertical joints and horizontal joints have been completed correctly, and that all penetrations have been taped correctly. Check that no damage has occurred to any installed sheet element or associated component, replace as necessary. Check that no dirt has been mounded up within 100mm of the sheet, and maintain the clearance. Ensure that the cladding is installed within 90 days of the sheet installation. Hand over a copy of the latest edition of the James Hardie Rigid Air Barriers Product Warranty to the client.

4.11 GIB® Rondo® Metal Batten Systems

4.11.1 Scope

Scope

Supply and install the specified GIB® Rondo® Metal Batten Systems to the locations identified on the drawings, incorporating all system components and accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the GIB® Rondo® Metal Batten Systems - System and Installation Manual and GIB® Site Guide publications (check www.gib.co.nz, or call 0800 100 442 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for GIB® Rondo® Metal Batten Systems.

This specification section should be read in conjunction with the GIB® Plasterboard Linings specification and relevant GIB® Systems specifications, and other specification sections, as they are interrelated.

For the purpose of this specification, the GIB® Rondo® Metal Batten Systems - System and Installation Manual publication is referred to as the GIB® Rondo® Metal Batten Systems Manual.

4.11.2 Requirements

Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

Warranty

GIB® Product & System Warranty:

- 10 Years Warranty - for all GIB® Products and Systems installed, according to warranty conditions.
- Provide the GIB® Product & System Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

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4.11.3 GIB® Rondo® Metal Batten Systems

GIB® Rondo® 310 Ceiling Batten System

GIB® Rondo® 310 Ceiling Batten System. Incorporating 35mm deep, concealed metal ceiling battens that are either fastened with proprietary metal support clips (recommended) to the support frame or fixed directly to the support frame.

Suitable for 10mm,13mm,16mm and 19mm thick GIB® plasterboard ceiling linings for residential and commercial applications. Plasterboard ceiling linings are generally screw-fixed directly to the underside of the ceiling battens. Maximum 130mm clearance from the underside of the support frame (joist/rafter) to the top of the ceiling batten.

GIB® Rondo® System Components:

- 310 Batten: 35mm deep, galvanised steel furring channel (batten).
- 340 Perimeter Channel: 35mm deep, galvanised steel perimeter 'U' channel.
- NZ18 Perimeter Angle: 32 x 32mm, galvanised steel perimeter angle.
- 311 Clip: 92mm long, galvanised steel batten fastening clip. Provides 30mm max. clearance from supporting joist or truss.
- 313 Clip: 192mm long, galvanised steel batten fastening clip. Provides 130mm max. clearance from supporting joist or truss.
- A311 GIB Quiet Clip®: 92mm high, galvanised steel batten fastening clip with rubber cushioning grommets.
- 312 Jointer: Galvanised steel batten jointing clip.

GIB® Rondo® 311 or 313 clips can be installed to provide additional restraint and accurate batten alignment when the battens are direct-fixed to the support frame. Use GIB Quiet Clip® for GIB® Noise Control Systems.

When installed as a ceiling diaphragm, the battens must be fixed directly to the support framing. If GIB® Rondo® clips are used, then a timber block (min 300mm) or a continuous timber member must be fixed alongside the support framing to create a direct connection.

Installed with all system components and accessories required for proper installation and performance, in accordance with the GIB® Rondo® Metal Batten Systems Manual, to the locations, layout, levels and details shown on the drawings.

Where electrical earthing of GIB® Rondo® 310 Ceiling Batten System is required, the electrical earthing shall be carried out by a qualified electrician in accordance with the electrical standards and regulations.

Installed Location:

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4.11.4 Co-operation

Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to ensure that the GIB® Rondo® Metal Batten System correctly allows for ceiling lining installation, and for the locations of recessed lights and other fittings installed by others, and to install GIB® Rondo® Metal Batten Systems as required.

4.11.5 Workmanship

Workmanship

Where required by the NZ Building Act 2004, it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

Installation of GIB® Rondo® Metal Batten Systems shall be carried out by experienced and competent tradespersons, who are familiar with the specified systems and installation techniques, in accordance with the GIB® Rondo® Metal Batten Systems - System and Installation Manual, to fully comply with all warranty requirements, and relevant requirements of AS/NZS 2785 (suspended systems). Submit evidence of experience on request, e.g. National Certificate of Interior Systems, or Certified Business Member of AWCINZ.

All cutting, jointing, fixing and supporting techniques shall be exactly as recommended by the manufacturer. All work shall be such as to leave a neat, efficient and robust installation, to the required standard, free from damage and defects.

4.11.6 Delivery & Handling

Delivery & Handling

Store all materials and accessories indoors, off the floor, on a flat, level surface in accordance with the manufacturer's requirements. Keep materials and accessories dry and protected from damage, distortion, moisture and contamination at all times.

Do not use damaged or defective materials and products.

Handle all materials in accordance with the manufacturer's requirements and Product Data Sheets, and in a manner that prevents damage and distortion to the component.

Installers shall be familiar with and comply with the manufacturer's Material Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

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4.11.7 Preparation

General

The building must be fully enclosed, weathertight and suitably dry before installation commences.

Check that all preliminary and preparatory building works have been completed to specification and as shown on the drawings.

Check that any required building services installations, including electrical, plumbing, mechanical, fire, or other service located behind the ceiling line and/or wall line, have been completed.

Supporting timber framing shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content 18% at the time of installation.

Supporting light structural steel framing shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. All light structural steel framing members shall satisfy the requirements of AS/NZS 1170.

Supporting steel stud partitioning shall comply with AS 1397 and as specified and shown on the drawings.

Supporting steel structures shall comply with NZS 3404.

Supporting concrete structures shall comply with the CCANZ CP 01:2011 or with NZS 3109. New concrete must have aged for a minimum of 28 days.

Supporting concrete masonry structures shall comply with NZS 4229, or with NZS 4230 and AS/NZS 1170 for specific design.

Carry out all necessary substrate inspections and preparatory work in accordance with the GIB® Rondo® Metal Batten System Manual and the GIB® Site Guide prior to installation.

Confirm the location and details of movement control joints, as indicated on the drawings, prior to installation.

The commencement of work on each section/area shall be deemed to indicate full acceptance by the installer that all preparatory works by other trades is complete.

4.11.8 Installation

GIB® Rondo® 310 Ceiling Batten System (600mm c/c battens)

GIB® Rondo® 310 Ceiling Batten System. Installed in accordance with the GIB® Rondo® Metal Batten Systems Manual, to the locations, layout, levels and details shown on the drawings. Suitable for 13mm thick, single layer, internal plasterboard ceiling linings for residential applications.

Ceiling Batten Set-out:

- Batten Spacing: Maximum 600mm centreto-centre spacings.
- Batten Span: Maximum 1200mm for multi-span battens. Maximum 900mm for single-span battens (non-jointed), and for garage ceilings.

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Confirm the ceiling lining fixing and installation requirements prior to installing GIB® Rondo® 310 Metal Ceiling Battens. Make allowance for the lining thickness when establishing the finished batten datum level.

For Multi-span Battens: Set-out GIB® Rondo® 310 Metal Ceiling Battens at maximum 600mm centre-to-centre spacings, with a maximum batten span of 1200mm, to the areas, levels and details shown on the drawings.

For Single-span Battens (non-jointed): Set-out GIB® Rondo® 310 Metal Ceiling Battens at maximum 600mm centre-to-centre spacings, with a maximum batten span of 900mm.

Screw-fix GIB® Rondo® perimeter angle and/or channel to walls, true to line and level, with 32mm x 8g x GIB® Grabber® wafer head needle tip screws at 300mm centres max.

Fix GIB® Rondo® battens as noted on the drawings and as per GIB Rondo Metal Batten Systems system and installation manual.

Direct fixing: Fix batten direct to underside of trusses with pairs of GIB grabber 32mm x 8g wafer head screws or pairs of 45mm x 2.8mm FH nails through the flange.

Fix GIB® Rondo® batten clips along the batten lines, 900mm or 1200mm apart (as above), to the support framing with 32mm x 8g GIB® Grabber® wafer head needle tip screws or pairs of 40 x 2.8mm GIB® Nails. Batten clip fixings and set-out shall be to the manufacturer's installation requirements for the clip type, batten type and batten set-out.

Securely fasten the clips in place so that the battens are fixed at the correct datum level and are parallel, straight and true to line. Support batten ends on perimeter angle or channel, or alternatively, cut, fold and fix the batten end to the top plate.

Use full length battens. When jointing is necessary, joint battens using the manufacturer's proprietary batten jointer for the batten type.

Do not fix batten clips directly to H3.2, CCA, CuAz or ACQ treated timber - fully separate the clips from timber with DPC or other approved material.

Where required, provide additional battens for ceiling-mounted fixtures and fittings at the set-out shown on the drawings.

Ceiling Diaphragms:
- When installed as a ceiling diaphragm, the battens must be fixed directly to the support framing.
- If GIB® clips are used then a timber block (min 300mm) or a continuous timber member must be fixed alongside the support framing to create a direct connection.

4.11.9 Completion

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Completion

Carry out a final inspection immediately after installation. Check that the GIB Rondo Metal Batten System has been installed correctly in accordance with the GIB® Rondo® Metal Batten Systems Manual and installation tolerances, to the correct set-out and details shown on the drawings, and that the installations are accurately aligned true to line, level (and/or plumb) and plane.

Check that the installed layout allows for the correct positioning and installation of all penetrations and services fixtures and fittings as indicated on the drawings.

Check for any damage and defective work - repair or replace as necessary to the required standard.

Leave all of this work complete and to the required standard in accordance with the manufacturer's warranty requirements, as shown on the drawings.

Leave completed works and surrounding surfaces clean and free of rubbish and debris. Remove all rubbish and excess material from the site.

Issue to the Owner a copy of the a copy of the GIB® Product and System Warranty.

Provide all necessary Producer Statements.

5 ROOFING

5.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

5.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

3604:2011(NZS)	Timber-framed buildings
4217:1980(NZS)	Pressed metal tile roofs

5.3 Gerard Roofs Pressed Steel Tiles

5.3.1 Scope

Minimum roof pitch equal to or greater than 20º

Supply the selected Gerard roofing tiles and install them in the areas identified on the Roof Plan. All aspects of the work shall be in complete accordance with Gerard's installation instructions (check 0800 104 868 for latest editions) and other relevant Product Manufacturers Recommendations.

Note that substitutions are not permitted

5.3.2 Tile

Corona Shake, Satin Finish

Corona Shake, Satin Finish.

5.3.3 Trim

Angle Trim

Angle Trim.

5.3.4 Installation

Qualifications

All installation work shall be carried out by a Gerard Certified Roofer.

Co-ordination

Co-ordinate to set-out the roof fixing battens etc. very carefully to absolutely minimize tile cutting. Coordinate to ensure that the timber members required for ridges, hips, valleys, penetrations, junctions with vertical faces, etc. are correctly in place to Gerard detailing, and for barges the framing suits the trim selected. Check that the underlay is correctly installed with turn-ups to walls, parapets,

openings, skylights, etc. as required, and that pre-installed flashings are correctly in place. Ensure the fixing battens are sized to suit the rafters spacing and are fixed to NZS 3604 Table 10.12 requirements. Note and co-ordinate with the Installer of the specified Rainwater System (refer Plumber Section).

Delivery & Storage

Unload and handle tiles without scratching, distortion or other damage, store on a firm level base out of the weather, keep clean and dry until installed. Do not place in fall zone i.e. within 2m of roof edge.

Installation for Corona Shakes - Satin Finish

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Corona Shakes fixed 4 nails per tile to main roof battens at 372mm centres. Corona Shakes must be random laid. Plan the tiles installation to minimize foot traffic over finished surfaces. Lap tiles away from line of site.

Cutting, bending or straightening, etc. to Gerard requirements, neatly and true to line.

Fix with AHI Specification 50x2.8mm hot-dipped galvanized flat head nails, all correctly positioned.

(Where using Barrel trim feather fold the trim bottom edges to avoid tile to trim gaps).

Avoid

Avoid runoff of Gerard tiles to galvanized steel. Avoid copper runoff on to Gerard tiles. Avoid lead runoff on to Gerard tiles (where proximity to lead is unavoidable, i.e. existing flashings during a reroof, prime and topcoat paint all surfaces of the lead).

Maintenance

Touch-up any damage to coatings with Gerard's finishing kit. Remove trade debris from the roof and from the site progressively, and on completion leave the roof and rainwater system completely clean. Advise others to minimize walking on the roof, and if unavoidable to use soft-sole shoes and place the weight over battens only. Provide owner with a copy of maintenance instructions and warranty.

6 ALUMINIUM JOINERY

6.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

6.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

1734:1997(AS/NZS)	Aluminium and aluminium alloys - Flat sheets, coiled sheet and plate
2208:1996(AS/NZS)	Safety glazing materials in buildings
4211:2008(NZS)	Specification for performance of windows
4223.3:2016(NZS)	Glazing in buildings - Part 3: Human impact safety requirements
4666:2000(AS/NZS)	Insulating glass units
4667:2000(AS/NZS)	Quality requirements for cut-to-size and processed glass
AS/NZS 1231	Aluminium, anodic coatings
AS/NZS 1865	Drawn aluminium rod, bar and strip
AS/NZS 1866	Aluminium / alloys - extruded sections

6.3 Aluminium Windows

6.3.1 Alternatives

Alternatives Option 1

The materials and elements specified indicate the required standards for these works. Alternatives which are equal to or superior to these materials and elements may be tendered for approval.

Thermal performance (NZBC H1/AS1) must be as required to meet the Designer's Thermal Evaluation.

6.3.2 Installation Type

Timber Frame Installation - Direct Fix

All windows (and aluminium frame external doors) installation work shall be exactly in accordance with NZBC E2/AS1, the Windows Association's Windows Installation System (WANZ:WIS), and details on the drawings or supplied by the windows manufacturer.

Check framing alignment, and that window openings are square and the correct size for fitting tolerances.

Prepare framing openings by neatly cutting the building wrap at 45º into the corners, turning wrap through the frame depth and fixing to the inside face, flashing the bottom corners with moulded plastic and over-flashing the full sill and 200mm up the jambs with the specifed flexible flashing tape,

stapled to hold the stretched external corners. At head corners install flashing tape 200mm each way from the corners.

Install the sill flashing, extending from an upstand lip behind the line of the aluminium frame out to lap a minimum of 35mm down over the top of the cladding, sloping at 15º unless the glazing weight requires the frame be blocked up for support. (If the flashing is level for blocking-up the sill, upstand its ends to create 'dams' as shown in E2/AS1).

Set shims or pack as necessary and install the frames exactly true and square. Use appropriate separators between aluminium and other materials, and fix securely with due regard for any anticipated movements and for linings, trim etc.

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Install the head flashing, extending 35mm up behind the cladding (and in turn over-flashed with an additional piece of wrap cover extended up under the wrap or flashing or eaves above), sloping at 15º down to the exterior, and turning down to cover the top of the aluminium frame by at least 10mm, before finishing with a 5mm 45º 'kick out'. Seal between head flashing and cladding at the ends as detailed. Install jamb flashings/sealant or scribers as detailed.
After frames installation install closed cell backing rods as required and expanding foam air-seal the gap between framing and liners.

Timber Frame Installation - Cavity Construction

All windows (and aluminium frame external doors) installation work shall be exactly in accordance with NZBC E2/AS1, the Windows Association's Windows Installation System (WANZ:WIS), and details on the drawings or supplied by the windows manufacturer.
Check framing alignment, and that window openings are square and the correct size for fitting tolerances.
Prepare framing openings by neatly cutting the building wrap at 45º into the corners, turning wrap through the frame depth and fixing to the inside face, flashing the bottom corners with moulded plastic and over-flashing the full sill and 200mm up the jambs with the specifed flexible flashing tape, stapled to hold the stretched external corners. At head corners install flashing tape 200mm each way from the corners.

Install the WANZ extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit. Install the head cavity closer, positioned to provide a 15mm drip edge to the cladding.

Set shims or pack as necessary and install the frames exactly true and square, blocked-up off the support bar as required. Use appropriate separators between aluminium and other materials, and fix securely with due regard for any anticipated movements and for linings, trim etc.

Install the head flashing, extending 35mm up behind the cladding (and in turn over-flashed with an additional piece of wrap cover extended up under the wrap or flashing or eaves above), sloping at 15º down to the exterior, and turning down to cover the top of the aluminium frame by at least 10mm, before finishing with a 5mm 45º 'kick out'. Upstand the head flashing ends as detailed. Install jamb flashings/ sealant or scribers as detailed.

After frames installation install closed cell backing rods as required and expanding foam air-seal the gap between framing and liners.

6.3.3 Interior Finish

Architraved
Architraved.

6.3.4 Reveal

Timber Finger Jointed - 19mm
Timber reveals for paint finish with all sides primed.

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6.3.5 Glass Platform

Double Glazed
Double Glazed.

6.3.6 Finish

Powder Coated Aluminium - Matt
Polyester powder coating in accordance with WANZ Powder Coating Quality Assurance System and AAMA 2603-98 performance is required.

6.3.7 Hardware

Colour Matched Hardware
Hardware colour matched to Aluminium Joinery: confirm with owner prior to manufacture of joinery

Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Key alike all lockable window hardware able to be keyed alike.

Account for all keys and deliver separately to the site manager. Factory fit all required and scheduled hardware.

6.3.8 Workmanship

Workmanship
These windows will be manufacturerd in workshops containing all mechanical equipment appropriate for the work, and by experienced and competent tradesmen who are familiar with the techniques and materials specified.

The manufacturer will co-ordinate with other trades to establish the exact sizes for all frames before fabrication. Frames and sashes will be fabricated true, square, rigid, and ‘out of wind’, with all joints strongly mechanically fixed, and with mitres tight and fully sealed. Potential thermal, wind and seismic movements will be accommodated within the construction. All cavities will drain to the exterior, and all drilling swarf etc. will be removed during fabrication.

Stays, hinges, running gear and glazing will be installed as scheduled (the Designer will be notified if any scheduled hardware of fixing position appears to be inappropriate for this project).

Hardware will be fixed true to line and position, and adjusted and oiled as required for correct operation.

Glass will be cut true and square, sized to provide correct edge clearances, blocked into place as required, and all units will be delivered either pressure fit, pocket glaze, or beaded/wedged, unless site glazing is required. Glazing gaskets will be compatible with all adjacent materials, and cut 1% over-length to absolutely avoid stretching during installation. Frames will be braced etc. as necessary for transportation to the site.

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Flashings as detailed will be supplied. Flashing materials will be compatible with the windows.

6.3.9 Delivery and Installation

Delivery and Installation

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and the construction principles that are embodied in the Acceptable Solutions.

Arrange for delivery of windows to the site only when a suitable storage situation is available for them, handle the windows in accordance with the manufacturers requirements, avoid any frame distortion, avoid rubbing damage, avoid contact with concrete, plaster, mud etc. and keep them dry. Retain protective coverings for as long as possible, and remove them at completion.

Experienced and competent tradesmen who are familiar with the techniques and materials specified shall carry out all installation work. Fix in accordance with the manufacturer's instructions. Take utmost care to avoid damage to anodized or powder coated surfaces - correction of any such disfigurement requires written authority - replace any badly damaged items.

Use fixings compatible with the materials involved, as recommended by the windows manufacturer and to comply with the DWP requirements, basically aluminium or Type 316 stainless steel where exposed externally; galvanized to AS/NZS 4680, 610g/m2, may be used where not exposed.

Thoroughly check all preparatory work to openings prior to installation, including wrap, corner seal tapes, adjacent cladding, pre-installed flashings, etc. as appropriate. Use inert barriers or coatings to prevent contact between dissimilar metals or between aluminium and concrete.

Install flashings as detailed and supplied by the windows manufacturer, installed tightly and neatly with absolute minimum tolerances, with head weathering jamb, jamb weathering sill, and sill open (draining) to exterior. Except where the window is recessed all head flashings shall extend 30mm minimum beyond the frame.

Air-seal all frame perimeters to adjacent structure to a depth of 15 - 20mm with expanding foam or appropriate sealant including a PEF rod at head, sill and jambs to retard the spread of sealant.

Weather-seal frame jambs etc. to adjacent surfaces (or to each other) as detailed or as required by the windows manufacturer, to achieve a fully watertight installation. In preparation for sealant the joints shall be clean, dry, and primed if necessary. Insert closed cell polyethylene backer rods or a polyethylene tape slip layer if required. Mask adjacent surfaces if appropriate, install the sealant fully in accordance with the sealant manufacturers recommendations, and finish to even smooth surfaces.

Remove trade debris progressively, appropriately clean any affected adjacent surfaces, thoroughly clean the windows, check that all hardware is in full working order, and provide safety indication of the glass for the balance of adjacent works.

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7 GLAZING

7.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

7.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

1170.0:2002SUPP1(AS/NZS) A1	Structural design actions - General principles - Commentary: Amendment 1
1170.5:2004(NZS)	Structural design actions - Earthquake actions - New Zealand
2208:1996(AS/NZS)	Safety glazing materials in buildings
3604:2011(NZS)	Timber-framed buildings
4211:2008(NZS)	Specification for performance of windows
4223.1:2008(NZS)	Code of practice for glazing in buildings - Glass selection and glazing
4223.3:2016(NZS)	Glazing in buildings - Part 3: Human impact safety requirements
4223.4:2008(NZS)	Glazing in buildings - Part 4: Wind, dead, snow, and live actions
4223.SUPP1:2008(NZS)	Code of practice for glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
4232.2:1988(NZS)	Performance criteria for fire resisting enclosures - Part 2: Fire resisting glazing systems
4666:2000(AS/NZS)	Insulating glass units
4667:2000(AS/NZS)	Quality requirements for cut-to-size and processed glass
4668:2000 (AS/NZS)	Glossary of terms used in the glass and glazing industry

7.3 Non-Structural Glazing

7.3.1 Scope

Scope

Supply and install the selected glass products to the windows, doors, curtain wall systems, roofs and canopies, balustrades and barriers, partitions and screens, and other non-structural glazing elements, as noted and shown on the drawings. All aspects of this work shall be in accordance with the glass manufacturer's installation requirements and recommendations, other relevant product manufacturers' recommendations, and as shown on the drawings.

7.3.2 Co-operation

Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Co-ordinate with other trades for all necessary holes and cut-outs etc. for glass mounted hardware, fittings and fixtures, and to install all glass and glazed elements as required.

7.3.3 Workmanship

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Workmanship

All installation work shall be carried out by experienced and competent tradesmen familiar with the products specified and installation techniques, to the manufacturer's requirements and recommendations, and the requirements of the relevant Glazing Standards, and to the layout and details shown on the drawings.

Handle and store glass in accordance with the manufacturer's recommendations.

Provide temporary safety markings to all glass panes as the installation work progresses.

Finish all external glazing wind and watertight.

Do not use damaged, marked or faulty materials.

7.3.4 Glass Type

Clear Float Glass

Clear Float Glass: Clear annealed float glass, in accordance with NZS 4223, to the locations identified on the drawings.

Manufacturer, brand name & type: TBC

Obscure Patterned Glass

Obscure Patterned Glass: Surface patterned obscure glass, in accordance with NZS 4223, to the locations identified by the home owner.

Manufacturer, brand name & type: TBC

Toughened Safety Glass

Toughened Safety Glass: Toughened Grade 'A' Safety Glass, in accordance with AS/NZS 2208 and NZS 4223, to the locations identified on the drawings. All cutting and drilling and other processing requirements shall be done prior to toughening. Install safety glass in accordance with the manufacturer's recommendations and NZS 4223.

Manufacturer, brand name & type: TBC

7.3.5 Insulating Glass Units

Insulated Glass Units (IGU's)

Insulating Glass Units. Sealed, gas filled, insulating glass units manufactured and installed in accordance with AS/NZS 4666, and the Insulating Glass Manufacturers' Association recommendations, to the locations identified on the drawings.

Manufacturer, brand name & type: TBC
External Glass, type & thickness:
Space width and Gas:
Internal Glass, type & thickness:

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7.3.6 Components & Accessories

Aluminium Framed Glazing

Provide all necessary glazing components and accessories including glazing tape, setting and distance blocks, sealants, gaskets, etc., to complete aluminium framed glazing as required.

7.3.7 Installation

Aluminium, Double Glazed (IGU's)

Install Insulated Glass Units into aluminium frames in accordance with the glazing manufacturer's recommendations and NZS 4223, and as detailed.

7.3.8 Completion

Completion

Check that all glass has been installed correctly to the required standard and as shown on the drawings. Check for damage and surface marking and replace as necessary. Clean off and remove all temporary safety markings, as programmed and when instructed, and leave glass trade clean.
Remove all rubbish and waste material from site.
Issue to the Owner a copy of the Glass Manufacturer's maintenance requirements and all necessary Manufacturer Warranties.

8 INSULATION

8.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

8.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

3604:2011(NZS)	Timber-framed buildings
4220:1982(NZS)	Code of practice for energy conservation in non-residential buildings
4243.1:2007(NZS)	Energy efficiency - Large buildings - Building thermal envelope
4246:2006(NZS)	Energy efficiency - Installing insulation in residential buildings
4859.1:2002(AS/NZS)	Materials for the thermal insulation of buildings - General criteria and technical provisions

8.3 Thermal Insulation

8.3.1 Scope

Scope

Supply and install the selected products as thermal insulation to the specified R-values, complete with all accessories, to the floors, walls, ceilings, roofs, and other thermally insulated building elements, as noted and shown on the drawings. All aspects of this work shall be in accordance with the product manufacturer's technical literature and installation requirements, other relevant product manufacturers' recommendations, and as shown on the drawings.

8.3.2 Co-operation

Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.
Co-ordinate with other trades to install all thermal insulation as required.

8.3.3 Workmanship

Workmanship

All installation work shall be carried out by experienced and competent tradesmen, familiar with the specified products and installation techniques, in accordance with the manufacturer's installation requirements, and as noted and detailed on the drawings.
Store and handle products in accordance with the manufacturer's recommendations, keep dry and

protect from damage. Do not compress fibre insulation bales, do not use damaged or faulty insulation products and accessories.
The building must be completely enclosed and water tight before installation commences with the exception of roof insulation when installed with roofing. Ensure the moisture content of timber framing is no greater than 18% prior to installing insulation to timber framed elements. Always maintain the full insulation thickness to ensure the required thermal values are achieved. Do not install insulation pads or blankets into closed cavities that are less than the stated insulation nominal thickness.

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8.3.4 Product

Glass Fibre Pads
Glass fibre thermal insulating pads.

Manufacturer, brand name & type: Pink Batts or similar approved
R-Value: refer to H1 calculations
Location: refer to H1 calculations

Glass Fibre Blanket
Glass fibre thermal insulating blanket.

Manufacturer, brand name & type: Pink Batts or similar approved
R-Value: refer to H1 calculations
Location: refer to H1 calculations

8.3.5 Installation

Wall Insulation - Glass Fibre Pads
Install glass fibre insulation pads, complete with accessories, friction fitted between wall studs and dwangs etc. and held in place in accordance with the manufacturer's installation recommendations. Completely fill the framing voids, leave no gaps at the edges or at penetrations etc, and maintain full insulation pad thickness. Support external wall insulation with vertical strapping tape at 400mm centres to the outside face, stainless steel stapled to the framing.

Ceiling Insulation - Glass Fibre Blanket
Install glass fibre insulation blanket, complete with accessories, friction fitted between the ceiling framing over the ceiling lining in accordance with the manufacturer's installation recommendations. Leave no gaps along the insulation blanket edges and joints, and at the ceiling perimeter/wall junction. Refer to the electrical fitting manufacturer's installation recommendations for insulation separation requirements around their recessed electrical fittings. Separate ceiling insulation 200mm from recessed light fittings and other recessed electrical fittings where no fittings manufacturers installation information is available and product does not have a CA, IC or ICF rating.

8.3.6 Completion

Completion

Check that all insulation has been installed correctly and is correctly supported and that all edges, joins and ends are fully closed without gaps. Check for damage and faults and repair or replace as necessary. Collect and remove from site all rubbish and waste material.

Issue to the Owner a copy of any product maintenance requirements and a copy of the Thermal Insulation Product and Installation Warranties for the completed works.

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9 TILING

9.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

9.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

3103:1991(NZS)	Specification for sands for mortars and plasters
3122:2009(NZS)	Specification for Portland and blended cements (General and special purpose)
4858:2004(AS/NZS)	Wet area membranes

9.3 Workmanship

9.3.1 Co-operation

Co-operation

Co-operate with the Contractor and other Subcontractors to ensure that substrates are completely appropriate for the tiling required, particularly with regard to concrete surface finish, the use of retarders, release agents or curing compounds, and with regard fixing and finishing of sheet substrates and their support.

9.3.2 Workmanship

Sequence

Delay tiling to allow maximum curing and settling and initial creep of the substrates, particularly to load bearing structural elements.

Qualifications

All work by competent and experienced tilers. Co-ordinate with other trades and instruct them as necessary to ensure appropriate substrate conditions to assure first class tiling results.

Preparation

Protect all adjacent surfaces from damage or staining during tiling: arrange any making good or cleaning required as instructed by the Architect/Designer. Wash down and remove form work release agents, slab curing compounds, and surface retarders. Clean down with mould killer, etching agents, or wire brush as required. Grind off high spots if required. Ensure that the moisture content of substrates is appropriate.

Set-out

Set out tiles as detailed or for even margins with patterns to register in all directions. The finished surfaces shall be true and even and with lines accurate, level and plumb, or to even falls as noted, and finished flush with adjoining work as appropriate. Cut edges to the manufacturers instructions, and stone arris where the cut edges are not concealed under adjoining work.

Installation

No retempering of partially set or dried mortar, adhesive or grout. Prior to grouting rake out any excess bedding material. Grout shall be coloured as directed, placed full depth, and finish tooled to a dense, uniform surface. Clean excess grout off tiles and adjacent surfaces.

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Control Joints

Form control joints at tiling edges abutting concrete or masonry, within the tiled surface to give a maximum panel dimension of 2m, and over any control joints in the substrate. Rake control joints full depth to the substrate as work proceeds, mask edges and clean out just prior to placing filler, and fill full depth and flush. Clean excess filler off the tiles or other surfaces.

Completion

On completion thoroughly clean the full tiled surfaces, and lightly buff where appropriate. Protect finished work from subsequent damage.

Exterior Tiling

No exterior tiling during inclement weather.

9.4 Materials

9.4.1 Materials

Adhesives & Grouts

All adhesives/beddings/grouts shall be selected for each specific tile/substrate situation, selected as the best readily available, and each is subject to approval by the Architect/Designer (who may require appropriate manufacturers information for consideration prior to approval).

Standards

Water, cement, sand and sand particle size grading, all exactly to the relevant NZS requirements.

Crack Control

Crack control joint filler as recommended by the tiles supplier, with the colours selected from the standard range.

Materials shall be from the same batch for even type and colour, and shall be delivered with their packaging and labeling intact.

Requirements

Store in dry areas, machine mix all materials to the manufacturers requirements, and do not mix proprietary materials.

9.4.2 Tiles/Scope

Delivery & Handling

All tiles true to shape, free of warp, and accurate in dimensions to facilitate laying with minimum joint width. All tiles true to samples and free of imperfections. Tiles from the same batch where possible, and delivered with the original packaging and labeling intact. Tiles handled and stored carefully to preserve edges.

Setout

The exact setout will be notified with the tile(s) selection.

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10 PAINTING & DECORATING

10.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

10.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

2310:2002(AS/NZS)	Glossary of paint and painting terms
2311:2009(AS/NZS)	Guide to the painting of buildings
3750.0:2008(AS/NZS)	Paints for steel structures - Introduction and list of Standards
AS 1580	Methods of test for paints
BRANZ IB 257	Wood primers
NZBC E3	Internal Moisture
NZS 7702	Colours for specific purposes

10.3 General

10.3.1 Alternatives

Alternatives - Option 1

The materials specified in this section or on the drawings indicate the required standards for these works. Alternatives which are considered equal to or superior to these may be tendered for approval (in writing, and they must NOT be used unless they are approved in writing).

10.3.2 Co-operation

Co-operation

Co-operate with all trades and attend upon Concretor, Joiner, Carpenter, etc. to ensure that the surfaces provided by these trades are completely suitable for the Painter works that are required.

10.3.3 Preparation

Preparation

No painting or varnishing or other surface coating work shall be undertaken unless the surfaces to be coated are in a correct and proper condition to ensure first class results.

Inspect the works of other trades on which Painter work is scheduled and report to the Main Contractor and the Architect/Designer any defects or irregularities that would affect the permanency or finish of the painting work, and do not proceed until the defects or irregularities have been

completely rectified. Failure to examine and report will be construed as an acceptance that all preparatory works are completely satisfactory.

This clause does not relieve the Painter of any of the usual preparatory work to surfaces customarily performed by this trade.

Clean down all surfaces with sugar soap, strippers, mould killers, etching agents, etc. as required. Sand or rub all sharp edges off exterior timbers and other materials as appropriate before painting. Finish rub down ALL surfaces. Ensure that the moisture content of all substrates is appropriate. Remove locks, fastenings, and similar hardware before painting and refix on completion. Remove all electrical switch and power plates before painting and refix them on completion. Mask adjacent surfaces as required to a true line and remove the masking on completion. Dust and wipe down all surfaces for Painter work and completely remove all dust, rubbish, dirt etc. from areas involved immediately prior to commencement. To each area of the works complete all surface preparation before applying paint to any surface.

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10.3.4 Protection

Protection

Take adequate precautions to prevent paint spots falling on prefinished or similar surfaces, and extreme care to keep absorbent materials (e.g. cedar, sawn framing, decking, paving) completely clean during all adjacent painting work. Correction of any such disfigurement shall be to the Architect/Designer's approval.

10.3.5 Qualifications

Qualifications - Option 2

All work by the Painting Subcontractor shall be of the highest reasonable standard, and executed by experienced and competent tradesmen to the Architect/Designer's approval.

10.3.6 Workmanship

Workmanship

Strictly adhere to all Manufacturers' instructions.

Strictly observe Manufacturers' requirements with regard to surface and air temperatures for painting. No work shall be carried out on surfaces that are not completely dry, and no external work shall be carried out during damp or wet conditions.

In all finishes any irregularities or brushmarks or dust etc. in each preceding coat shall be rubbed down to provide a smooth clean surface for the following coat. Each coat shall be finished over all surfaces before a further coat is applied, and each coat shall be completely dry before subsequent coats. Finish broad areas before painting trim, paint ceilings before walls and walls before joinery, trim and other items.

Each coat and the full completed system shall be of uniform finish, colour, texture and sheen, shall have proper covering of thin edges, corners, end grain etc. and shall be free of blemishes such as runs, sags, fat edges, entrained hairs, brush marks, starved patches etc.

10.3.7 General

General

The schedules indicate the general extent of the works to be carried out but are in no way exhaustive in their description of the actual items for painter work. Complete all work necessary for the proper and entire completion of the works. All items and portions of items reasonably inferable but not specifically mentioned are deemed included, i.e. cupboard interiors, the top and bottom of doors, unseen cabinetry tops, etc. All doors shall have equal painter work on ALL surfaces.

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Where timber work is specified for priming before fixing the priming shall be thoroughly brushed in to all surfaces, and all exterior timber work for paint finishing shall be fully primed within one week of fixing. Should more than one month elapse between priming and undercoating the timber shall be fully reprimed.

Stopping up work shall be carried out immediately the priming or sealing coat is dry, and shall be solidly placed to finish clean and dry. Stopping tinted to match the timber for clear finished work.

10.3.8 Materials

Materials

All Painter materials shall be ready mixed and delivered in unopened containers. Materials shall be used only for the purpose and in the manner intended by the manufacturer; any apparent scheduled discrepancy in this respect shall be referred to the Architect/Designer immediately for clarification.

Where surfaces are specified to be finished in a particular manner or material, all preparatory work, priming, or undercoating, that is necessary to ensure a proper finish shall be provided, irrespective of any apparent omission herein.

In water splash or wet areas that require a paint finish the paint must be gloss or semi-gloss finish as per NZBC E3/AS1 3.1.2.

Thinning shall only be to manufacturer's specification. Thoroughly stir as required to lift any settled pigment and ensure the paint is homogeneous. Paints shall be factory or shop tinted to the colour required. Undercoats shall be fully tinted to match the final colour scheduled. All paints shall have the finished film thickness that is specified by the manufacturer (checked by monitoring the coverage per litre).

10.3.9 Completion

Completion

Allow to touch up to approval any Painter work which is damaged during the finishing works of other trades. Replace all hardware, remove all masking, covers, containers etc., thoroughly clean all

affected surfaces, and leave all spaces ready for immediate occupation. Avoid scratching or abrading glass or hardware during any cleaning.

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11 PLUMBING

11.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

11.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

1221:1997(AS/NZS)	Fire hose reels
1254:2010(AS/NZS)	PVC-U pipes and fittings for stormwater and surface water applications
1260:2009(AS/NZS)	PVC-U pipes and fittings for drain, waste and vent application
1477:2006(AS/NZS)	PVC pipes and fittings for pressure applications
1546.1:2008(AS/NZS)	On-site domestic wastewater treatment units - Septic tanks
2032:2006(AS/NZS)	Installation of PVC pipe systems
2033:2008(AS/NZS)	Installation of polyethylene pipe systems
2492:2007(AS/NZS)	Cross-linked polyethylene (PE-X) pipes for pressure applications
2537.1:2011(AS/NZS)	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Part 1: Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X) - General
2642.2:2008(AS/NZS)	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
2712:2007(AS/NZS)	Solar and heat pump water heaters - Design and construction
3500.1:2003(AS/NZS)	Plumbing and drainage - Water services
3500.2:2003(AS/NZS)	Plumbing and drainage - Sanitary plumbing and drainage
3500.3:2003(AS/NZS)	Plumbing and drainage - Stormwater drainage
3500.4:2003(AS/NZS)	Plumbing and drainage - Part 4: Heated water services
3500.5:2000 (AS/NZS)	Plumbing and drainage - Domestic installations
3501:1976(NZS)	Specification for copper tubes for water, gas, and sanitation
4121:2001(NZS)	Design for access and mobility: Buildings and associated facilities
4305:1996(NZS)	Energy efficiency - Domestic type hot water systems
4517:2010(NZS)	Fire sprinkler systems for houses
4541:2007(NZS)	Automatic fire sprinkler systems
4602:1988(NZS)	Low pressure copper thermal storage electric water heaters
4603:1985(NZS)	Installation of low pressure thermal storage electric water heaters with copper cylinders (open-vented systems)

4606.1:1989(NZS)	Storage water heaters - General requirements
4607:1989(NZS)	Installation of thermal storage electric water heaters: valve-vented systems
4611:1982(NZS)	Non-thermostatic shower mixing valves
4613:1986(NZS)	Domestic solar water heaters
4614:1986(NZS)	Installation of domestic solar water heating systems
4617:1989(NZS)	Tempering (3-port mixing) valves
4692.1:2005(AS/NZS)	Electric water heaters - Energy consumption, performance and general requirements
4766:2006(AS/NZS)	Polyethylene storage tanks for water and chemicals
5103:1973(NZS)	Code of practice for the design, installation and operation of sprinkler irrigation systems
5262:2003(NZS)	Gas appliance safety
5601.1:2013(AS|NZS)	Gas installations - Part 1: General installations
7602:1977(NZS)	Specification for polyethylene pipe (Type 5) for cold water services
7643:1979(NZS)	Code of practice for the installation of unplasticized PVC pipe systems
7646:1978(NZS)	Specification for polyethylene pipes and fittings for gas reticulation
AS/NZS 1596	LP gas handling and storage
AS/NZS 2053	Specification for unplasticized PVC conduit and fittings for electrical wiring
NZBC G12	Water Supplies
NZBC G13	Foul Water

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11.3 General

Carry out all works necessary to leave the water, waste, vent and soil systems serving the sanitary fittings and the plumbing hardware shown on the drawings or specified below in correct working order complete with all ancillary systems (safetrays, floor drains, overflows, relief valves, etc.) required, and with all normal incidentals customarily installed by this trade.

Comply with the Building Code, Territorial Authority By-laws and statutory authority Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange for all tests and pay all fees and customary charges in connection with the required works.

11.4 Workmanship

11.4.1 Co-operation

Co-operation

Co-operate with all other trades. Attend upon Concretor, Drainlayer and Carpenter to set out the exact positions of pipe runs before adjacent work is put in hand, and to ensure that all pipes, sleeves, fixings, flashings etc. are correctly incorporated into the structure as construction proceeds.

11.4.2 Workmanship

Qualifications

All plumbing work shall be carried out by, or under the direct control of, properly qualified tradesmen, and shall be to recognised high standards.

Winter Conditions

Observe best local trade practice to avoid problems which arise from freezing winter conditions.

Cutting & Checking Timber

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials only to approval. Install seismic restraints to storage tanks and HWCs.

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Weatherseal

Weatherseal wherever pipes, screws, bolts or other fastenings penetrate an external surface, and particularly roofing; seal with gaskets, flashings (and overflashings if necessary) or mastic as appropriate - any damage that results from failure of such seals will be made good at the Plumber's expense.

Protection

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Plumber's expense.

11.4.3 Pipework

Joints

Joints between pipes of different materials shall always be to the approval of the TA Plumbing Inspector.

Pipework Set-out

Pipework set-out neatly with a minimum number of bends, and more or less parallel to and at right angles to structural elements - avoid diagonal piping.

Concealed & Exposed Pipework

All internal pipework shall be concealed except where otherwise is either shown or approved. Exposed pipework shall be accurately and neatly run. Arrange all pipework (and particularly traps) in a manner which will allow maximum future accessibility for repairs or maintenance. Arrange for access panels to any primary maintenance positions, and install conveniently located isolating valves for each group of fittings. Wingbacks securely and squarely fixed. Crox unions usually acceptable only at the final connection to fittings. Install white plastic flanges where pipes penetrate linings in visible locations.

Marked Positions

Where pipes are covered with nail fixed linings and trim ensure that their positions are marked on the linings to minimise the risk of subsequent nailings penetrating the pipe. Any such damage shall be rectified immediately, with all consequential damage made good.

Fixing Pipework

Set pipework out in straight runs to even gradients. Fix all pipes to the structure sufficiently to fully support and to prevent sagging or vibration. Clips and saddles shall be the same material as the pipe. Exterior pipes on stand-off brackets. Fixings to the exterior or damp locations shall all be hot dip galvanized unless otherwise noted. Sleeves for pipes or drains penetrating concrete or masonry shall be uPVC, 20mm minimum larger internal diameter than the external diameter of the pipe, finished flush with concrete or masonry, and packed and mastic sealed.

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During Construction

Close open ends of the systems during construction to prevent the entry of foreign matter.

11.4.4 Temperature Movement

Thermal Issues

All work shall respect in full all probable thermal movements - layouts, fixings and jointings shall be arranged to allow thermal movement without risk of prejudice to watertight conditions, or risk of damage from straining of the pipes which will generate failures.
In particular, observe best local trade practice to avoid problems arising from freezing conditions.

11.4.5 Excavation

Excavation Requirements

Allow to carry out all excavation that is required to suit the services installed by this trade. Check for other services before excavation. Trenches true to line and level, base of trenches clear of loose material, and shore trenches as required to suit the ground conditions. Backfilling shall be carried out by this trade, and be to the requirements specified in Siteworks.

11.4.6 Testing

Services Testing

All plumbing services shall be completed in stages which will allow for proper testing under normal working pressures prior to the application of insulation, concealment or other enclosure. All leaks remedied and retested. On completion the whole of the plumbing services to be subjected to full operational tests in the presence of the plumbing inspector, with any defects revealed in these tests properly remedied.

11.4.7 Warranties

Warranties Submittal

Warranty cards and manufacturer's guarantees for all items supplied and installed by this trade shall be correctly filled in and handed over at Practical Completion.

11.5 Materials

11.5.1 Materials

Materials Quality

Materials shall be delivered with packaging and labeling intact. Incidentals (jointing compounds, PTFE tape, seals, washers, silfos, solvent cements, etc.) shall be completely appropriate for the application involved. The use of imperfect items or items damaged in any way is always subject to approval.

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11.5.2 Materials Separation

Materials Separation

Separate dissimilar metals in any circumstances which could produce contact or electrolytic action by a water film, with thick plastic tape, bituminous felt or other neutral material. Pipes in contact with or built into concrete or masonry shall be fully spiral wrapped in Denso tape or equal.

11.6 Systems

11.6.1 Wastes & Vents

Sizes & Falls

All traps sized to AS 3500.2. Wastes and vents all uPVC. Wastes shall be to AS 3500.2 falls as a minimum. Vents shall be generally as indicated, but avoid where permissible in compliance with AS 3500.2, or shall be combined above the flood level of the fittings.

Bird-proof Domes

Fit bird proof domes to all vents.

11.6.2 Cold Water System

Supply From Existing Toby

All cold water supply pipework shall be polybutylene, arranged and fixed so that all joints are in a fully ‘relaxed' condition, without any stress or tension.

Lay on a 20mm main from the existing toby along the route shown on the Site Plan to the connection position noted on the Floor Plan (pipe depth, protection, backfilling, signal strip etc. to comply with all Supply Authority requirements). At the connection position take a branch feed off for the hosecocks (and reticulate to the positions shown and install angle hosecocks) and toilet cisterns and then take the main feed through an accessibly positioned cleanable in-line sediment and dirt filter.

Primary distribution from the water filter shall be in 20mm piping, with water pipe sizes to individual fixtures sized to suit clause 5.3.1 of NZBC G12/AS1. Install conveniently located isolating valves to turn off each group of fittings, and install a small isolating valve alongside each toilet cistern not integrally fitted with one. (Note that these isolating valves and the hosecocks are not covered by the Plumbing Hardware Prime Cost Sum).

11.6.3 Hot Water System

Gas Instant Hot Water Device

Supply the gas instant hot water device complete with a wall recess box as noted on the drawings and install it where shown on the plan and elevation.

Install pressure relief valves, cold water expansion valves, flow control valves, pressure limit valves, and non-return/isolating valves as required to leave the hot water systems in full design operational order.

Install a tempering valve to control the hot water temperature at any sanitary fixture used for personal hygiene at not more than 55°C.

Flush all pipework before making the final connections. Lag the main distribution pipes full length with wall pipe insulation.

Showers shall have priority feeds, without 'tees', and the pipework layout shall ensure that the showers temperature and pressure remain as even as possible.

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11.6.4 Gas Fitting

Scope

Is included in the Plumbing trade, although all work must be carried out by Registered Gasfitters, and be in complete accordance with all relevant Regulations and standards and be in full accordance with best trade practice.

Obtain all necessary permits and pay all fees. If necessary obtain a Dangerous Goods Licence for the storage installation in the name of the Owner; and if the Owner's signature is required forward all relevant papers to the Architect/Designer.

Testing & Compliance

Test the full systems to all relevant requirements; if any faults are discovered rectify them and then re-test the full system.

Check that all necessary flues comply in all respects with the regulations and the item manufacturer’s requirements.

11.7 Elements

11.7.1 Sanitary Fittings

Sanitary Fittings - Option 1

Supply and fix all of the sanitary fittings as scheduled on the drawings. All fittings checked on delivery for 'perfect' condition, and all fittings plain white. Supply and fix all normal accessories that are not usually supplied with the fitting.

The Plumber is responsible for fittings from delivery until Practical Completion of the contract.

11.7.2 Flashings

Responsibility

Ridges, hips, barges, valleys, aprons etc. flashings all supplied and installed by the Roofer. Metal windows flashings (those installed during windows installation ONLY) will be supplied by the windows subcontractor and installed by the Carpenter. All other flashings including wall penetration flashings, soakers, etc. that are required to leave the building completely water and weathertight are the Plumber's responsibility.

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Flashings Fabrication

All flashings shall be machine folded to profiles as shown or required, incorporating capillary breaks where appropriate, shall be formed in one piece where possible, and lead or other soft edged where required. Stop ends, external angles, junctions etc. soldered or sealed and clinch riveted as appropriate.

Materials - Option 1

All flashings 1mm powder coated aluminium unless otherwise noted. Supply the flashings to appropriate trades for building in as work proceeds, with all flashings neatly dressed to substrates.

12 DRAINLAYING

12.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

12.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

1254:2010(AS/NZS)	PVC-U pipes and fittings for stormwater and surface water applications
1260:2009(AS/NZS)	PVC-U pipes and fittings for drain, waste and vent application
1546.1:2008(AS/NZS)	On-site domestic wastewater treatment units - Septic tanks
2032:2006(AS/NZS)	Installation of PVC pipe systems
3500.2:2003(AS/NZS)	Plumbing and drainage - Sanitary plumbing and drainage
3500.3:2003(AS/NZS)	Plumbing and drainage -Stormwater drainage
7643:1979(NZS)	Code of practice for the installation of unplasticized PVC pipe systems
AS/NZS 1547:2012	On-site domestic wastewater management
BS 5572	Code of practice for sanitary pipework
NZBC G13	Foul Water

12.3 General

Carry out all required works to leave the sewer and stormwater systems shown on the drawings in correct working order complete with all normal incidentals.

Comply with Local Authority By-laws and Health Department Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the works.

12.4 Workmanship

12.4.1 General

General

Carry out all required works to leave the sewer and stormwater systems shown on the drawings in correct working order complete with all normal incidentals. Comply with Local Authority By-laws and Health Department Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the works.

12.4.2 Co-operation

Co-operation

Cooperate with all trades and attend upon the Concretor and Plumber to set out exact pipe runs before any adjacent work is put in hand and ensure that all sleeves etc. are correctly incorporated as work proceeds.

12.4.3 Materials

Materials

All pipes and other materials shall comply with the appropriate Standards, and shall be protected from damage of any kind until installation is complete. All incidentals appropriate for the applications involved. Concrete shall be 17.5MPa and as specified under Concretor. Mortar shall be as specified in Blocklayer.

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12.4.4 Workmanship

Workmanship

All drainlaying shall be carried out by, or under direct control of, properly qualified tradesmen, and shall be to recognised high standards. Ensure cast-in items are installed when required so that no delay is caused by this trade. Adequately protect all adjacent surfaces - clean down to remove dirt etc., and any damage shall be made good by the appropriate trade at the Drainlayer's expense.

On completion of drainlaying clean up full area affected by this trade to the condition it was in before drainlaying commenced.

Site is to be returned as close as possible to its present condition on completion of the contract.

12.4.5 Excavation

Excavation

As required for sewer and stormwater. Check for other service lines before excavation - the Drainlayer is responsible for making good any damage. Trenches true to line and with even gradients between gullies, soil stack terminations or downpipes, etc.

Keep the bottom of trenches clear of loose material. All pipes shall be laid in appropriate bedding material, compacted as required. Shore trenches if required to suit ground conditions. Backfilling shall be by this trade, to the standards required in Siteworks.

12.5 Elements

12.5.1 Drainlaying

Drainlaying

Commence drainlaying at the low end of even fall sections of drains and proceed in a continuous sequence to the fittings connections.

Sumps, gullies, etc. solidly bedded. Lay 110 (ODmm) uPVC drains to connect gullies, sumps, stacks, and downpipes through to the street edge connections.

Every junction and bend shall be an inspection position. Temporarily seal the open ends of incomplete drains to prevent entry of foreign matter. Make appropriate provision for any anticipated differential settlement. Place signal strip above all drains.

Ensure that stormwater drains are very accurately positioned so that downpipes can drop directly into them, without offsets.

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12.5.2 Soakage Pits

Soakage Pits

Where shown on the site plan, Soakage Pits shall be dimensioned and sited in accordance with best local trade practice, and to the complete satisfaction of the Territorial Authority Inspector.

12.5.3 Testing

Testing

The sewer and stormwater systems shall both be fully tested to the approval of the Territorial Authority Inspector before being covered in. If any defects show rectify and then fully retest.

12.5.4 As Built Drawings

As Built Drawings

During drainlaying plot the location of all bends and changes in direction and all cleaning access positions. Locate each item by two diagonal measures from structure corners, etc. and record on a blank plan copy (supplied by Architect/Designer when requested).

Note that Practical Completion of the contract will not be certified until this as-built drawing has been produced (made available to the Contractor in time for the Code Compliance Certificate application.

13 ELECTRICAL

13.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

13.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

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Comply with all relevant provisions and recommendations of:

2201.1:2007(AS/NZS)	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
2293.2:1995(AS/NZS)	Emergency evacuation lighting for buildings - Inspection and maintenance
3000:2007(AS/NZS)	Electrical installations (known as the Australia/New Zealand Wiring Rules)
3350.2.35:1999(AS/NZS)	Safety of household and similar electrical appliances - Particular requirements - Instantaneous water heaters
5000.1:2005(AS/NZS)	Electric cables - Polymeric insulated - For working voltages up to and including 0.6/1 (1.2) kV
60335.2.30:2009(AS/NZS)	Household and similar electrical appliances - Safety - Particular requirements for room heaters
6104:1981(NZS)	Specification for emergency electricity supply in buildings
AS/NZS 1125	Conductors in insulated electric cables and flexible cords
AS/NZS 2053	Specification for unplasticized PVC conduit and fittings for electrical wiring
AS/NZS 3012	Electrical installations - Construction and demolition sites
AS/NZS 3018	Domestic electrical installations
AS/NZS 3085	Telecommunications installations
AS/NZS 3100	Requirements for electrical apparatus
AS/NZS 3191	PVC insulated flexible cords
AS/NZS 3439	Electrical switchgear and controlgear
AS/NZS 3947	Low-voltage switchgear
AS/NZS 60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Flexible cables (cords)
AS/NZS 60598	Luminaires - Particular requirements - Recessed luminaires
AS/NZS 60898	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Circuit-breakers for a.c. and d.c. operation
AS/NZS 61009	Residual current operated circuitbreakers with integral overcurrent protection for household and similar uses (RCBOs)
NZECP 54	Recessed luminaires

NZS 1989	Plugs and socket outlets
NZS 6206	Electric meter boxes

13.3 Workmanship

13.3.1 General

Scope

Supply and install all materials, including all necessary minor and incidental items, for proper completion of all of the electrical services specified or shown on the drawings. The contract will not be deemed to be complete until the Electrician has provided an Electrical Certificate of Compliance in accordance with NZECP 11 (made available to the Contractor in time for the Code Compliance Certificate application).

TAUPO DISTRICT COUNCIL
BC180581
APPROVED CONSENT
PLANS/SPECIFICATIONS

Position of Items (Edit)

The position of switches, light and power outlets and other fittings, although shown specifically in some instances, are in general only shown diagrammatically. The exact location of each of these items will be as directed on site by the Architect/Designer and home owner; the Electrician shall give reasonable notice of when this information is required. Items positioned in contravention of this shall be repositioned if directed, including rewiring if necessary, all at the Electrician's expense.

Unless drawn (on 1:20 wall elevations) or specified otherwise the mounting height to the centreline of the following items above the floor shall be:

-1000mm for lighting switches;
-2000mm for wall mounted lights;
-2100mm for the bayonet of pendant lights;
-300mm for power points, except at benches.

(Notify the Architect/Designer if either the actual fitting or mounting position seem to make the mounting height noted above inappropriate).

Warranties Submittal

Warranty cards and manufacturers guarantees for items supplied and installed by this trade shall be filled in correctly and handed over at Practical Completion. Arrange all circuits to obtain an optimum balance of the system, and check and reconnect where necessary to achieve this on completion. Leave the works clean and tidy and in full operational order.

13.3.2 Co-operation

Co-operation

Co-operate with all other trades and attend upon the Concretor and Carpenter to set out all required penetrations and to ensure that all wiring and fittings are correctly incorporated as work proceeds. The Carpenter will provide and fix all necessary dwangs and timber supports in locations determined by the Electrician.

13.3.3 Workmanship

Qualifications

All electrical work shall be carried out by, or under the direct control of, registered tradesmen, and shall be to recognized high standards. All work shall be such as to leave a neat, efficient and robust installation. Neatly label switchboards to identify each circuit.

Cutting & Checking Timber

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604: 2011 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials shall be only to approval.

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PLANS/SPECIFICATIONS

Protection

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Electrician's expense.

13.3.4 Wiring

Wiring Quality

Joints within cable runs will not normally be accepted. TPS cable shall be adequately supported, and clipped at regular intervals. At terminations all strands of conductors shall be fully secured in a terminal block or clamped under a screw head washer; do not cut away any strands. Wiring which terminates in enclosed fittings and/or where subject to heat liable to cause deterioration, shall be high temperature type, with the tails made off with heat resisting sleeves, to protect the permanent wiring.

Wiring Cable

Wire lights in 1.5mm 3 core - 7.5 amps loading max per circuit (allow for 100w to all light fittings unless identified otherwise).
Wire power outlets in 2.5mm 3 core - 7 maximum GPO singles or doubles per circuit. Assess power outlets for specific equipment and allow accordingly.

Conceal Wiring

Conceal all wiring except as noted on drawings or below. All wiring cast into concrete shall be run in conduit pipes. All cables shall be stranded (single core is unacceptable).

Wiring Layout

Wire more or less parallel to and at right angles to the structural elements - avoid any diagonal wiring. Layout of the principal distribution wiring shall be to approval. Position all wires to minimise the risk of damage from subsequent nailing of linings etc.

Wiring in Timber Framing

Generally, do not run TPS horizontally within timber walls except in the area up to 300mm above floor. Wire in the ceiling framing and drop vertically to outlets and switches.

Exterior Lighting Wiring

Wire exterior lighting in screened cable.

13.4 Systems

13.4.1 Earth

Earth

Provide a driven main earth suitable for the full installation, close to the meterboard, complying fully with all appropriate regulations and to the complete approval of a certified inspector. Bond all exposed metals, including light fittings and piped services and provide earth conductors for the entire system. Sheathing to any neutral screened cables may be used for earthing.

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13.4.2 Mains

Mains, Single Phase, Underground

Install a neutral screened 16mm main cable underground (depth, cover/protection, backfilling, signal strip etc. to comply with all relevant regulations) from the grid connection position noted on the Site Plan along the route indicated to the meterboard, positioned where shown on the Floor Plan, and make appropriate arrangements for the grid connection. Install pilot as required. The meterboard shall be metalclad with a meter reading window, recessed maximum depth into the wall and at 2m to the top of the board, with the meters and water heater controllers by the supply company nominated by the Principal. Install all switches and fuses that are necessary. From the meterboard run (route to approval) a neutral screened 16mm main plus controllers etc. to the switchboard.

13.5 Materials & Control

13.5.1 Materials

Material Quality

All materials delivered with packaging and labeling intact. All required incidentals (insulating tape, seals, fixings, etc.) shall be completely appropriate for the application involved. The use of items damaged in any way is subject to approval in each instance.

13.5.2 Switchboard

Single Switchboard

The switchboard shall be an appropriate size standard PDL DBF series board installed fully recessed where shown and at 2m to the top of the board. Install appropriate sized MCB's for all circuits, including a minimum of two power and one lighting RCDs as required to cover all outlets.

13.6 Elements

13.6.1 Appliances

Appliances - Option 2

All appliances are exactly identified on the drawings notes. Main Contractor will establish, in consultation with the Plumber and Electrician, which of them will be supplied by each of these trades.

The Electrician shall supply appliances that are his responsibility, install them exactly in accordance with their manufacturer's instructions, and protect them until completion.

13.6.2 Light Fittings

Light Fittings - Option 1

Generally light fittings are identified as to type on the drawing, and will be supplied by the Principal. Take delivery, install in accordance with any directions supplied and protect until Practical Completion.

All light fittings and fixtures are to be confirmed by the home owner

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BC180581
APPROVED CONSENT
PLANS/SPECIFICATIONS

13.6.3 Tele Communications

Workmanship

Workmanship shall be recognised best trade practice, and in accordance with the manufacturers' recommendations. All work shall be by competent and experienced operatives.

13.6.4 Other Wired Services

Other Wired Services

Co-operate with all other trades to ensure that the following services are installed complete and in accordance with their manufacturer's recommendations with all normal or necessary incidentals and with all wiring concealed.

The installation of the following are to be confirmed with the home owner:

-SKY TV.
-Garage door operating mechanisms.
-Gas hot water supply unit installed complete by the Plumber - supply electrical feed and connect.
-Wall mounted fan heaters.
-Front door bell - supply and install.
-Kitchen, laundry and wet areas air exhaust fans and ducting as noted - supply and install.
-Under-tile electric heating to the bathroom and shower room complete with thermostat control installed where shown. Supply and install (immediately prior to tiles installation) exactly to the suppliers recommendations.
-Heated towel rails to bathroom and shower room.
-Heat pump
-Supply a Heavy Duty TV Aerial (suitable for TV1, 2, and 3, Sky, and all local and community TV stations) and install on the roof ridges where directed, stayed against wind, and with all connections compatible with the roofing and waterproof. Feed to the outlets shown with the complete system exactly to aerial suppliers recommendations.
-Heating.

CN - 180581 - A2249582

View Instrument Details

Instrument No.	10714671.1
Status	Registered
Date & Time Lodged	03 Jul 2017 11:52
Lodged By	Hollman, Karyn Elizabeth
Instrument Type	Consent Notice under s221(4)(a) Resource Management Act 1991

Affected Computer Registers	Land District
768163	South Auckland

Annexure Schedule: Contains 2 Pages.

Signature

Signed by Karyn Elizabeth Hollman as Territorial Authority Representative on 03/07/2017 11:36 AM

***** End of Report *****

© Copyright: Land Information New Zealand

GREAT LAKE TAUPŌ
Taupō District Council

In the Matter of	the Resource Management Act 1991
And	
In the Matter of	Resource Consent **Jarden Corporation Ltd** **RM 160180 & 160181**

CONSENT NOTICE
Pursuant to Section 221 of the Resource Management Act 1991

To: The District Land Registrar
South Auckland Land Registration District

TAKE NOTICE that the land described below is subject to conditions in relation to a subdivision consent as follows:-

Lots 184 to 207 DP 509197 shall be subject to the following conditions:

a. Maximum Building Coverage - 40%

b. Maximum Total Coverage – 60%

c. Minimum Building Setback Front Boundary – 4m [except for the garage/carport component of the building for which the setback shall be 5m]

d. Maximum Earthworks - Disturbance of the allotment at any one time while redeveloping – 100%, subject to provision of an Earthworks Management Plan for approval to Taupō District Council's Manager Consents & Regulatory at the time of building consent application. The Earthworks Management Plan shall detail how all sediment, debris and dust is to be contained on-site to ensure that there is no nuisance beyond the site boundaries, and how these sediment and dust controls are to be maintained until the site is fully stabilised.

e. All future driveways that slope toward the road shall have a slot drain or stormwater catch-pit installed within the lot immediately adjacent to the road boundary and connected back into a soak hole within the lot boundary.

Lots 184 to 193 DP 509197 shall be subject to the following conditions:

f. These lots may be subject to the effects of rural activities occurring on land to the west which is zoned Rural Environment under the Operative Taupō District Plan [as at March 2016].

Exception: where deviation from any of these requirements (as set out in Conditions a – f above) is proposed and agreed to by way of Council review or land use consent, the landowner shall be deemed to have complied with / remain in compliance with this consent notice. Council agreement/consent shall be confirmed in writing and remain on file.

AND THAT you are hereby requested to register the same pursuant to section 221 of the Resource Management Act 1991.

DATED this 13 day of June 2017

SIGNED for and on behalf of
THE TAUPO DISTRICT COUNCIL
by way of delegated authority to the Consents and Regulatory Manager: Finance & Strategy pursuant to Section 34 of the Resource Management Act 1991.

Scott Devonport
Authorised Officer

CT - 180581 - A2249583

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Guaranteed Search Copy issued under Section 172A of the Land Transfer Act 1952

R.W. Muir
Registrar-General
of Land

Identifier	**787087**
Land Registration District	**South Auckland**
Date Issued	03 July 2017

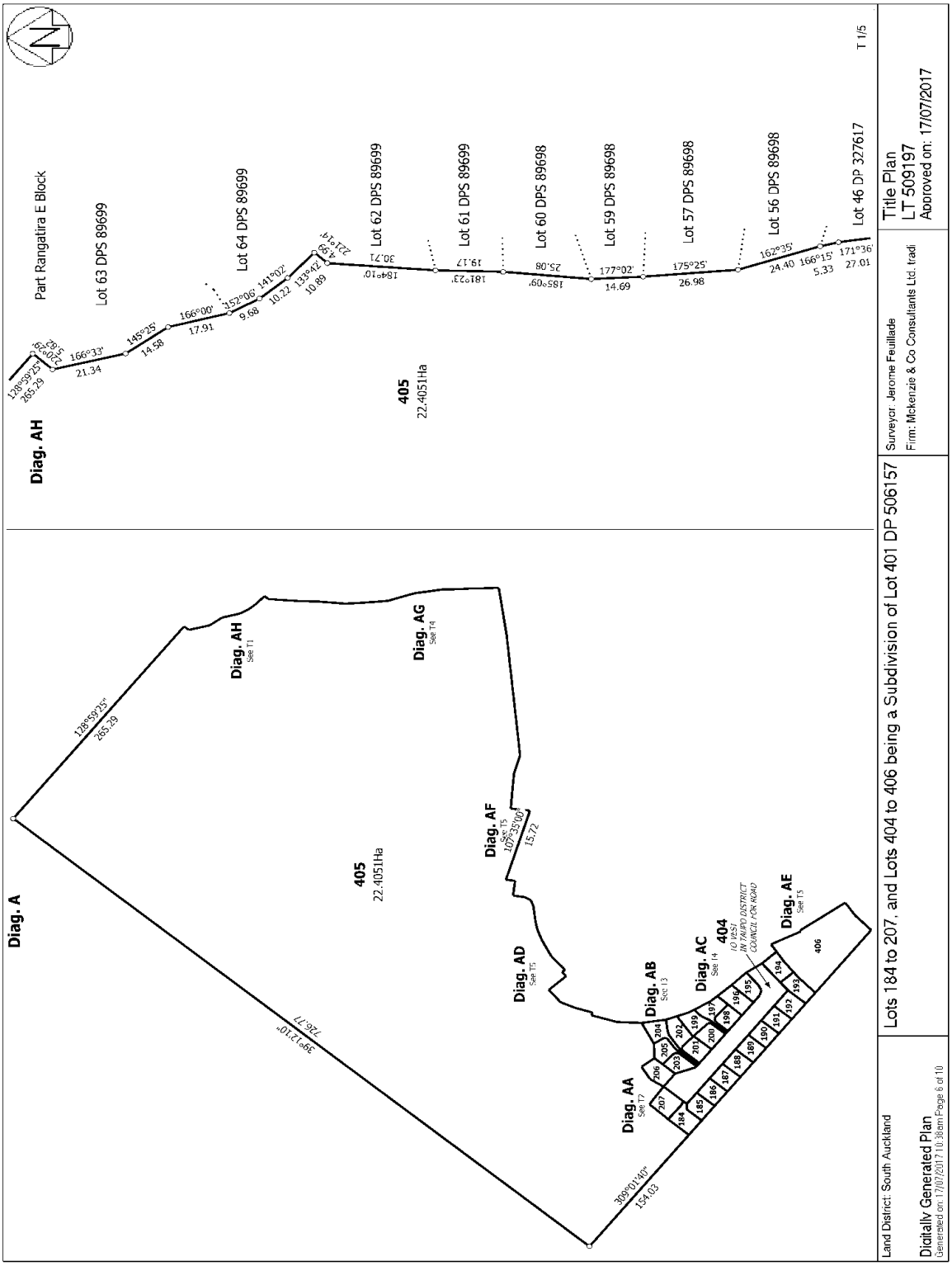
Prior References
768163

Estate	Fee Simple
Area	543 square metres more or less
Legal Description	Lot 196 Deposited Plan 509197

Proprietors
Jarden Corporation Limited

Interests
10714671.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 3.7.2017 at 11:52 am

Identifier **787087**



Project Information Memorandum - A2254158

GREAT LAKE TAUPŌ
Taupō District Council

PROJECT INFORMATION MEMORANDUM

Section 34, Building Act 2004

BC No: 180581

This Project Information Memorandum is not a building consent to build. It is confirmation that the proposed building work may be undertaken once any notices and/or certificates attached to this memorandum have been complied with and any additional authorisations you are required to obtain have been obtained. Commencement of the work is also subject to the provisions of the Building Act 2004 and requires a building consent. ***THIS IS NOT A BUILDING CONSENT.***

Owner Name: Penny Homes Limited
Owner Address: 1 Jarden Mile, Taupo 3330
Property Location: 6 Mayfly Grove, Taupo
Valuation Number: 0730164798
Legal Description: Lot 196 DP 509197
Description of Work: New 3 bedroom dwelling.

Planning Comment:

- Planning assessment has been undertaken and the proposal complies.

Engineering Comment:

Stormwater

- No piped council stormwater system is provided for this site and all runoff from roofs and paving must be disposed of onsite (i.e. to soakholes).
- If the driveway slopes toward the public road it shall have a slot drain or stormwater catch-pit installed within the lot adjacent to the public road boundary and connected back to a soakhole in the property.
- Silt-laden stormwater runoff from the construction site is not permitted as it damages stormwater systems and adjacent property. Erosion and silt control measures must be put in place and maintained until the site is stable and has been re-grassed.

Wastewater

- There is a connection provided to the Taupo District Council sewerage system for the disposal of all wastewater from the site. Refer to the Taupo District Council services plans.

Water

- There is a connection provided to the Taupo District Council water supply system. Refer to the Taupo District Council services plan. The water toby box lid shall be set at ground level after any site works.

- If the water to the toby is off, the ferrule on the Taupo District Council adjacent main must be turned on. This can be done by Taupo District Council by applying at Taupo District Council and paying the turn-on fee. Alternatively, your plumber may also do this.

Access

- A formed vehicle crossing is required - if not already existing. This must comply with Council`s Code of Practice for Development of Land. An application form for this must be completed at a Taupo District Council service centre.

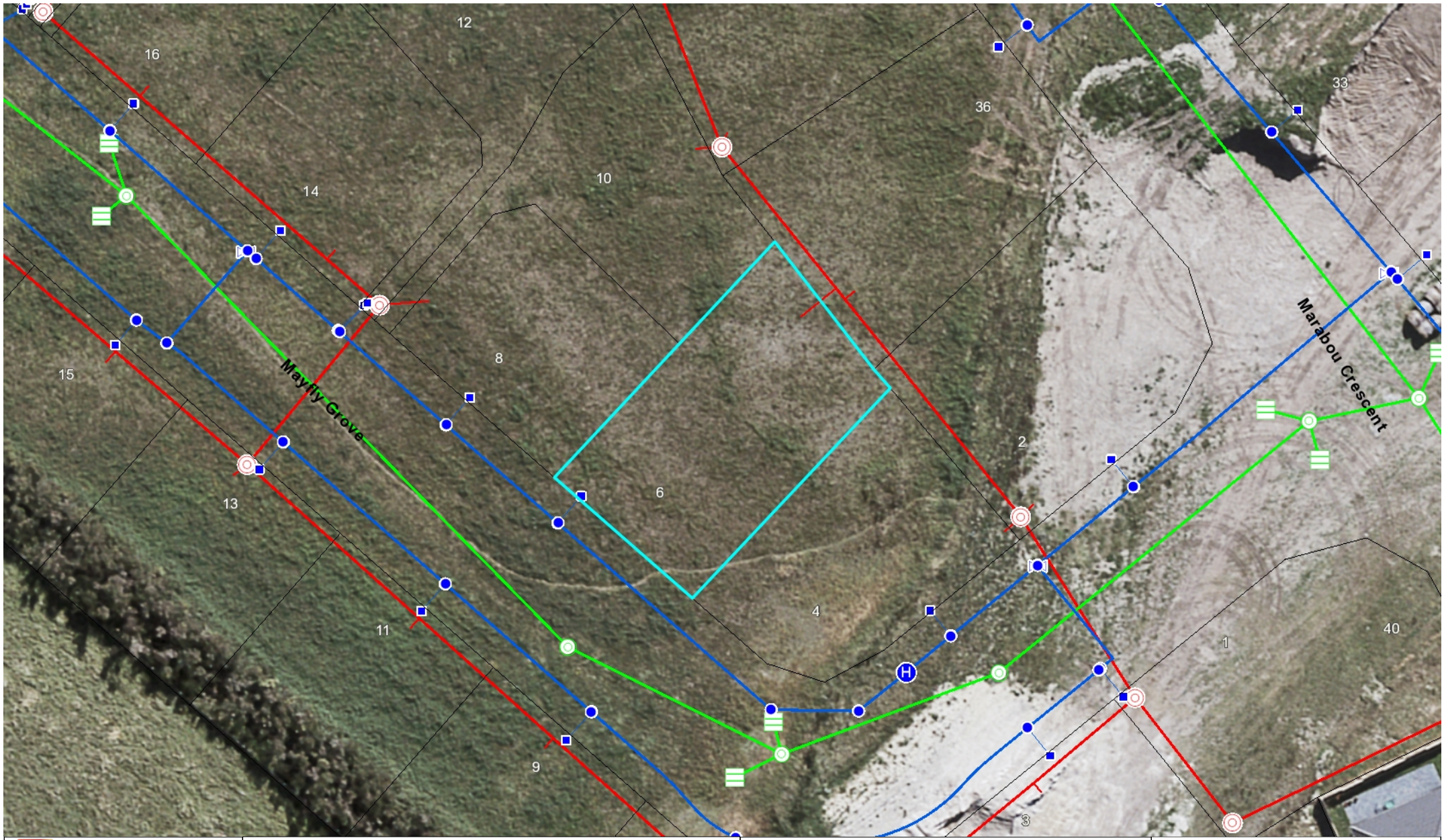
Attachments *(The following attachments are included with this Project Information Memorandum):*

- Services plan
- Certificate of Title
- Consent Notice

Signed for and on behalf of Taupo District Council



Krystal Foden
Business Support Officer
Date: 29/06/18



GREAT LAKE TAUPŌ
Taupō District Council

The information displayed has been taken from Taupo District Council's GIS databases and maps. It is made available in good faith, but its accuracy or completeness is not guaranteed. Position of property boundaries are INDICATIVE only and must not be used for legal purposes. Cadastral information sourced from Land Information New Zealand. Crown Copyright Reserved. This map is not to be reproduced without permission of TDC. © Copyright Reserved Taupo District Council.

LEGEND:

- Property Boundaries
- Proposed Subdivisions
- Lease Boundaries
- Taupo District Boundary
- TDC Reserves
- DOC Reserves
- Council Owned Land
- Council Easements

SERVICES

Sewer (wastewater)

- Manhole
- Node
- Pump Station
- Sewer pipe

Water

- Water point (valve, fire hydrant)
- Water pipe

Stormwater

- Manhole
- Inlet / cesspit
- Node
- Stormwater pipe

- Fibre Optic Cable (Council)
- Street Lights

MAP PRODUCED FROM GEOCORTEX

26.194 Meters

Scale = 1: 500 (A4)

Date Created: 29 June 2018 11:26 a.m.

Author:

N

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Guaranteed Search Copy issued under Section 172A of the Land Transfer Act 1952

R.W. Muir
Registrar-General
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Identifier	**787087**
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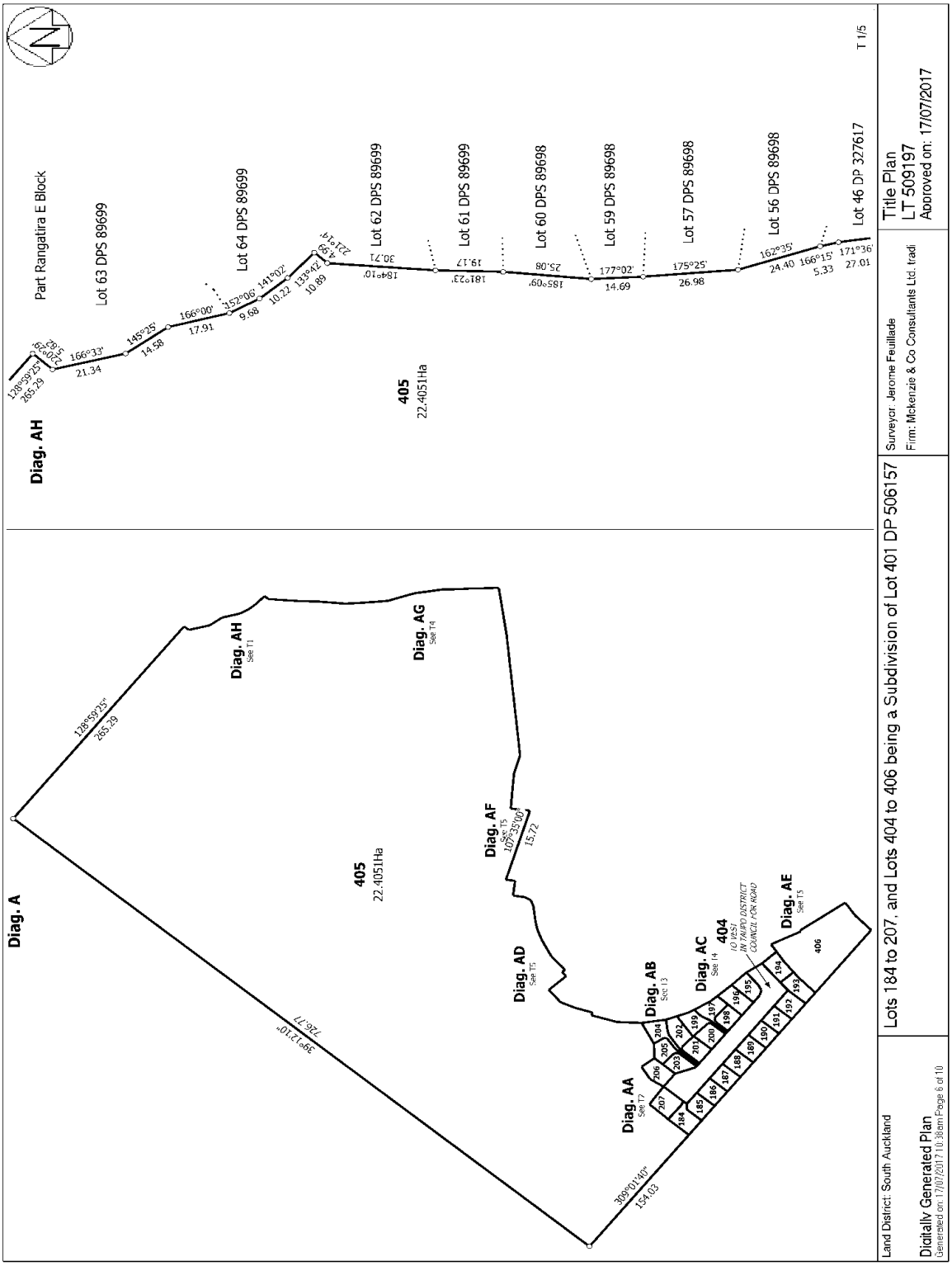
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Estate	Fee Simple
Area	543 square metres more or less
Legal Description	Lot 196 Deposited Plan 509197

Proprietors
Jarden Corporation Limited

Interests
10714671.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 3.7.2017 at 11:52 am

Identifier **787087**



GREAT LAKE TAUPŌ
Taupō District Council

In the Matter of	the Resource Management Act 1991
And	
In the Matter of	Resource Consent **Jarden Corporation Ltd** **RM 160180 & 160181**

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AND THAT you are hereby requested to register the same pursuant to section 221 of the Resource Management Act 1991.

DATED this 13 day of June 2017

SIGNED for and on behalf of
THE TAUPO DISTRICT COUNCIL
by way of delegated authority to the Consents and Regulatory Manager: Finance & Strategy pursuant to Section 34 of the Resource Management Act 1991.

Scott Devonport
Authorised Officer

2018-07-10 Request for information - A2262112

GREAT LAKE TAUPŌ
Taupō District Council
46 Horomatangi Street, Taupō 3330
Private Bag 2005, Taupo Mail Centre
Taupō 3352, New Zealand
T 07 376 0899
F 07 378 0118
E info@taupo.govt.nz
www.taupo.govt.nz

10 July 2018

Penny Homes Limited
1 Jarden Mile
Taupo 3330

BC No: 180581

Dear Sir/Madam

PROCESSING OF BUILDING CONSENT APPLICATION
PENNY HOMES LIMITED - 6 MAYFLY GROVE, TAUPO
NEW 3 BEDROOM DWELLING.

The Building Act 2004 requires a Building Consent Authority to be satisfied on reasonable grounds that the provisions of the Building Act and Regulations will be met if the building work were properly completed in accordance with the plans and specifications that accompany the building consent application.

As a code compliance certificate will be issued against the approved plans and specifications it is imperative that the plans and specifications clearly reflect compliance with the building code.

Having assessed your plans and specifications, we require the following additional information to ensure compliance is properly demonstrated and enables the building consent to be issued:

BUILDING PROCESSING

1. **Please clarify the location of the ORG shown on sheet 1. Its show in the middle of the SS drain . Should you have a blockage below this , you may find SS overflow in the fitting below this ORG . Please advise as I believe there this should be at the lowest part of the SS drain? (AS3500)**

2. **Please show where the ceiling access is to be placed and supply a size for same ? (B1)**

3. **Please show diagrammatically and with references how top plate of braced wall fixings to external walls is achieved in accordance with NZS3604:2011 Cl 8.7.3. Please note that inclusion of tables from the standard or other documents is not sufficient on it's own. You must identify what fixing goes where.**

   Following are some online resources for your references:

   https://www.buildmagazine.org.nz/articles/show/connecting-top-plates

   https://www.buildmagazine.org.nz/assets/PDF/Build-162-39-Design-Right-Isolated-Brace-Elements.pdf

   http://www.miteknz.co.nz/Artefacts/Charts-And-Literature/Charts-And-Alternative-Solutions/Top-Plate-Jointing/

http://www.miteknz.co.nz/Artefacts/LUMBERLOK-Timber-Connectors/Wall-Frame-Fixings/PLATE-LOK/

http://www.pryda.co.nz/wp-content/uploads/2016/05/Pryda-Builders-Guide-Web.pdf

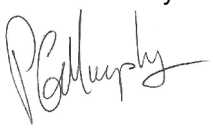
Page41

We appreciate that requests for those items may be frustrating but unless compliance can be clearly demonstrated a building consent cannot be granted. We have suspended processing this building consent until the above information is provided. Please be assured of our earliest attention to completion of processing and issue of building consent on receipt of this information.

Please note that if the requested information is not received within 20 working days of the date of this letter then the application may be refused pursuant to Section 48 (1)(b) of the Building Act 2004.

For further enquiries please contact me on 073760667

Yours sincerely



Peter Murphy
Building Control Officer

RFI reply-designer - A2265165

To: Peter Murphy[pmurphy@taupo.govt.nz]
Cc: 'Willie Robinson'[willie@pennyhomes.co.nz]
From: Joanna
Sent: Wed 11/07/2018 11:48:12 p.m
Importance: Normal
Subject: FW: 180581_Request_For_Information_New House at 6 Mayfly grove , taupo
MAIL_RECEIVED: Wed 11/07/2018 11:48:33 p.m
180581_Request_For_Information_20180710.pdf
JT STAGE 19 --- Lot 196 - BC REV A.pdf

.....
;;;;;;;;;;
Hi Peter,

I have detailed a response below to you.

1. I have re-located ORG, please see sheet 1.
2. I have detailed a size & location, please see sheet 3.
3. I have had a go at detailing this with a key for 3kN & 6kN connectors. Please see sheet 7.

Kind regards,

Joanna

From: sam@jtdesign.co.nz
Sent: Tuesday, 10 July 2018 1:50 PM
To: 'Joanna'
Subject: FW: 180581_Request_For_Information_New House at 6 Mayfly grove , taupo

This might be your one!

Regards,

Sam Stratford

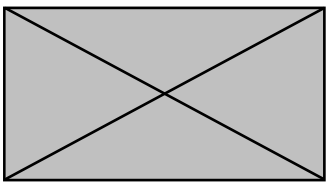
JTDESIGN ARCHITECTURE

From: Willie Robinson <willie@pennyhomes.co.nz>
Sent: Tuesday, 10 July 2018 1:07 PM
To: sam@jtdesign.co.nz
Subject: FW: 180581_Request_For_Information_New House at 6 Mayfly grove , taupo

FYI

WILLIE ROBINSON **sales consultant**

07 377 0154 | 027 533 4252 | willie@pennyhomes.co.nz



33 Marabou Crescent, Taupo, 3330 www.pennyhomes.co.nz

From: Peter Murphy [mailto:pmurphy@taupo.govt.nz]
Sent: Tuesday, 10 July 2018 12:59 p.m.
To: Willie Robinson <willie@pennyhomes.co.nz>
Subject: 180581_Request_For_Information_New House at 6 Mayfly grove , taupo

Hi Willie. I have a couple of questions for the above BC . Please consider and come back when ready . Thanks, Peter Murphy, BMO@ Taupo District Council.

WARNING
This message may contain privileged and confidential information intended only for the use of the addressee named above. If you have received this message in error, please notify the Taupo District Council immediately. Phone +64 7 376 0899.
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This e-mail has been scanned and cleared by MailMarshal http://www.marshalsoftware.com

GREAT LAKE TAUPŌ
Taupō District Council
46 Horomatangi Street, Taupō 3330
Private Bag 2005, Taupo Mail Centre
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10 July 2018

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http://www.miteknz.co.nz/Artefacts/LUMBERLOK-Timber-Connectors/Wall-Frame-Fixings/PLATE-LOK/

http://www.pryda.co.nz/wp-content/uploads/2016/05/Pryda-Builders-Guide-Web.pdf

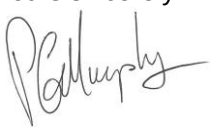
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For further enquiries please contact me on 073760667

Yours sincerely



Peter Murphy
Building Control Officer

TOWN PLANNING INFORMATION:

Site Area:	542 m²		
Floor Area over Frame:	183.52 m²		
Floor Area over Foundation:	190.54 m²		
Driveway as Coverage:	43.24 m²		
Building Coverage:	192.32/542	=35.48%	(<30%)
Total Coverage:	192.32+41.61		
	233.93/542	=43.16%	(<50%)
Plot Ratio:	233.93/542	=43.16%	(<40%)
Max Cut: 0.2m			
Max Fill: 0.5m			
Max Earthworks Disturbance:	267.93 m²	= 49.43%	(<50%)

LOT: 196
DP: 509197
AREA: 542m²

RL 408.00

RL 408.00

EXISTING 0.5m TIMBER RETAINING WALL

EXISTING 0.9m TIMBER RETAINING WALL

RL 407.00

WATER CONNECTION

Building restriction line

MAYFLY GROVE

PLATFORM RL 407.50

PAVING 14.36m²

80ø DP (54)

RL 407.60

ROCK FILLED SOAKPIT
3m x 3m x 2m DEEP
(198m²)

ROCK FILLED SOAKPIT
2m x 2m x 1.5m DEEP
(68m²)

PAVING 11.88m²
RL 407.60

SEWER CONNECTION

IP

100ø uPVC SS DRAIN @1:60 GRADIENT

80ø DP (50)

NEW RESIDENCE
FFL 407.70

RL 407.60

ENTRY

50ø VENT

80ø DP (59)

100ø uPVC SW DRAIN @1:120 GRADIENT

CATCH PIT (32)

65ø

100ø

65ø

TRAFFICABLE GRATE + CHANNEL

50ø VENT

65ø

100ø

65ø

100ø

65ø

IP

CONCRETE 43.24m²

80ø DP (36)

80ø DP (35)

65ø

65ø

ORG

1505

PAVING 3.79m²

IP IP IP

100ø uPVC SS DRAIN @1:60 GRADIENT

IP IP

RL 407.00

EXISTING 0.9m TIMBER RETAINING WALL

5075

ACCESS TO MARABOU CRESCENT

ENERGY EFFICIENCY OF HOT WATER SYSTEM:

INSTALLATION OF HOT WATER SYSTEMS AND PIPES TO COMPLY WITH **NZS4305:1996** WITH REGARD TO PIPE SIZES AND PIPE INSULATION REQUIREMENTS.
WATER PIPE FROM WATER HEATER TO KITCHEN SINK TO BE INSULATED ALONG ENTIRE LENGTH. PROVIDE SUITABLE PROTECTION TO PIPES IN EXPOSED LOCATIONS, BURIED UNDERGROUND OR EMBEDDED WITHIN CONCRETE.

ACCESS ROUTE REQUIREMENTS:

ACCESS ROUTE TO MAIN ENTRANCE, REFER TO NZBC D1 2.0 & TABLE 2 FOR ACCEPTABLE SURFACE MATERIALS AND FINISHES.

SITE PLAN AND DRAINAGE NOTES:

ALL PLUMBING AND DRAINAGE TO BE INSTALLED AND TESTED BY A REGISTERED TRADESPERSON IN ACCORDANCE WITH **AS/NZS3500.2** AND **NZBC E1/AS1** WHERE APPLICABLE. WATER SUPPLY TO **NZBC G12/AS1**.

AS/NZS 3500.2
MINIMUM TRAP & DISCHARGE PIPE SIZE ABOVE SLAB

FIXTURE	FU's	PIPE Ø
Basin	1	40Ø
Shower	2	40Ø
Bath	4	40Ø
Kitchen Sink	3	65Ø
Laundry Tub	5	65Ø
WC Pan	4	100Ø

DRAIN SIZES AS SHOWN ON DRAWING

EROSION & SEDIMENT CONTROL PLAN:

PROVIDE SILT FENCING AND OTHER METHODS OF SEDIMENT CONTROL LIKE MULCHING STRAW AS DETERMINED NECESSARY & APPLICABLE ON SITE.

USE EROSION CONTROL TECHNIQUES TO PREVENT SEDIMENT GENERATION SUCH AS:
- RE-VEGETATION
- MINIMIZATION OF EARTHWORKS
- TIMING
- STAGING OF EARTHWORKS OPERATIONS

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TITLE: **NEW RESIDENCE**
LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **SITE & DRAINAGE PLAN**
CONSENT COPY
REV A

SCALE: 1:100
DRAWN: JO
DATE: AUG 2017

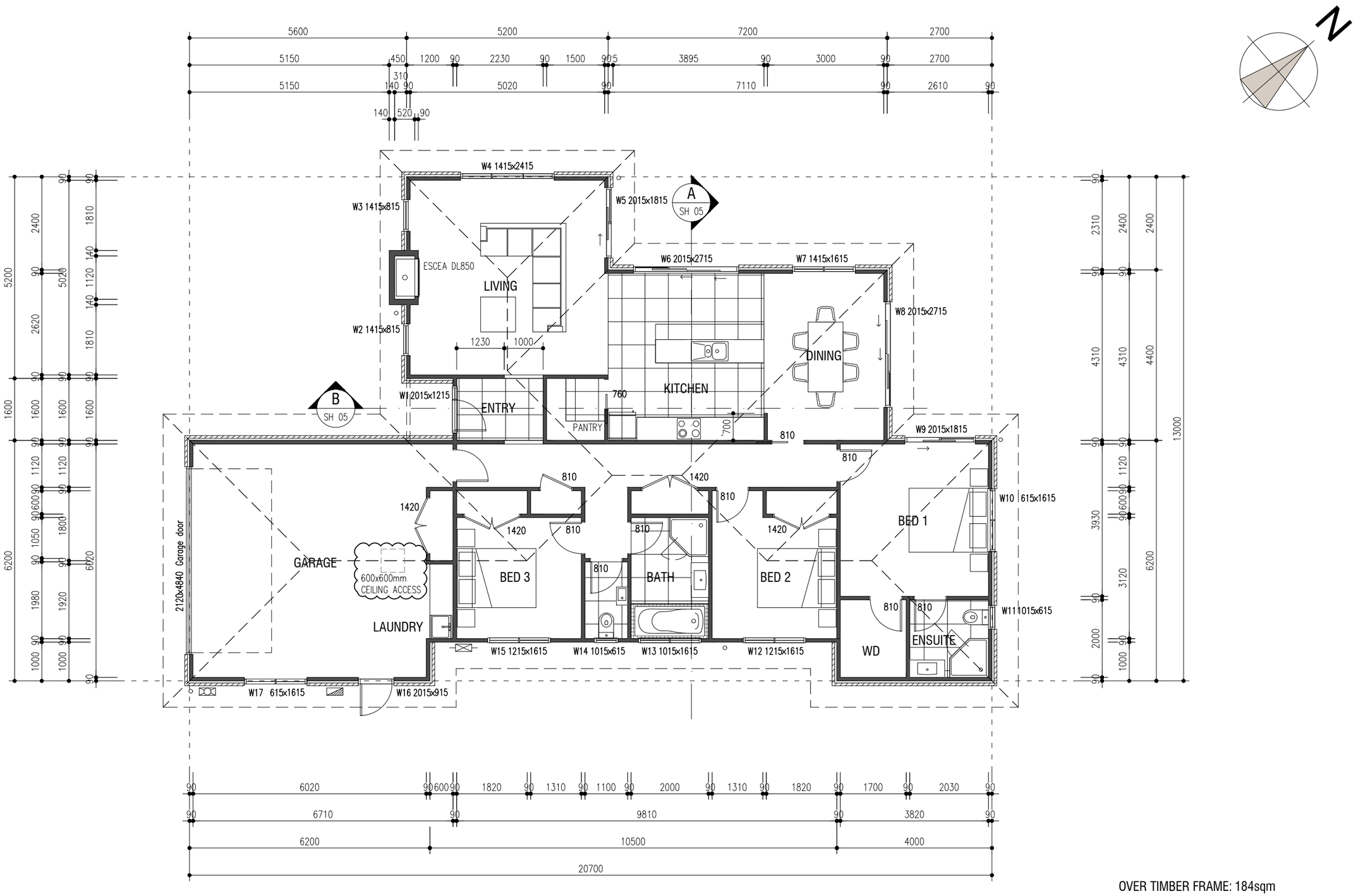
NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE: 10.07.18

REVISION:
A –SH1 RELOCATE ORG.
–SH3,6–8 DETAIL CEILING ACCESS.
–SH4 DETAIL REFERENCE.
–SH7 AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET 1
OF: 18
JOB No. -



OVER TIMBER FRAME: 184sqm
OVER FOUNDATION: 190sqm

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **FLOOR PLAN**

CONSENT COPY
REV A

SCALE: 1:100

DRAWN: JO

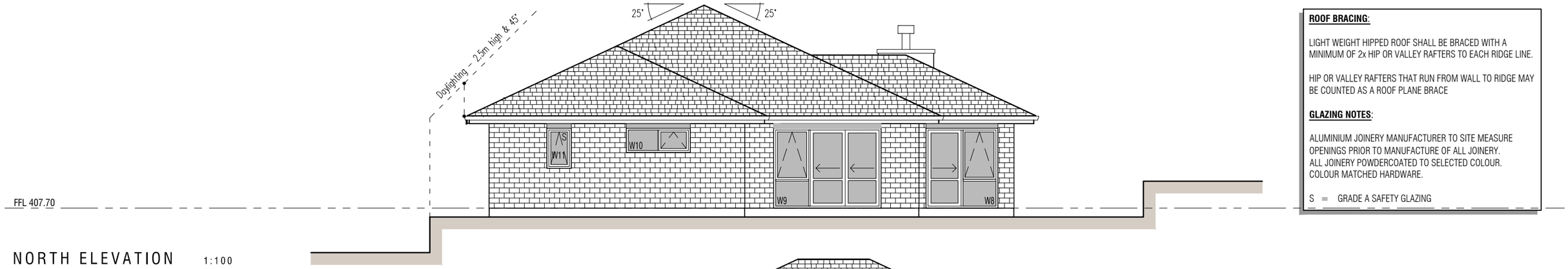
DATE: AUG 2017

NOTES:
Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE:		REVISION:	
10.07.18	A	-SH1	RELOCATE ORG.
		-SH3,6-8	DETAIL CEILING ACCESS.
		-SH4	DETAIL REFERENCE.
		-SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET **3**
OF: 18
JOB No. -



NORTH ELEVATION 1:100

ROOF BRACING:

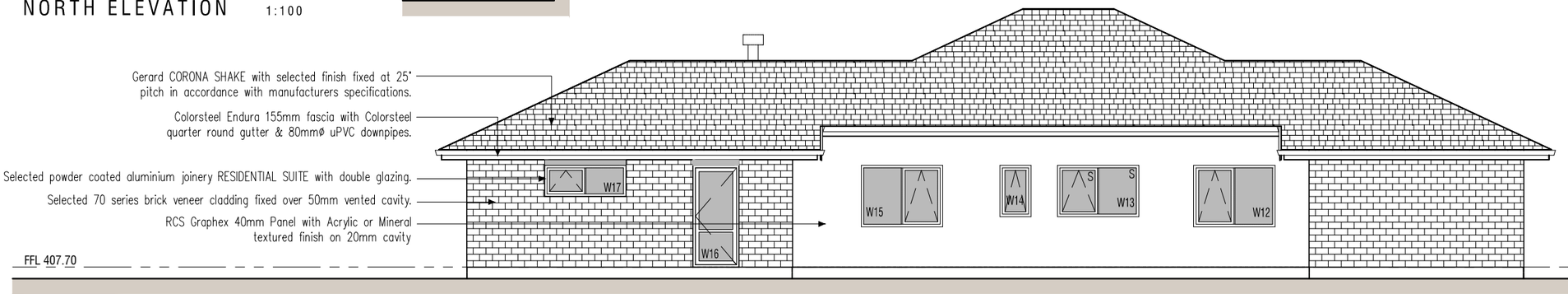
LIGHT WEIGHT HIPPED ROOF SHALL BE BRACED WITH A MINIMUM OF 2x HIP OR VALLEY RAFTERS TO EACH RIDGE LINE.

HIP OR VALLEY RAFTERS THAT RUN FROM WALL TO RIDGE MAY BE COUNTED AS A ROOF PLANE BRACE

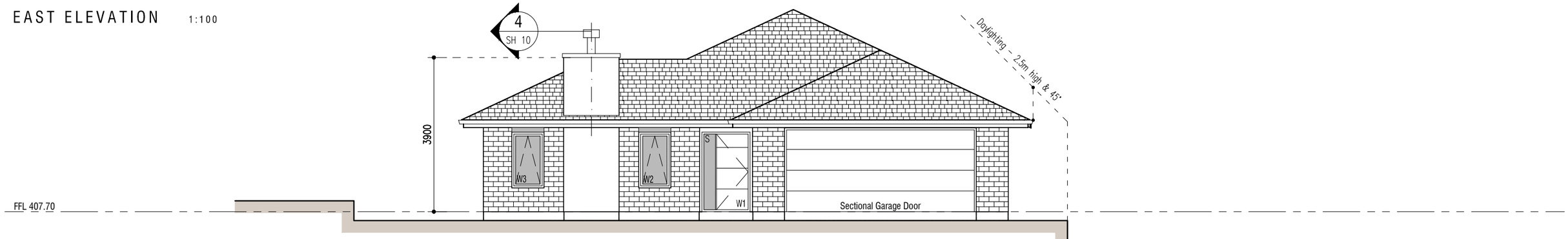
GLAZING NOTES:

ALUMINIUM JOINERY MANUFACTURER TO SITE MEASURE OPENINGS PRIOR TO MANUFACTURE OF ALL JOINERY.
ALL JOINERY POWDERCOATED TO SELECTED COLOUR.
COLOUR MATCHED HARDWARE.

S = GRADE A SAFETY GLAZING



EAST ELEVATION 1:100



SOUTH ELEVATION 1:100



WEST ELEVATION 1:100

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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **ELEVATIONS**

CONSENT COPY
REV A

SCALE: 1:100

DRAWN: JO

DATE: AUG 2017

NOTES:
Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

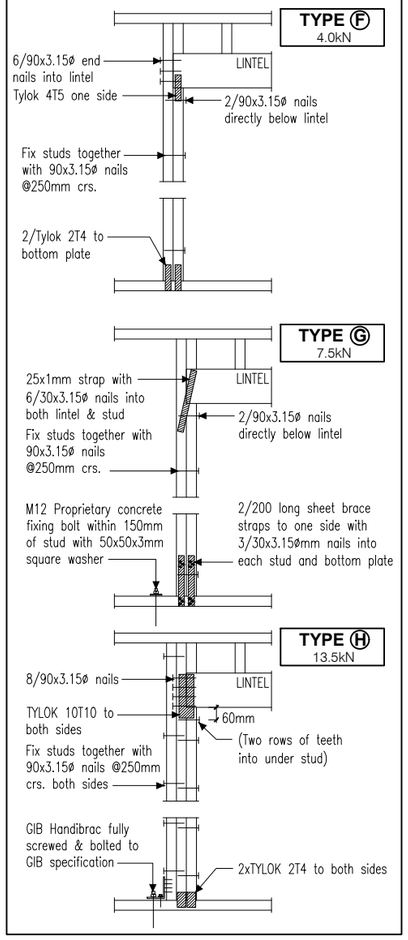
All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

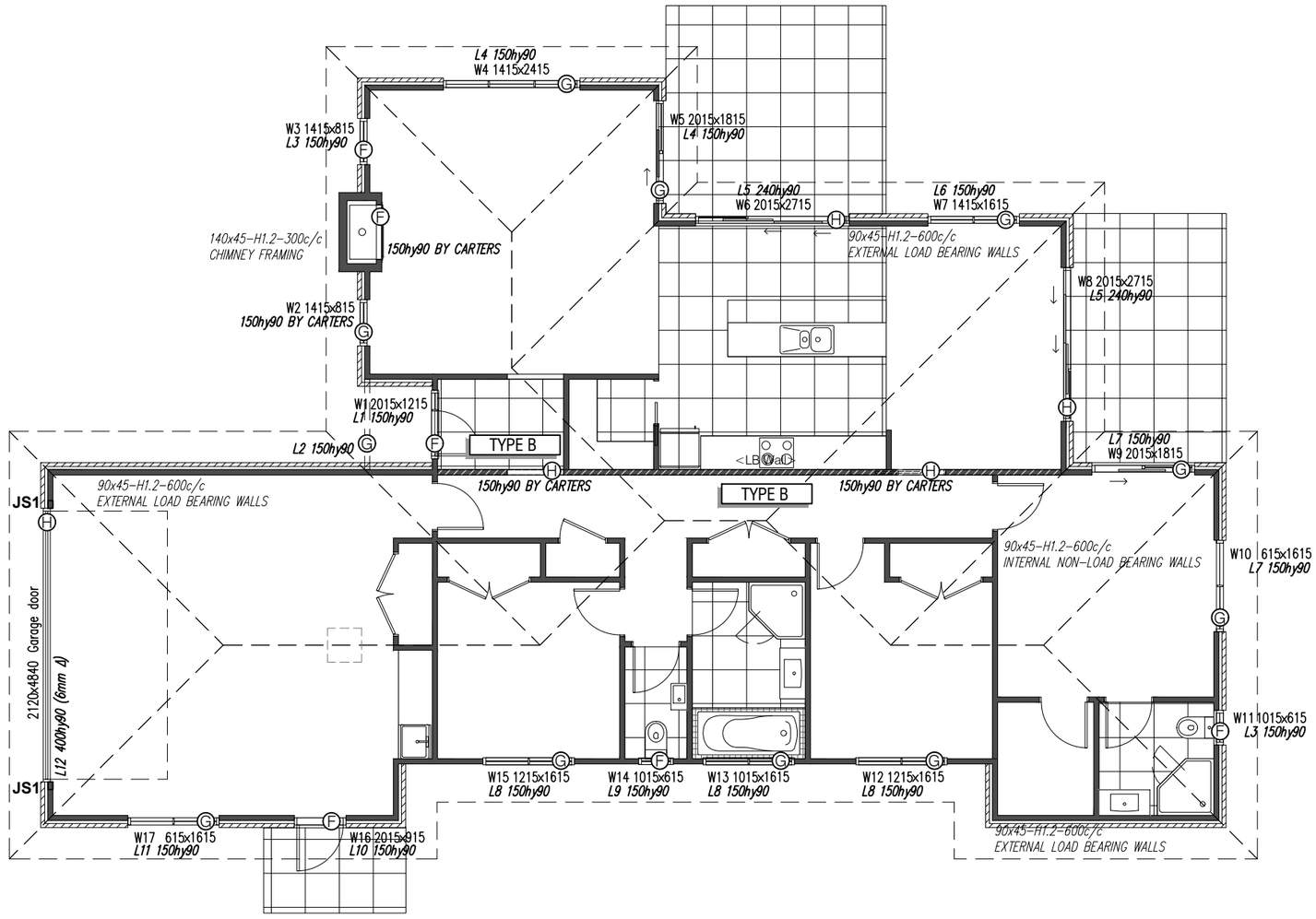
DATE:		REVISION:	
10.07.18	A	-SH1	RELOCATE ORG.
		-SH3,6-8	DETAIL CEILING ACCESS.
		-SH4	DETAIL REFERENCE.
		-SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET 4
OF: 18
JOB No. -

LINTEL FIXING TYPES

IMPORTANT NOTE: trimming stud numbers shown are indicative only

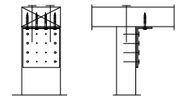




LOADBEARING WALLS - STUD TOP PLATE FIXING

TYPE B (internal wall)
4.7kN

2/90x3.15 dia. plain steel wire nails driven vertically into stud.



plus
LUMBERLOK 6kN Stud Anchor
(CPC80 Purlin Cleat)

STUD TO TOP PLATE FIXING

ALTERNATIVE TO NZS3604:2011 TABLE 8.18
(Refer to James Hardies Rigid Air Barriers Installation manual)

4.7kN fixing = Fix HomeRAB using 40 x 2.8mm Hardiflex nails at 75mm crs. maximum to top plate with a minimum edge distance of 20mm.

TYPE B = TYPE B fixing @ 600c/c max

NOTE: Δ = DEFLECTION OF BEAM
LB Wall = INTERNAL LOAD BEARING WALL

BATTEN FIXING REQUIREMENTS:

NZS 3604:2011 Table 10.12 for tile batten fixing requirements.

50x40mm H1.2 battens - Achieve fixing *Type S (0.8kN)*
2/90 x 3.15 gun nail

TRIMMING STUDS TO OPENINGS:

NZS 3604:2011 Fig. 8.5 and Table 8.5 to determine the number of trimming studs required for window and door openings.

TRIMMING STUDS: OUTSIDE SCOPE OF NZS 3604:2011

As per DesignIT calculations and where indicated on plan:

JS1 3/90x45 HyCHORD trimming studs

BOTTOM PLATE FIXINGS TO CONCRETE:

BOTTOM PLATE TO STUD CONNECTION TO COMPLY WITH NZS 3604:2011 table 8.19 AND AS REQUIRED FOR LINTEL FIXINGS.

PROPRIETARY ANCHORS SHALL HAVE A MINIMUM CAPACITY WHEN TESTED IN ACCORDANCE WITH NZS3604 7.5.12.3

EXTERNAL WALLS AND INTERNAL LOAD BEARING WALLS: M12 ANCHOR BOLTS @ 0.9m CTRS SET NOT LESS THAN 90mm INTO CONCRETE.

INTERNAL WALLS: M12 ANCHOR BOLTS @ 0.9m CTRS SET NOT LESS THAN 90mm INTO CONCRETE OR 8x75mm DRIVE PIN & WASHER @ 0.6m CTRS.

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TITLE: **NEW RESIDENCE**
LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **STUD SIZES, LINTELS & FIXINGS**
CONSENT COPY
REV A

SCALE: 1:100
DRAWN: JO
DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE:	REVISION:		
10.07.18	A	–SH1	RELOCATE ORG.
		–SH3,6–8	DETAIL CEILING ACCESS.
		–SH4	DETAIL REFERENCE.
		–SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

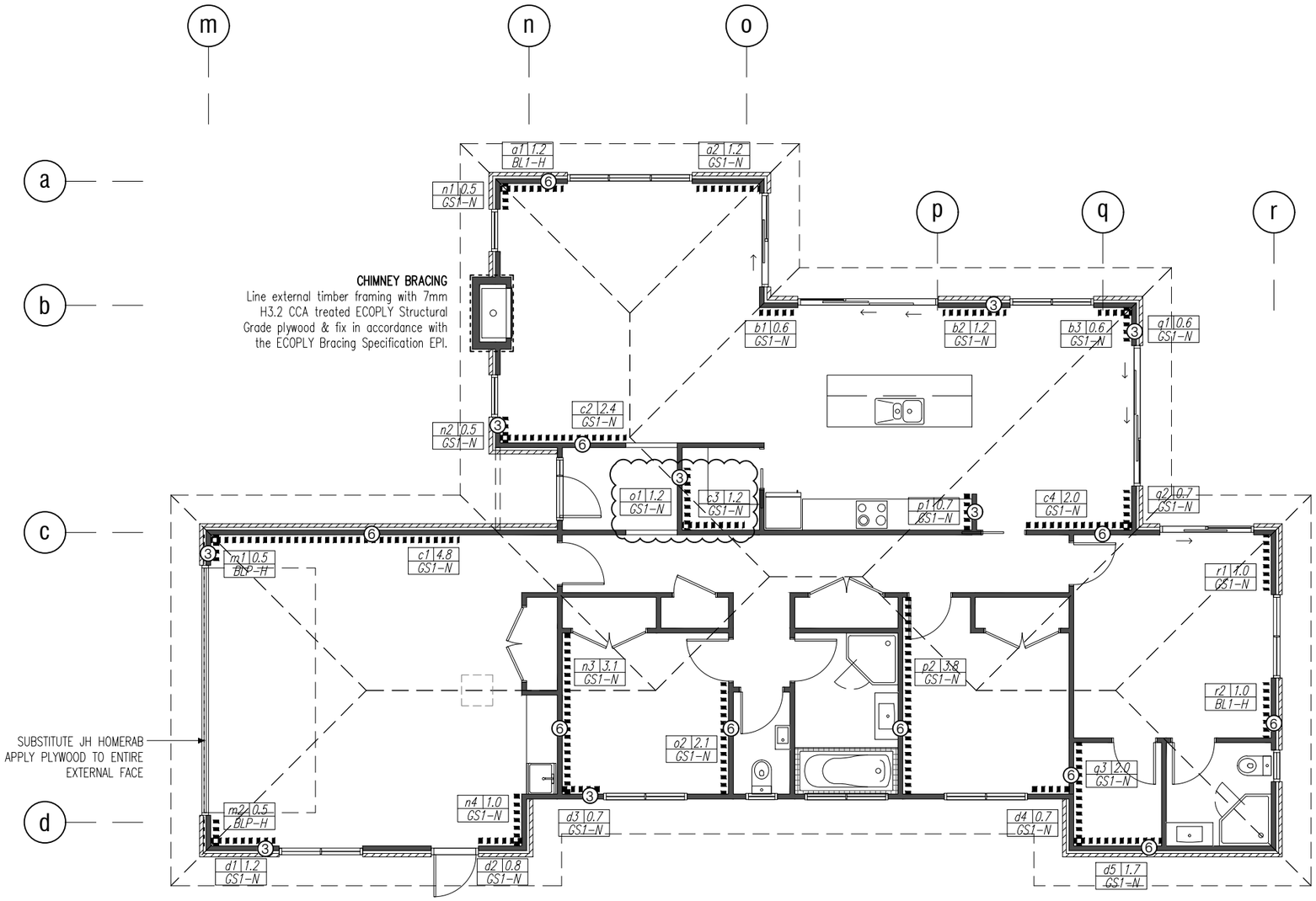
SHEET 6
OF: 18
JOB No. -

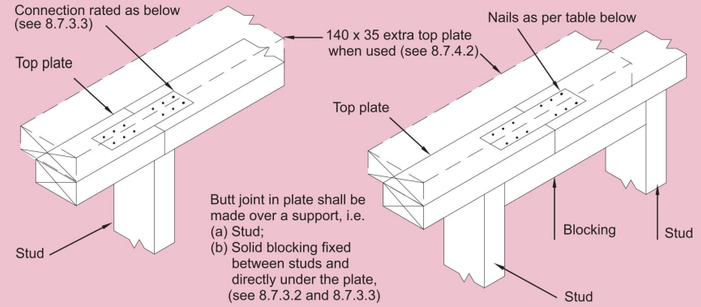
TOP PLATE CONNECTORS WITH BRACE ELEMENTS:
NZS 3604:2011 Clause 8.7.3.3
NZS 3604:2011 Figure 8.15 & 8.16 can be used where the top plate of the wall that contains one or more wall bracing elements shall be jointed according to the bracing capacity.

CAPACITY REQUIREMENT KEY:

③ 3kN Connection as per Figure 8.15
OR other approved solution equivalent with capacity.
Where bracing capacity does not exceed 100B/U's.

⑥ 6kN Connection as per Figure 8.16
OR other approved solution equivalent with capacity
ie; LUMBERLOK PLATE-LOK fixed in accordance
to product specifications.
Where bracing capacity exceeds 100B/U's.





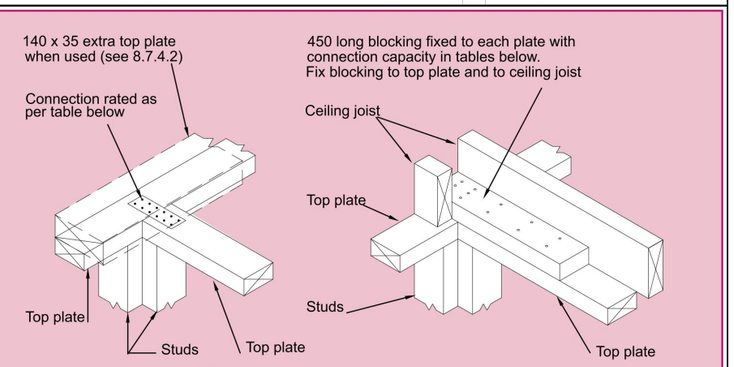
Capacities of metal plate joints(2)	
Up to 3 kN	3 / 30 x 3.15 mm nails per side
Up to 6 kN	6 / 30 x 3.15 mm nails per side

Capacities of nailed joints(2)	
Up to 3 kN	3 / 100 x 3.75 mm nails per side
Up to 6 kN	6 / 100 x 3.75 mm nails per side

NOTE –
(1) See section 4 for durability requirements.
(2) Not required when extra top plate is used.

Unless otherwise stated, all dimensions are in mm.

Figure 8.15 – Connecting top plates in line – Walls containing bracing (see 8.7.3.3)



Capacities of metal plate joints	
Up to 3 kN	3 / 30 x 3.15 mm nails per side
Up to 6 kN	6 / 30 x 3.15 mm nails per side

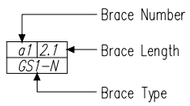
Capacities of nailed joints	
Up to 3 kN	3 / 100 x 3.75 mm nails per side
Up to 6 kN	6 / 100 x 3.75 mm nails per side

NOTE – See section 4 for durability requirements.

Unless otherwise stated, all dimensions are in mm.

Figure 8.16 – Connecting top plates to external walls at right angles – Walls containing bracing (see 8.7.3.4)

Bracing Symbol



OVER TIMBER FRAME: 184sqm
OVER FOUNDATION: 190sqm

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TITLE: **NEW RESIDENCE**
LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **BRACING PLAN**
CONSENT COPY
REV A

SCALE: 1:100
DRAWN: JO
DATE: AUG 2017

NOTES: Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work E&OE

DATE:	REVISION:		
10.07.18	A	-SH1	RELOCATE ORG.
		-SH3,6-8	DETAIL CEILING ACCESS.
		-SH4	DETAIL REFERENCE.
		-SH7	AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET 7
OF: 18
JOB No. -

PROPOSED R-VALUES - SCHEDULE METHOD				
LOCATION	**COMPONENT**	**SCHEDULE METHOD MINIMUM**	**R-VALUE ACHIEVED**	**INSULATION DESCRIPTION & REFERENCE**
WALLS	90x45 @600crs. Brick veneer over cavity	2	2.24	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	90x45 @600crs. RCS 40mm Graphex over cavity	2	3.05	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	140x45 @300crs.RCS 40mm Graphex over cavity	2	3.47	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
	90x45 @600crs.Gib lining both sides	2	2.18	Pink Batts R2.6 wall insulation ***Refer to Design Navigator Calculations in Appendix***
ROOFS	Timber trusses @900crs.	3.3	3.37	Pink Batts R3.6 ceiling insulation ***Refer to Design Navigator Calculations in Appendix***
FLOOR	Ribraft slab on ground	1.3	1.30	No insulation ***Refer to Branz House Insulation Guide Fifth Edition***
GLAZING	Aluminium joinery with double glazed windows	0.26	0.26	Standard aluminimum joinery with double glazed windows ***Refer to Branz House Insulation Guide Fifth Edition***

NOTE:

CHECK KITCHEN APPLIANCE POSITIONS AND TYPES BEFORE INSTALLATION WITH FINALIZED KITCHEN PLAN.

CHECK POSITIONS AND TYPES OF ALL FITTINGS PRIOR TO INSTALLATION.

ALLOW PC SUMS FOR SPECIALIST FITTINGS WHERE APPLICABLE.

ALL RECESSED DOWNLIGHTS TO BE CA RATED. TYPES: ICF, IC, CA80, CA135.

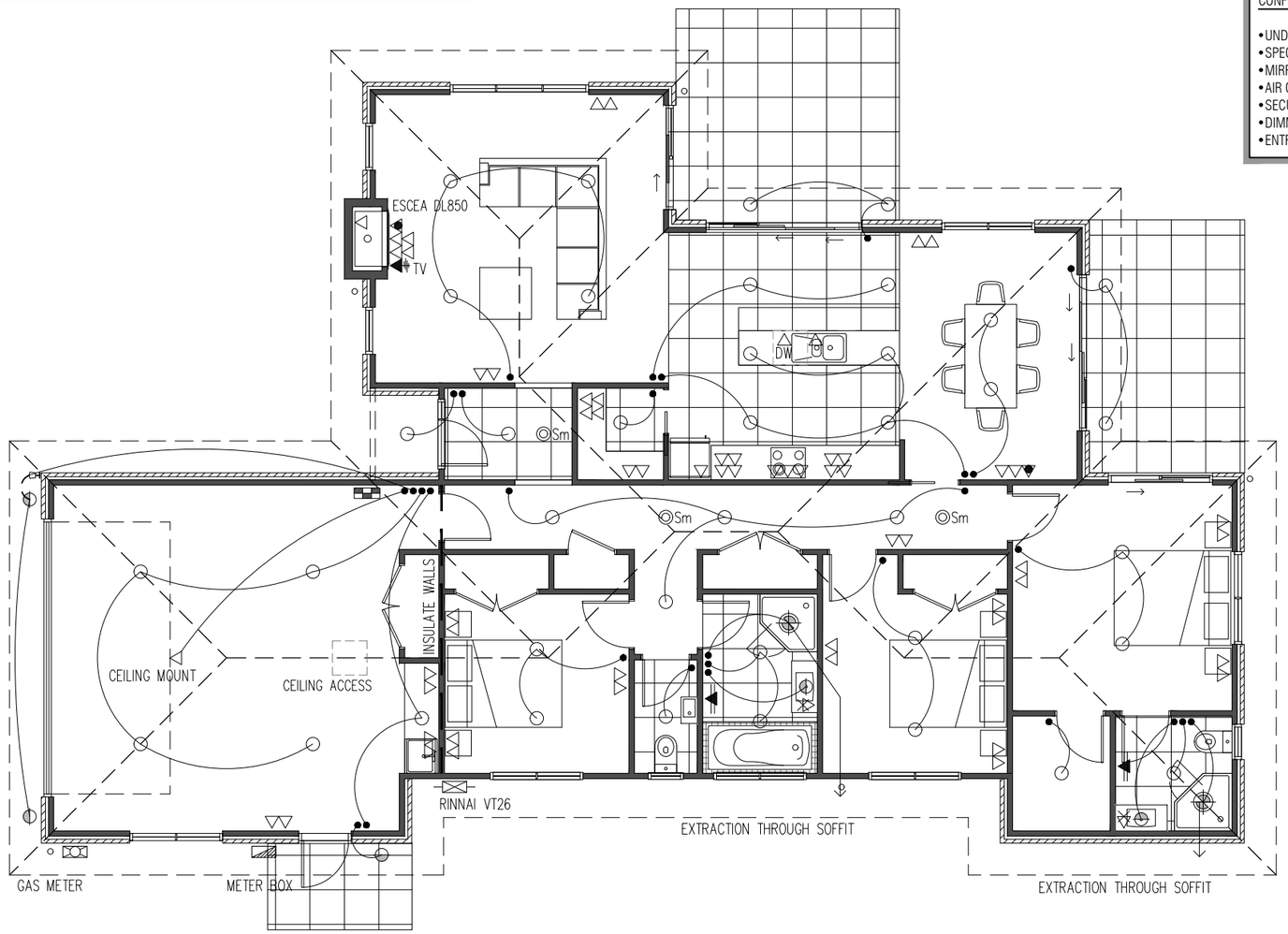
SMOKE ALARMS TO BE TYPE 1 WITH HUSH AND TEST FACILITY IN ACCORDANCE WITH NZBC F7/AS1.

CONFIRM IF THE FOLLOWING ARE REQUIRED:

- UNDER TILE HEATING
- SPECIALIST FITTINGS
- MIRROR DEMISTERS
- AIR CONDITIONING SYSTEM IF APPLICABLE
- SECURITY SYSTEM
- DIMMERS TO SELECTED LIGHTS
- ENTRY CONTROL SYSTEM

LEGEND:

- Distribution Board
- Meter Box
- Gas Meter Box
- Rinnai VT26 HWH
- Light Sensor
- Recessed LED
- Wall Mounted Light
- Manrose Extraction Fan
- Sm Smoke Detector
- Power Outlet
- Double Power Outlet
- Earth Leakage point
- Heated Towel Rail
- Phone Outlet
- Light Switch
- TV Outlet



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TITLE: **NEW RESIDENCE**

LOT 196
MAYFLY GROVE, NUKUHAU

DRAWING: **ELECTRICAL PLAN**

CONSENT COPY
REV A

SCALE: 1:100

DRAWN: JO

DATE: AUG 2017

NOTES:
Wind Zone = HIGH
Eq Zone = 2
Exposure Zone = B

All dimensions to be checked and verified by the Contractor before commencement of any work **E&OE**

DATE:		REVISION:
10.07.18	A	-SH1 RELOCATE ORG. -SH3,6-8 DETAIL CEILING ACCESS. -SH4 DETAIL REFERENCE. -SH7 AMEND BRACING ELEMENTS. ADD TOP PLATE CONNECTORS.

SHEET **8**
OF: **18**
JOB No. -

2018-07-13 Processing checksheet - A2265192

GoGet Processing Summary Report

Consent No: 180581
Site Address: 6 Mayfly Grove, Taupo
Description: New 3 bedroom dwelling.

Checklist/Elements	Status	Notes	Processed By
PIM/CIM Planning - Sec 37 BAct	Pass		Karen Murray
Activity Type: Residential 4a, Rural 4b, Town Centre 4g,Turangi & Mangakino Town Centre 4c, Taupo and Centennial Industrial 4d, Spa Road Mixed Use 4i, Industrial 4d	Pass		KMU
Performance Standards	Pass		KMU
General Rules	Pass		KMU
Parking Loading and Access	Pass		KMU
District Wide	Pass		KMU
Other	Pass	CT - Consent Notice	KMU
DC's	Pass	DC not required	KMU
Resource Consent required?	N/A	Click 'N' if NO RC required	KMU
Business Support PIM/CIM issue	Pass		Krystal Foden
PIM/CIM read to be issued	Pass		KF
Complete and ready for issue	Pass		KF
Residential Building	Pass		Peter Murphy
PIM	Pass		PMUR
Resource Consents / RMA	N/A	complies for RMA	PMUR
Engineering comments	Pass	Standard engineering comments	PMUR
Territorial authority	Pass		PMUR
A1 - Classified Use identified	P	Detached dwellings SH , res 1	PMUR
Is the property undergoing subdivision (Section 116a)	N/A	none	PMUR
General	Pass		PMUR
LBP(s) confirmed	Pass	Design LBP provided , JT design	PMUR
Classified use of building	Pass	SH , Res1 house	PMUR
Has there been any building work already undertaken which may require a COA	P	- There appears to be no work on this property (with or without a consent(which will require a COA	PMUR
Warnings / Bans	Pass	none	PMUR
Stability: B1, B2 Structure and Durability	Pass		PMUR
Site Requirements	Pass	site shown as benched . Existing retaining walls already in place	PMUR
Foundations	Pass	- Footing / foundation dimensions, rib raft floor system - Durability systems noted - Footing dimensions for loaded dimensions	PMUR
Floors - Concrete	Pass	- Slab system detailed: Means of compliance noted.Firths rib raft floor - Slab Thickening/pads (Check truss manufacturer's design and set out detail for special requirements.) - Concrete strength specified: 20 mpa (Note: Where other than 17.5MpA concrete is specified, tag consent for delivery docket) - Shrinkage / Control joints detailed on plans - Reinforcing: size, type, placement on plans - Durability systems noted	PMUR
External and internal walls	Pass	Please show where the ceiling access is to be placed and supply a size for same ? (B1)	PMUR

Please show diagrammatically and with references how top plate of braced wall fixings to external walls is achieved in accordance with NZS3604:2011 Cl 8.7.3. Please note that inclusion of tables from the standard or other documents is not sufficient on it's own. You must identify what fixing goes where. Following are some online resources for your references:
https://www.buildmagazine.org.nz/articles/show/co top-plates
https://www.buildmagazine.org.nz/assets/PDF/Build-162-39-Design-Right-Isolated-Brace-Elements.pdf

http://www.miteknz.co.nz/Artefacts/Charts-And-Literature/Charts-And-Alternative-Solutions/Top-Plate-Jointing/
http://www.miteknz.co.nz/Artefacts/LUMBERLOK-Timber-Connectors/Wall-Frame-Fixings/PLATE-LOK/

http://www.pryda.co.nz/wp-content/uploads/2016/05/Pryda-Builders-Guide-Web.pdf
Page41- Wall framing - studs/dwangs/sizes/centres for height/load/wind zone
- Bracing systems detailed / calculations supplied
- Lintel sizes & specifications (Where proprietary lintels are specified, manufacturer's detail/specification tables copied & included on file. Durability of structural elements assessed.)
- Fixings suitable for application
- Timber grade & treatment schedule provided (for all timber)
- Wall and roof claddings, fixings and structural elements

Request for Further Information:

Request: Please show where the ceiling access is to be placed and supply a size for same ? (B1) PMUR

Response: Now provided , plans updated . PMUR

Request for Further Information:

Request: Please show diagrammatically and with references how top plate of braced wall fixings to external walls is achieved in accordance with NZS3604:2011 Cl 8.7.3. Please note that inclusion of tables from the standard or other documents is not sufficient on it's own. You must identify what fixing goes where. Following are some online resources for your references:
https://www.buildmagazine.org.nz/articles/show/connecting-top-plates
https://www.buildmagazine.org.nz/assets/PDF/Build-162-39-Design-Right-Isolated-Brace-Elements.pdf

http://www.miteknz.co.nz/Artefacts/Charts-And-Literature/Charts-And-Alternative-Solutions/Top-Plate-Jointing/
http://www.miteknz.co.nz/Artefacts/LUMBERLOK-Timber-Connectors/Wall-Frame-Fixings/PLATE-LOK/

http://www.pryda.co.nz/wp-content/uploads/2016/05/Pryda-Builders-Guide-Web.pdf
Page41 PMUR

Response: Now shown and advised on plan set . PMUR

Roof structure Pass
- Engineer PS1 supplied Mitek truss design
- Engineer detail shown on plans
- Construction systems detailed
- Roof framing (Rafter / purlins size, spacing & span) truss manufacturer's design certificate, layout & fixings
- Roof bracing detailed
- Durability of structural elements assessed.
- Fixings suitable for application

PMUR

Checklist/Elements	Status	Notes	Processed By
		- Timber grade & treatment schedule provided (for all timber)	
Fire Safety: C1-C6, F6, F7, F8	Pass		PMUR
C/AS1 Compliant	Pass	- Risk group SH - Length of escape routes	PMUR
F7: Requirements	Pass	- Smoke detection requirements	PMUR
Outbreak of fire	Pass	- Gas specification - appliance & flue clearances - venting	PMUR
Access: D1, D2, F8, F4	Pass		PMUR
Access routes identified: D1	Pass	- External and internal routes	PMUR
Moisture: E1, E2, E3	Pass		PMUR
Tanking	Pass	- under-floor waterproofing, protection, drainage, damp proof membrane	PMUR
Wall Claddings	Pass	- E2 risk matrix assessment supplied and checked - Floor heights shown on plans - Building paper/wrap specified - walls & roof - Cavity system details batten size, treatment, cavity drain/closure, int/ext corners brick veneer and graphex cladding - Flashing and junction details supplied as per Brick details and resene manual - Approved cladding systems detailed, correct installation - System tested or historical use - Risk factors vs cladding system, detailing adequate, junctions and connections, special installation requirements - walls, intersections, etc. - Maintenance requirements detailed and reasonable - Windows & doors, meter boxes, gas boxes, penetrations, fixing points (Head, jamb & sill flashing details)	PMUR
Roof Claddings	Pass	- Approved system for location and slope, penetrations detailed. - Internal and External gutters construction and overflow detail supplied. Sized to E1 req. - Flashing systems detailed, (stop end)	PMUR
Internal moisture	Pass	- Waterproofing detail showers, floors, wet areas - PS3 requirements: Advisory note added. - Service rooms sealed - Ventilation requirements met.	PMUR
Safety of Users: F1, F2, F3, F5	Pass		PMUR
F2: Hazardous building materials identified	Pass	- Shown to comply Performance requirements of F2 - Safety glazing, balustrades etc.	PMUR
Facilities Supplied: G1, G2, G3, G15	Pass		PMUR
Toilet, Bathroom, Laundry, Kitchen numbers and locations	Pass		PMUR
Interior Environment and Ventilation: G4, G5, G6, G7, G8	Pass		PMUR
G4: Ventilation	Pass	- G4/AS1 Natural or Mechanical	PMUR
G7 and G8 Natural and artificial lighting	Pass	- Check limits on application in the functional and performance requirements of the NZBC. - Light & visual awareness - External awareness for habitable spaces. Exceeds the 10 % requirement floor / wall area .	PMUR
Energy Works: G9, G10, G11	Pass		PMUR
Electrical plan or specifications supplied show compliance with G9 requirements	Pass	- Conditions noted for energy certificate (electricity)	PMUR
Plans or specifications supplied show	Pass	- Conditions noted for energy certificate (gas)	PMUR

Checklist/Elements	Status	Notes	Processed By
compliance with G10 and G11 requirements			
Plumbing and Drainage: G12, G13, G14, E1	Pass		PMUR
Plumbing System	Pass	- Means of compliance: G12 or AS/NZS 3500 or Alt solution - Water supply to building - Materials specified - Water heating system detailed gas infinity - Tempering to personal hygiene fixtures	PMUR
Drainage Systems	Pass	Please clarify the location of the ORG shown on sheet 1. Its show in the middle of the SS drain . Should you have a blockage below this , you may find SS overflow in the fitting below this ORG . Please advise as I believe there this should be at the lowest part of the SS drain? (AS3500) - Means of disposal identified (off site) and detailed - Means of compliance: AS/NZS 3500 - Sewer layout - Plan / schematic layout provided, pipe sizes, gradients, venting	PMUR
Request for Further Information:			
Request: Please clarify the location of the ORG shown on sheet 1. Its show in the middle of the SS drain . Should you have a blockage below this , you may find SS overflow in the fitting below this ORG . Please advise as I believe there this should be at the lowest part of the SS drain? (AS3500)			PMUR
Response: ORG now revised , nearer the bottom of the drain			PMUR
Surface water	Pass	- Means of disposal identified (onsite) and detailed - Calculations for gutter and downpipe sizing, taking 198m2 , 3x3x2 soak pit shown	PMUR
Energy Efficiency: H1	Pass		PMUR
Means of compliance used	Pass	- H1/VM1- NZS 4214, modelling methods - Correct zone used	PMUR
Complete insulation systems noted	Pass	- Floor R1.3 - Wall R2.6 - Ceiling R 3.6 - Glazing R.26	PMUR
Producer Statements 1	Pass		PMUR
Authors Name	In Ling N	In Ling Ng	PMUR
Is the author approved?	Pass	Cpeng 146585 , Mitek truss designer	PMUR
What method of compliance has been used?	Pass	Acceptable Solution	PMUR
Specific reference to the New Zealand Building Code	Pass	B1 B2	PMUR
Author signed and dated the Producer Statement?	27/2/18	27/2/18	PMUR
Supporting Information	Pass	Standards referenced Calculations Drawings	PMUR
Specific conditions of acceptance	Pass	Inspection and construction requirements have been added to GoGet and all conditions have been added to NCS	PMUR
Compliance with the NZBC has been demonstrated?	Pass		PMUR
Pre-Issue Admin Check			Peter Murphy
General	Pass		PMUR
Check PIM/CIM	Pass	Check PIM/CIM. Sort drawings & specifications into office copy and applicant/site copy. Check for completeness	PMUR
Advice notes / Conditions of consent	Pass	Advice notes / Conditions of consent recorded	PMUR

Checklist/Elements	Status	Notes	Processed By
recorded		within application form	
Stamp Plans & Specifications	Pass	Stamp Plans & Specifications with consent number & office copy/site copy identification stamps	PMUR
Stamp siting form	Pass	Stamp siting form for applicant with consent number and include in consent envelope	PMUR
Stamp drainage as built	Pass	Stamp 'drainage as built' with consent number and include in consent envelope	PMUR
Update LBP	Pass	Update the LBP text fields within GoGet with Designers LBP info and other LBP's which will be requried.	PMUR
RFI and Processing checksheets added to GOGET	Pass	initiate RFI checksheet and processing checksheet reports within GOGET and save to file.	PMUR
Signed off RFI's and completed checksheets	Pass		PMUR

I am satisfied on reasonable grounds that the provisions of the Building Code will be met if the building work in relation to the attached application is properly completed in accordance with the attached plans and specifications.

Signed: _____ Date: 13 July 2018 8:00 am

Peter Murphy

2018-07-13 Required items for building consent - A2265194

GREAT LAKE TAUPŌ
Taupō District Council

REQUIRED ITEMS FOR BUILDING CONSENT
BC 180581

Inspections Required

The following inspections are required:

1	Siting & Foundation	(pile holes, footings, reinforcing steel, ground bearing, earth fill etc)
1	Prefloor Plumbing and Drainage	(under slab/floor drains and plumbing)
1	Prefloor Building	(polythene, mesh, reinforcement, bracing connections etc)
1	Sanitary Sewer/Drainage	(sewer connection, storm-water, materials, septic tank, falls etc)
1	Framing Inspection	(wall and roof framing, connections and fittings, timber sizes & treatments, bracing and fixings)
1	Rigid Air Barrier fixings inspection	
1	Pre-Ext Cladding Systems-Building	(cavities, head, jamb, sill flashings & wraps penetrations, cavities fixings etc prior to installation of exterior cladding. Brick veneer at ½ height)
1	Half High Brick	(brick veneer at ½ height)
1	Preline Plumbing	(internal plumbing and fittings, pressure test)
1	Preline Building	(exterior claddings & joinery, insulation, bracing, timber moisture content, fire protection glazing, building systems etc)
1	Post Lining	(wall bracing, fixings, fire protection, etc)
1	Code Compliance - Building (Single Dwelling Only)	(Surface finishes, access & egress, fire safety features, weathertightness, as per approved plans etc)
12	Total Inspections	

Documentation Required

The following documentation is required:

CCC application form
Drainage as-built
Stormwater as- built
PS3 for stormwater drainage (soakhole/ soakpit) including photos
Electrical Certificate
Gas Certificate
Correct siting form
Pre-floor plumbing as built
PS3 General — External coating PS3
PS3 Fireplace
Roof Cladding Memorandum (E2)
Water Proofing Certificate - External (E2) Membrane butynol
Water Proofing Certificate - Internal (E3) Tilers membrane — bathroom

The above list is an indication only of the inspections that may need to be carried out to ensure the work complies with the building consent. Additional inspections may be required to satisfy the requirements of Section 90 of the Building Act 2004. Persons carrying out building work are to ensure that adequate inspections are carried out to enable the Building Consent Authority to be satisfied the work complies with the consent as required by Section 94(1)(a) of the Building Act 2004.

Please ensure that all relevant components are inspected and 'signed off' by Taupō District Council building control staff before progressing to the next stage and all conditions/notes are complied with.

Inspection Bookings:
*For **Taupō & Mangakino** phone (07) 376 0899*
*For **Turangi** phone (07) 386 7017*

Licensed Building Practitioner Forms Required

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

Design 1	W Thomson
Carpentry 1	
Bricklaying and Blocklaying 1	
External Plastering 2	Resene Graphex cladding system
Roofing 1	

Advice Notes

#When all building work authorised by this building consent is complete, electronic application should be made to Taupo District Council for a CODE COMPLIANCE CERTIFICATE and submit the documentation requested as part of this consent. This application and documentation must be submitted and approved prior to booking the final inspection. If no application has been made, Taupo District Council must decide whether to issue the CCC after 2 years of the building consent being granted. An application form for this purpose is enclosed.

LBP Building Work
Section 87 Building Act 2004
If not stated on the application form the owner must notify the Council in writing of the names and LBP numbers of ALL licensed building practitioners engaged in this project before building work commences
LBP related building inspections will not take place until Council has been notified of all the LBP's engaged in the project.

#Drainage/as built plans including stormwater drains and soakholes, are to be provided, drawn to scale, and all parts clearly identified at the time of inspection. Failure to do this may result in the inspection not being carried out. A recheck will then be required, which will incur further charges.
All AS/NZS3500:2:2: underslab plumbing to be inspected and tested with as-built supplied before pipe work is covered up

PLEASE NOTE: All external cladding's and internal linings that contribute to B1 - Structure, C3 & C6 - Protection from Fire, E2- External Moisture, E3 - Internal Moisture, & G6 - Acoustic and Impact Sound requirements of the Building Code must be installed in strict accordance with the manufacturers specifications and details except where details have been proposed and approved as alternative solutions as part of this consent.

#Prior to a Code of Compliance Inspection being undertaken, an Energy Works certificate shall be provided to the Taupo District Council to demonstrate compliance with Clause G9 and/or G10 and G11 of the NZBC.

#As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for
RCS graphex panel coatings exterior cladding system
- Copy of the applicators approval certificate
- A producers statement from the Applicator
- Copy of Manufacturers' warranty

#As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for
ASA waterproofing membrane for bathroom
- Copy of the applicators approval certificate
- A producers statement from the Applicator
- Copy of Manufacturers' warranty

#As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for
Ardex Butyol roofing membrane exterior gutters
- Copy of the applicators approval certificate
- A producers statement from the Applicator

- Copy of Manufacturers' warranty

The above list is an indication only of the inspections that may need to be carried out to ensure the work complies with the building consent. Additional inspections may be required to satisfy the requirements of Section 90 of the Building Act 2004. Persons carrying out building work are to ensure that adequate inspections are carried out to enable the Building Consent Authority to be satisfied the work complies with the consent as required by Section 94(1)(a) of the Building Act 2004.

Please ensure that all relevant components are inspected and 'signed off' by Taupō District Council building control staff before progressing to the next stage and all conditions/notes are complied with.

Inspection Bookings:
*For **Taupō & Mangakino** phone (07) 376 0899*
*For **Turangi** phone (07) 386 7017*

*BC180581 items to send to applicant - A2265428

To: Tech Support[businesssupport@taupo.govt.nz]
From: Peter Murphy
Sent: Thur 12/07/2018 8:07:08 p.m
Importance: Normal
Subject: BC 180581 is ready to issue thanks, M
MAIL_RECEIVED: Thur 12/07/2018 8:07:09 p.m
ObjRef.obr

Peter Murphy has sent you links to the following 5 documents from Objective:
"As laid drainage plan" (A2261928)
"Building plans" (A2249575)
"Site specific specis" (A2249573)
"Siting Confirmation plan" (A2261929)
"Specifications" (A2249578)

Open in Navigator
Double click on the attachment

Open in NEW ECM Browser
As laid drainage plan
https://objective.taupodc.govt.nz:8443/objective/#item=A2261928
Building plans
https://objective.taupodc.govt.nz:8443/objective/#item=A2249575
Site specific specis
https://objective.taupodc.govt.nz:8443/objective/#item=A2249573
Siting Confirmation plan
https://objective.taupodc.govt.nz:8443/objective/#item=A2261929
Specifications
https://objective.taupodc.govt.nz:8443/objective/#item=A2249578

Open in Your Browser
As laid drainage plan
Latest: https://objective.taupodc.govt.nz/id:A2261928/document/versions/latest
Published: https://objective.taupodc.govt.nz/id:A2261928/document/versions/published
Building plans
Latest: https://objective.taupodc.govt.nz/id:A2249575/document/versions/latest
Published: https://objective.taupodc.govt.nz/id:A2249575/document/versions/published
Site specific specis
Latest: https://objective.taupodc.govt.nz/id:A2249573/document/versions/latest
Published: https://objective.taupodc.govt.nz/id:A2249573/document/versions/published
Siting Confirmation plan
Latest: https://objective.taupodc.govt.nz/id:A2261929/document/versions/latest
Published: https://objective.taupodc.govt.nz/id:A2261929/document/versions/published
Specifications
Latest: https://objective.taupodc.govt.nz/id:A2249578/document/versions/latest
Published: https://objective.taupodc.govt.nz/id:A2249578/document/versions/published

A2261928
A2249575
A2249573
A2261929
A2249578

Works Order Application - A2265480

GREAT LAKE TAUPŌ
Taupō District Council

WORKS ORDER APPLICATION FOR:
WATER CONNECTION

Date: 13/07/2018

Works Order No: _____ **Code No:** _____

BC No: 180581

Owner Name: Penny Homes Limited **Phone No:** _____

Owner's Address: 1 Jarden Mile, Taupo 3330, ,

Property Address: 6 Mayfly Grove, Taupo

Legal Description: Lot 196 DP 509197

Fee Paid: $140.00 **Receipt No:** _____

Dimensions: Toby turn on

Assigned Department: Mel Montesa **Target Date:** ASAP

Assigned By: Business Support

SKETCH WHERE REQUIRED *(Attach Sheets For Sketch If Required)*

RETURN CHIT (FILL IN WHEN WORK COMPLETE)

Works Order No: _____

Date Work Started: _____ **Date Completed:** _____

Action Taken: _____

Is additional work or further action needed? Yes ☐ No ☐

Describe additional work or action: _____

Signature: _____ **Date:** _____

Building Consent - A2270000

GREAT LAKE TAUPŌ
Taupō District Council

Building Consent

Section 51, Building Act 2004

BC No: 180581

The Building

Street address of building: 6 Mayfly Grove, Taupo

Legal description of land where building is located: Lot 196 DP 509197

Valuation number: 0730164798

Building name: Not applicable

Location of building within site/block number: Not applicable

Level/unit number: Not applicable

The Owner

Name of owner: Penny Homes Limited

Contact person: Unknown

Mailing address: 1 Jarden Mile, Taupo 3330

Street address/registered office: Unknown

Phone number: **Landline**: Unknown **Mobile**: 027 5334252 **Daytime**: Unknown **After hours**: Unknown

Facsimile number: Unknown

Email address: willie@pennyhomes.co.nz

Website: Unknown

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

As above

Building Work

The following building work is authorised by this building consent:

New 3 bedroom dwelling.

This building consent:

- Is issued under section 51 of the Building Act 2004.
- 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).
- Also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.

This building consent is issued subject to the following conditions and advice notes:

1. **Condition: It is a condition of this consent that agents authorized by the building consent authority for the purposes of section 90 of the Building Act 2004 are entitled, at all times during normal working hours or while building work is being done, to inspect -**
   (a) land on which building work is being or is proposed to be carried out; and
   (b) building work that has been or is being carried out on or off the building site; and
   (c) any building.
2. **LBP Building Work Section 87 Building Act 2004 If not stated on the application form the owner must notify the Council in writing of the names and LBP numbers of ALL licensed building practitioners engaged in this project before building work commences LBP related building inspections will not take place until Council has been notified of all the LBP"s engaged in the project.**

3. **Drainage/as built plans including stormwater drains and soakholes, are to be provided, drawn to scale, and all parts clearly identified at the time of inspection. Failure to do this may result in the inspection not being carried out. A recheck will then be required, which will incur further charges. All AS/NZS3500:2:2: underslab plumbing to be inspected and tested with as-built supplied before pipe work is covered up**
4. **PLEASE NOTE: All external claddings and internal linings that contribute to B1 - Structure, C3 & C6 - Protection from Fire, E2- External Moisture, E3 - Internal Moisture, & G6 - Acoustic and Impact Sound requirements of the Building Code must be installed in strict accordance with the manufacturers specifications and details except where details have been proposed and approved as alternative solutions as part of this consent.**
5. **Prior to a Code of Compliance Inspection being undertaken, an Energy Works certificate shall be provided to the Taupo District Council to demonstrate compliance with Clause G9 and/or G10 and G11 of the NZBC.**
6. **As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for RCS graphex panel coatings exterior cladding system - Copy of the applicators approval certificate - A producers statement from the Applicator - Copy of Manufacturers" warranty**
7. **As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for ASA waterproofing membrane for bathroom - Copy of the applicators approval certificate - A producers statement from the Applicator - Copy of Manufacturers" warranty**
8. **As agreed prior to granting of consent, At the completion of the works and prior to the issue of the C.C.C, the applicant shall provide the Taupo District Council the following documentation to assist Council in establishing compliance with the NZBC for Ardex Butyol roofing membrane exterior gutters - Copy of the applicators approval certificate - A producers statement from the Applicator - Copy of Manufacturers" warranty**

When all building work authorised by this building consent is complete, electronic application should be made to Taupo District Council for a CODE COMPLIANCE CERTIFICATE and submit the documentation requested as part of this consent. This application and documentation must be submitted and approved prior to booking the final inspection. If no application has been made, Taupo District Council must decide whether to issue the CCC after 2 years of the building consent being granted. An application form for this purpose is enclosed.

Compliance Schedule

A compliance schedule is not required for the building.

Attachments

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

- Approved Plans and Specifications
- Required items sheet attached to front of plans including a list of the inspections required *(Section 90)*
- Application for Code Compliance Certificate
- Project Information Memorandum

Signature: _____

Kelvin Short – **Building Manager**

On behalf of: Taupo District Council

Date: 20 July 2018

Building Consent granted 20/07/2018 - A2270014

To: willie@pennyhomes.co.nz[willie@pennyhomes.co.nz]; Tech Support[businesssupport@taupo.govt.nz]; buildingconsents[buildingconsents@taupo.govt.nz]
From: buildingconsents
Sent: Fri 20/07/2018 1:45:01 a.m
Importance: Normal
Subject: Building Consent granted for 6 Mayfly Grove, Taupo
MAIL_RECEIVED: Fri 20/07/2018 1:45:04 a.m

;;

REF180530177

This email is to advise that the consent for the proposed works has been granted for 6 Mayfly Grove, Taupo. The approved documentation will be **ready for collection after 3.30pm** from the Taupo Council Office at 46 Horomatangi Street, Taupo.

Please note that the granted consent documents have also been uploaded to your application online but are only able to be accessed via the below link by the person who submitted the application.

Click Here to access the online portal. Select the 'My Account' tab and enter your log in details. Then in the 'Submitted Applications' section, select the application you wish to view. The granted building consent documents are located in the 'Files' section of your application summary screen.

A copy of the approved plans and documents are **required to be onsite for all inspections**, please ensure that the plans are printed to the originally drawn scale, failure to do so will result in a failed inspection.

Please be sure to save a copy of these approved documents as they may not always be available through the online portal.

Kind regards,
Building Consent Team, Taupo District Council

2018-08-02 Audit Report - G3 - A2279652

GoGet Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Prefloor Plumbing and Drainage**
Inspection Status: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **2 August 2018 8:43 a.m.**

Inspection Element	Status
General	Pass
Approved building consent documents or as-laid plan on site?	Pass
Conditions of consent (if any) are met and consent documents on site	Pass
Appropriate materials being used	Pass
Drainage	Pass
Correct location, type, sizes, cover, and gradients	Pass
Adequate support and protection where required	Pass
Under test water or air **water test appears ok good fall**	Pass
On Site Wastewater System **correct size & type used , asper aslaid,as/nz3500 & approved consent document** **All appears ok to proceed as per approved consented document, as/nz 3500**	N/A
Plumbing	N/A
Outcome of Inspection	Pass
Approved **All appears ok to proceed as per approved consented document, as/nz 3500**	Pass
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received	N/A

Documentation

Pre-floor plumbing as built	Accepted



Taken at 8:38 AM on Thursday 2/08/2018



Taken at 8:39 AM on Thursday 2/08/2018



Taken at 8:40 AM on Thursday 2/08/2018



Taken at 8:40 AM on Thursday 2/08/2018

2018-08-02 Site Notice - A2279658

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581** Date Printed: **2 August 2018**

Applicant: **Penny Homes Limited**

Valuation Ref: **0730164798**

Site Address: **6 Mayfly Grove, Taupo**

Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Prefloor Plumbing and Drainage**

Inspection Status: **Pass**

Inspected By: **Glenn Walker**

Inspection Date: **2 August 2018**

Passed Items

General	
Approved building consent documents or as-laid plan on site?	
Conditions of consent (if any) are met and consent documents on site	
Appropriate materials being used	
Drainage	
Correct location, type, sizes, cover, and gradients	
Adequate support and protection where required	
Under test water or air	**water test appears ok good fall**
Outcome of Inspection	
Approved	**All appears ok to proceed as per approved consented document, as/nz 3500**

Documentation	Status
Pre-floor plumbing as built	Accepted
CCC application form	Required
Drainage as-built	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
Correct siting form	Required
PS3 General **External coating PS3**	Required
PS3 Fireplace	Required
Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane **bathroom**	Required

Licensed Building Practitioners	Status

Carpentry 1	Required
Bricklaying and Blocklaying 1	Required
External Plastering 2	Required
Resene Graphex cladding system	
Roofing 1	Required

All lbp & plumber - A2280469

LAKES COAST CLUSTER GROUP

ADVICE OF LICENSED BUILDING PRACTITIONER/(S)
Section 87, Building Act 2004

1 THE BUILDING (*project location*)

Building name (*if applicable*) Jiang Xu

Building street address: Lot 196, 6 Mayfly Grove

2. THE PROJECT

Building consent number: 180581

3. THE OWNER (*must be completed and all details must be the owner's*)

Owner's name (*for individuals, state the preferred form of title, e.g. Mr, Mrs, Ms, Miss, Dr. For companies, trusts and other organisations provide a contact person's name*): Penny Homes, Melanie Mundy

Address: 1 Jarden Mile

Date: 3/8/18

Landline: 07 377 0154

Mobile: 021 909 435

After Hours:

Fax:

E-mail: melanie@pennyhomes.co.nz

4. LICENSED BUILDING PRACTITIONERS ENGAGED TO CARRY OUT/SUPERVISE RESTRICTED BUILDING WORK

Particular work to be carried out or supervised	Name, address, email, and phone number of Licensed Building Practitioner	Licensed Building Practitioner number (*or registration number if treated as being licensed under section 291 of Act*)	Licensing class (*Tick box*) ✓ ☐
	Name: Reliable Foundations Address: Email: northisland@rfl.co.nz Telephone: 021 281 181	127456	Foundations ☑ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Mike Teddy Address: Email: ktmman@gmail.com Telephone: 027 245 2635	107918	Foundations ☐ Carpenter ☑ Bricklayer ☐ Plasterer ☐ Roofer ☐

4. LICENSED BUILDING PRACTITIONERS ENGAGED TO CARRY OUT/SUPERVISE RESTRICTED BUILDING WORK (*cont.*)

Particular work to be carried out or supervised	Name, address, email, and phone number of Licensed Building Practitioner	Licensed Building Practitioner number (*or registration number if treated as being licensed under section 291 of Act*)	Licensing class (*Tick box*) ✓ ☐
	Name: Pipeworks / Plumber Address: Email: ourLS_trace@xtra.co.nz Telephone: 027 529 7473	18138	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Great Lake Plumbing / Gas Address: Email: greatlakeplumbingandgas@gmail.com Telephone: 021 659 663	18936	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Kelvyn Price / Drains Address: Email: price.n@outlook.com Telephone: 021 158 5214	16309	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Residential Roofing Address: Email: damian@residentialroofingtaupo.co.nz Telephone: 0274 328 933	123731	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☑
	Name: HQ Electrical Address: Email: hq@hqelectrical.co.nz Telephone: 021 861 931	E 16616	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐

SIGNATURE

Signature of ~~owner~~/agent on behalf of and with the authority of the owner *[delete one]*: Galvin

Name of person signing: Kim Galvin / Penny Homes Date: 3/8/18

COUNCIL USE ONLY

LBP(s) checked	Y	All OK	Y	N
Comments:				

Pre-floor as-laid plan 180581 - A2281282

GREAT LAKE TAUPŌ
Taupō District Council

46 Horomatangi Street, Taupo 3330
Private Bag 2005, Taupo Mail Centre, Taupo 3352
Ph: 07 376 0899
businesssupport@taupo.govt.nz
www.taupo.govt.nz

SERVICES AS LAID PLAN

☒ Prefloor ☐ Drainage ☐ Soakholes

Please select the items covered in this document

Building Consent No: 180581

Owners Name: XU Residence

Property Address: 6 Mayfly Grove

Plumber: Andrew Burley
Name/s *Address* *Contact Phone No.*

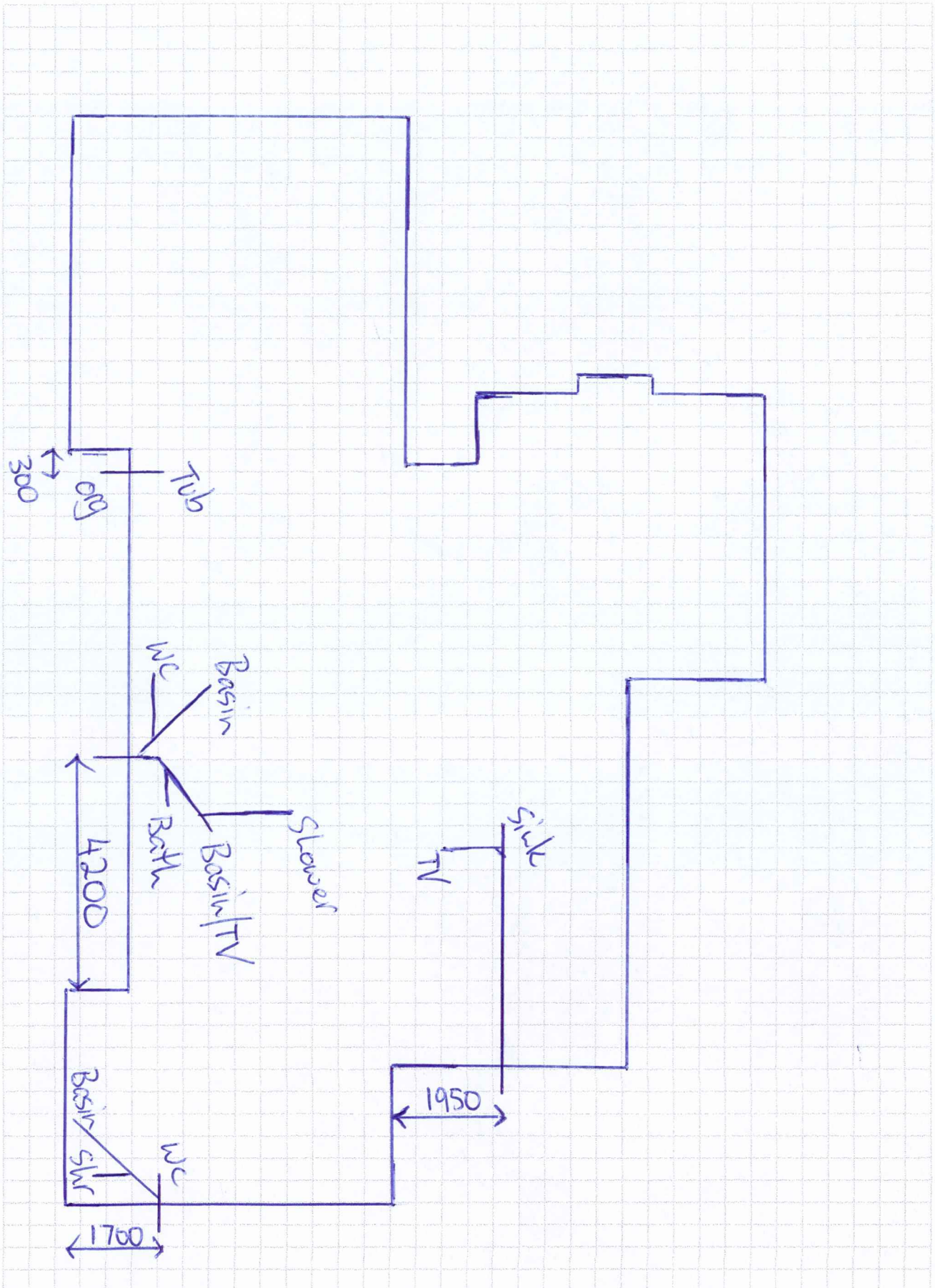
Registration No. 18138

Drainlayer: _____
Name/s *Address* *Contact Phone No.*

Registration No. _____

DRAW PLAN IN BLACK BALLPOINT ON GRAPH OPPOSITE
Plan is to show: ☐ All drains in correct position relative to building and boundaries ☐ The road frontage ☐ Depth of drains at connection points ☐ All foul water and stormwater drains ☐ All inspection openings, accurately dimensioned ☐ All buildings and boundaries ☐ Outside water lines and the source of supply ☐ The type, location and size of all on site sewage disposal systems ☐ Size and position of soak holes ***REFER TO EXAMPLE ON LAST PAGE***

NOTE: If the inspector cannot be satisfied of compliance and/or the drain layout differs from the approved building consented documents, an amendment to the consent may be requested.


300
Tub
WC
Basin
Bath
Basin/TV
Shower
4200
TV
Sink
1950
Basin
Shr
WC
1700

CHECKED BY:

LBP notification - A2282964

LAKES COAST CLUSTER GROUP

ADVICE OF LICENSED BUILDING PRACTITIONER/(S)
Section 87, Building Act 2004

1 THE BUILDING *(project location)*

Building name *(if applicable)*: Jiang Xu

Building street address: Lot 196, 6 Mayfly Grove

2. THE PROJECT

Building consent number: 180581

3. THE OWNER *(must be completed and all details must be the owner's)*

Owner's name *(for individuals, state the preferred form of title, e.g. Mr, Mrs, Ms, Miss, Dr. For companies, trusts and other organisations provide a contact person's name)*: Penny Homes, Melanie Mundy

Address: 1 Jarden Mile

Date: 3/8/18

Landline: 07 377 0154

Mobile: 021 909 435

After Hours:

Fax:

E-mail: melanie@pennyhomes.co.nz

4. LICENSED BUILDING PRACTITIONERS ENGAGED TO CARRY OUT/SUPERVISE RESTRICTED BUILDING WORK

Particular work to be carried out or supervised	Name, address, email, and phone number of Licensed Building Practitioner	Licensed Building Practitioner number *(or registration number if treated as being licensed under section 291 of Act)*	Licensing class *(Tick box)* ✓ ☐
	Name: Reliable Foundations Ltd Address: Email: northisland@rfl.co.nz Telephone: 021 281 181	132324	Foundations ☑ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Mike Teddy Address: Email: ktmman@gmail.com Telephone: 027 245 2635	107918	Foundations ☐ Carpenter ☑ Bricklayer ☐ Plasterer ☐ Roofer ☐

4. LICENSED BUILDING PRACTITIONERS ENGAGED TO CARRY OUT/SUPERVISE RESTRICTED BUILDING WORK (*cont.*)

Particular work to be carried out or supervised	Name, address, email, and phone number of Licensed Building Practitioner	Licensed Building Practitioner number (*or registration number if treated as being licensed under section 291 of Act*)	Licensing class (*Tick box*) ✓ ☐
	Name: Pipeworks / Plumber Address: Email: burls_trace@xtra.co.nz Telephone: 027 529 7473	18138	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Great Lake Plumbing / Gas Address: Email: greatlakeplumbingandgas@gmail.com Telephone: 021 659 663	18936	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Kelvyn Price / Drains Address: Email: price.n@outlook.com Telephone: 021 158 5214	16309	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐
	Name: Residential Roofing Address: Email: damian@residentialroofingtaupo.co.nz Telephone: 0274 328 933	123731	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☑
	Name: HQ Electrical Address: Email: hq@hqelectrical.co.nz Telephone: 021 861 931	E 16616	Foundations ☐ Carpenter ☐ Bricklayer ☐ Plasterer ☐ Roofer ☐

SIGNATURE

Signature of ~~owner~~/agent on behalf of and with the authority of the owner *[delete one]*: Galvin

Name of person signing: Kim Galvin / Penny Homes Date: 3/8/18

COUNCIL USE ONLY

LBP(s) checked	Y	All OK	Y	N
Comments:				

2018-08-08 Audit Report - G2 - A2283635

GoGet Audit Report

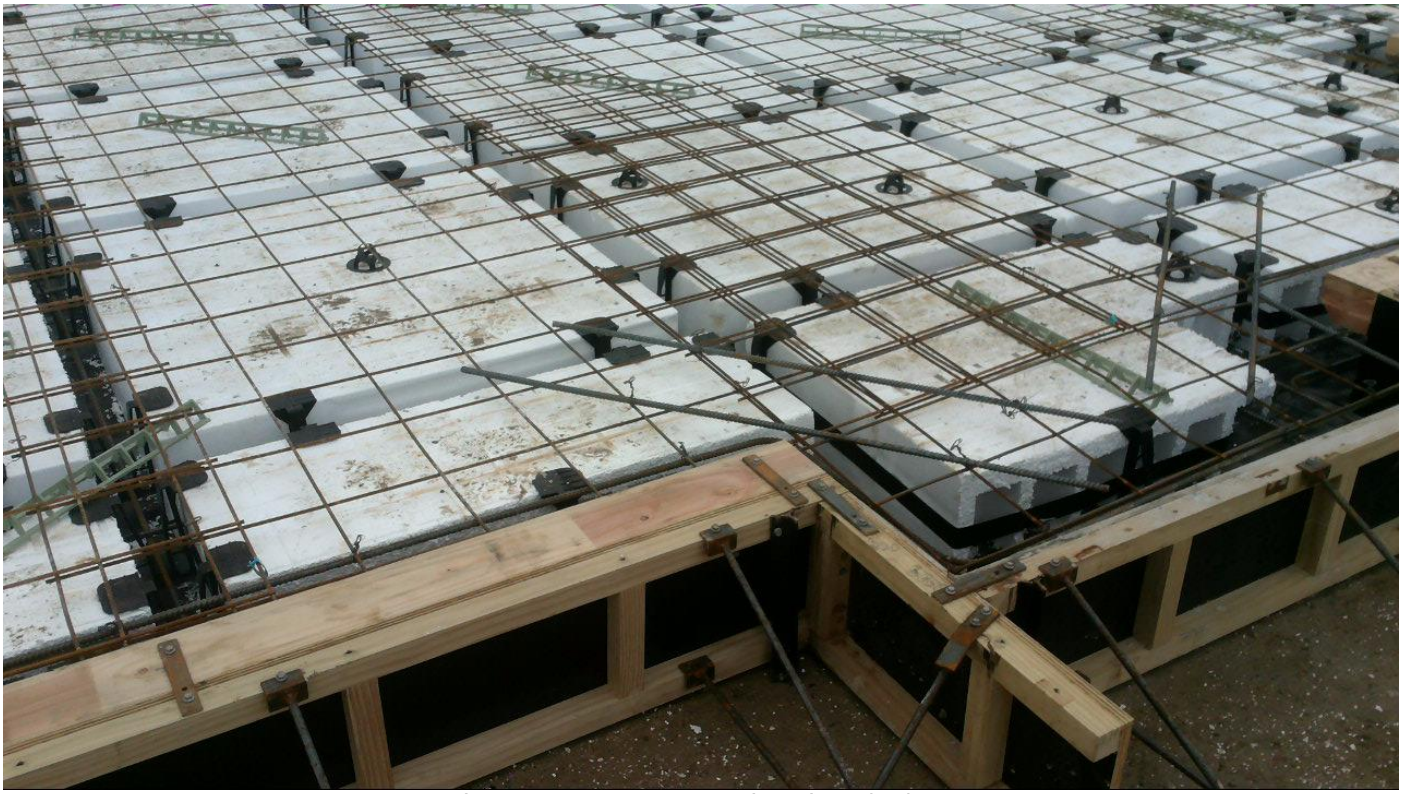
Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Prefloor Building**
Inspection Status: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **8 August 2018 1:25 p.m.**

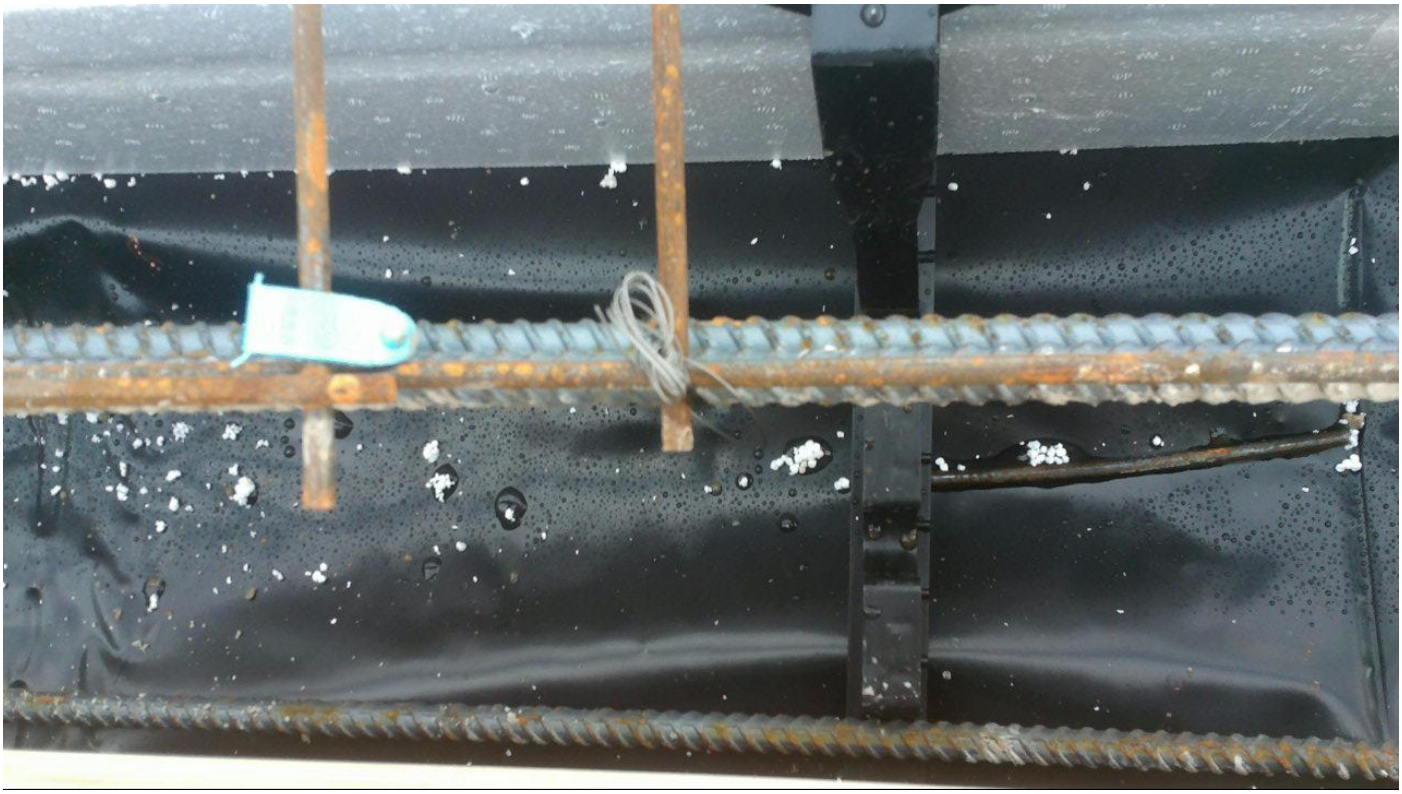
Inspection Element	Status
General	Pass
Met Jayden on site for prefloor inspection of ribraft.	
As per the approved plans	Pass
Approved building consent documents on site	Pass
Proposed floor level correct	Pass
Slab on Ground or Suspended Concrete	Pass
Appropriate materials being used	Pass
Polythene, pods, spacers, chairs, thickenings, correct mesh and steel in place.	
Correct location, type, sizes, cover, laps etc of reinforcing	Pass
Steel and mesh is clean and tied	Pass
Compaction for base	Pass
Appears firm.	
Proposed floor level correct	Pass
Engineer inspected (if required)	N/A
Damp Proof Membrane	Pass
Timber Floor	N/A
Outcome of Inspection	Pass
Approved	Pass
Work appears correct as per approved consented documents, ok to proceed on reasonable grounds.	
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received	N/A

Documentation

Correct siting form	Accepted



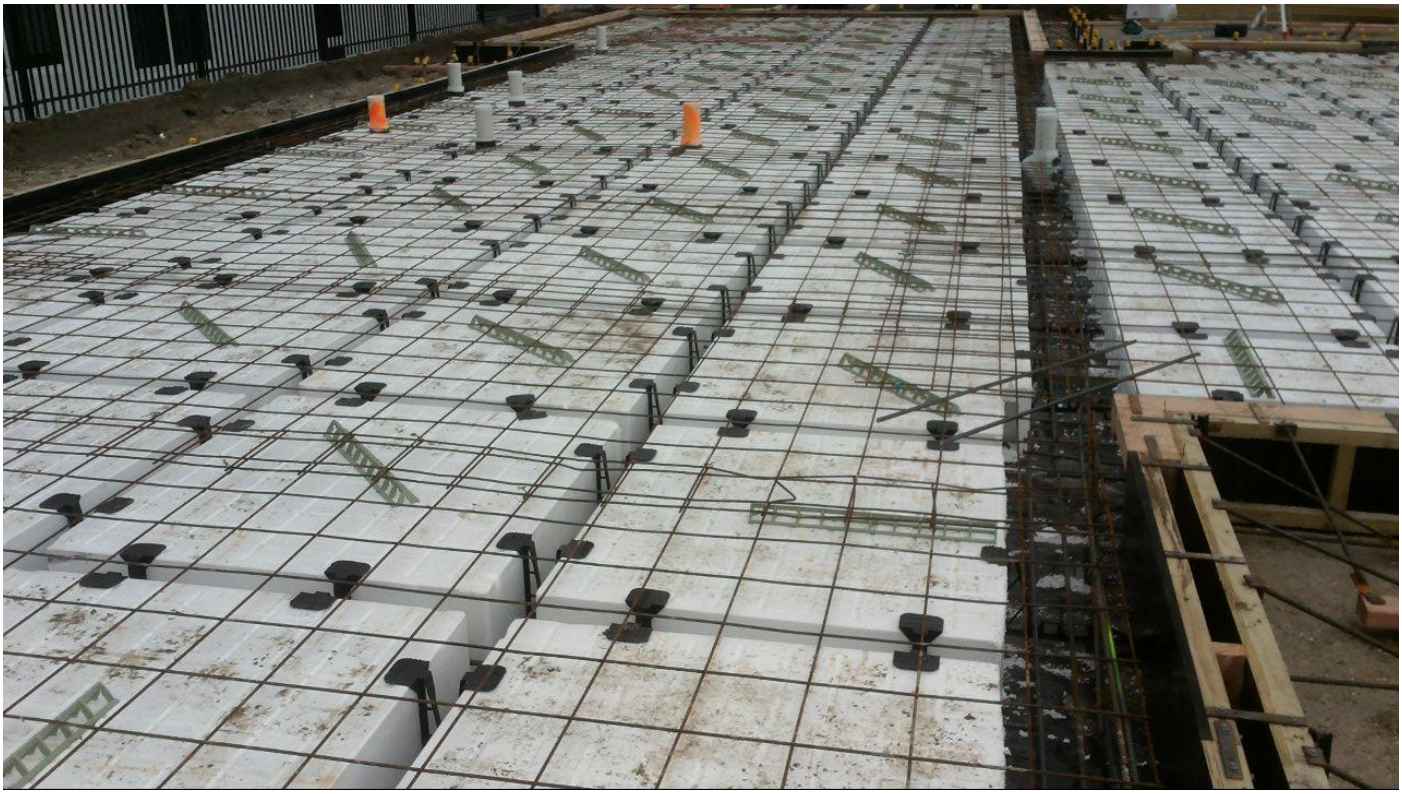
Taken at 11:59 AM on Wednesday 8/08/2018



Taken at 12:00 PM on Wednesday 8/08/2018



Taken at 12:02 PM on Wednesday 8/08/2018



Taken at 12:02 PM on Wednesday 8/08/2018

2018-08-08 Site Notice - A2283639

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581** Date Printed: **8 August 2018**

Applicant: **Penny Homes Limited**

Valuation Ref: **0730164798**

Site Address: **6 Mayfly Grove, Taupo**

Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Prefloor Building**

Inspection Status: **Pass**

Inspected By: **Ben Fouhy**

Inspection Date: **8 August 2018**

Passed Items

General	**Met Jayden on site for prefloor inspection of ribraft.**
As per the approved plans	
Approved building consent documents on site	
Proposed floor level correct	
Slab on Ground or Suspended Concrete	
Appropriate materials being used	**Polythene, pods, spacers, chairs, thickenings, correct mesh and steel in place.**
Correct location, type, sizes, cover, laps etc of reinforcing	
Steel and mesh is clean and tied	
Compaction for base	**Appears firm.**
Proposed floor level correct	
Damp Proof Membrane	
Outcome of Inspection	
Approved	**Work appears correct as per approved consented documents, ok to proceed on reasonable grounds.**

Documentation	Status
Correct siting form	Accepted
CCC application form	Required
Drainage as-built	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
PS3 General **External coating PS3**	Required
PS3 Fireplace	Required
Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane **bathroom**	Required

Licensed Building Practitioners	Status
Foundations 1 **Reliable foundations**	Required
Roofing 1 **Damion**	Required
Carpentry 1 **Mike Teddy**	Required
Bricklaying and Blocklaying 1	Required
External Plastering 2 **Resene Graphex cladding system**	Required

Correct siting of building 180581 - A2288215

GREAT LAKE TAUPŌ
Taupō District Council

UNDERTAKING AS TO CORRECT SITING OF BUILDING

Building Act 2004

This form must be completed and be available for collection by the Building Management Officer when the first inspection is carried out or at such other time as agreed. A Code Compliance Certificate will not be issued until such time as this form is received and correctly filled out.

BC No: 180581

I hereby certify that the building work currently being carried out at

LOT 196 MAYFLY GROVE

(Address of Property)

is positioned in accordance with, and is the same size, as shown on the approved plans of the Building Consent.

Name of Builder/Owner: JAYDEN WILSON

(Delete that which does not apply)

Signature: J. Wils.

Date: 8-8-2018

Taupo District Council
46 Horomatangi Street, Private Bag 2005, Taupo Mail Centre, Taupo 3352
Phone: 07 3760899 Email: info@taupo.govt.nz Website: www.taupo.govt.nz

2018-08-15 Audit Report - G5 - A2289733

GoGet Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Sanitary Sewer/Drainage**
Inspection Status: **Fail**
Inspected By: **Glenn Walker**
Inspection Date: **15 August 2018 11:31 a.m.**

Inspection Element	Status
General	Pass
Approved building consent documents or as-built plan on site o	Pass
Conditions of consent (if any) are met	Pass
As per the approved plans	Pass
Sanitary Drainage	Pass
Appropriate materials being used	Pass
Adequate support and protection where required	Pass
Correct location, type, sizes, cover, and gradients of drains **correct size & type used , asper aslaid,as/nz3500 & approved consent document**	Pass
G13 or AS/NZS3500	Pass
Test of entire system **water test appears ok good fall**	Pass
Stormwater **by other**	Fail
To approved disposal system (onsite or reticulated system)	Fail
Disposal system adequate	Fail
As built provided with PS3 and photos	Fail
On Site Wastewater System	N/A
Outcome of Inspection	Fail
Approved **All appears ok to proceed as per approved consented document, as/nz 3500**	Pass
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received **storm water aslaid plans**	Fail

Documentation

Drainage as-built	Accepted



Taken at 11:25 AM on Wednesday 15/08/2018



Taken at 11:25 AM on Wednesday 15/08/2018



Taken at 11:28 AM on Wednesday 15/08/2018

2018-08-15 Site Notice - A2289739

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581** Date Printed: **15 August 2018**

Applicant: **Penny Homes Limited**

Valuation Ref: **0730164798**

Site Address: **6 Mayfly Grove, Taupo**

Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Sanitary Sewer/Drainage**

Inspection Status: **Fail**

Inspected By: **Glenn Walker**

Inspection Date: **15 August 2018**

Passed Items

General	
Approved building consent documents or as-built plan on site o	
Conditions of consent (if any) are met	
As per the approved plans	
Sanitary Drainage	
Appropriate materials being used	
Adequate support and protection where required	
Correct location, type, sizes, cover, and gradients of drains	**correct size & type used , asper aslaid,as/nz3500 & approved consent document**
G13 or AS/NZS3500	
Test of entire system	**water test appears ok good fall**
Outcome of Inspection	
Approved	**All appears ok to proceed as per approved consented document, as/nz 3500**

Failed Items

Stormwater	**by other**
To approved disposal system (onsite or reticulated system)	
Disposal system adequate	
As built provided with PS3 and photos	
Outcome of Inspection	
Required documents not yet received	**storm water aslaid plans**

Documentation	Status
Drainage as-built	Accepted
CCC application form	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
PS3 General	Required

KEEP ON SITE FOR RECHECK

External coating PS3

PS3 Fireplace	Required
Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane	Required

bathroom

Licensed Building Practitioners	Status
Foundations 1	Required

127456 in unlicenced so 132324 given by Kiri via Reliable foundations as an alternative until 127456 sorts his suspension out

Roofing 1	Required

Damion

Carpentry 1	Required

Mike Teddy

Bricklaying and Blocklaying 1	Required
External Plastering 2	Required

Resene Graphex cladding system

Drainage as laid plan 180581 - A2292105

GREAT LAKE TAUPŌ
Taupō District Council

72 Lake Terrace, Taupo 3330
Private Bag 2005, Taupo Mail Centre, Taupo 3352
Ph: 07 376 0899
techsupport@taupo.govt.nz
www.taupo.govt.nz

TAUPO DISTRICT COUNCIL
18 0581
APPROVED CONSENT PLANS / SPECIFICATIONS

SERVICES AS LAID PLAN

☐ Prefloor ☑ Drainage ☐ Soakholes

Please select the items covered in this document

Building Consent No: 180581.

Owners Name: Xu.

Property Address: 6 Mayfly Grove.

Plumber: _____
Name/s *Address* *Contact Phone No.*

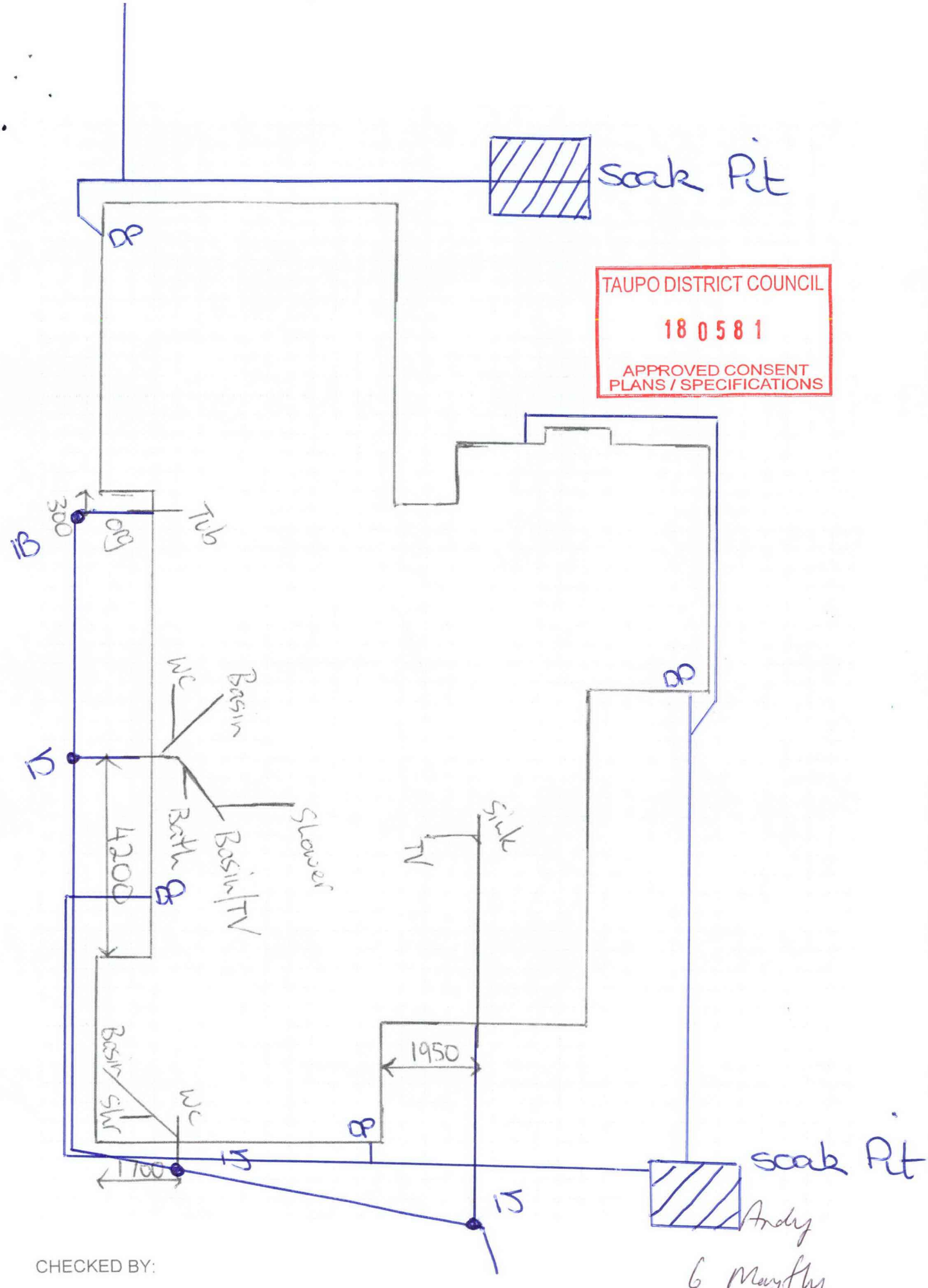
Registration No. _____

Drainlayer: Kelvin Rice 22 Kurapoto Cres Taupo 021 158 5214
Name/s *Address* *Contact Phone No.*

Registration No. 16309

DRAW PLAN IN BLACK BALLPOINT ON GRAPH OPPOSITE
Plan is to show:
☐ All drains in correct position relative to building and boundaries
☐ The road frontage
☐ Depth of drains at connection points
☐ All foul water and stormwater drains
☐ All inspection openings, accurately dimensioned
☐ All buildings and boundaries
☐ Outside water lines and the source of supply
☐ The type, location and size of all on site sewage disposal systems
☐ Size and position of soak holes
REFER TO EXAMPLE ON LAST PAGE

NOTE: If the inspector cannot be satisfied of compliance and/or the drain layout differs from the approved building consented documents, an amendment to the consent may be requested.


Soak Pit
DP
TAUPO DISTRICT COUNCIL
180581
APPROVED CONSENT PLANS / SPECIFICATIONS
300
Tub
IB
WC
Basin
Bath
Basin/TV
Shower
TV
Sink
4200
DP
1950
Basin
sink
WC
1700
IB
Soak Pit
Andy
6 Mayfly

CHECKED BY:

2018-08-29 Audit Report - G16 - A2299689

GoGet Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Framing Inspection**
Inspection Status: **Fail**
Inspected By: **Richard Jones**
Inspection Date: **29 August 2018 1:44 p.m.**

Inspection Element	Status
General	Pass
Approved building consent documents on site	Pass
Conditions of consent (if any) are met	Pass
Floor plan as per the approved plans	Pass
Shrinkage control joints **no sawcuts**	Pass
Wall Framing	PassNC
As per the approved plans	Pass
Appropriate timber treatment for use **H1.2 and laminated lintels**	Pass
Bracing as per design **Recheck garage and chimney ply braces.**	PassNC
General Fixings (nailing, proprietary fixings for uplift, bracing, top plate etc)	Pass
Lintel sizes and fixing **Recheck entry and garage lintel**	PassNC
Top plate packer as required **Double Top plate**	Pass
Support for proposed cladding	Pass
Support for point loads	Pass
Roof Framing	PassNC
As per the approved design & plans **As built.**	Pass
Rafter and/or Truss Fixings (top plate, ridge beam, girder truss etc) **Truss internal fixings**	PassNC
Roof bracing **Hip roof**	Pass
Appropriate timber treatment for use **H1.2**	Pass
Subfloor Framing	N/A
Outcome of Inspection	Fail
Approved **Met Mike on site**	Pass
Further Inspection Required (Recheck Required)	Fail
Required documents not yet received	N/A

Documentation

Truss Manufacturers Asbuilt Plan (B1) **Fixings plan only**	Accepted



Taken at 1:46 PM on Wednesday 29/08/2018



Taken at 1:46 PM on Wednesday 29/08/2018



Taken at 1:46 PM on Wednesday 29/08/2018



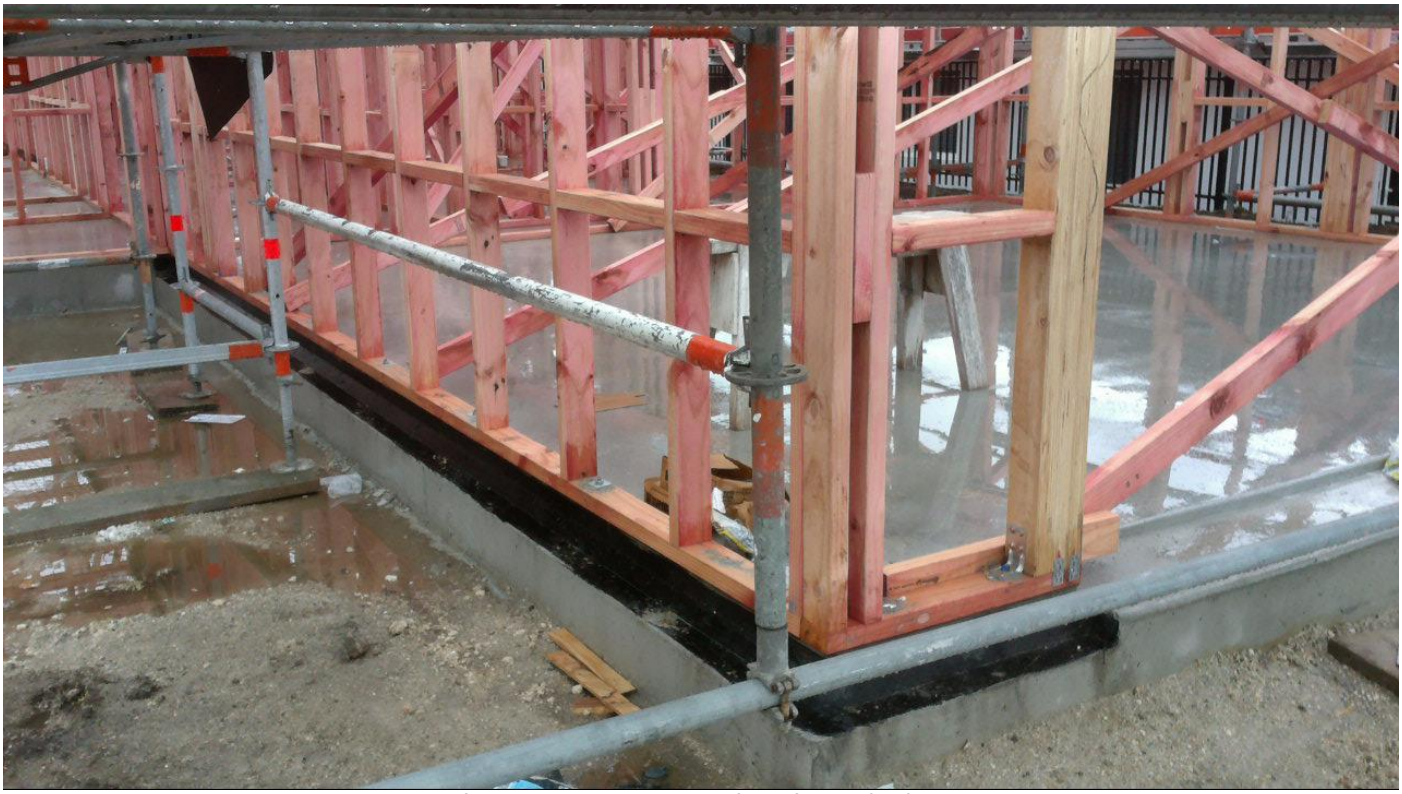
Taken at 1:47 PM on Wednesday 29/08/2018



Taken at 1:47 PM on Wednesday 29/08/2018



Taken at 1:48 PM on Wednesday 29/08/2018



Taken at 1:48 PM on Wednesday 29/08/2018



garage

Taken at 1:48 PM on Wednesday 29/08/2018



Taken at 1:48 PM on Wednesday 29/08/2018



Taken at 1:49 PM on Wednesday 29/08/2018



Taken at 1:49 PM on Wednesday 29/08/2018

2018-08-29 Site Notice - A2299694

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581** Date Printed: **29 August 2018**

Applicant: **Penny Homes Limited**

Valuation Ref: **0730164798**

Site Address: **6 Mayfly Grove, Taupo**

Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Framing Inspection**

Inspection Status: **Fail**

Inspected By: **Richard Jones**

Inspection Date: **29 August 2018**

Passed Items

General	
Approved building consent documents on site	
Conditions of consent (if any) are met	
Floor plan as per the approved plans	
Shrinkage control joints	**no sawcuts**
Wall Framing	
As per the approved plans	
Appropriate timber treatment for use	**H1.2 and laminated lintels**
General Fixings (nailing, proprietary fixings for uplift, bracing, top plate etc)	
Top plate packer as required	**Double Top plate**
Support for proposed cladding	
Support for point loads	
Roof Framing	
As per the approved design & plans	**As built.**
Roof bracing	**Hip roof**
Appropriate timber treatment for use	**H1.2**
Outcome of Inspection	
Approved	**Met Mike on site**

Pass With Non-Compliant Items

Wall Framing	
Bracing as per design	**Recheck garage and chimney ply braces.**
Lintel sizes and fixing	**Recheck entry and garage lintel**
Roof Framing	
Rafter and/or Truss Fixings (top plate, ridge beam, girder truss etc)	**Truss internal fixings**

Failed Items

Outcome of Inspection

Further Inspection Required (Recheck Required)

Documentation	Status
Truss Manufacturers Asbuilt Plan (B1)	Accepted

KEEP ON SITE FOR RECHECK

Fixings plan only	
CCC application form	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
PS3 General	Required
External coating PS3	
PS3 Fireplace	Required
Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane	Required
bathroom	

Licensed Building Practitioners	Status
Foundations 1	Required
127456 in unlicenced so 132324 given by Kiri via Reliable foundations as an alternative until 127456 sorts his suspension out	
Roofing 1	Required
Damion	
Carpentry 1	Required
Mike Teddy	
Bricklaying and Blocklaying 1	Required
External Plastering 2	Required
Resene Graphex cladding system	

Pre-floor as-laid plan 180581 - A2301982

AS BUILT FINAL LAYOUT

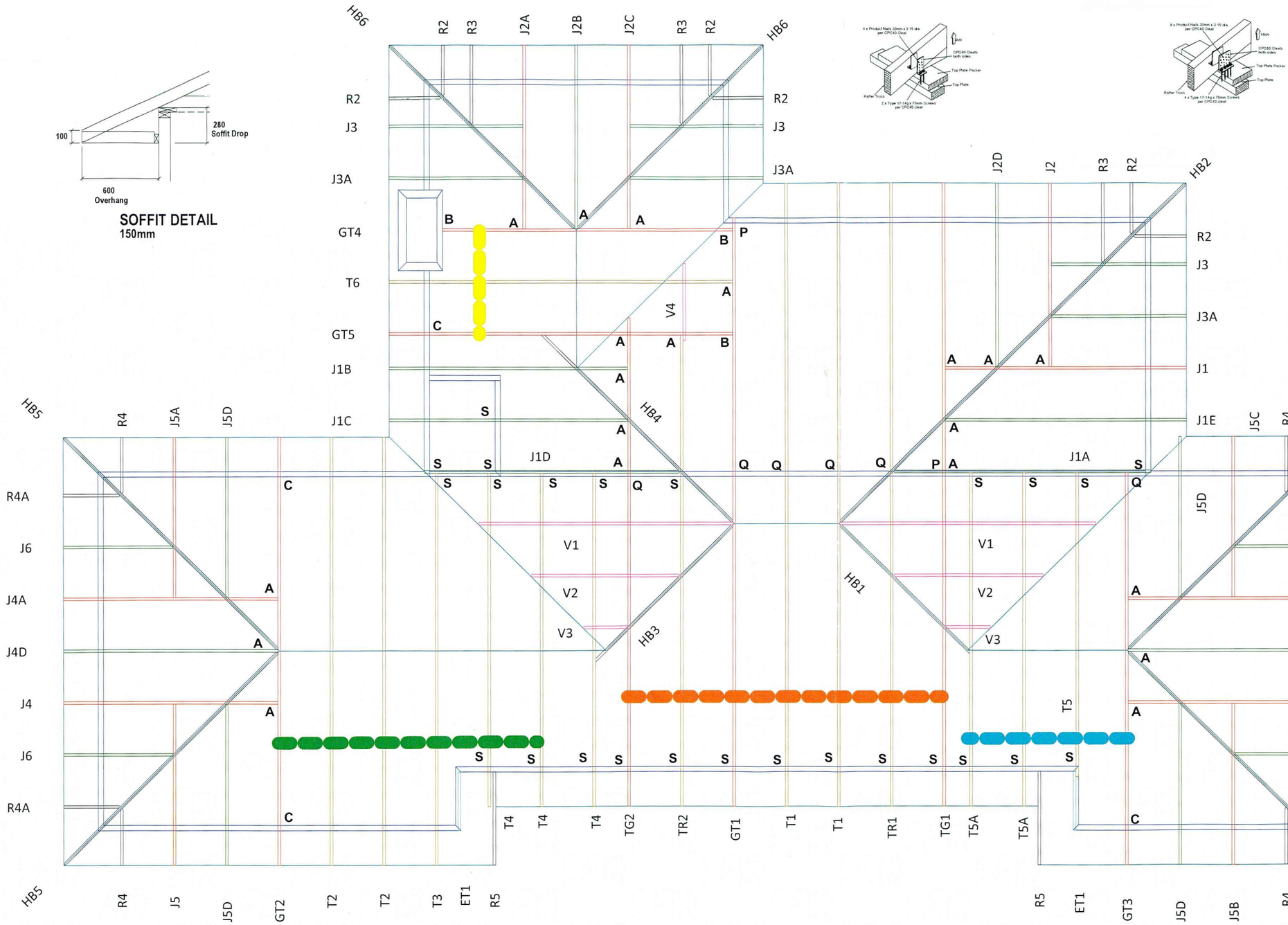
For valley/saddle truss fixing unless stated otherwise use a pair of wire dogs at 900mm centres for up to and including a very high wind zone. Or a pair of CT200's at 900mm centres for extra high wind zone. This fixing is to meet the minimum requirements as per NZS3604.

BC. 180581

CARTERS

Your Building Partner

SOFFIT DETAIL
150mm



All gable trusses are designed to suit cladding manufacturer's framing requirements.
If a gable truss requires a windbeam brace, the type of MiTek brace will be noted as such on the layout.

Please contact your local CARTERS Manufacturing Branch, for any queries regarding this layout, or if any on site remedial work is required.
No modifications to Roof Trusses or Wall Frames are to be undertaken without first obtaining written authority from CARTERS.

CARTERS
Carters Manufacturing Cambridge
(07) 8237312

JOB No **275099M1**

Client: Penny Homes Ltd
Job: Xu Residence
Site: 6 Mayfly Grove
Taupo

Pitch: 25.0deg
Roof Type: Metal Tiles
Overhang: 600mm
Wind Area: High
Roof Snow: 0.000kPa

Trusses and rafters at 900 mm max centres unless stated otherwise. This layout is to be read in conjunction with the Architectural plans.

DRAWN Hilton Familton | 6 Aug,2018

FIXINGS

A = 47x90 Joist Hanger
B = 47x120 Joist Hanger
C = CT200 (pair)
D = 47x190 Joist Hanger
E = 95x165 Joist Hanger
F = SH-140 Split Hanger
G = SH-180 Split Hanger
H = SH-220 Split Hanger
J = 2x6kN Strap (12kN Total)
K = 6kN Strap
L = Multigrip (single)
M = Multigrips (pair)
N = Nailon Plate (200x100)
P = 16kN Pack
Q = 9kN Pack
S = CPC 40 Single Cleat
T = CPC 40 Short (pair)
U = CPC 80 Single Cleat
V = 16kN Uplift
W= 24kN Uplift
X = 25kN Uplift
Y = 35kN Uplift
Z = 45kN Uplift

Unless otherwise indicated, all specified truss fixings are to use L/Lok product nail fasteners (as per the MiTek On-site Guide) when the choice of using screws or nails is optional.

All truss to frame fixings require 2 additional 2/90x3.15dia skew nails.

All truss fixings not indicated as above must have 2 wire dogs for cross joints and 2/90x3.15dia nails for butt joins.

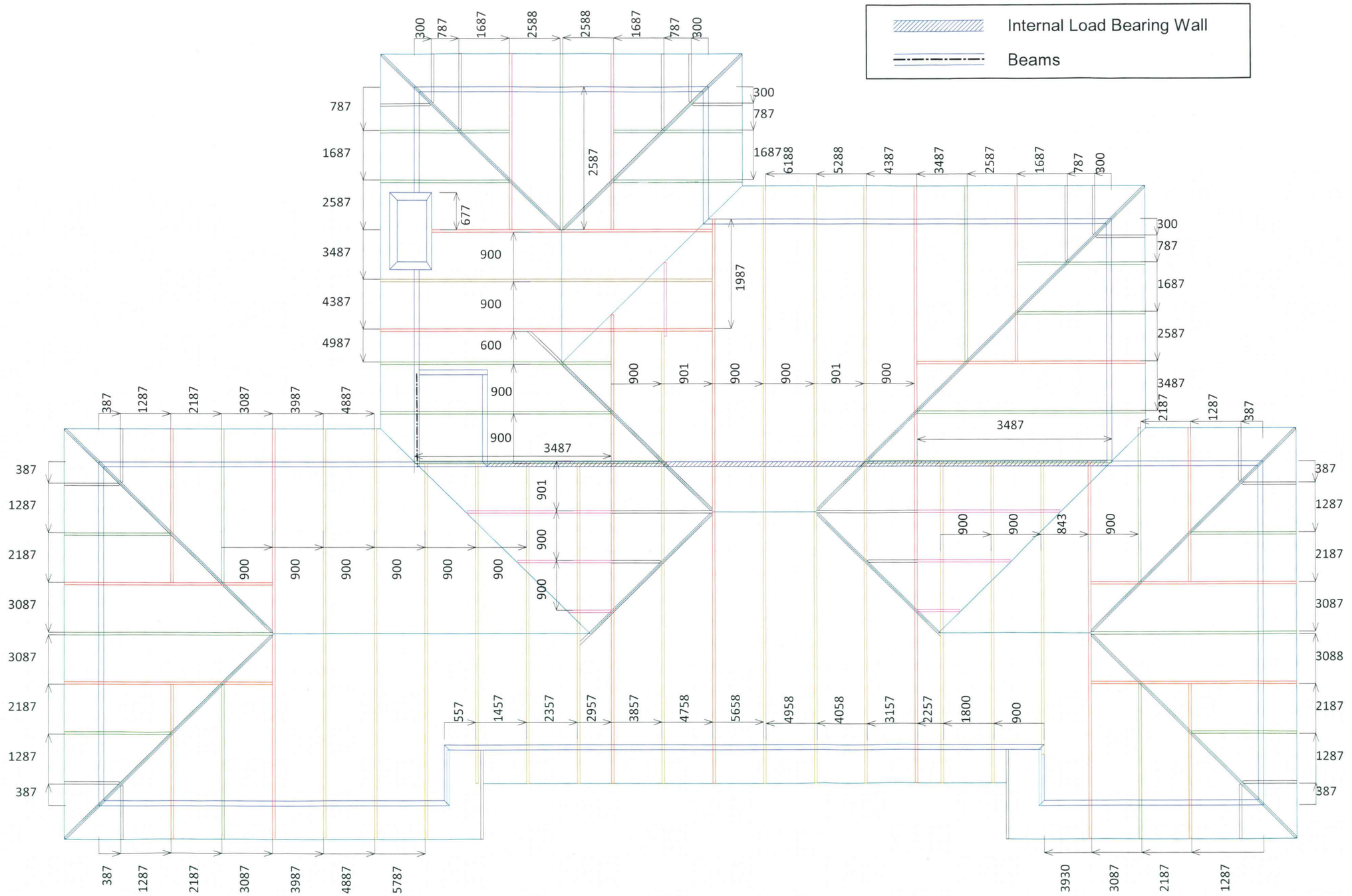
Fixings shown are for fixing trusses to the top plate. Any other point load uplift fixings down through the framing stud to top plate, stud to bottom plate, bottom plate to floor remain the responsibility of the architect / draughtsman.

Truss Layout

FTMA NEW ZEALAND

AS BUILT
FINAL LAYOUT

CARTERS **Your Building Partner**



CARTERS
Carters Manufacturing Cambridge
(07) 8237312

JOB No **275099M1**

Client: Penny Homes Ltd
Job: Xu Residence
Site: 6 Mayfly Grove
Taupo

Pitch: 25.0deg
Roof Type: Metal Tiles
Overhang: 600mm
Wind Area: High
Roof Snow: 0.000kPa

Trusses and rafters at 900 mm max centres unless stated otherwise. This layout is to be read in conjunction with the Architectural plans.

DRAWN Hilton Familton | 6 Aug,2018

Dn kN | Up kN — Ultimate Limit State Loads

Notification of point loaded lintels or point loads on internal walls where the downward load is higher than 8kN (85mm raft type slab) or 10kN (100mm standard slab), or the upward load is greater than 10kN.

No allowance for any loading within the truss space has been allowed for including storage unless specifical stated.

Any roof loads as stated on this layout over 16kN up or down are outside the scope of NZS3604, and the architect / draughtsperson is responsible for the design to transfer the loads to the ground.

Truss Dimensions

Please contact your local CARTERS Manufacturing Branch, for any queries regarding this layout, or if any on site remedial work is required. No modifications to Roof Trusses or Wall Frames are to be undertaken without first obtaining written authority from CARTERS.

FTMA NEW ZEALAND

2018-09-26 Audit Report - G16 - A2320853

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Framing Inspection**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **26 September 2018 8:50 a.m.**
Duration: **0 minutes**

Inspection Element	Status
Wall Framing	Pass
Bracing as per design **Recheck garage and chimney ply braces.**	Pass
Lintel sizes and fixing **Recheck entry and garage lintel**	Pass
Roof Framing	Pass
Rafter and/or Truss Fixings (top plate, ridge beam, girder truss etc) **Truss internal fixings**	Pass
Outcome of Inspection	Pass
Further Inspection Required (Recheck Required)	Pass

2018-09-26 Audit Report - G11 - A2320854

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Pre-Ext Cladding Systems-Building**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **26 September 2018 10:28 a.m.**
Duration: **60 minutes**

Inspection Element	Status
General	Pass
Approved building consent documents on site **Met Mike on site for preclad inspection.**	Pass
Conditions of consent (if any) are met	Pass
As per the approved plans	Pass
Walls	Pass
Cladding type(s) **Brick veneer, Insulclad, Linda.**	Pass
Appropriate materials used (e.g. timber treatment & grade, approved/appraised)	Pass
Flashing details & materials **DPC in place with kickouts.**	Pass
Internal & external corners & junctions	Pass
Battens (cavity system) and/or ventilation	Pass
Tanking to foundations for brickwork **Tanking done.**	Pass
Proprietary fixings (metal tie down straps/connection etc for trusses/bracing etc)	Pass
Building wrap (Correct type/installation) **Rab and Watergate Plus in Insulclad areas.**	Pass
Penetrations **Marshall.**	Pass
Deck Flashings	N/A
Roof	Pass
Roof type(s) **Metal tile.**	Pass
Correct installation and materials	Pass
Flashings	Pass
Outcome of Inspection	Pass
Approved	Pass
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received	N/A



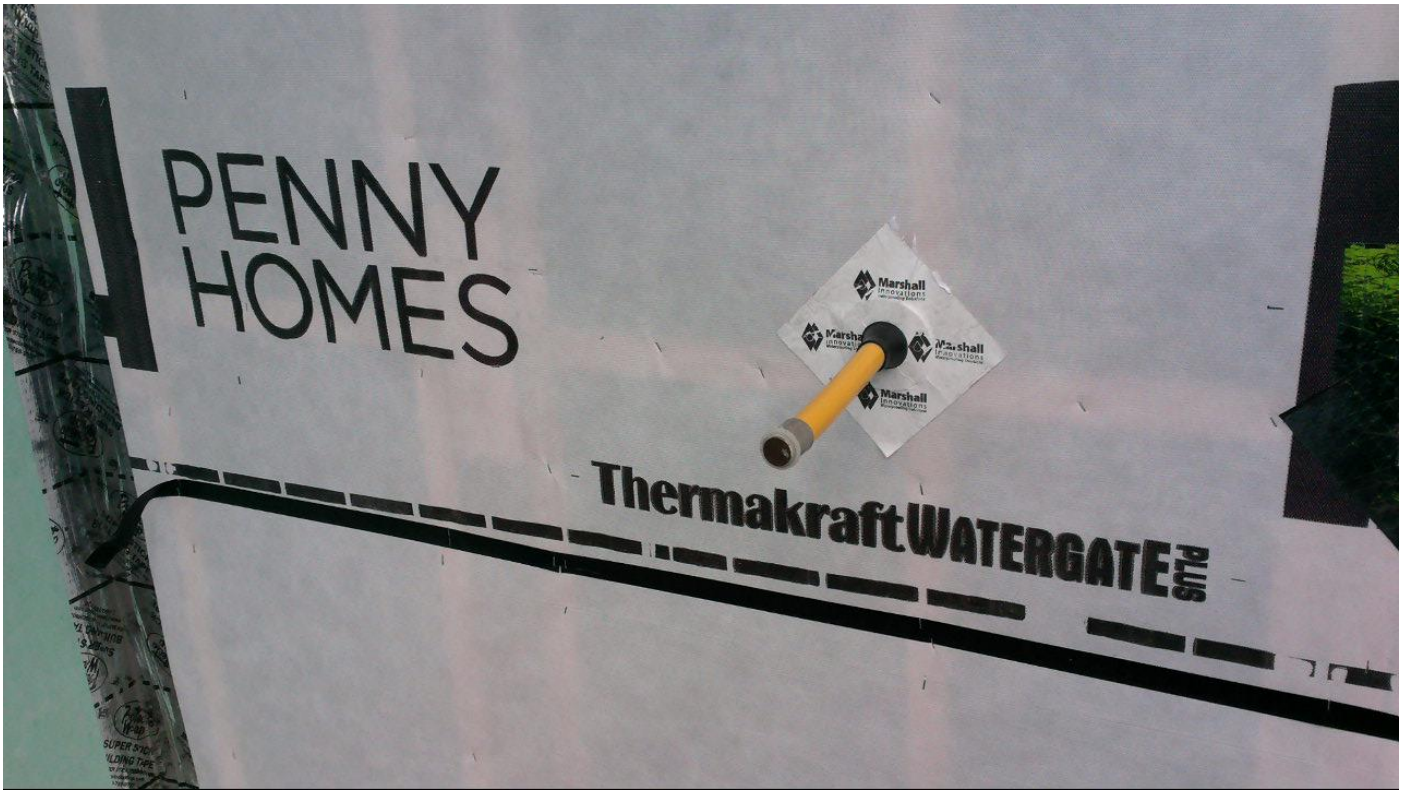
Taken at 8:55 AM on Wednesday 26/09/2018



Taken at 8:55 AM on Wednesday 26/09/2018



Taken at 8:55 AM on Wednesday 26/09/2018



Taken at 8:56 AM on Wednesday 26/09/2018

2018-09-26 Site Notice - A2320857

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581**
Date Printed: **26 September 2018**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**
Building Category: **Residential Level 1**

Inspection Type: **Framing Inspection**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **26 September 2018**

Passed Items

Wall Framing	
Bracing as per design	**Recheck garage and chimney ply braces.**
Lintel sizes and fixing	**Recheck entry and garage lintel**
Roof Framing	
Rafter and/or Truss Fixings (top plate, ridge beam, girder truss etc)	**Truss internal fixings**
Outcome of Inspection	
Further Inspection Required (Recheck Required)	

Inspection Type: **Pre-Ext Cladding Systems-Building**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **26 September 2018**

Passed Items

General	
Approved building consent documents on site	**Met Mike on site for preclad inspection.**
Conditions of consent (if any) are met	
As per the approved plans	
Walls	
Cladding type(s)	**Brick veneer, Insulclad, Linda.**
Appropriate materials used (e.g. timber treatment & grade, approved/appraised)	
Flashing details & materials	**DPC in place with kickouts.**
Internal & external corners & junctions	
Battens (cavity system) and/or ventilation	
Tanking to foundations for brickwork	**Tanking done.**
Proprietary fixings (metal tie down straps/connection etc for trusses/bracing etc)	
Building wrap (Correct type/installation)	**Rab and Watergate Plus in Insulclad areas.**
Penetrations	**Marshall.**
Roof	
Roof type(s)	**Metal tile.**

Correct installation and materials

Flashings

Outcome of Inspection

Approved

Documentation	Status
Drainage as-built	Accepted
Correct siting form	Accepted
Pre-floor plumbing as built	Accepted
Truss Manufacturers Asbuilt Plan (B1)	Accepted
CCC application form	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
PS3 General	Required
PS3 Fireplace	Required
Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane	Required

Licensed Building Practitioners	Status
Design 1	Accepted
Foundations 1	Required
Roofing 1	Required
Carpentry 1	Required
Bricklaying and Blocklaying 1	Required
External Plastering 2	Required

2018-10-12 Audit Report - G4 - A2332774

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Preline Plumbing**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **12 October 2018 9:05 a.m.**
Duration: **60 minutes**

Inspection Element	Status
General	Pass
Approved building consent documents on site	Pass
Conditions of consent (if any) are met	Pass
As per the approved plans	Pass
Plumbing	Pass
Appropriate materials being used	Pass
Adequate support and protection where required	Pass
Integrity of framing (notches, holes etc)	Pass
Sealing of penetrations	Pass
Position of HWC, (roof space etc.)	N/A
Soil and waste pipes as per AS/NZ 3500/G10 & G13	N/A
Pressure test of entire system **pressure test ok 200 PSI**	Pass
Outcome of Inspection	Pass
Approved **all appears ok to proceed as per approved consented documents , G10 G12**	Pass
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received	N/A



Taken at 9:03 AM on Friday 12/10/2018



Taken at 9:04 AM on Friday 12/10/2018



Taken at 9:04 AM on Friday 12/10/2018



Taken at 9:04 AM on Friday 12/10/2018



Taken at 9:04 AM on Friday 12/10/2018



Taken at 9:05 AM on Friday 12/10/2018



Taken at 9:19 AM on Friday 12/10/2018

2018-10-12 Audit Report - G7 - A2332775

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Preline Building**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **12 October 2018 9:03 a.m.**
Duration: **60 minutes**

Inspection Element	Status
General	Pass
Approved building consent documents on site	Pass
Conditions of consent (if any) are met	Pass
Floor plan as per the approved plans	Pass
Walls	Pass
Appropriate materials being used	Pass
Airseals in place at window and door	Pass
Wall bracing (internal) **all bracing inplace & holding down inplace correctly**	Pass
Fixings (nailing, proprietary fixings for uplift, bracing etc)	Pass
Moisture content (specify) % **Between 15-18 %**	Pass
Roof	N/A
Insulation	Pass
Correct installation **pink batts**	Pass
Outcome of Inspection	Pass
Approved **all appears ok to proceed as per approved consented document /NZBC**	Pass
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received	N/A



Taken at 9:01 AM on Friday 12/10/2018



Taken at 9:01 AM on Friday 12/10/2018



Taken at 9:01 AM on Friday 12/10/2018



Garage area

Taken at 9:02 AM on Friday 12/10/2018



Taken at 9:09 AM on Friday 12/10/2018

2018-10-12 Site Notice - A2332777

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581**
Date Printed: **12 October 2018**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**
Building Category: **Residential Level 1**

Inspection Type: **Preline Plumbing**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **12 October 2018**

Passed Items

General
- Approved building consent documents on site
- Conditions of consent (if any) are met
- As per the approved plans

Plumbing
- Appropriate materials being used
- Adequate support and protection where required
- Integrity of framing (notches, holes etc)
- Sealing of penetrations
- Pressure test of entire system — **pressure test ok 200 PSI**

Outcome of Inspection
- Approved — **all appears ok to proceed as per approved consented documents , G10 G12**

Inspection Type: **Preline Building**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **12 October 2018**

Passed Items

General
- Approved building consent documents on site
- Conditions of consent (if any) are met
- Floor plan as per the approved plans

Walls
- Appropriate materials being used
- Airseals in place at window and door
- Wall bracing (internal) — **all bracing inplace & holding down inplace correctly**
- Fixings (nailing, proprietary fixings for uplift, bracing etc)
- Moisture content (specify) % — **Between 15-18 %**

Insulation
- Correct installation — **pink batts**

Outcome of Inspection

Approved	**all appears ok to proceed as per approved consented document /NZBC**

Documentation	Status
Drainage as-built	Accepted
Correct siting form	Accepted
Pre-floor plumbing as built	Accepted
Truss Manufacturers Asbuilt Plan (B1)	Accepted
CCC application form	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
PS3 General	Required
PS3 Fireplace	Required
Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane	Required

Licensed Building Practitioners	Status
Design 1	Accepted
Foundations 1	Required
Roofing 1	Required
Carpentry 1	Required
Bricklaying and Blocklaying 1	Required
External Plastering 2	Required

2018-10-17 Audit Report - RAB - A2335383

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Rigid Air Barrier fixings inspection**
Inspection Outcome: **N/A**
Inspected By: **Glenn Walker**
Inspection Date: **17 October 2018 1:49 p.m.**
Duration: **0 minutes**

Inspection Element	Status
General	N/A
External walls	N/A
Outcome of Inspection	N/A

2018-10-17 Audit Report - G15 - A2335384

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Half High Brick**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **17 October 2018 1:47 p.m.**
Duration: **60 minutes**

Inspection Element	Status
General	Pass
Previous inspections	Pass
Approved building consent documents on site	Pass
Conditions of consent (if any) are met	Pass
Brick Inspection	Pass
As per the approved plans / design	Pass
Brick cavity between 40 / 75mm	Pass
Adequate brick ties. (Min 5 per sq metre)	Pass
Position and size of brick ties correct	Pass
DPC flashings installed around joinery	Pass
Construction joints installed. (If required)	Pass
Adequate weep holes have been provided	Pass
Mortar joints are consistent thickness. (9 ? 13mm)	Pass
Mortar joints have been tooled	Pass
Correct installation and materials	Pass
2nd storey brick slip has been installed	N/A
Correct size lintels	N/A
Durability of lintels meets Code requirements	N/A
Outcome of Inspection	Pass
Approved **all appears ok to proceed as per approved consented document /NZBC**	Pass
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received	N/A



Taken at 1:43 PM on Wednesday 17/10/2018



Taken at 1:43 PM on Wednesday 17/10/2018



Taken at 1:44 PM on Wednesday 17/10/2018



Taken at 1:44 PM on Wednesday 17/10/2018



Taken at 1:46 PM on Wednesday 17/10/2018



Taken at 1:46 PM on Wednesday 17/10/2018

2018-10-17 Site Notice - A2335392

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581**
Date Printed: **17 October 2018**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**
Building Category: **Residential Level 1**

Inspection Type: **Half High Brick**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **17 October 2018**

Passed Items

General
- Previous inspections
- Approved building consent documents on site
- Conditions of consent (if any) are met

Brick Inspection
- As per the approved plans / design
- Brick cavity between 40 / 75mm
- Adequate brick ties. (Min 5 per sq metre)
- Position and size of brick ties correct
- DPC flashings installed around joinery
- Construction joints installed. (If required)
- Adequate weep holes have been provided
- Mortar joints are consistent thickness. (9 ? 13mm)
- Mortar joints have been tooled
- Correct installation and materials

Outcome of Inspection
- Approved — **all appears ok to proceed as per approved consented document /NZBC**

Documentation	Status
Drainage as-built	Accepted
Correct siting form	Accepted
Pre-floor plumbing as built	Accepted
Truss Manufacturers Asbuilt Plan (B1)	Accepted
CCC application form	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
PS3 General	Required
PS3 Fireplace	Required

Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane	Required

Licensed Building Practitioners	Status
Design 1	Accepted
Foundations 1	Required
Roofing 1	Required
Carpentry 1	Required
Bricklaying and Blocklaying 1	Required
External Plastering 2	Required

2018-10-25 Audit Report - G8 - A2339177

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Post Lining**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **25 October 2018 10:58 a.m.**
Duration: **60 minutes**

Inspection Element	Status
General	Pass
Previous inspections	Pass
Approved building consent documents on site	Pass
Conditions of consent (if any) are met	Pass
As per the approved plans	Pass
Linings	Pass
Appropriate materials used **gib system used and fixed to manufators specs**	Pass
Wall Bracing	Pass
Fixings	Pass
Fire Resistant Ratings	N/A
Accoustic Noise Ratings	N/A
Outcome of Inspection	Pass
Approved **all appears ok to proceed as per approved consented document /NZBC**	Pass
Further Inspection Required (Recheck Required)	N/A
Required documents not yet received	N/A



Taken at 10:48 AM on Thursday 25/10/2018



Taken at 10:48 AM on Thursday 25/10/2018



Taken at 10:48 AM on Thursday 25/10/2018



Taken at 10:48 AM on Thursday 25/10/2018



Taken at 10:49 AM on Thursday 25/10/2018



Taken at 10:49 AM on Thursday 25/10/2018

2018-10-25 Site Notice - A2339182

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581**
Date Printed: **25 October 2018**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**
Building Category: **Residential Level 1**

Inspection Type: **Post Lining**
Inspection Outcome: **Pass**
Inspected By: **Glenn Walker**
Inspection Date: **25 October 2018**

Passed Items

General
- Previous inspections
- Approved building consent documents on site
- Conditions of consent (if any) are met
- As per the approved plans

Linings
- Appropriate materials used — **gib system used and fixed to manufators specs**
- Wall Bracing
- Fixings

Outcome of Inspection
- Approved — **all appears ok to proceed as per approved consented document /NZBC**

Documentation	Status
Drainage as-built	Accepted
Correct siting form	Accepted
Pre-floor plumbing as built	Accepted
Truss Manufacturers Asbuilt Plan (B1)	Accepted
CCC application form	Required
Stormwater as- built	Required
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Required
Electrical Certificate	Required
Gas Certificate	Required
PS3 General	Required
PS3 Fireplace	Required
Roof Cladding Memorandum (E2)	Required
Water Proofing Certificate - External (E2) Membrane butynol	Required
Water Proofing Certificate - Internal (E3) Tilers membrane	Required

Licensed Building Practitioners	Status
Design 1	Accepted

Foundations 1	Required
Roofing 1	Required
Carpentry 1	Required
Bricklaying and Blocklaying 1	Required
External Plastering 2	Required

Application for Code of Compliance Certificate BC180581 - A2373108

Application for Code Compliance Certificate

Reference number: REF181201231 **Submitted on:** 12/12/2018 08:10 a.m.

The Building Consent

Building consent number:	180581
Issued by:	Taupō District Council
Valuation number:	0730164798
Property address:	6 Mayfly Grove, Taupo
Legal description:	Lot 196 DP 509197

The Owner

Name of owner:	Penny Homes
Contact person:	
Mailing address::	PO Box 708, Taupo 3351
Street address/registered office:	
Landline:	
Mobile:	
Daytime:	
After hours:	
Fax:	
Email address:	melanie@pennyhomes.co.nz
Website:	
The following evidence of ownership is attached to this application:	Other Document

The Agent

Is there an agent working on behalf of the applicant?	False

First Point of Contact

First point of contact for communication with Council:	Owner

The Application

All building work to be carried out under the building consent specified on this form was completed on:	
Building work undertaken:	Residential

The personnel who carried out building work are as follows:

Type of practitioner: Producer Statement Authors
Name: Todd Elmiger
Company name:
Address:
Landline:
Mobile:
Email address:

Type of practitioner: Producer Statement Authors
Name: Steve Bibby
Company name:
Address:
Landline:
Mobile:
Email address:

Type of practitioner: Builder
Name: Kiriwai Williams
Company name:
Address:
Landline:
Mobile:
Email address:

Type of practitioner: Brick
Name: Gareth Moseley
Company name: 131220
Address:
Landline:
Mobile:
Email address:

Type of practitioner: Builder
Name: Steve Amerin
Company name:
Address:
Landline:
Mobile:
Email address:

Type of practitioner: Drainlayer
Name: Kelvin PRice
Company name:

Address:
Landline:
Mobile:
Email address:

Type of practitioner:	Gas
Name:	Huia Anderson
Company name:	
Address:	
Landline:	
Mobile:	
Email address:	

Type of practitioner:	Electrician
Name:	Brian Farmer
Company name:	
Address:	
Landline:	
Mobile:	
Email address:	

Type of practitioner:	Roofing
Name:	Damion Poutu
Company name:	
Address:	
Landline:	
Mobile:	
Email address:	

Specified systems:	There are no specified systems in the building

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

The code compliance certificate should be sent to:	Owner

Attachments

Brick LBP.pdf
Roof - LBP.pdf
Slab LBP.pdf
Texture LBP.pdf
Tile Warranty.pdf
build lbp.pdf

[elec memo.pdf]

[gas.pdf]

Upload any other relevant documents (please upload each document separately): (1 mb)



Upload any other relevant documents (please upload each document separately): (735 kb)



Upload any other relevant documents (please upload each document separately): (735 kb)



Upload any other relevant documents (please upload each document separately): (1 mb)



Upload any other relevant documents (please upload each document separately): (1 mb)



Upload any other relevant documents (please upload each document separately): (883 kb)



[soakpits.pdf]

Name of person completing this Code Compliance Certificate application: Melanie Mundy

Relationship to owner (if not owner): Agent

Electrical Certificate BC180581 - A2373109

Certificate of Compliance and

Electrical Safety Certificate

Location: 6 Mayfly Gr Taupo

Client details: Penny Homes Ltd. Xu residence

Name of Electrical worker: Brian Farmer **Practising licence No:** E16616 **Ph:** 07 378 8411
Name of person being supervised: Paul Olsen. Training No: EW135193 **Ph:** 0275773030
Name of person being supervised: Chase Duncan **Training No**: EWE-TLC 145316 **Ph:** 0275616432

Type of work: ~~Alteration~~ ~~Addition~~ New work **Risk category:** ~~Low~~ General High
Reference Standards. AS/NZS 3000/2007 A1 & A2

Description of work: Install the following in new residence: 16mm 1 phase service mains & 25mm buried earth to main switchboard. Install: 33x recessed LED lights, 2x vanity lights. Install 8x single socket outlets, 28x double socket outlets, 1x oven, 1x hob, 2x heated towel rails, 2x exhaust fans. Outside work: Install 1x waterproof socket, 6 recessed lights.

I certify that the completed Prescribed Electrical Work to which this certificate applies has been done lawfully and safely, and the information in the certificate is correct in that the installation, or part of:

1. Has an earthing system which is correctly rated.
2. Relies on a supplier Declaration of Conformity.
3. Is safe to connect to a low voltage supply.
4. Contains fittings that are safe to connect to a power supply.
5. Has been tested in accordance with the Electricity (Safety) Regulations.
6. Relies on manufacturer's instructions

Electronic reference: C:\Users\DSE Customer\Documents\HQ Electrical\SDOCs

Certifiers signature **Date:** 18.12.2018

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

Certifiers Name: Brian Farmer **Practising Licence No:** E16616 **Date issued:** 18.12.2018

Certifiers signature:

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

Gas Certificate BC180581 - A2373110

GASFITTING CERTIFICATE OF COMPLIANCE

Pursuant to the Gas Act 1992 and the Gas (Safety and Measurement) Regulations 2010

www.certsonline.co.nz
Great Lake Plumbing & Gas Ltd
ph 021659663
22A Arthur Crescent,Hilltop,
Taupo,3330,NZ

Consumer:	. Xu	**Certificate Number:**	**18936-672**	**Test Result:**	7 min Duration
Installation Address:	6 Mayfly Grove	**Gas Supplier:**			7kPa test pressure
		Category:	Gasfitters		0kPa Loss / Gain
	Taupo 3330	**Installation Type:**	New		2.75kPa Working pressure
Vehicle Registration:		**Gas Type:**	NG	**Other Testing:**	
Vessel Registration:		**Certification Date:**	08-12-2018	**Test/Completion Date:**	08-12-2018

DESCRIPTION OF GASFITTING TO WHICH THIS CERTIFICATE APPLIES

[Y] Includes Pipework Installation

[N] Includes work on an appliance or fitting, imported or manufactured, for consumers own use

[Y] This certificate relates to the whole of the gas installation or [N] Just to specified parts of it

ADDITIONAL INFORMATION (include install dates - references)

Qty	Item Type	Item Location	Make/Model	Input Rate	Flue Type	Flue Location	Vent Type	Vent Location
1	Space heater inbuilt	Lounge	Escea DL 850	36mj/h	Power Flue (Room Sealed)		Mechanical	
1	Water heater continuous flow	RH Wall	Rinnai REU VR2626WG ZK	199mj/h	Forced Draught Flue (Power)		Natural	
1	Hob	Kitchen	Westinghouse	34mj/h	Unflued		Adventitious	

I CERTIFY THAT:

[Y] I Certify that all appliances and fittings worked on by me or by persons working under my supervision are safe to connect to a gas supply and that all work carried out was in accordance with all applicable requirements of the Gas Act 1992 and Gas (Safety and Measurement) Regulations 2010 & all information entered in this certificate is correct.

[Y] I Certify that work required complies with standards in addition to AS/NZS 5601.1 or AS/NZS 5601.2 (as applicable), and are referenced in the Additional Information text.

[Y] I Certify that all Gasfitting Work has been done in accordance with sections 3 to 6 of AS/NZS 5601.1

[Y] I Certify that all Gasfitting Work has been done in accordance with sections 3 to 9 of AS/NZS 5601.2.

[Y] I Certify that all Gasfitting Work has been done in accordance with the certified design [Y] manufacturer's instructions [Y] for the gas installation or part installation and the manufacturer's and/or certified design compliance documents are attached, or an electronic location referenced on this Certficate.

[Y] The gasfitting work has been done lawfully & safely

Installer(s) supervised by certifier

Certificate Owner

Name: Anderson Huia Te Kawa(18936)

Employer License No:

Company: Great Lake Plumbing & Gas Ltd

Certifier

Name: Anderson Huia Te Kawa(18936)

Employer License No:

Signed:



Memorandum from LBP-Bricklaying BC180581 - A2373111

Memorandum from Licensed Building Practitioner:
Record of building work
Section 88, Building Act 2004

THE BUILDING

Street address: Mayfly Grove	
Suburb: Nukuhau	
Town/City: Taupo	Postcode:

THE PROJECT

Building consent number: BC 180581

THE OWNER(S)

Name(s): XU Residents	
Mailing address:	
Suburb:	PO Box/Private Bag:
Town/City:	Postcode:
Phone number:	Email address:

RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

PRIMARY STRUCTURE

Work that is restricted building work ✓ Tick	Description of restricted building work If necessary, describe the restricted building work	Carried out or supervised Tick ✓ whether you carried out the RBW or supervised someone else.
○ Foundations and subfloor framing	N/A	○ Carried out ○ Supervised
○ Walls	N/A	○ Carried out ○ Supervised
○ Roof	N/A	○ Carried out ○ Supervised
○ Columns and beams	N/A	○ Carried out ○ Supervised
○ Bracing	N/A	○ Carried out ○ Supervised
○ Other	N/A	○ Carried out ○ Supervised

RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

EXTERNAL MOISTURE MANAGEMENT SYSTEMS

Damp proofing ○	N/A	○ Carried out ○ Supervised
Roof cladding or roof cladding system ○	N/A	○ Carried out ○ Supervised
Ventilation system (for example, subfloor or cavity) ○	N/A	○ Carried out ○ Supervised
Wall cladding or wall cladding system ✓	Brick Veneer wall ties used on every centre Correct cavities used, correct weep holes used Passed half high inspection by council	○ Carried out ✓ Supervised
Waterproofing ○		○ Carried out ○ Supervised
Other ○		○ Carried out ○ Supervised

ISSUED BY

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

Name: Gareth Moseley	LBP number: BP 131220
Class(es) licensed in: B1, B2	
Plumbers, Gasfitters and Drainlayers registration number (if applicable): /	
Mailing address (if different from below):	
Street address/Registered office: 181 Tauhara Road	
Suburb: Taupo	Town/City: Taupo
PO Box/Private Bag: PO Box 1536	Postcode: 3330
Phone number: 027584616 / 0273544957	Mobile: 027584616 / 0273544957
After hours: " "	Fax: /
Email address: G.M.Brickandblock@gmail.com	Website: /

DECLARATION

I Gareth Moseley carried out or supervised the restricted building work recorded on this form.

Signature: _____ Date: 5/11/2018

Memorandum from LBP-Carpentry BC180581 - A2373112

Memorandum from Licensed Building Practitioner:
Record of building work
Section 88, Building Act 2004

PlaceMakers
Know how. Can do.

THE BUILDING		
Street address:	Mayfly	
Suburb:		
Town/City:	Taupo	Postcode: 3330

THE PROJECT	
Building consent number:	180581

THE OWNER(S)		
Name(s):	Xu	
Mailing address:		
Suburb:		PO Box/Private Bag:
Town/City:		Postcode:
Phone number:		Email address:

RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

PRIMARY STRUCTURE

Work that is restricted building work (✓) Tick	Description of restricted building work If necessary, describe the restricted building work	Carried out or supervised Tick (✓) whether you carried out the RBW or supervised someone else.
○ Foundations and subfloor framing	by others	○ Carried out ○ Supervised
✓ Walls	stand pre-cut frames and fixing as per plan	✓ Carried out ○ Supervised
✓ Roof	stand trusses and fixings as per plan	✓ Carried out ○ Supervised
○ Columns and beams	/	○ Carried out ○ Supervised
○ Bracing	as per plan	✓ Carried out ○ Supervised
○ Other	/	○ Carried out ○ Supervised

White – Council Copy Yellow – Home Owner's copy Blue – Builder's Copy

RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

EXTERNAL MOISTURE MANAGEMENT SYSTEMS

Damp proofing ✓	brick rebate	✓ Carried out ○ Supervised
Roof cladding or roof cladding system ○	by others	○ Carried out ○ Supervised
Ventilation system (for example, subfloor or cavity) ○	//	○ Carried out ○ Supervised
Wall cladding or wall cladding system ○	by others	○ Carried out ○ Supervised
Waterproofing ○	/	○ Carried out ○ Supervised
Other ○	/	○ Carried out ○ Supervised

ISSUED BY

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

Name: Mike Teddy	LBP number: 107918
Class(es) licensed in: Carpentry	
Plumbers, Gasfitters and Drainlayers registration number (if applicable):	
Mailing address (if different from below):	
Street address/~~Registered office~~: 144 Whangamata Rd, Kinloch	
Suburb:	Town/City: Taupo
PO Box/Private Bag:	Postcode: 3377
Phone number:	Mobile: 027 245 2635
After hours:	Fax:
Email address: Ktmman@gmail.com	Website:

DECLARATION

I Mike Teddy carried out or supervised the restricted building work recorded on this form.

Signature: M Teddy Date: 11-12-2018

White – Council Copy Yellow – Home Owner's copy Blue – Builder's Copy

Memorandum from LBP-Foundations BC180581 - A2373113

Form 6A

Memorandum from licensed building practitioner: Record of building work

Section 88, Building Act 2004

Please fill in the form as fully and correctly as possible.
If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

Street address: Lot 196 Mayfly Grove	
Suburb: Nukuhau Grove	
Town/City: TAUPO	Postcode:

Building consent number: 180581

Name(s):	
Mailing address:	
Suburb:	PO Box/Private Bag:
Town/City:	Postcode:
Phone number:	Email address:

EXTERNAL MOISTURE MANAGEMENT SYSTEMS		
Work that is restricted building work	**Description of restricted building work**	**Carried out or supervised**
Tick ✓	If necessary, describe the restricted building work.	Tick ✓ whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Damp proofing ☑	Installed Polythene to underside of concrete foundation as per Ribraft design shown in consented plans.	◉ Carried out ○ Supervised
Roof cladding or roof cladding system ☐		○ Carried out ○ Supervised
Ventilation system (for example, subfloor or cavity) ☐		○ Carried out ○ Supervised
Wall cladding or wall cladding system ☐		○ Carried out ○ Supervised
Waterproofing ☐		○ Carried out ○ Supervised
Other ☐		○ Carried out ○ Supervised

RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

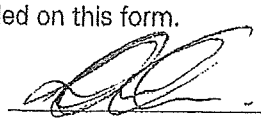
PRIMARY STRUCTURE

Work that is restricted building work	Description of restricted building work	Carried out or supervised
Tick ✓	If necessary, describe the restricted building work.	Tick ✓ whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Foundations and subfloor framing ☑	Installed Ribraft concrete foundation to engineers design as per consented plan.	◉ Carried out ○ Supervised
Walls ☐		○ Carried out ○ Supervised
Roof ☐		○ Carried out ○ Supervised
Columns and beams ☐		○ Carried out ○ Supervised
Bracing ☐		○ Carried out ○ Supervised
Other ☐		○ Carried out ○ Supervised

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise restricted building work.	
Name: KIRIWAI WILLIAMS	LBP number: 106230
Class(es) licensed in: F1, F2	
Plumbers, Gasfitters and Drainlayers registration number (if applicable):	
Mailing address (if different from below):	
Street address/Registered office: 2 GOLF COURSE LANE	
Suburb: BELL BLOCK	Town/City: NEW PLYMOUTH
PO Box/Private Bag 9116	Postcode: 4312
Phone number:	Mobile: 027 480 1111
After hours:	Fax:
Email address: taranaki@rfl.co.nz	Website:

DECLARATION

I KIRIWAI WILLIAMS carried out or supervised the restricted building work recorded on this form.

Signature: 

Date: 14 · 8 · 2018

Memorandum from LBP-Roofing BC180581 - A2373115

Memorandum from licensed building practitioner: Record of building work

Section 88, Building Act 2004

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

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

THE BUILDING

Street address: Lot 196 mayfly grove - Xu Residence	
Suburb: Nukuhau	
Town/City: Taupo	Postcode: 3330

THE PROJECT

Building consent number:

THE OWNER(S)

Name(s):	
Mailing address:	
Suburb:	PO Box/Private Bag:
Town/City:	Postcode:
Phone number:	Email address:

RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

PRIMARY STRUCTURE

Work that is restricted building work	Description of restricted building work	Carried out or supervised
Tick ✓	If necessary, describe the restricted building work.	Tick ✓ whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Foundations and subfloor framing ☐		◯ Carried out ◯ Supervised
Walls ☐		◯ Carried out ◯ Supervised
Roof ☐		◯ Carried out ◯ Supervised
Columns and beams ☐		◯ Carried out ◯ Supervised
Bracing ☐		◯ Carried out ◯ Supervised
Other ☐		◯ Carried out ◯ Supervised

EXTERNAL MOISTURE MANAGEMENT SYSTEMS		
Work that is restricted building work	**Description of restricted building work**	**Carried out or supervised**
Tick ✓	If necessary, describe the restricted building work.	Tick ✓ whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Damp proofing ☐		◯ Carried out ◯ Supervised
Roof cladding or roof cladding system ☑	Supplied and fitted materials as per manufacturers specifications.	◯ Carried out ◉ Supervised
Ventilation system (for example, subfloor or cavity) ☐		◯ Carried out ◯ Supervised
Wall cladding or wall cladding system ☐		◯ Carried out ◯ Supervised
Waterproofing ☐		◯ Carried out ◯ Supervised
Other ☐		◯ Carried out ◯ Supervised

ISSUED BY

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

Name: Damion D E Poutu	LBP number: 123731
Class(es) licensed in:	
R2, R3, R4	
Plumbers, Gasfitters and Drainlayers registration number (if applicable):	
Mailing address (if different from below):	
Street address/Registered office: 1/31 MIRO ST	
Suburb:	Town/City: TAUPO
PO Box/Private Bag 644	Postcode: 3330
Phone number: 07 377 0449	Mobile: 0274 328933
After hours:	Fax: 07 3770444
Email address: reliableroofingtaupo@xtra.co.nz	Website:

DECLARATION

I Damion Poutu ~~carried out~~ or supervised the restricted building work recorded on this form.

Signature: Damion Poutu

Date: 31/09/18

Producer statement - Soakhole GGL BC180581 - A2373116

GREAT LAKE TAUPŌ
Taupō District Council

Producer Statement Construction (PS3)

General construction work

All sections of this form must be completed

TO BE COMPLETED BY THE PERSON WHO HAS UNDERTAKEN THE BUILDING WORK

Author company: GGL SITE DEVELOPMENT EARTHMOVING LTD BC number: 180581

Author name: TODD ELMIGER Author registration number:

Description of work: Install Sceria - Rock Soak pit as per E2 - AS1 spec.
Dimensions of pit given by JT Design.
x 1 18m³ pit, x 1 6m³ pit.

Legal description: DP 509197

Site address: LOT 196 mayfly

NZBC clauses *(circle as applicable)*:

B1	B2	C1	C2	C3	C4	C5	C6	C7	D1	D2	E1
E2	E3	F1	F2	F3	F4	F5	F6	F7	F8	G1	G2
G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14
G15	H1										

I have sighted the above building consent and read the attached conditions of consent and confirm that I have undertaken the building work described above in accordance with the consented plans and specifications.

I understand that Council will rely upon this producer statement, for the purpose of establishing compliance with the above building consent.

Signature: Date: 11 - 12 - 18

Tradesperson's contact details:

Address: 95 MIRO STREET TAUPO Postcode: 3330

Phone: — Fax: —

Mobile: 021 703075 Email: todd@ggltd.co.nz.

Tiling Durability Statement - A2373122

Material Durability Statement

TIMESTAMP:	11/26/2018 1:38:35 PM
ADDRESS:	6 Mayfly Grove, Taupo
CLIENT NAME:	Penny Homes Ltd - Xu
TILER NAME:	Steven Bibby
WATERPROOFER NAME:	Steven Bibby
CONTRACTOR OR BUSINESS NAME:	Tile Creations 2008 Ltd
ASA REGISTRATION NO:	606181
E-MAIL ADDRESS :	tracey@tilecreations.co.nz
SUBSTRATE:	All substrates checked prior to waterproofing
PRIMING AND BOND BREAKER:	The correct primers have been used and applied in accordance with its TDS The correct bond breaker have been used and applied in accordance with TDS
MEMBRANE USED:	Dampfix Gold
DATE OF COMPLETION:	24/11/2018
FLOOD TEST DATE:	N/A
COUNCIL INSPECTION:	N/A
APPLICATORS DECLARATION:	I the applicator confirm that the above information is correct, that the products used have been applied in accordance with their TDS and we are satisfied that the work done meets the relevant building code standards
AREAS WATERPROOFED:	Bathrooms - Floors and 75mm up the wall Bath Surrounds - 150mm around bath surrounds

Terms & Conditions:

The waterproofing materials listed above have a current BRANZ appraisal and meets the requirements of the AS/NZS4858-2004 standards. The waterproofing membrane has a minimum durability of 15 years as required by the New Zealand Building Code. Material Durability Statement is given subject to the products listed being applied and installed according to the ASA System Specification. Substitution of any product or component will be a breach of the specification and may render the guarantee null and void.

This is not a workmanship warranty. Any defects, leaks, or damage of any nature, caused by Applicator, and the costs associated with rectification of these defects etc. shall be the Applicator's sole responsibility. It is the Applicator's responsibility to ensure all work is done to the relevant standards.

ASA, or its appointed agents, reserves the right to inspect any alleged failure and must be given reasonable time to investigate claims of product failure. The Company must accept the claim of product failure in writing and agree to costs BEFORE the commencement of remedial work.

The company will not be liable for any costs unless and until such liability is accepted in writing.

Bostik New Zealand Ltd
19 Eastern Hutt Road, Wingate, Lower Hutt, New Zealand, Phone: 0508 222 777, Fax: + 64 4 577 3776
E-mail: nzsales@bostik.com
www.bostik.co.nz

Code Compliance Certificate application formally received 12/12/2018 - A2373125

To: melanie@pennyhomes.co.nz[melanie@pennyhomes.co.nz]; Tech Support[businesssupport@taupo.govt.nz]; buildingconsents[buildingconsents@taupo.govt.nz]
From: buildingconsents
Sent: Tue 11/12/2018 8:07:41 p.m
Importance: Normal
Subject: Code Compliance Certificate application formally received for 6 Mayfly Grove, Taupo
MAIL_RECEIVED: Tue 11/12/2018 8:07:47 p.m

;

Your online Code of Compliance application has been formally received for 6 Mayfly Grove, Taupo (REF181201231).

We will advise the outcome or if there is further information required in due course.

Kind regards,
Taupō District Council Building Consent Team

soakhole 3 - A2373636



soak hole 6 - A2373637



Soak hole 2 - A2373638



Soak hole 1 - A2373639



Soak 4 - A2373640



2018-12-18 Audit Report - G5 - A2377370

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Sanitary Sewer/Drainage**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **18 December 2018 2:21 p.m.**
Duration: **0 minutes**

Inspection Element	Status
Stormwater **by other**	Pass
To approved disposal system (onsite or reticulated system)	Pass
Disposal system adequate	Pass
As built provided with PS3 and photos	Pass
Outcome of Inspection	Pass
Required documents not yet received **storm water aslaid plans**	Pass

2018-12-18 Audit Report - G9 - A2377371

GoGet Inspection Audit Report

Consent No: **180581**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**

Inspection Type: **Code Compliance - Building (Single Dwelling Only)**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **18 December 2018 2:35 p.m.**
Duration: **60 minutes**

Inspection Element	Status
General	Pass
Met Kevin on site for CCC inspecction.	
Previous inspections	Pass
Approved building consent documents on site	Pass
Conditions of consent (if any) are met	Pass
As per the approved plans	Pass
Shrinkage control joints	Pass
Application for Code Compliance Certificate	Pass
Potable water as per Clause G12	Pass
Section 75 confirmation	N/A
Exterior	Pass
External envelope complete & weatherproof	Pass
Claddings completed in accordance with standards/specifications	Pass
Correct protective coating/paint systems as required	Pass
Wall and roof penetrations sealed/flashed	Pass
Access to building	Pass
Barriers as required completed and compliant	Pass
Subfloor access as required	N/A
Ground levels/paving heights	Pass
Stormwater disposed of appropriately	Pass
Retaining walls	Pass
Vehicle and footpath damage	Pass
Interior	Pass
Ceiling and wall insulation in place	Pass
Fire ratings stopped	Pass
Installation of shower / bath linings, splash boards etc	Pass
Safety glass in bath / shower screens and adjacent windows	Pass
Wet areas (walls, ceilings, floors)	Pass
Tempering valve installed	N/A
Mechanical ventilation extraction to exterior	Pass
Catches on low windows (safety from falling)	Pass
Barrier heights and handrails	Pass
Lighting to access routes / stairs	Pass
Smoke alarms fitted and working	Pass
Visual awareness	Pass
Barriers for residential pools	N/A

Covers for small heated pools	N/A
Fireplace	N/A
Outcome of Inspection	Pass
Further Inspection Required (Recheck Required)	N/A
Have all documents been received, checked and Goget documentation updated?	N/A
Approved	Pass

Work appears as per approved consented documents, ok to issue CCC.



Taken at 2:26 PM on Tuesday 18/12/2018



Taken at 2:26 PM on Tuesday 18/12/2018



Taken at 2:26 PM on Tuesday 18/12/2018



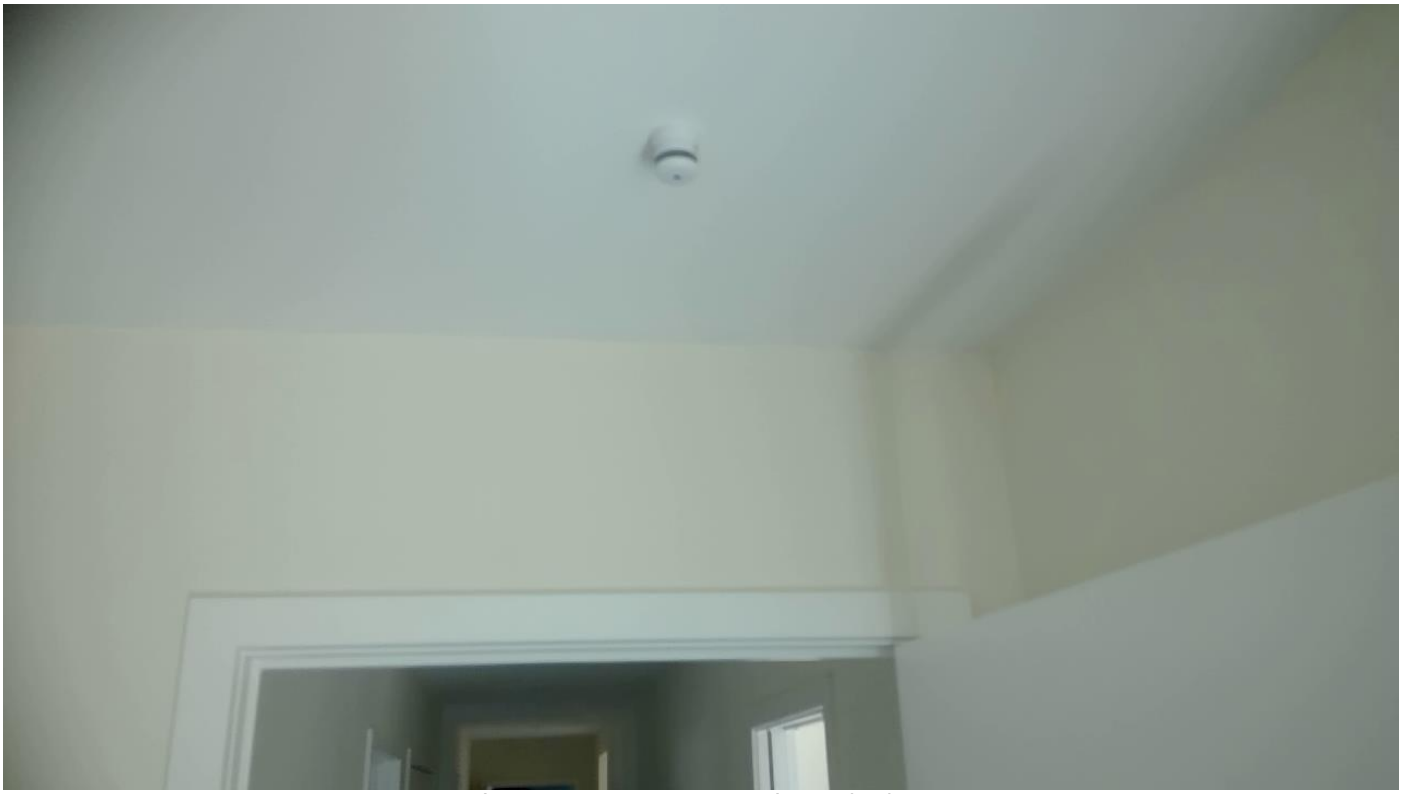
Taken at 2:28 PM on Tuesday 18/12/2018



Taken at 2:29 PM on Tuesday 18/12/2018



Taken at 2:29 PM on Tuesday 18/12/2018



Taken at 2:30 PM on Tuesday 18/12/2018



Taken at 2:32 PM on Tuesday 18/12/2018

2018-12-18 Site Notice - A2377375

Taupo District Council
72 Lake Terrace
Taupo
Phone 07 376 0899
buildingconsents@taupo.govt.nz

SITE NOTICE

Consent No: **180581**
Date Printed: **18 December 2018**
Applicant: **Penny Homes Limited**
Valuation Ref: **0730164798**
Site Address: **6 Mayfly Grove, Taupo**
Work Type: **New 3 bedroom dwelling.**
Building Category: **Residential Level 1**

Inspection Type: **Sanitary Sewer/Drainage**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **18 December 2018**

Passed Items

Stormwater — **by other**
- To approved disposal system (onsite or reticulated system)
- Disposal system adequate
- As built provided with PS3 and photos

Outcome of Inspection
- Required documents not yet received — **storm water aslaid plans**

Inspection Type: **Code Compliance - Building (Single Dwelling Only)**
Inspection Outcome: **Pass**
Inspected By: **Ben Fouhy**
Inspection Date: **18 December 2018**

Passed Items

General — **Met Kevin on site for CCC inspecction.**
- Previous inspections
- Approved building consent documents on site
- Conditions of consent (if any) are met
- As per the approved plans
- Shrinkage control joints
- Application for Code Compliance Certificate
- Potable water as per Clause G12

Exterior
- External envelope complete & weatherproof
- Claddings completed in accordance with standards/specifications
- Correct protective coating/paint systems as required
- Wall and roof penetrations sealed/flashed
- Access to building
- Barriers as required completed and compliant
- Ground levels/paving heights
- Stormwater disposed of appropriately
- Retaining walls

Vehicle and footpath damage	
Interior	
Ceiling and wall insulation in place	
Fire ratings stopped	
Installation of shower / bath linings, splash boards etc	
Safety glass in bath / shower screens and adjacent windows	
Wet areas (walls, ceilings, floors)	
Mechanical ventilation extraction to exterior	
Catches on low windows (safety from falling)	
Barrier heights and handrails	
Lighting to access routes / stairs	
Smoke alarms fitted and working	
Visual awareness	
Outcome of Inspection	
Approved	**Work appears as per approved consented documents, ok to issue CCC.**

Documentation	**Status**
CCC application form	Accepted
Drainage as-built	Accepted
Stormwater as- built	Accepted
PS3 for stormwater drainage (soakhole/ soakpit) including photos	Accepted
Electrical Certificate **Brain Farmer - E 16616**	Accepted
Gas Certificate **Anderson Huia Te Kawa - 18936**	Accepted
Correct siting form	Accepted
Pre-floor plumbing as built	Accepted
PS3 General **External coating PS3**	Accepted
Roof Cladding Memorandum (E2)	Accepted
Truss Manufacturers Asbuilt Plan (B1) **Fixings plan only**	Accepted
Water Proofing Certificate - Internal (E3) Tilers membrane **bathroom**	Accepted

Licensed Building Practitioners	**Status**
Design 1 **W Thomson**	Accepted
Bricklaying and Blocklaying 1 **Gareth Mosely**	Accepted
Roofing 1 **Damion Poutu**	Accepted
Carpentry 1 **Mike Teddy**	Accepted
Foundations 1 **Kirinai Williams**	Accepted
External Plastering 2 **Resene Graphex cladding system**	Accepted

2018-12-19 Statement of compliance - A2377724

GREAT LAKE TAUPŌ
Taupō District Council

Statement of Compliance with the NZ Building Code

Consent No: 180581

ISSUED BY: **Taupo District Council**

PROJECT

Site Address:	6 Mayfly Grove, Taupo
Legal Description:	Lot 196 DP 509197
Work Description:	New 3 bedroom dwelling.
Building Category:	Residential Level 1

OWNER

Name(s): Penny Homes Limited
Address: 1 Jarden Mile,Taupo

[P] Application for CCC Received, Signed, Dated and have correct details
[P] Check all Inspections required and completed with reasons identified
[P] Records and Notes of Required Standard, Legible and Authors identifiable
[P] All Consent Conditions Complied With, Checked and no outstanding Conditions
[P] All records in file complete including Plans, Specifications, Inspection Notes, Certificate and Notices
[P] Application form for BC, Amendments and all letters and correspondence (refer to NCS system & Objective)
[P] All checks been completed as per Systems and Policy Manual 3.10.1 and 12.2 and a CCC for this consent can be issued

NOTES:
Inspections Prepaid:
Inspections Done: 12
Total Inspections Chargeable: 10
CCC Backdating of Durability Requirements: NA
Current Lawful Established Use: Housing
Year First Built: 2018.

LICENSED BUILDING PRACTITIONERS:

Design 1	BP115814	W Thomson
Carpentry 1	BP107918	Mike Teddy
Foundations 1	BP106230	Kirinai Williams
Bricklaying and Blocklaying 1	BP131220	Gareth Mosely
External Plastering 2	BP110343	Resene Graphex cladding system
Roofing 1	BP123731	Damion Poutu

Taupo District Council confirms that work done in relation to this project has been completed in accordance with the Building Consent and the New Zealand Building Code.

Signed: Date: 19 December 2018
Name: Peter Shepherd
Position: Building Officer

Code of Compliance Certificate - A2378333

GREAT LAKE TAUPŌ
Taupō District Council

Code Compliance Certificate

Section 95, Building Act 2004

BC No: 180581

The Building

Street address of building: 6 Mayfly Grove, Taupo
Legal description of land where building is located: Lot 196 DP 509197
Valuation number: 0730164798
Building name: N/A
Location of building within site/block number: Unknown
Level/unit number: N/A
Current, lawfully established, use: Housing
Year first constructed: 2018

The Owner

Name of owner: Xu Jiang
Contact person: Xu Jiang
Mailing address: 38A Lakewood Drive, Taupo 3330
Street address/registered office: Unknown
Phone number: Landline: Unknown **Mobile:** 027 5334252 **Daytime:** Unknown **After hours:** Unknown
Facsimile number: N/A
Email address: melanie@pennyhomes.co.nz
Website: N/A

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

Name: Penny Homes
Address: PO Box 708, Taupo 3351
Phone: Unknown
Email: melanie@pennhyhomes.co.nz

Building Work

Issued by: Taupo District Council
Description of work: New 3 bedroom dwelling.
Intended Use: **Intended Life:** Indefinite, but not less than 50 years

Code Compliance

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

a) The building work complies with the building consent

Signature: _____
Kelvin Short – **Building Manager**
On behalf of: Taupo District Council
Date: 19/12/18

GREAT LAKE TAUPŌ
Taupō District Council
46 Horomatangi Street, Taupō 3330
Private Bag 2005, Taupo Mail Centre
Taupō 3352, New Zealand
T 07 376 0899
F 07 378 0118
E info@taupo.govt.nz
www.taupo.govt.nz

19 December 2018

Xu Jiang
38A Lakewood Drive
Taupo 3330

Dear Sir/Madam

Code Compliance Certificate in relation to BC180581
6 Mayfly Grove, Taupo - New 3 bedroom dwelling.

Please find enclosed the Code Compliance Certificate for the above Building Consent.

If you require further information, please contact this office on 07 376 0899 or email techsupport@taupo.govt.nz.

Yours sincerely

Krystal Foden
Business Support Officer

CCC granted 19/12/2018 - A2378338

To: melanie@pennyhomes.co.nz[melanie@pennyhomes.co.nz]; Tech Support[businesssupport@taupo.govt.nz]
From: buildingconsents
Sent: Wed 19/12/2018 1:36:35 a.m
Importance: Normal
Subject: Online application for 6 Mayfly Grove, Taupo
MAIL_RECEIVED: Wed 19/12/2018 1:36:41 a.m

;

This email is to advise that the Code Compliance Certificate for 6 Mayfly Grove, Taupo has been issued.

Please follow https://online.taupo.govt.nz/online-services/REF181201231/online-services/REF181201231 to access the documents.

Kind regards,
Taupō District Council Building Consent Team