

## Nicola Kirby

---

**From:** Hayden Kent <hayden@kfconsilium.co.nz>  
**Sent:** Thursday, 16 August 2018 2:20 PM  
**To:** 'Waimak Contracting Ltd'; Nicola Kirby  
**Subject:** RE: BC170482 - 18 Claremont Cres, Amberley

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Access is acceptable to asphalt.

Regards

Hayden Kent  
Ph 021 2172440



PO Box 37, Amberley 7441, New Zealand  
[www.kfconsilium.co.nz](http://www.kfconsilium.co.nz)

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**From:** Waimak Contracting Ltd <waimakcontracting@hotmail.co.nz>  
**Sent:** Thursday, 16 August 2018 1:19 PM  
**To:** Nicola Kirby <Nicola.Kirby@hurunui.govt.nz>  
**Cc:** hayden@kfconsilium.co.nz  
**Subject:** Re: BC170482 - 18 Claremont Cres, Amberley

Thanks Nicola, can you please get Hayden to call us with the outcome ASAP we are hoping to get this asphalted tomorrow?

**Kind Regards**

**Michaela I Admin/Accounts**

Waimak Contracting Ltd  
Ph: 027 302 1981  
[waimakcontracting@hotmail.co.nz](mailto:waimakcontracting@hotmail.co.nz)  
[www.waimakcontracting.com](http://www.waimakcontracting.com)

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**From:** Nicola Kirby <[Nicola.Kirby@hurunui.govt.nz](mailto:Nicola.Kirby@hurunui.govt.nz)>  
**Sent:** Wednesday, 15 August 2018 4:44 PM  
**To:** Waimak Contracting Ltd  
**Cc:** [hayden@kfconsilium.co.nz](mailto:hayden@kfconsilium.co.nz)  
**Subject:** RE: BC170482 - 18 Claremont Cres, Amberley

Hi Michaela,

I have copied in our contracted Consents Engineer, Hayden Kent who will be in touch re an inspection.

From our file notes it looks like the crossing has been dug out, metalled and approved by Hayden on 4 December 2017.

Hayden – let me know if you require any further information from my end.

Kind regards,

Nicola.

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**From:** Waimak Contracting Ltd <[waimakcontracting@hotmail.co.nz](mailto:waimakcontracting@hotmail.co.nz)>  
**Sent:** Wednesday, 15 August 2018 4:39 PM  
**To:** planning <[planning@hurunui.govt.nz](mailto:planning@hurunui.govt.nz)>  
**Subject:** 18 Claremont Cres, Amberley

Hi,

Can I please book in a vehicle crossing inspection for tomorrow afternoon?

I have been advised that the dig out inspection has already been carried out and passed... Can you please confirm this?

Thanks 😊

**Kind Regards**

**Michaela | Admin/Accounts**

Waimak Contracting Ltd  
Ph: 027 302 1981  
[waimakcontracting@hotmail.co.nz](mailto:waimakcontracting@hotmail.co.nz)  
[www.waimakcontracting.com](http://www.waimakcontracting.com)

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# HURUNUI DISTRICT COUNCIL

P.O. Box 13 | Amberley | 7441 | 66 Carters Road | Amberley | 7410  
Phone 03 314-8816 | Fax 03 314-9181 | Email info@hurunui.govt.nz  
Web hurunui.govt.nz | facebook.com/HurunuiDistrictCouncil  
Skype hdc\_customer\_services | twitter.com/hurunuidc



## PAYMENT REQUEST

<b>Supplier Name and Address</b>
<b>DA Thrupp</b>
<b>71 Smiths Rd</b>
<b>Amberley</b>

<b>Customer #</b> (or attach new supplier request)	<b>020518</b>
<b>Supplier #</b>	<b>4822</b>
<b>Purchase order #</b>	<b>134660</b>

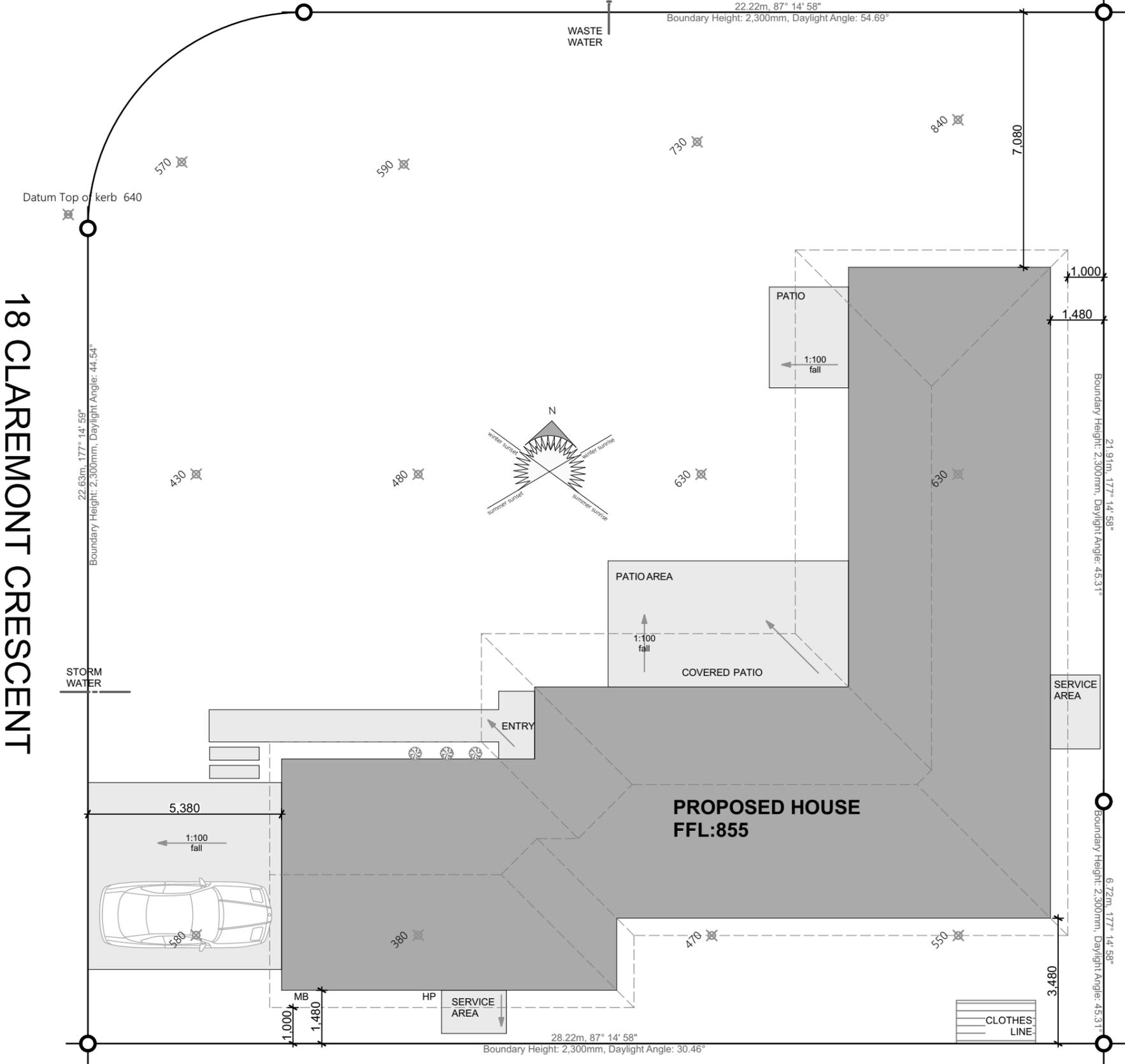
<b>Bank Account Number</b> (Attach deposit slip)	
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Details	GL Code	Amount	
Refund of vehicle crossing bond for BC170482	733007256	\$ 2,500	00
		\$	
		\$	
		\$	
		\$	
		\$	
		\$	
		\$	
<b>TOTAL</b>	<b>GST Inclusive</b>	\$ 2,500	00

Only required if No PO for an exceptional reason

Date	Prepared By	Authorised By

# DENTON STREET



**LEGAL DESCRIPTION:**

Lot:86  
 DP:485034  
 SITE AREA:800m2  
 AREA OVER FRAMING:197.16 m<sup>2</sup>  
 AREA OVER FOUNDATION:207.05 m<sup>2</sup>  
 TOTAL SITE COVERAGE:26%

**Site Info:**  
 Wind Zone:High  
 Earthquake Zone:3  
 Exposure Zone:B  
 Snow Loading Zone: N4

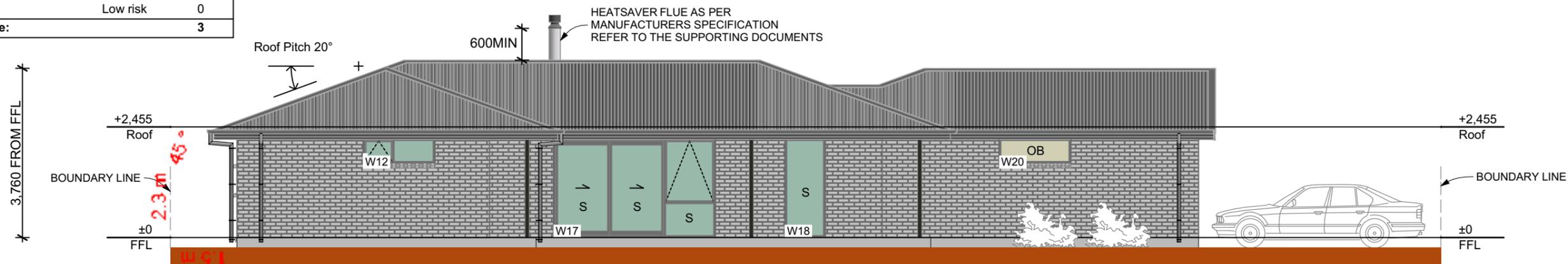
**Legend:**  
 MB: Meter Box  
 HP: Heat Pump EX

**General Note:**  
 Dimensions to foundation  
 Refer to foundation plan for more detailed drainage  
 Site to be fully fenced before commencing construction, fence to comply with NZBC clause F5/AS1 part 1

**Finished Floor level Note:**  
 FFL comply with NZBC E1/AS1 clause 2 page 33. The main contractor shall confirm all levels on site prior to works and shall insure the finished floor level shall comply with the requirements

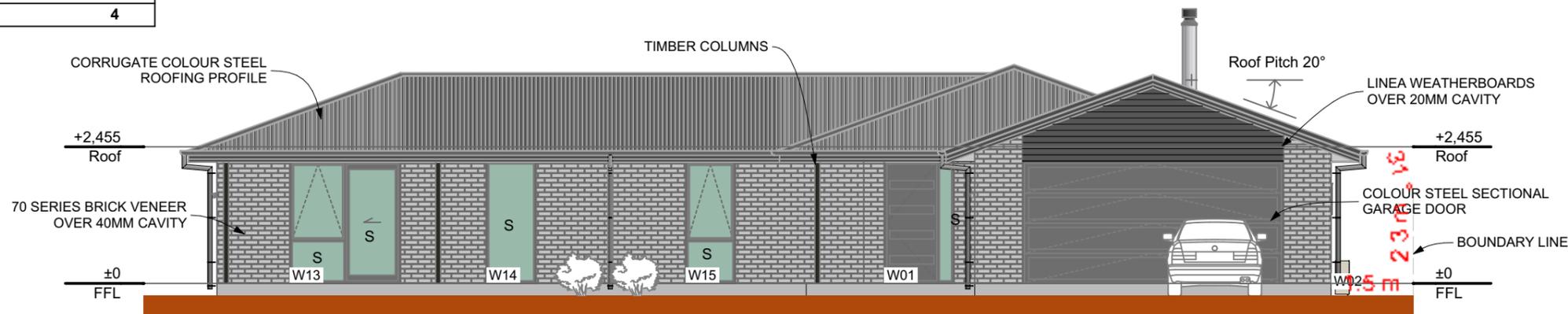
**Finished Floor Level:**  
 Shall be at least 225mm above the finished level of the surrounding ground immediately adjacent to the building and no less than 150mm above the road crown on at least one cross-section through the building and roadway.

BUILDING ENVELOPE RISK MATRIX		
North Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Low risk	0
Deck design	Low risk	0
<b>Total Risk Score:</b>		<b>3</b>



01 NORTH ELEVATION 1:100

BUILDING ENVELOPE RISK MATRIX		
West Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Medium risk	1
Deck design	Low risk	0
<b>Total Risk Score:</b>		<b>4</b>



02 WEST ELEVATION 1:100

**Legend:**  
 S: Safety Glass  
 OB: Obscure Glazing

NZBC H1 Calculation: (Schedule Method 4218)		
	Wall	Windows
North:	38m <sup>2</sup>	11m <sup>2</sup>
West:	50m <sup>2</sup>	12m <sup>2</sup>
South:	38m <sup>2</sup>	3.6m <sup>2</sup>
East:	50m <sup>2</sup>	12m <sup>2</sup>
<b>Totals:</b>	<b>176m<sup>2</sup></b>	<b>38.6m<sup>2</sup></b>
Window Area:22%		
Combined Window Area for E - W- S Elevations		
Wall:138m <sup>2</sup>		
Window:27.6m <sup>2</sup>		
Percentage:20%		



**ACCESSWAY CONSTRUCTION BOND**  
**BUILDING CONSENT BC170482**

GST Reg No 53-915-477  
Received with thanks by 42/01  
Hurunui District Council  
10-10-17 15:25 \*COPY COPY#635564  
DR BC170482 roading bon -3,025.00  
LMS Drafting & Design::1/76 Hamilton Av  
CQ WSP CHC  
DA Thrupp 3,025.00  
Total Received 3,025.00

BY THIS BOND made the 9<sup>th</sup> day of October 2017

BETWEEN the Hurunui District Council (called "the Council") of the one part

AND Billie May ANDERSON and Rickie Trevor GOODGAME (the "Owner(s)") of 18 Claremont Crescent (with his/her/their successors and assigns called "the Owner(s)")



**BACKGROUND:**

- A. The Owner(s) wishes to undertake building works on the property situated at 18 Claremont Crescent legal description – Lot 86 Deposited Plan 485034 (hereinafter called "the Land").
- B. The Council's District Plan for the Land provides that the creation of any new vehicle crossing, or the use of an existing vehicle crossing for a new activity, (including the relocation of such) shall meet the standards of Rule 8.4.2 of the Proposed District Plan as Amended by Decision 2016. In this instance the vehicle crossing specifications are set out in the Consent Notice registered to the Certificate of Title.
- C. The Applicant has applied for a building consent (BC170482) under the Building Act 2004. The proposed activity complies in all other aspects with District Plan requirements with the exception of the vehicle crossing formation and construction. In order for the Council to issue a Building Consent for a permitted activity, the Owner agrees to provide a Bond to secure the carrying out of the vehicle crossing construction. The construction of the vehicle crossing shall be undertaken within 12 months of the bond being entered into or before the use of the proposed activity commences, whichever is the lesser.
- D. The estimated cost of the construction and formation of the vehicle crossing to the required standard under the Consent Notice is estimated to be the sum of \$2500.

**CONDITIONS OF BOND:**

**Urban Vehicle Crossing**

A vehicle crossing shall be provided to the Land in accordance with a formed in accordance with KF Consilium drawings 1023/1300 – 1023/1304 (Type B vehicle crossing) to the Consent Notice registered to the Land's Certificate of Title.

**Notes:**

1. District Plan rules set out the location and sight distance requirements.
2. The Bond will not be deemed to be given effect to until the accessway is dug out and inspected by the Council's engineer. As such, the hold will remain on the consent until this time.
3. Note that anyone working in the road reserve will first need to obtain a Corridor Access permit from Council via the beforeUdig service (online at beforeUdig.co.nz or by phone at 0800 248 344).

**THIS AGREEMENT RECORDS:**

1. The Owner(s) has deposited with the Council the sum of \$3025 as surety for this Bond and agree that the Council may hold the said sum of money until the conditions of this Bond have been fully met or the moneys shall have otherwise been disbursed in accordance with the terms of this Agreement.
2. The Owners acknowledge that the following vehicle crossing inspections are compulsory and the owner is required to give the Council's engineer 48 hours' notice prior to any inspection.
  - Pre-construction
  - Excavation to sub grade
  - Pre Steel
  - Final
3. The Owner(s) shall complete the Work to the reasonable satisfaction of the Council within 12 months of the date of this bond or within such longer period as the Council may approve.
4. The sum deposited with the Council includes a non-refundable fee of 5525 for administration and inspection costs incidental to the preparation and release of this Bond.
5. The Owner(s) acknowledges that their liability under this Agreement shall not be released, varied or affected in any way by any delay, extension of time, or other indulgence suffered or permitted by the Council or by any failure or neglect by the Council to enforce the terms of this Agreement.
  - 5.1 If the Owner(s) shall be in breach of any of the obligations under this Agreement, it shall be lawful for the Council, at the sole option of the Council to arrange for the satisfactory completion of all of the works and for this purpose the Council may employ its servants or agents or such contractors as the Council may see fit.
  - 5.2 The Owner(s) shall pay all costs incurred by the Council in arranging for the completion of those works and the Owner(s) shall be liable for any sum so expended by the Council or any expenses incurred by the Council in excess of the sum bonded.
  - 5.3 The Council may apply the moneys deposited with the Council towards payment of all such costs and expenses and in the event that the sum deposited with the Council is not sufficient to carry out the said works the Council may recover any excess from the Owner as a liquidated debt.
  - 5.4 In the event that costs and expenses incurred by the Council for the formation of the vehicle crossing are less than that sum deposited with the Council then the Owners shall be entitled to the repayment of the balance in accordance with the provisions in Clause 5.
6. Upon completion of the work being proposed to the reasonable satisfaction of the Council in accordance with the Consent Notice the Owner(s) shall be entitled to repayment to them of the moneys deposited with the Council but without any entitlement to interest and any of the costs payable under clause 5 of this bond.

7. In the event of the Owner not proceeding with the building works then the sum bonded will be refunded to them in accordance with Clause 5.
8. The Owner(s) shall pay any costs and disbursements incurred by the Council for additional inspections and in the enforcement by the Council of any of its rights under this Agreement.
9. If there is dispute between the parties arising out of, or in connection with, this bond, neither of the parties is to commence any proceedings relating to that dispute until the following procedure had been complied with:
  - 9.1 The party claiming a dispute has arisen must give written notice to the other party specifying the nature of the dispute.
  - 9.2 The parties will endeavour, in good faith to resolve the dispute referred to in the notice by using informal dispute resolution techniques.
  - 9.3 If the parties do not agree on a dispute resolution technique within 14 days after the date notice of a dispute was given, the dispute is to be mediated according to the standard Bond of LEADR New Zealand Incorporated (Lawyers Engaged in Alternative Dispute Resolution), and the Chair of LEADR (or the Chair's nominee) will select the mediator and determine the mediator's remuneration.
  - 9.4 A party seeking urgent interlocutory relief may, by notice to the other party, elect not to comply with the provisions of this clause, but only to the extent of the relief sought, and only for the period required to dispose of the application for interlocutory.
  - 9.5 Pending resolution of the dispute, this Bond will remain in full effect without prejudicing the parties' respective rights and remedies.

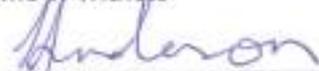
SIGNED by

 and  


in the presence of:

Linda Anderson

Name of Witness



Signature of Witness

41 Smiths rd, Leithfield

Address of Witness

Ranter

Occupation of Witness







**Water Supply**

-  Urban Main
-  Urban Service Connection
-  Urban Sub Main

**Water Supply Points**

-  Node
-  Toby
-  Valve less than or equal to 50mm

**Sewer**

-  Gravity Main
-  Service

**Stormwater**

-  Service
-  Swale

**Other**

-  Parcel
-  Assessment Boundary
-  Urban Boundary



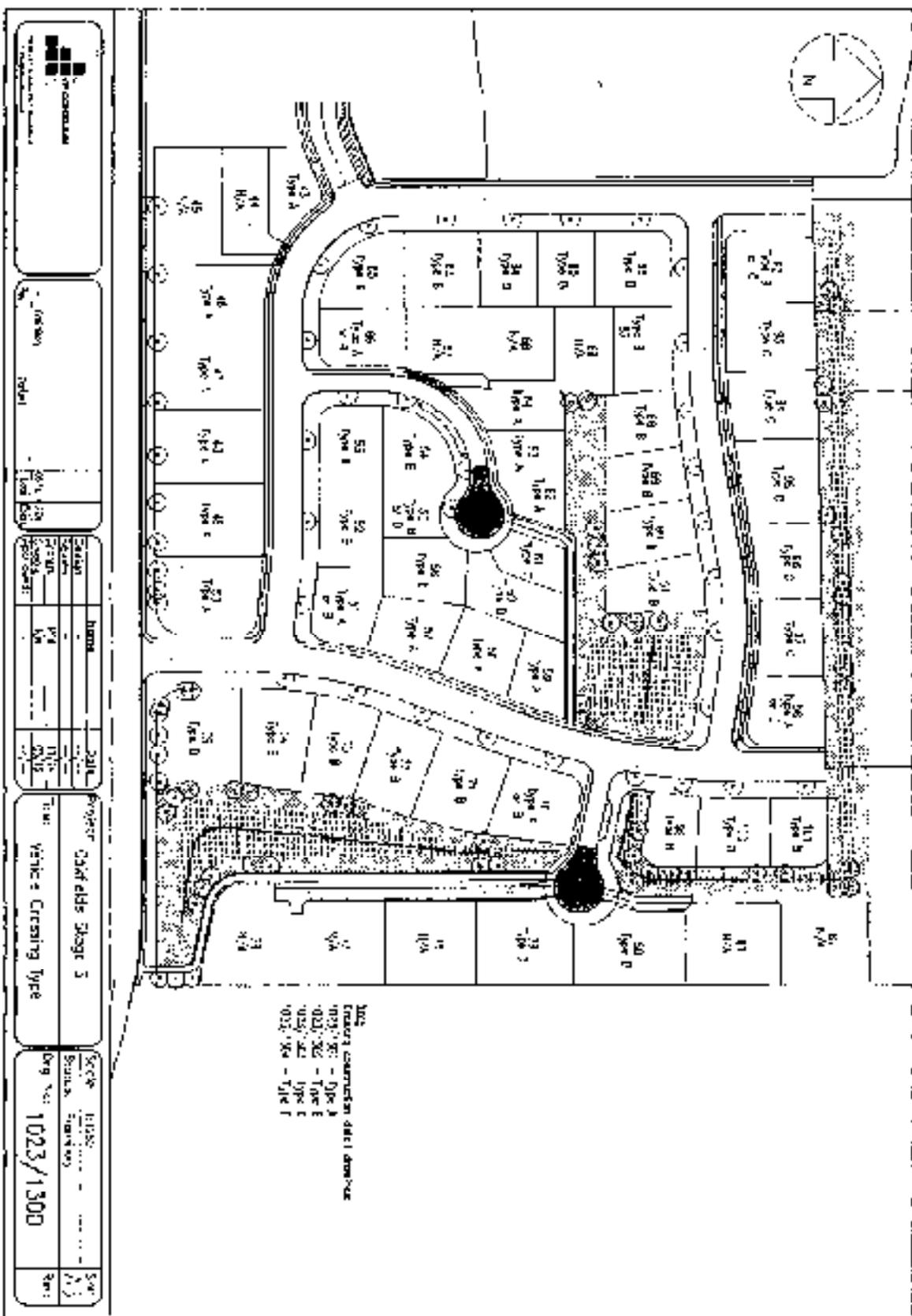
HDC, HDE, LINZ, Canterbury Maps

**Three Waters**  
170482 - PIM - Utilities Service Plan

Hurunui District Council does not guarantee that the data in this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequences which may arise from relying on any information depicted. Cadastral and topographic data sourced from LINZ. Crown Copyright Reserved.

Date:	26/09/2017
Scale:	1:250
Print Size:	A4 Landscape
Projection:	NZTM
Produced by:	











Layout	Name	Drawing Scale	Layout	Name	Drawing Scale	Layout	Name	Drawing Scale	Layout	Name	Drawing Scale	Layout	Name	Drawing Scale
01 Contents Page			09 Foundation Plan	FOUNDATION PLAN	1:100	18 Section A	SECTION	1:50	27 Details 07	Garage Door Head Flashing	1:5	33 Truss Layout	Truss Layout	
	IMAGE 1	1:2	10 Drainage Plan	DRAINAGE PLAN	1:100	19 Section B	SECTION	1:50		Joinery Brick Sill	1:5	34 Lintel Layout	Truss Layout	
02 Sediment & Fencing Plan			11 Bracing Plan	BRACING PLAN	1:100	20 Window & Door Penetration		1:6.2500	28 Details 08	Meter Box	1:5			
			12 Bracing Schedule			21 Details 01	Brick Foundation	1:5		Brick Lower Gabel End	1:5			
		1:200					CONCRETE TO REINFORCING CO...		29 Details 09	Brick Soffit	1:5			
03 Site Plan	SITE PLAN	1:125	13 Bracing Requirements	Bracing Notes		22 Details 02	STEEL BEND REQUIREMENTS			Joinery Brick Jamb	1:5			
				Bracing Notes			TIE WIRE GUIDE		30 Details 10	Joinery Brick Low Sill	1:5			
04 Floor Plan	FLOOR PLAN	1:100		Connecting Top Plates		23 Details 03				Vertical Cladding Junction	1:5			
			14 Roof Plan	Top Plate to External Wall			Foundation Details	1:5	31 Details 11					
05 Framing Plan	FRAMING PLAN	1:100		ROOF PLAN	1:100	24 Details 04	Garage Door Jamb	1:5		Bedding Type B				
			15 Electrical Plan							Bedding Type D				
06 Lintel Fixing Requirements	Lumberlok Fixing Schedule			ELECTRICAL PLAN	1:100	25 Details 05	Hip Flashing	1:5		Drainage Details	1:10			
	Mitek Fixing Options						Ridge Flasing	1:10		Pipe Cover				
07 Elevations	NORTH ELEVATION	1:100	16 Window & Door Layout	WINDOW & DOOR LAYOUT	1:100	26 Details 06	Valley Flashing	1:10		Pipe Installation Notes				
	WEST ELEVATION	1:100								Sump				
08 Elevations	EAST ELEVATION	1:100	17 Window Schedule	WINDOW SCHEDULE	1:100		Flue Penetration	1:10		Trench Requirements				
	SOUTH ELEVATION	1:100					Joinery Soffit Junction	1:10						
							Pipe Penetration	1:5						

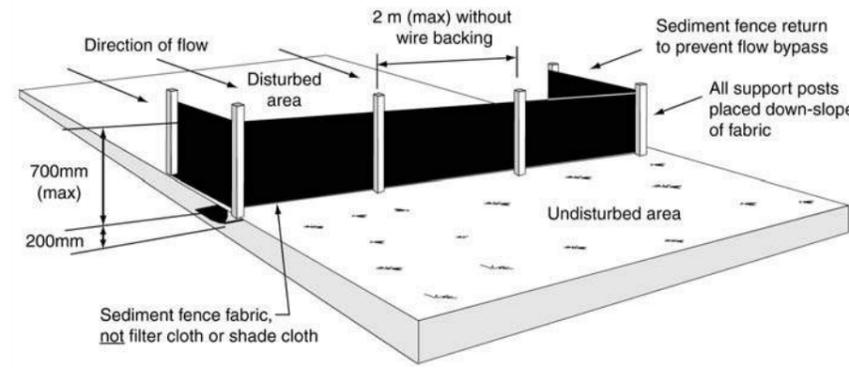


Image is an artist impression only all colours, materials & planting shown are subject to the final contract agreement

IMAGE 1

Note:

- 1) It is the responsibility of the contractor to verify on site, all dimensions, boundary setouts and service connection locations including levels shown prior to and on completion of construction.
- 2) All proprietary items and materials shall be stored, handled in strict accordance with the manufacturers specifications.
- 3) The contractor shall ensure that all work complies with NZS:3604 and NZBC and shall be aware of all amendments and current issues. The contractor shall work to the NZ Standards and is responsible for each sub trade.
- 4) Any doubt, ambiguity or omission of any part of the drawings or specifications, shall be referred to the designer for clarification prior to the commencement of work.
- 5) Do not scale off drawings. Use figured dimensions only.



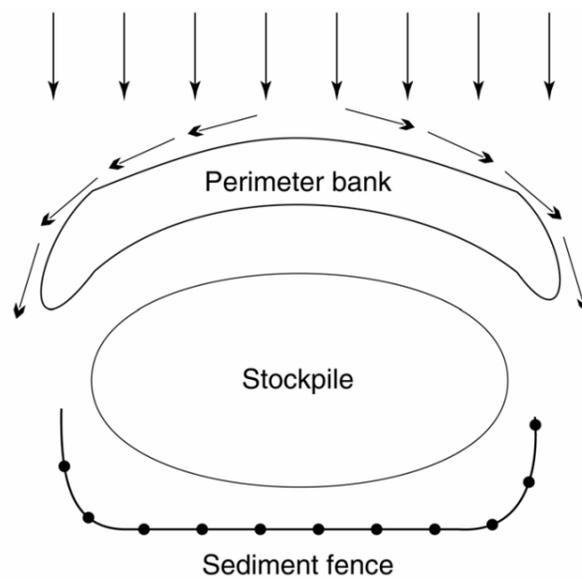
Alternative sediment control fencing

**Site Fencing:**

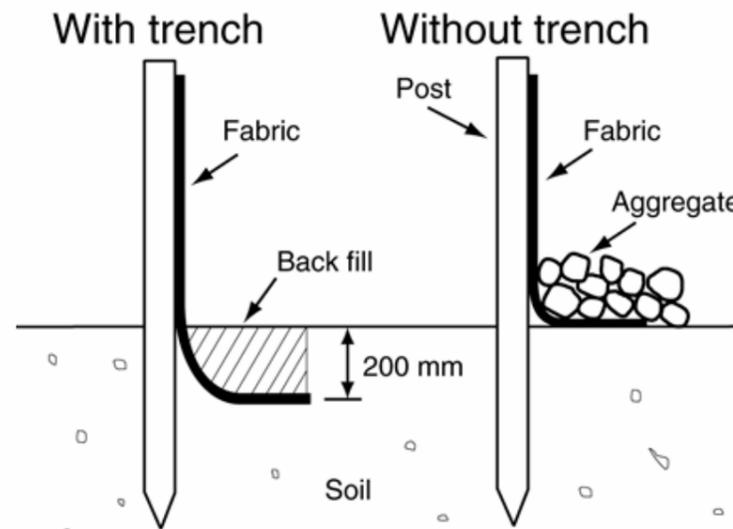
Allow to install a temporary construction barrier. The fencing shall be at least 2.0 in height from existing ground level on all sides accessible to the public this is to be installed prior to all construction work being carried out and shall be maintained for the duration of the dwelling construction. Typical fence construction may be galvanised chain link netting having a maximum sized grid of 50 mm x 50 mm. Post spacing shall be a maximum of 2.5m with a gap between the lower edge of the fence and ground no greater than 100 mm.

**Sediment control:**

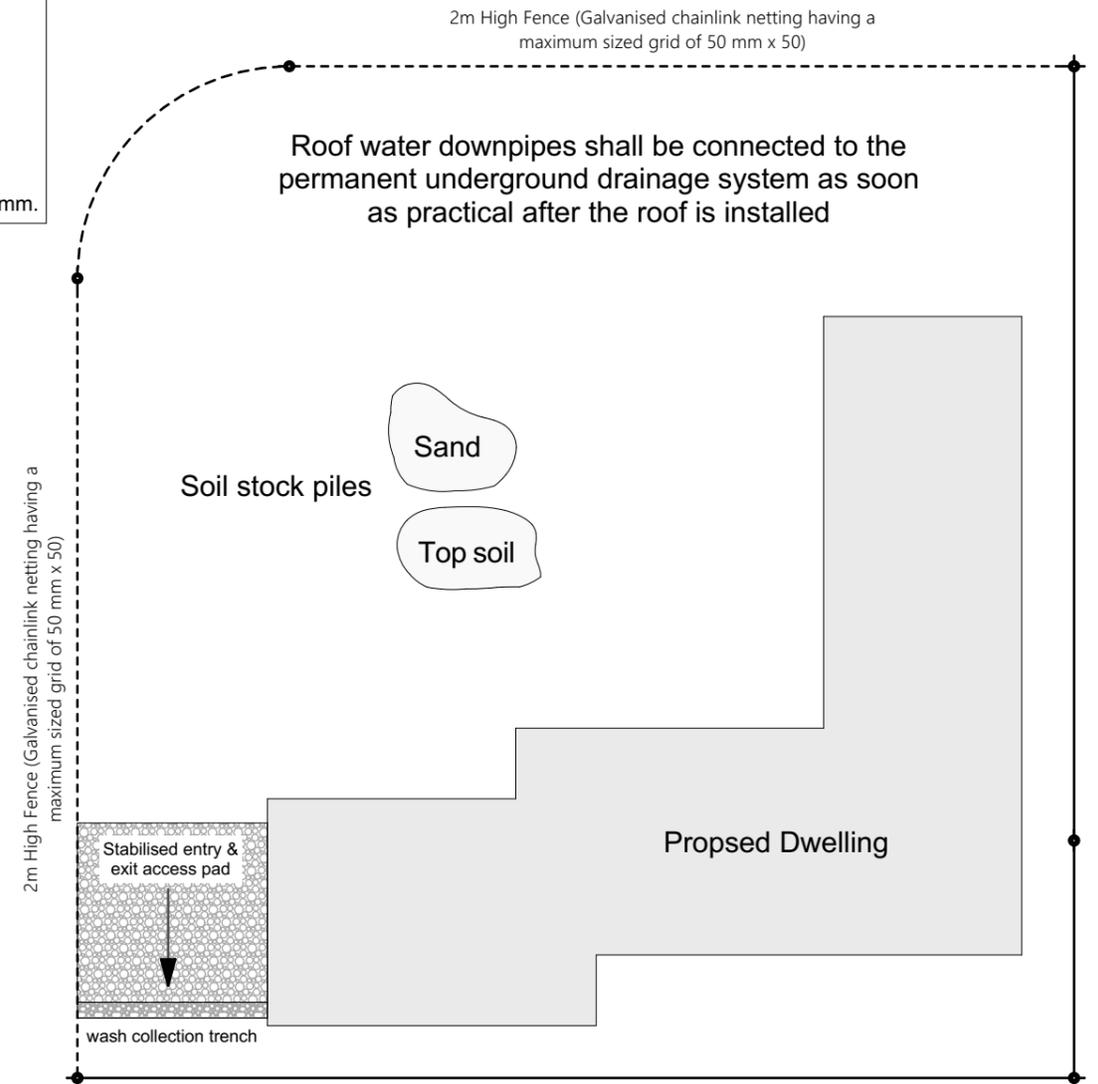
All sediment control to comply with NZBC E1  
Straw bails to be placed in a 200mm deep trench, tied together and anchored to ground by stakes  
Surplus gravel and soil to be contained behind sediment fences  
Contractor to oversee all sediment control



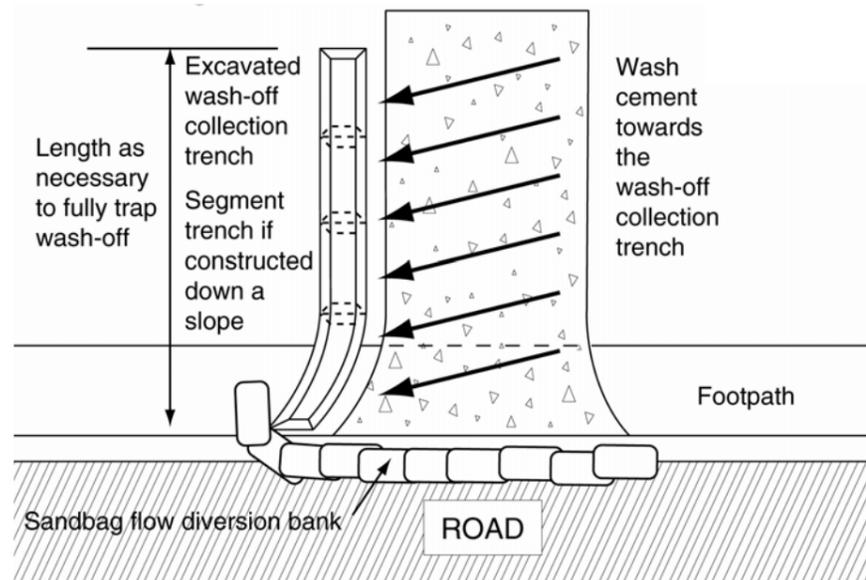
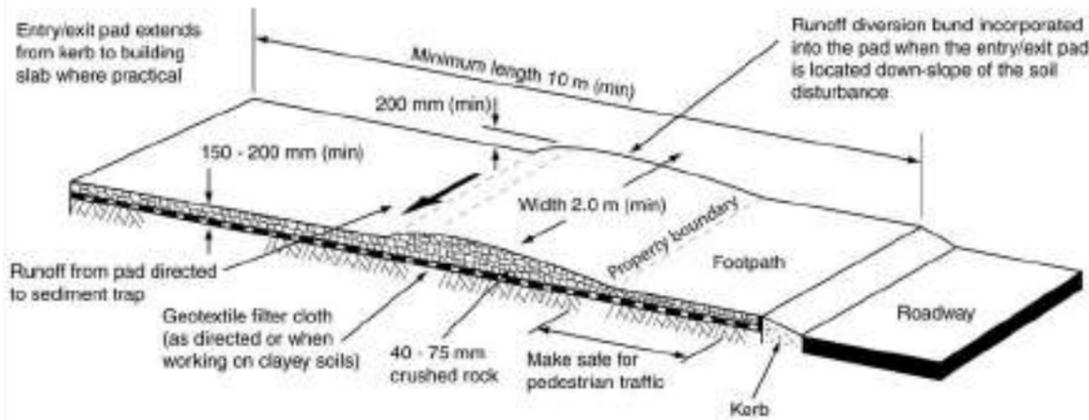
Stock pile sediment control fencing



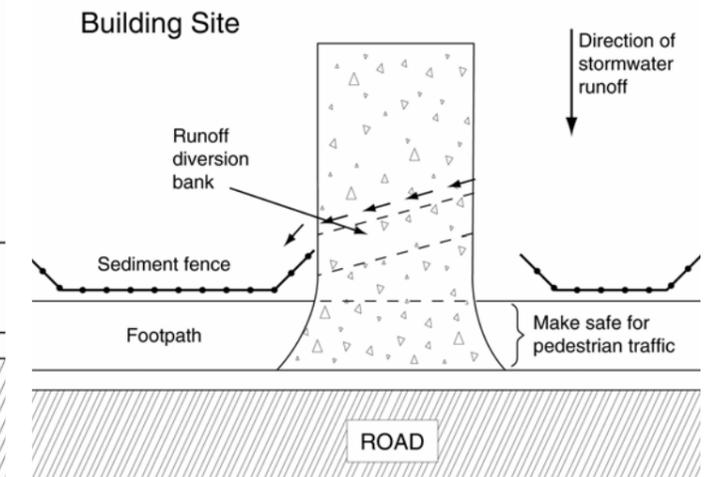
Alternative sediment control fencing



**Stabilised Entry/Exit Pad - Building Sites**



Alternative wash collection



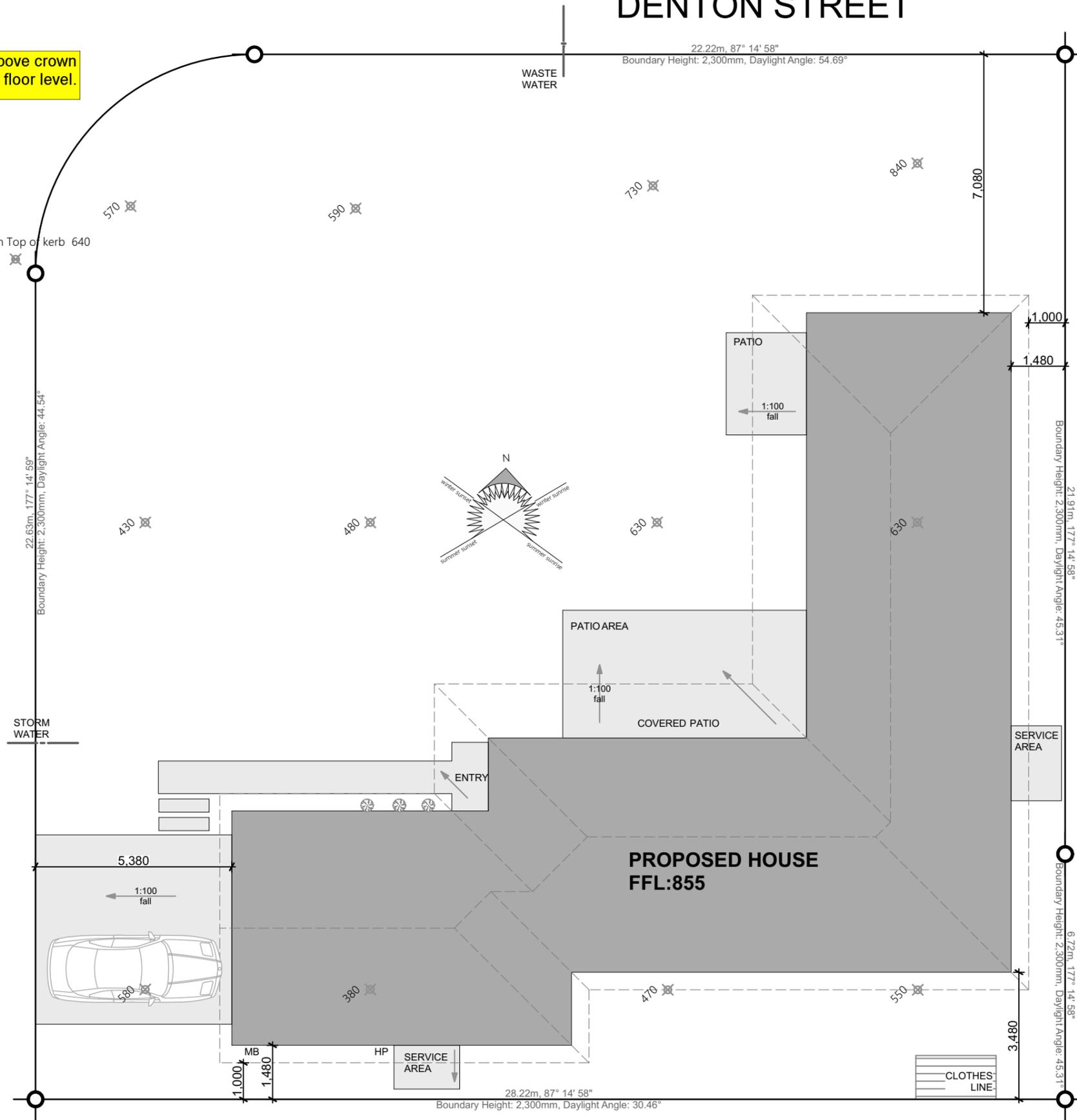
Alternative wash collection

# DENTON STREET



Ensure 150mm above crown of road to finished floor level.

# 18 CLAREMONT CRESCENT



### LEGAL DESCRIPTION:

Lot:86  
 DP:485034  
 SITE AREA:800m2  
 AREA OVER FRAMING:197.16 m<sup>2</sup>  
 AREA OVER FOUNDATION:207.05 m<sup>2</sup>  
 TOTAL SITE COVERAGE:26%

**Site Info:**  
 Wind Zone:High  
 Earthquake Zone:3  
 Exposure Zone:B  
 Snow Loading Zone: N4

**Legend:**  
 MB: Meter Box  
 HP: Heat Pump EX

**General Note:**  
 Dimensions to foundation  
 Refer to foundation plan for more detailed drainage

Site to be fully fenced before commencing construction, fence to comply with NZBC clause F5/AS1 part 1

**Finished Floor level Note:**  
 FFL comply with NZBC E1/AS1 clause 2 page 33. The main contractor shall confirm all levels on site prior to works and shall insure the finished floor level shall comply with the requirements

**Finished Floor Level:**  
 Shall be at least 225mm above the finished level of the surrounding ground immediately adjacent to the building and no less than 150mm above the road crown on at least one cross-section through the building and roadway.

Floor Area:  
197.16 m<sup>2</sup>  
(over framing)

Framing Note:  
Stud height 2.420m  
Double top plate height 2.455m  
  
All dimensions to framing only, refer to drainage plan for foundation dimensions

**Flooring Legend**

-  Concrete
-  Tiles
-  Waterproof membrane

Remaining areas shall be carpet

**General Note:**  
-Electric Hot Water  
-Electric Hob  
  
-Antislip floor coverings on all access routes (both external and internal), to comply with NZBC D1/AS1 Table 2 (accept surface areas inside entries as dry areas)  
  
-All down lights inside insulation envelope to be CA/80 rated  
  
-All bathroom and toilet areas to have an 150mm inline auto extraction fan

**Shower Note:**  
Showers shall have 10mm Grade A toughened safety glass shower screens and doors as shown

**Internal Loadbearing wall:**  
Refer to Truss manufacturer for all internal load bearing walls

**Window & Door Note:**  
Refer to window and door layout for positions

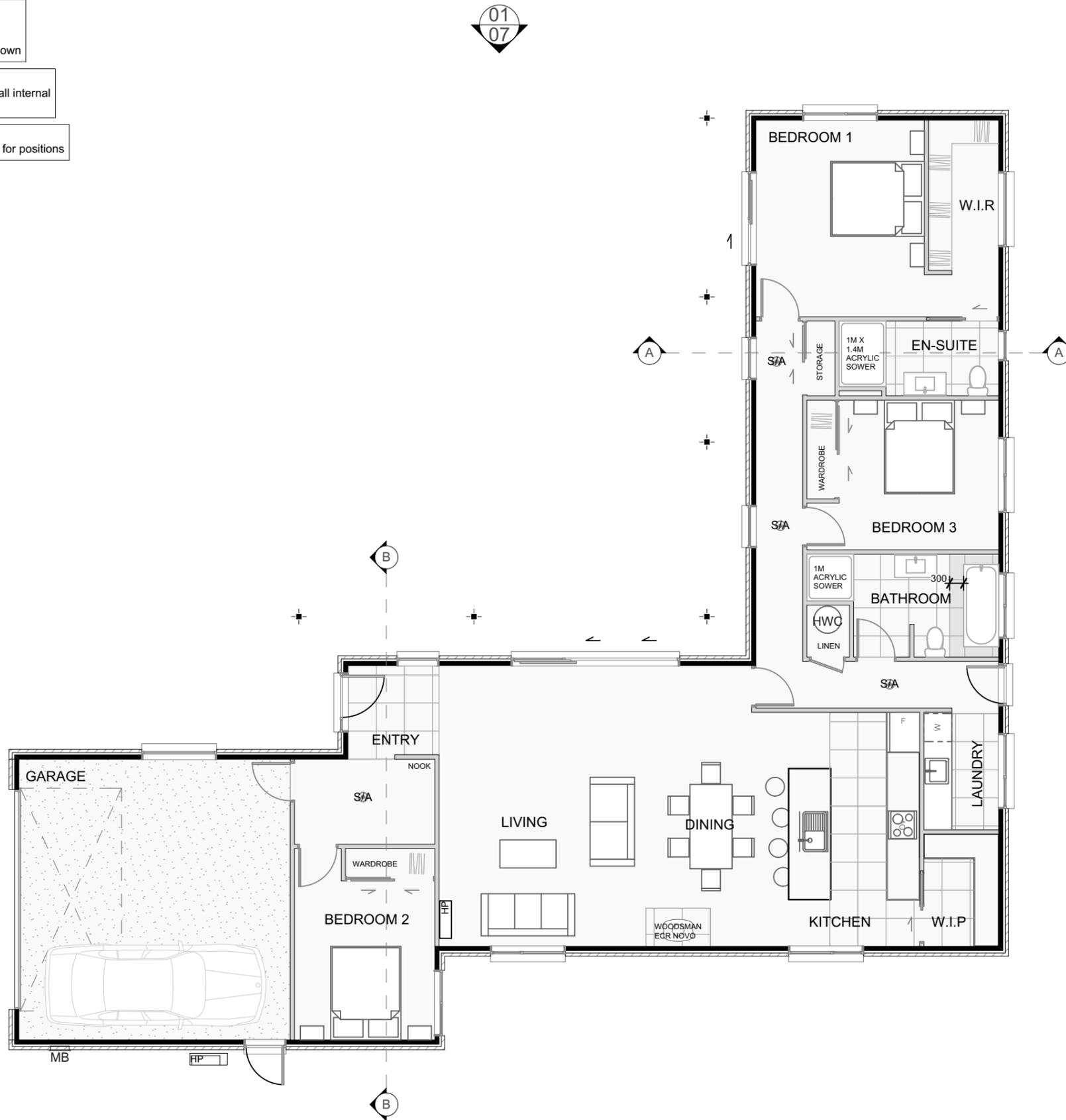
**Kitchen Note:**  
All surface finishes to the kitchen joinery, walls, etc. to comply with the requirements of NZBC G3. Kitchen layout to be confirmed prior to construction refer to the kitchen plan provided by others

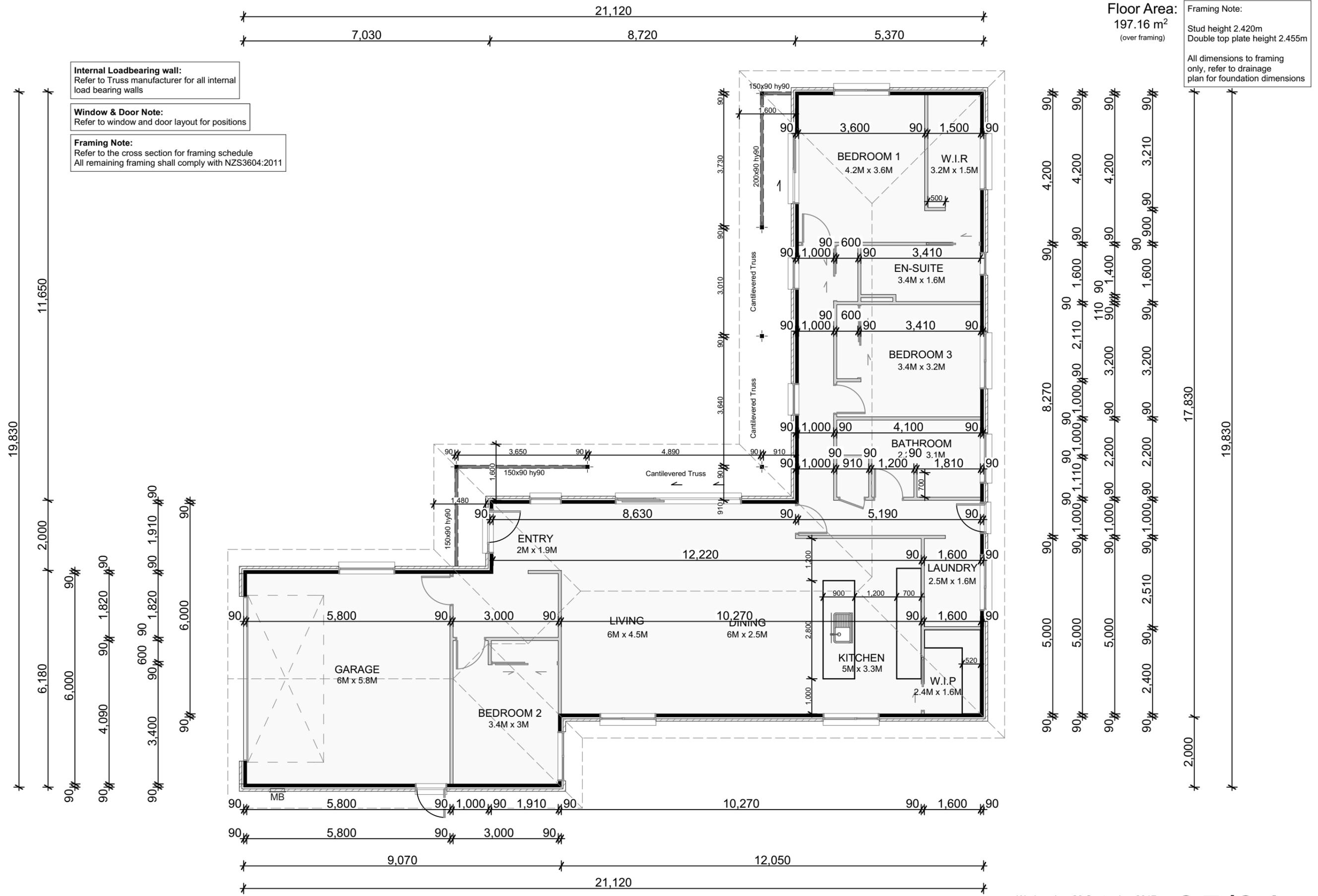
**Wet Area Waterproofing Notes:**  
-Baths shall have a waterproofing membrane extending at least 150 mm above and beyond the top of the side and ends of the bath

**Framing Note:**  
Refer to the cross section for framing schedule  
All remaining framing shall comply with NZS3604:2011

**Log Fire Note:**  
Fire Woodsman ECR Novo wood burner installed as per manufacturers specification.  
Refer to supporting documents for full set of requirements. Ensure the use of the heatsaver flue as per the supporting documents and refer to supporting documents for hearth requirements

**HWC Note:**  
300l Hot water cylinder with seismic restraints and tempering valve set to 55°C. HWC shall be secured to the wall framing using 3/ 25x1mm Galv. steel straps with 1/ 8mm coach screw with 30x2mm washer and 2 20x2.5mm thick washers. Screws to penetrate framing a minimum of 50mm. Ensure a safetray is installed below the HWC as per the requirements of G12 AS1 NZBC section 5.2.3 page 24.







10/2011



# LINTEL FIXING SCHEDULE

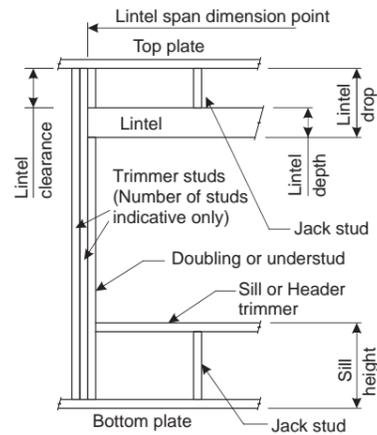
## ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12

### NZS 3604:2011

**NOTE:**

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

**DEFINITIONS**



**Lintel Supporting Girder Trusses:**

Roof Tributary Area	Light Roof Wind Zone				Heavy Roof Wind Zone			
	L	M	H	VH	L	M	H	VH
8.6 m <sup>2</sup>	G	G	H	G	G	H	G	H
11.6 m <sup>2</sup>	G	H	H	G	G	H	G	H
12.1 m <sup>2</sup>	G	H	H	G	H	H	G	H
15.3 m <sup>2</sup>	H	H	-	G	H	H	G	H
19.1 m <sup>2</sup>	H	-	-	G	H	-	G	H
20.9 m <sup>2</sup>	H	-	-	H	H	-	H	H
21.8 m <sup>2</sup>	H	-	-	H	-	-	H	-
34.3 m <sup>2</sup>	-	-	-	H	-	-	-	-

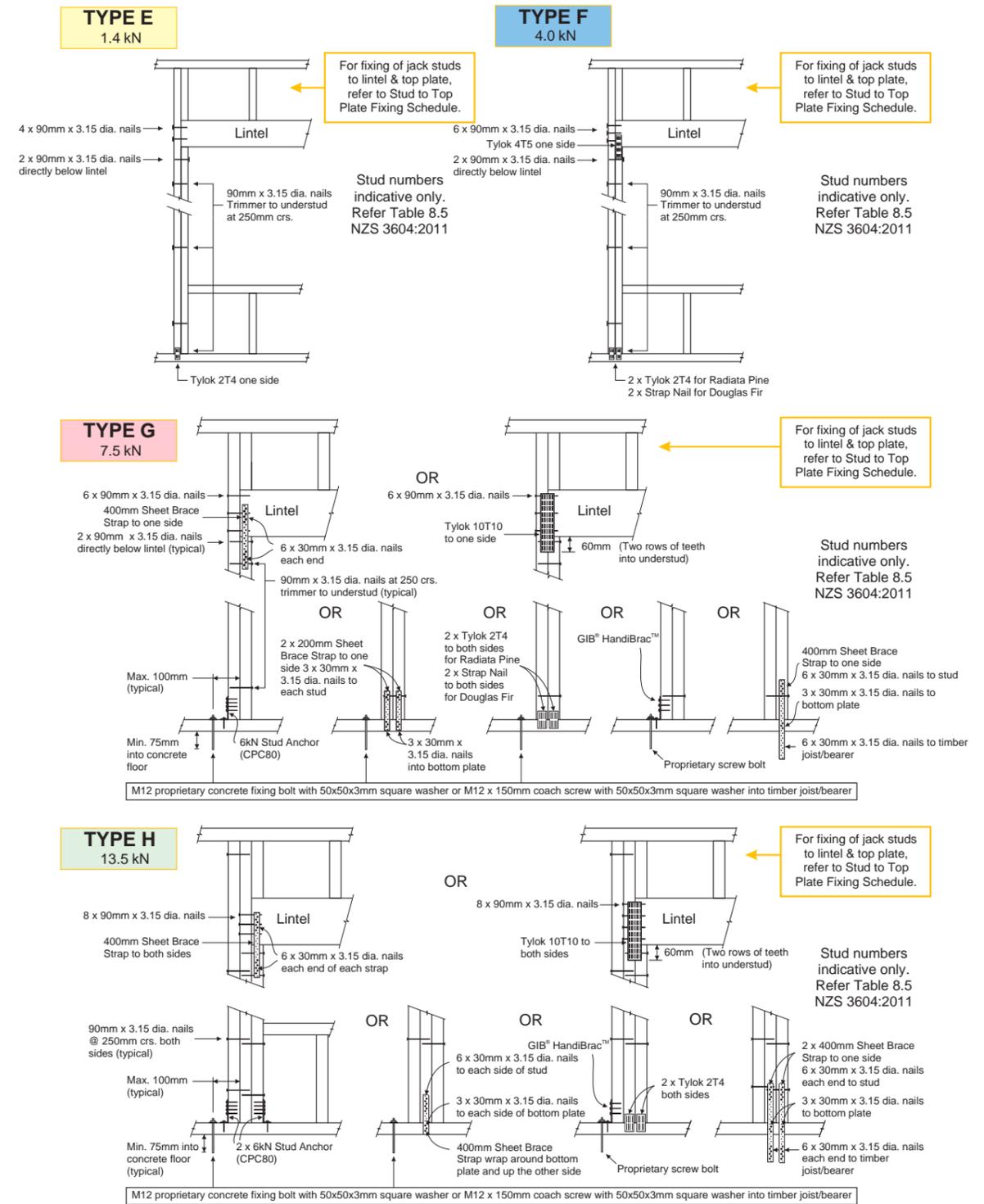
**Notes:**

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

**SELECTION CHART FOR LINTEL FIXING**

Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:2011)	Light Roof Wind Zone					Heavy Roof Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
		0.7	2.0	E	E	E	E	F	E	E	E
	3.0	E	E	E	F	F	E	E	E	E	F
	4.0	E	E	F	F	F	E	E	E	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
0.9	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	E	F	F	F	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	F	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	F	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	F	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	G	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	H	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	F	F	G	H	-
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-

**LINTEL FIXING OPTIONS**



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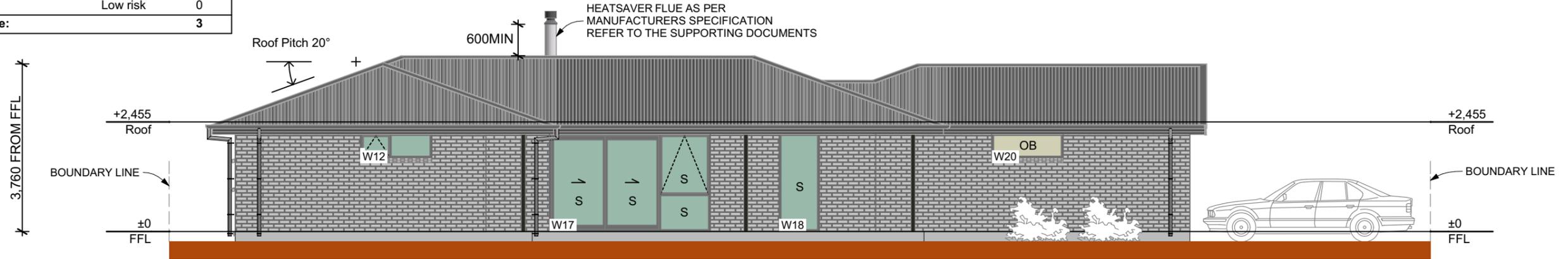
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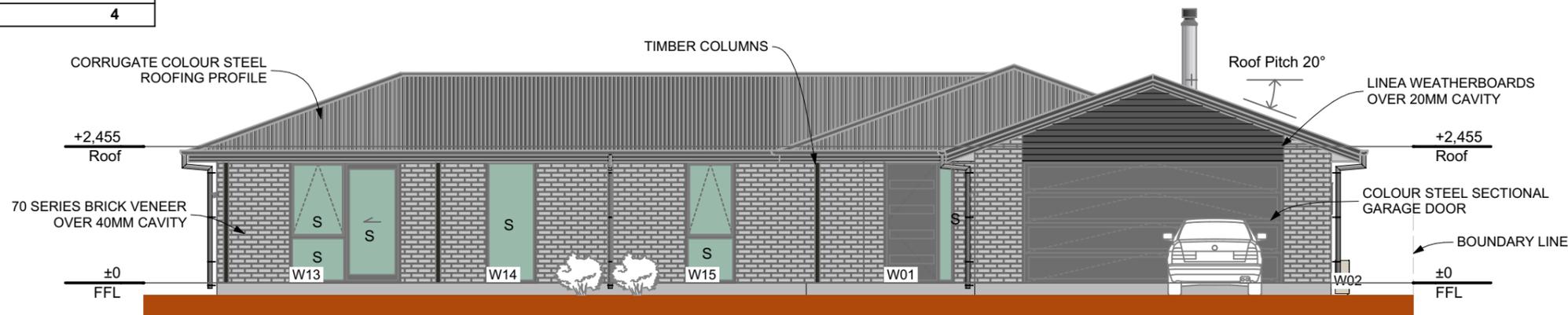
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BUILDING ENVELOPE RISK MATRIX		
North Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Low risk	0
Deck design	Low risk	0
<b>Total Risk Score:</b>		<b>3</b>



01 NORTH ELEVATION 1:100

BUILDING ENVELOPE RISK MATRIX		
West Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Medium risk	1
Deck design	Low risk	0
<b>Total Risk Score:</b>		<b>4</b>



02 WEST ELEVATION 1:100

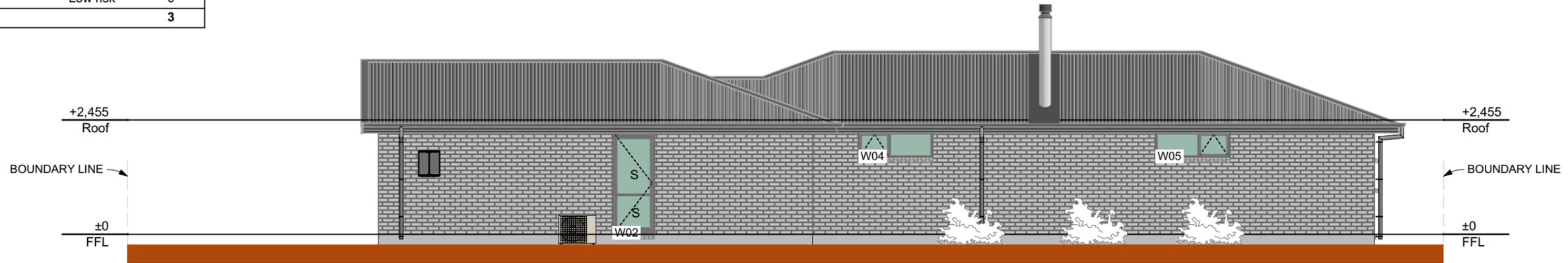
**Legend:**  
 S: Safety Glass  
 OB: Obscure Glazing

**NZBC H1 Calculation:**  
 (Schedule Method 4218)

	Wall	Windows
North:	38m <sup>2</sup>	11m <sup>2</sup>
West:	50m <sup>2</sup>	12m <sup>2</sup>
South:	38m <sup>2</sup>	3.6m <sup>2</sup>
East:	50m <sup>2</sup>	12m <sup>2</sup>
<b>Totals:</b>	<b>176m<sup>2</sup></b>	<b>38.6m<sup>2</sup></b>

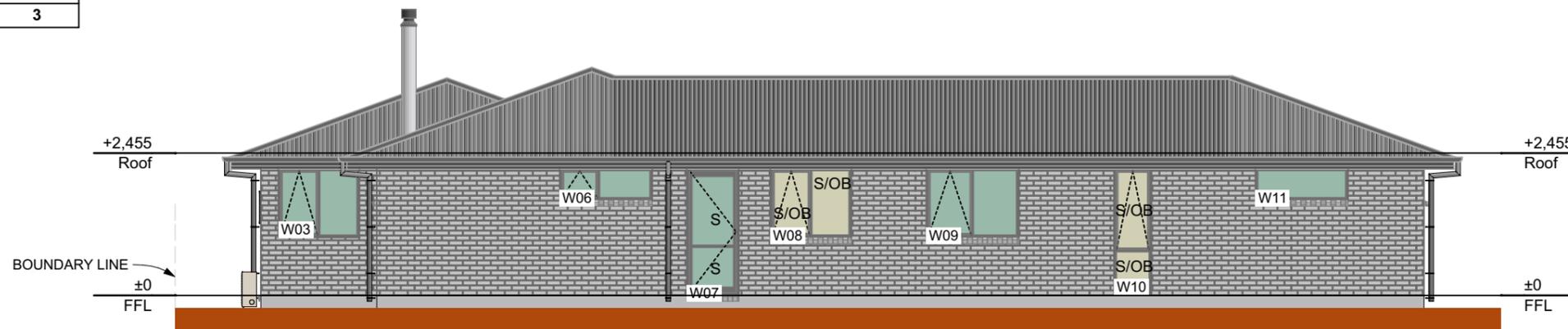
Window Area: 22%  
 Combined Window Area for E - W - S Elevations  
 Wall: 138m<sup>2</sup>  
 Window: 27.6m<sup>2</sup>  
 Percentage: 20%

BUILDING ENVELOPE RISK MATRIX		
South Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Low risk	0
Deck design	Low risk	0
<b>Total Risk Score:</b>		<b>3</b>



03 SOUTH ELEVATION 1:100

BUILDING ENVELOPE RISK MATRIX		
East Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Low risk	0
Deck design	Low risk	0
<b>Total Risk Score:</b>		<b>3</b>



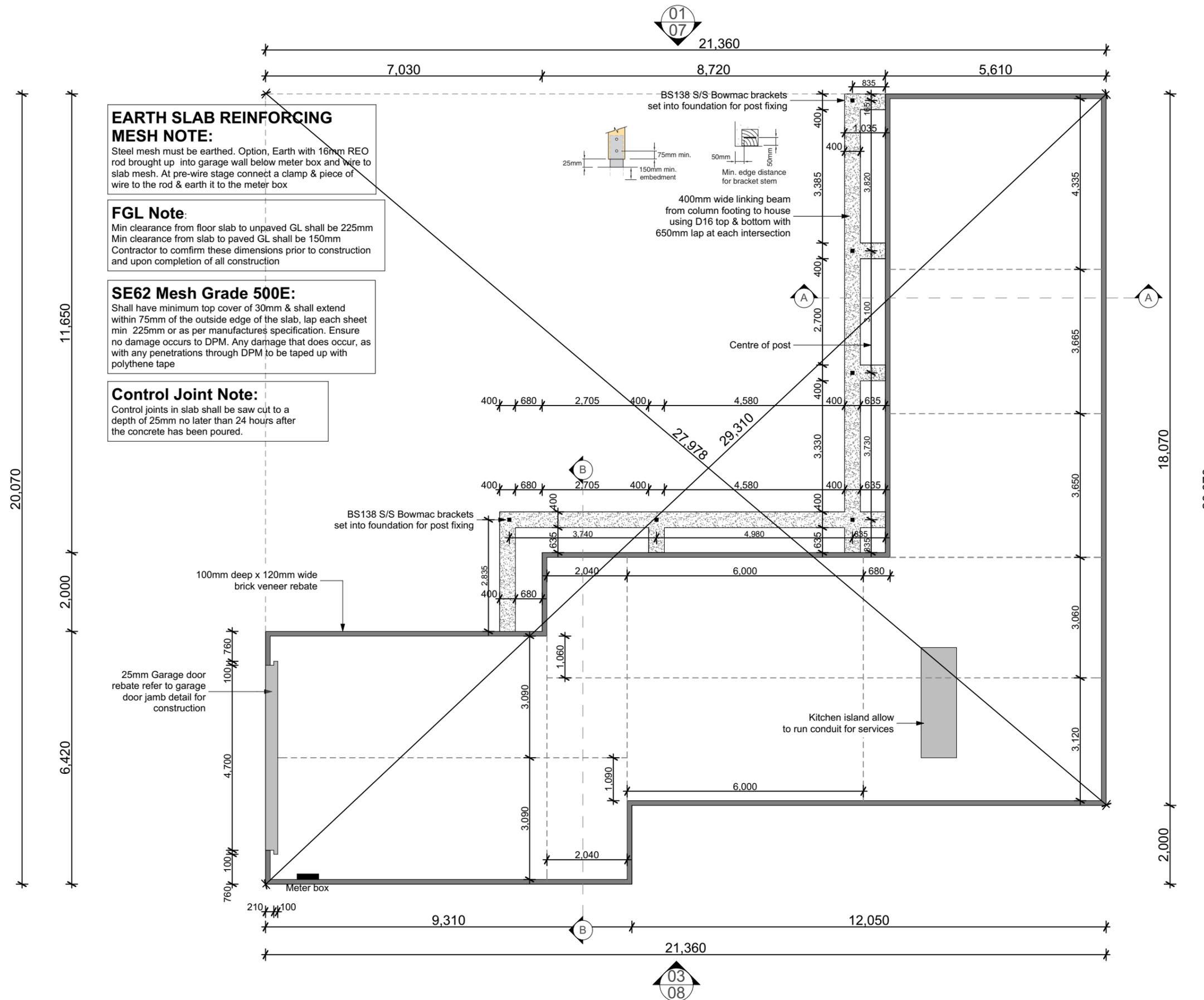
04 EAST ELEVATION 1:100

**Legend:**  
 S: Safety Glass  
 OB: Obscure Glazing

**NZBC H1 Calculation:**  
 (Schedule Method 4218)

	Wall	Windows
North:	38m2	11m2
West:	50m2	12m2
South:	38m2	3.6m2
East:	50m2	12m2
<b>Totals:</b>	<b>176m2</b>	<b>38.6m2</b>

Window Area:22%  
 Combined Window Area for E - W- S Elevations  
 Wall:138m2  
 Window:27.6m2  
 Percentage:20%

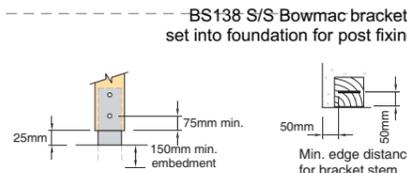


**EARTH SLAB REINFORCING MESH NOTE:**  
Steel mesh must be earthed. Option, Earth with 16mm REO rod brought up into garage wall below meter box and wire to slab mesh. At pre-wire stage connect a clamp & piece of wire to the rod & earth it to the meter box

**FGL Note:**  
Min clearance from floor slab to unpaved GL shall be 225mm  
Min clearance from slab to paved GL shall be 150mm  
Contractor to confirm these dimensions prior to construction and upon completion of all construction

**SE62 Mesh Grade 500E:**  
Shall have minimum top cover of 30mm & shall extend within 75mm of the outside edge of the slab, lap each sheet min 225mm or as per manufactures specification. Ensure no damage occurs to DPM. Any damage that does occur, as with any penetrations through DPM to be taped up with polythene tape

**Control Joint Note:**  
Control joints in slab shall be saw cut to a depth of 25mm no later than 24 hours after the concrete has been poured.



400mm wide linking beam from column footing to house using D16 top & bottom with 650mm lap at each intersection

**Legend**

-----	Control joints in slab
=====	2/D12 1.2m long corner bars

**Foundation Depth Note:**  
The foundation shall be supported on good ground with an ultimate bearing capacity of 300kPa. as defined by NZS3604:2011

**Reinforcing Bar Note:**  
All reinforcing to be ductility grade 300E (mesh 500E)  
Laps shall be a minimum of 40 x the bar diameter

**Concrete Note:**  
Concrete slab shall have a minimum compressive strength of 20MPa after 28 days of curing in accordance with NZS 3109 and NZS 3124 provided it complies with NZS 3604, Section 4 - Durability, paragraph 4.5.2

**Top Soil Note:**  
Remove all topsoil and compact hardfill in layers of 150mm max below slab. Granular fill material shall comply with NZS 7.5.3.2 refer to details for requirements



**Legend**

- dp 80 mm downpipe (6 Total)
- ip Inspection port
- tv 80mm Terminal vent
- Gully trap
- Stormwater, dia noted
- - - Sanitary drain, dia noted

**Minimum fixture pipe sizes & gradients:**

WC	- Ø100mm	1:60
Kitchen sink / Dishwasher	- Ø40mm	1:20 or Ø50mm 1:40
Basin / vanity	- Ø40mm	1:40
Laundry tub	- Ø40mm	1:30
Bath / shower	- Ø40mm	1:40

**Venting note:**  
Terminal and Branch vent shall be installed at a length of less than 10m and down stream from the head of the main or branch drain this shall be confirmed on site during installation.

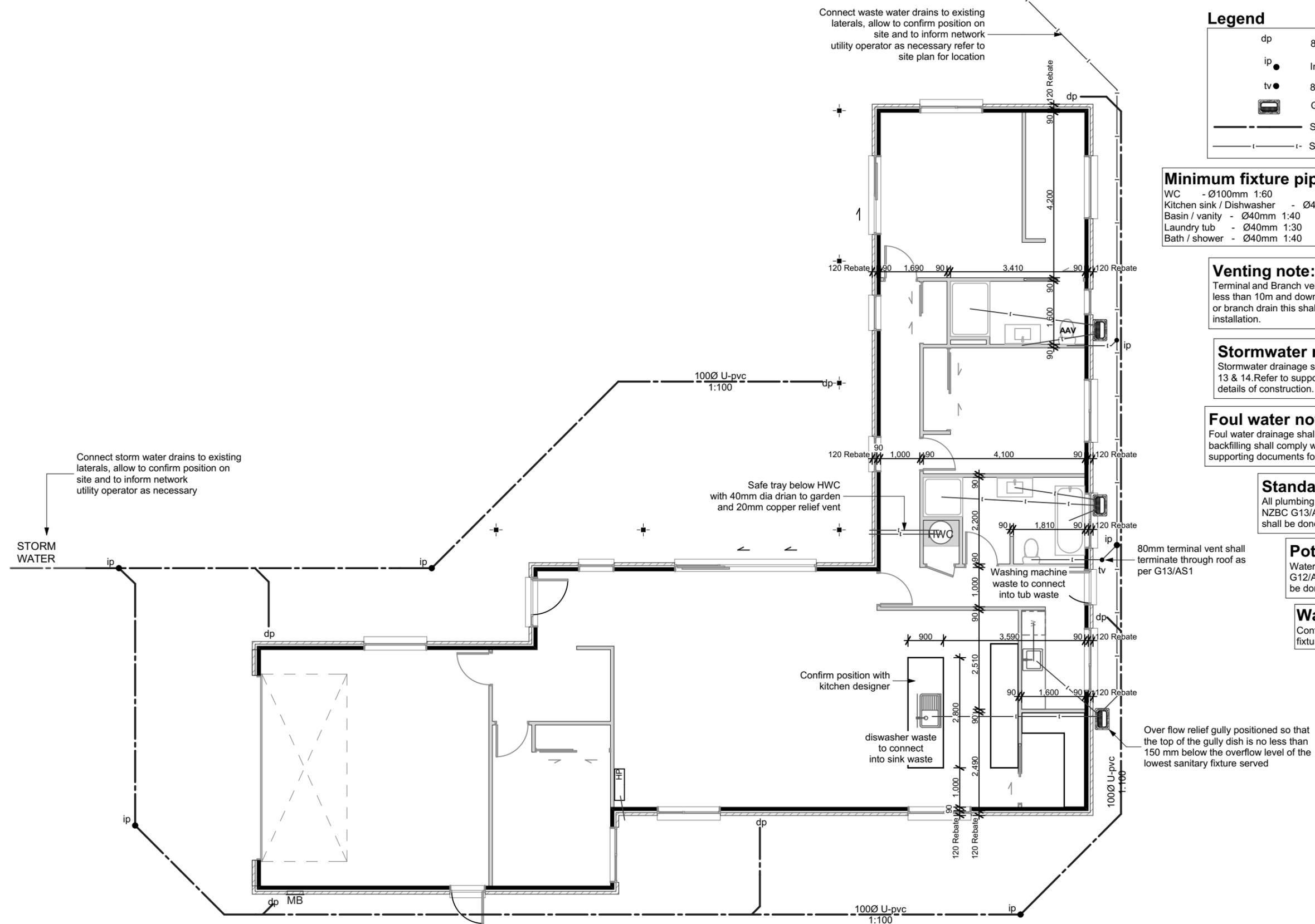
**Stormwater note:**  
Stormwater drainage shall comply with NZBC/E1 figures 13 & 14. Refer to supporting documents for details of construction.

**Foul water note:**  
Foul water drainage shall comply with G13/AS2 bedding and backfilling shall comply with figures 7,8 & 13 refer to supporting documents for details of construction.

**Standards note:**  
All plumbing and drainage shall be as per NZBC G13/AS1/AS2. Upon completion testing shall be done as per section 7.

**Potable water note:**  
Water supply shall be installed as per G12/AS1 testing upon completion shall be done as per section 7.5

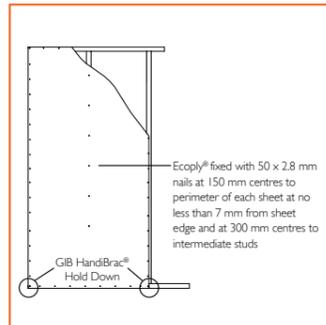
**Waste Positions:**  
Confirm all waste positions with selected fixtures requirements.





**Fastening centres**

Fasteners are placed at 150 mm centres around the perimeter of each sheet and 300 mm centres to intermediate studs. Where more than one sheet forms the brace element each sheet must be nailed off independently.



**ECOPLY® SUITABILITY FOR BRACING APPLICATIONS INCLUDING TREATMENT TYPE AND FASTENER MATERIAL\***

Application	Plywood Treatment	Fastener Material
Plywood bracing in interior spaces with no risk of exposure to weather or moisture penetration conducive to decay (all exposure zones <sup>1</sup> including sea spray):	Ecoply Untreated	Hot dipped galvanised or better
Plywood bracing in enclosed spaces (protected from the weather) but with a risk of moisture penetration conducive to decay in exposure zones <sup>1</sup> B & C:	Ecoply H3.1 LOSP/H3.2 CCA treated Ecoply Barrier (rigid air barrier)	Hot dipped galvanised or better
Plywood bracing in enclosed spaces (protected from the weather) but with a risk of moisture penetration conducive to decay in exposure zone <sup>1</sup> D (sea spray):	Ecoply H3.1 LOSP/H3.2 CCA treated Ecoply Barrier (rigid air barrier)	Stainless steel
Cladding	Refer to Shadowclad® Specification & Installation Guide	
Rigid Air Barrier	Refer to Ecoply Barrier® Specification & Installation Guide	
Bracing on framing exposed to ground atmosphere in exposure zones <sup>1</sup> B & C	Ecoply H3.1 LOSP/H3.2 CCA treated	Hot dipped galvanised or better
Bracing on framing exposed to ground atmosphere in exposure zones <sup>1</sup> D	Ecoply H3.1 LOSP/H3.2 CCA treated	Stainless steel
Bracing in wet process buildings in all exposure zones <sup>1</sup> (including sea spray)	Ecoply H3.1 LOSP/H3.2 CCA treated	Stainless steel

<sup>1</sup> Exposure zones as per section 4 of NZS 3604  
\* Refer to Table 8, page 15 of Ecoply Specification & Installation Guide.

Ecoply® Bracing Systems are designed to meet the requirements of the New Zealand Building Code and have been tested and analysed using the P21 method referenced in NZS 3604:2011 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply manufactured by

Carter Holt Harvey and SG8 timber framing, and GIB® products manufactured by Winstone Wallboards Ltd. Substituting materials may compromise performance of the system. GIB® and GIB HandiBrac® are registered trademarks of Fletcher Building Holdings Ltd.

MARCH 2014



Information contained in this document is specific to the CHH Woodproducts range of plywood products and cannot be used with any other plywood products no matter how similar they may appear. For further information contact customer services on 0800 326 759 or visit www.chhwoodproducts.co.nz

**GIB HANDIBRAC® RECOMMENDED INSTALLATION METHOD**



Information contained in this document is specific to the CHH Woodproducts range of plywood products and cannot be used with any other plywood products no matter how similar they may appear.

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Developed in conjunction with MiTek™ NZ, the GIB Handibrac® has been tested for use as a hold down in all EP Bracing elements.

- The GIB Handibrac registered design provides for quick and easy installation
- The GIB Handibrac provides a flush surface for the wall linings because it is fitted inside the framing. There is no need to check in the framing as recommended with conventional straps
- The GIB Handibrac is suitable for both new and retrofit construction
- The design also allows for installation and inspection at any stage prior to fitting internal linings

**Concrete Floor**

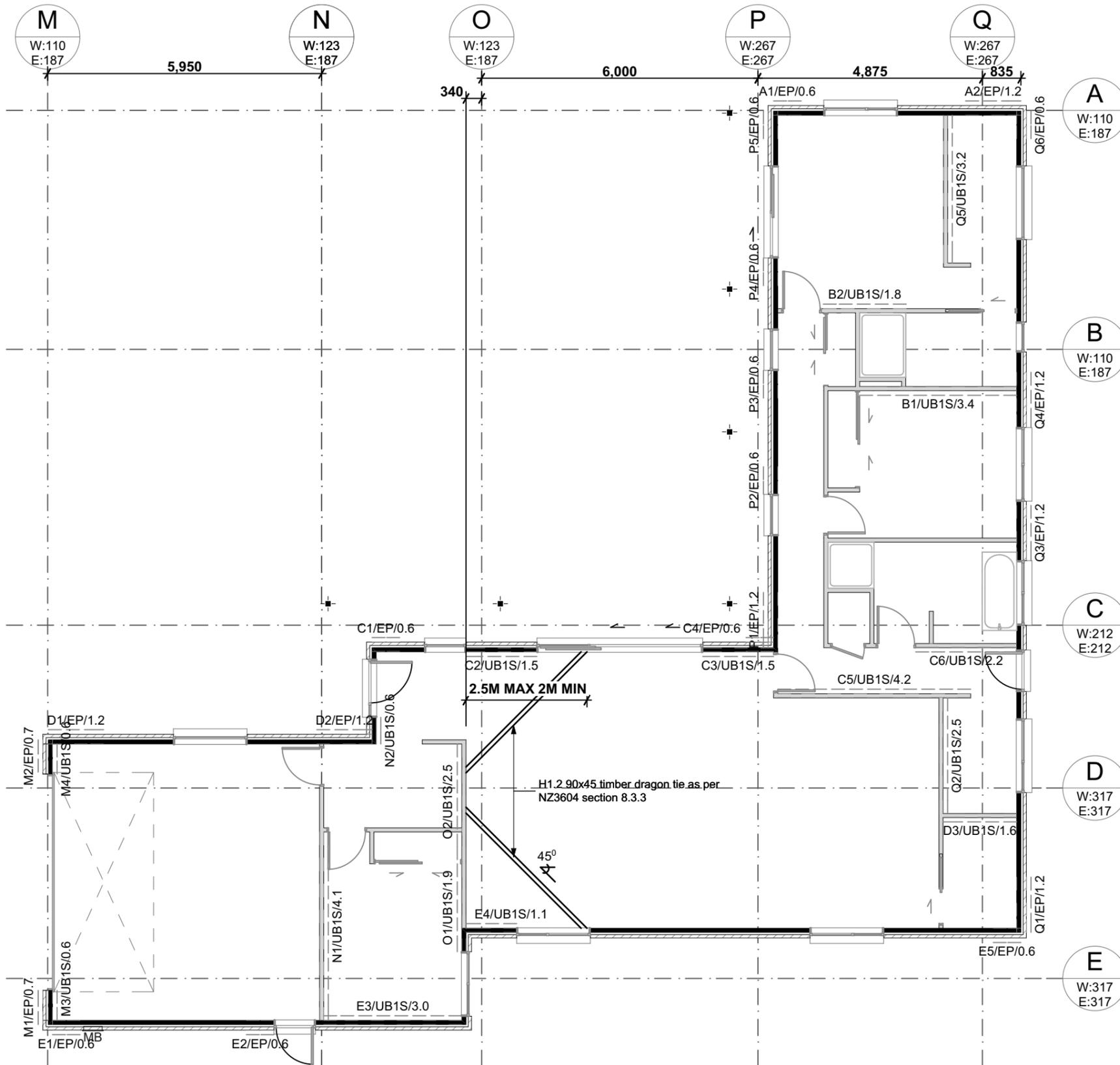
External walls	Internal walls
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate	Position GIB HandiBrac® at the stud/plate junction
<b>Hold-down fastener requirements</b>	
A mechanical fastening with a minimum characteristic uplift capacity of 15kN or screw bolt supplied with the bracket	

**Timber Floor**

External walls	Internal walls
Position GIB HandiBrac® in the centre of the perimeter joist or bearer	Position GIB HandiBrac® in the centre of the floor joist or full depth solid block
<b>Hold-down fastener requirements</b>	
M12 x 150 mm galvanised coach screw or screw bolt supplied with the bracket	

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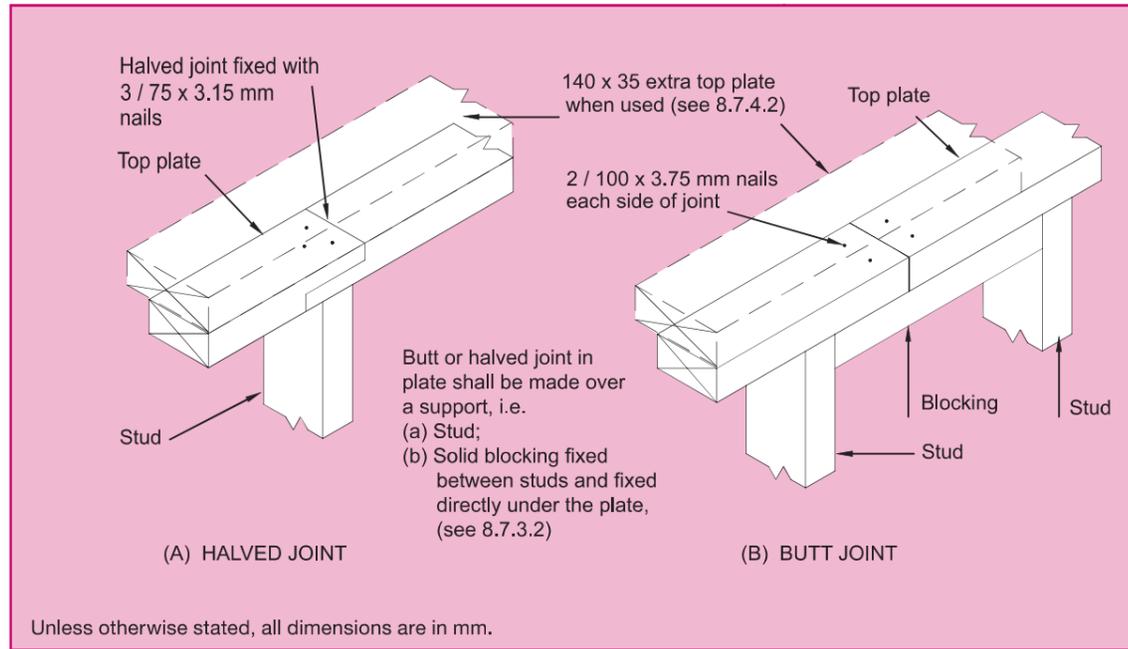
Ecoply® Bracing Systems are designed to meet the requirements of the NZBC and have been tested and analysed using the P21 method referenced in NZS 3604:2011 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply, Shadowclad® and Laserframe® SG8 timber framing manufactured by Carter Holt Harvey® Woodproducts New Zealand, and GIB® products manufactured by Winstone Wallboards Ltd. Substituting materials may compromise performance of the system. GIB® and GIB Handibrac® are registered trademarks of Fletcher Building Holdings Ltd.



BRACING CALCULATIONS			
Location of Storey	Single	Floor Load	2kPa
Floor Height to Apex	5.0 m	Roof Weight	Light
Roof Height Above Eaves	2.0 m	Cladding Weights:	
Roof Pitch	0 - 25 °	- Subfloor	Concrete Floor
Roof Style	Gable	- Wall Cladding	Heavy
Building Length (BL)	22.0 m	Room in Roof Space	No
Building Width (BW)	20.0 m	Soil Class	E - Very Soft
Wind Zone	High	Gross Plan Area (GPA)	208.0 m <sup>2</sup>
W along	55.0 BUs/m	Earthquake Zone	3
W across	50.0 BUs/m	EQ	9.0 BUs/m <sup>2</sup>
W along x BW	1,100.0 BUs	EQ x GPA	1,872.0 BUs
W across x BL	1,100.0 BUs		
Calculations based on NZS 3604:2011			

ALONG											
Bracing Line		Bracing Elements Provided						Wind		Earthquake	
Line Label	Min BUs W	Min BUs E	Brace No.	Brace Type	Brace Length	Brace Angle	Brace Height	Rating BUs/m	BUs Achieved	Rating BUs/m	BUs Achieved
A	110	187	A1	EP	0.6	0.0	2.4	95	57.0	105	63.0
			A2	EP	1.2	0.0	2.4	125	150.0	135	162.0
B	110	187	B1	UB1S	3.4	0.0	2.4	55	187.5	50	170.5
			B2	UB1S	1.8	0.0	2.4	55	99.0	50	90.0
C	212	212	C1	EP	0.6	0.0	2.4	95	57.0	105	63.0
			C2	UB1S	1.5	0.0	2.4	55	84.6	50	76.9
			C3	UB1S	1.5	0.0	2.4	55	84.6	50	76.9
			C4	EP	0.6	0.0	2.4	95	57.0	105	63.0
			C5	UB1S	4.2	0.0	2.4	55	230.5	50	209.5
			C6	UB1S	2.2	0.0	2.4	55	120.7	50	109.8
D	317	317	D1	EP	1.2	0.0	2.4	125	150.0	135	162.0
			D2	EP	1.2	0.0	2.4	125	150.0	135	162.0
			D3	UB1S	1.6	0.0	2.4	55	88.0	50	80.0
E	317	317	E1	EP	0.6	0.0	2.4	95	57.0	105	63.0
			E2	EP	0.6	0.0	2.4	95	57.0	105	63.0
			E3	UB1S	3.0	0.0	2.4	55	165.0	50	150.0
			E4	UB1S	1.1	0.0	2.4	55	60.5	50	55.0
			E5	EP	0.6	0.0	2.4	95	57.0	105	63.0
<b>Totals Achieved</b>								<b>W</b>	1,912.3	<b>E</b>	1,882.5
<b>Totals Required</b>								<b>W</b>	1,100.0	<b>E</b>	1,872.0

ACROSS											
Bracing Line		Bracing Elements Provided						Wind		Earthquake	
Line Label	Min BUs W	Min BUs E	Brace No.	Brace Type	Brace Length	Brace Angle	Brace Height	Rating BUs/m	BUs Achieved	Rating BUs/m	BUs Achieved
M	110	187	M1	EP	0.7	0.0	2.4	95	70.3	105	77.7
			M2	EP	0.7	0.0	2.4	95	66.5	105	73.5
			M3	UB1S	0.6	0.0	2.4	55	35.7	50	32.5
			M4	UB1S	0.6	0.0	2.4	55	35.7	50	32.5
N	123	187	N1	UB1S	4.1	0.0	2.4	55	224.9	50	204.5
			N2	UB1S	0.6	0.0	2.4	55	31.9	50	29.0
O	123	187	O1	UB1S	1.9	0.0	2.4	55	105.1	50	95.5
			O2	UB1S	2.5	0.0	2.4	55	138.1	50	125.5
P	123	187	P1	EP	1.2	0.0	2.4	125	150.0	135	162.0
			P2	EP	0.6	0.0	2.4	95	57.0	105	63.0
			P3	EP	0.6	0.0	2.4	95	57.0	105	63.0
			P4	EP	0.6	0.0	2.4	95	57.0	105	63.0
			P5	EP	0.6	0.0	2.4	95	57.0	105	63.0
			P6	EP	0.6	0.0	2.4	95	57.0	105	63.0
Q	267	267	Q1	EP	1.2	0.0	2.4	125	150.0	135	162.0
			Q2	UB1S	2.5	0.0	2.4	55	138.1	50	125.5
			Q3	EP	1.2	0.0	2.4	125	150.0	135	162.0
			Q4	EP	1.2	0.0	2.4	125	150.0	135	162.0
			Q5	UB1S	3.2	0.0	2.4	55	176.6	50	160.5
			Q6	EP	0.6	0.0	2.4	95	57.0	105	63.0
<b>Totals Achieved</b>								<b>W</b>	1,907.9	<b>E</b>	1,919.7
<b>Totals Required</b>								<b>W</b>	1,100.0	<b>E</b>	1,872.0



**8.7.3.2**

Joints in the *top plate* of a wall that does not contain any *wall bracing elements* (either in line or at wall intersections), shall be halved and nailed at the joints, see figure 8.14 (A), or be butted over *blocking* and nailed, see figure 8.14 (B), or be provided with an alternative fixing, having a capacity in tension or compression of 3 kN.

**8.7.3.3**

For single-storey buildings the connection in line of the *top plate* of a wall that contains one or more *wall bracing elements* shall be jointed according to the *bracing capacity* of the highest-rated individual *wall bracing elements* as follows:

- (a) *Bracing capacity* not exceeding 100 *bracing units*: A 3 kN connection as shown in figure 8.15 or by an alternative fixing of 3 kN capacity tension and compression along the *plate*;
- (b) *Bracing capacity* exceeding 100 *bracing units*: A 6 kN connection as shown in figure 8.15 or by an alternative fixing of 6 kN capacity tension and compression along the *plate*.
- (c) *Wall top plates* to which ceiling *diaphragms* are attached: A 6 kN connection as shown in figure 8.15 or by an alternative fixing of 6 kN capacity in tension and compression along the *plate*.

**8.7.3.4**

Each wall that contains one or more *wall bracing elements* shall be connected at the *top plate* level, either directly, or through a *framing member* in the line of the wall, to *external walls* at right angles to it. *Top plate* fixing(s) of the capacity in tension or compression along the line of the *wall bracing element* are given as follows:

- (a) For each wall containing *wall bracing elements* with a total *bracing capacity* of not more than 125 *bracing units*: to at least one such *external wall* by a fixing as shown in figure 8.16 of 6 kN capacity;
- (b) For each wall containing *wall bracing elements* with a total *bracing capacity* of not more than 250 *bracing units*: to at least 2 *external walls* by fixings as shown in figure 8.16 each of 6 kN capacity;
- (c) For each wall containing *wall bracing elements* with a total *bracing capacity* of more than 250 *bracing units*: to at least 2 *external walls* by fixings as shown in figure 8.16 each having a rating of not less than 2.4 kN per 100 *bracing units*.

Figure 8.14 – Connecting top plates – Walls not containing bracing (see 8.7.3.2)

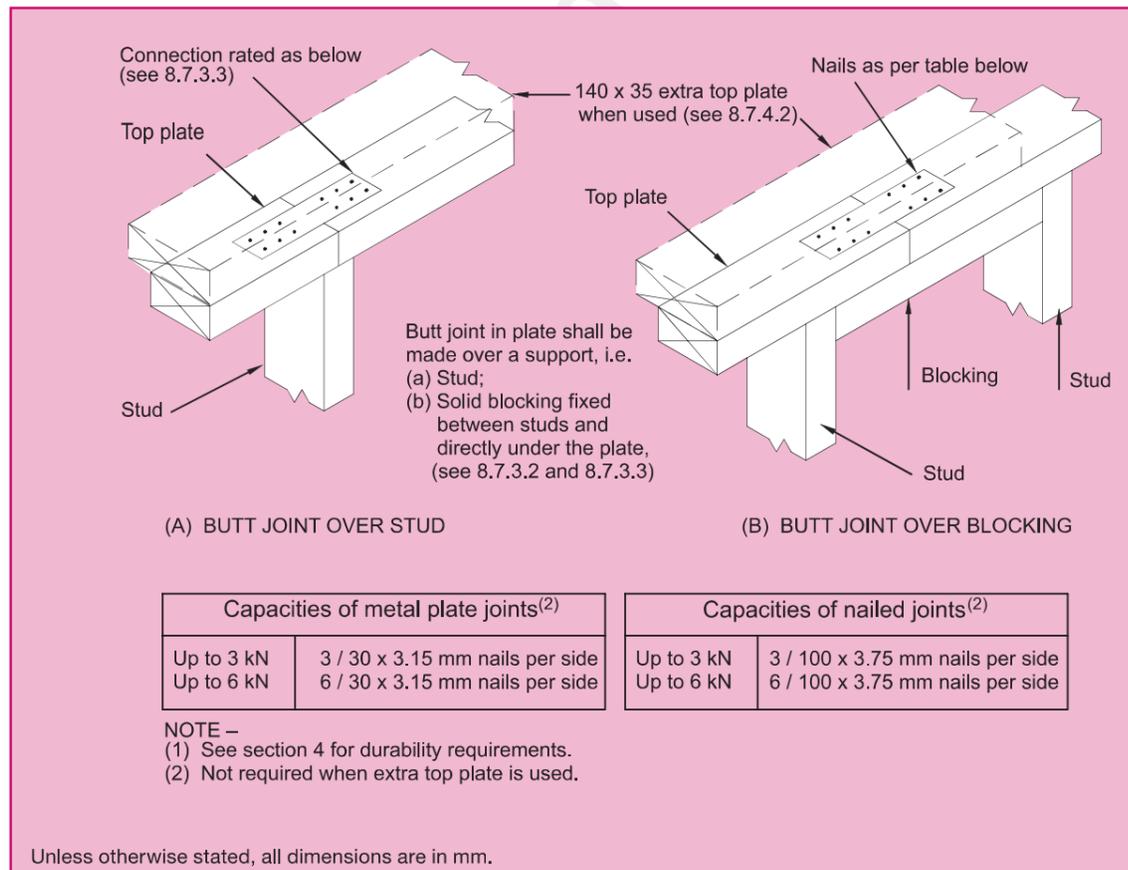


Figure 8.15 – Connecting top plates in line – Walls containing bracing (see 8.7.3.3)

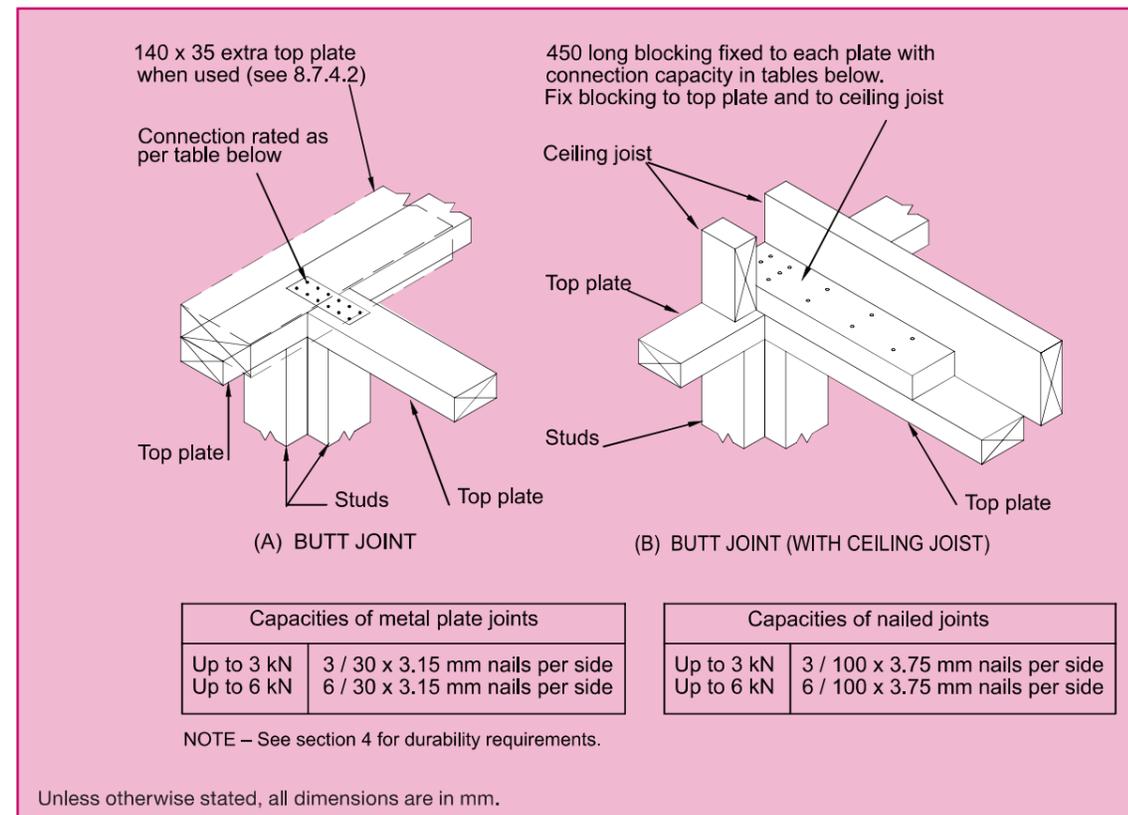


Figure 8.16 – Connecting top plates to external walls at right angles – Walls containing bracing (see 8.7.3.4)

**General Roofing Note:**  
 -Pitch = 20°  
 -Wind zone = High  
 -Roof cladding =Corrugate 0.40 B.M.T  
 Colour Steel(All Flashing shall be 0.55B.M.T) and 1mm butynol  
 -Underlay = Thermakraft 215 Self-supporting underlay  
 -Purlins =H1.2 70x45 @600crs top and bottom and 900crs max on main body of roof as per manufacturers specification  
 -Purlin fixing = NZS3604:2011Section 10 table 10.10:  
 -Fixing Type = T 1/10g self-drilling screw, 80mm long (Alternative fixing capacity shall be 2.4kN)

**Spouting Note:**  
 Colour Steel 80mm Downpipe catchment areas:

dp1: 30m <sup>2</sup>	dp4: 40m <sup>2</sup>
dp2: 52m <sup>2</sup>	dp5: 70m <sup>2</sup>
dp3: 40m <sup>2</sup>	dp6: 40m <sup>2</sup>

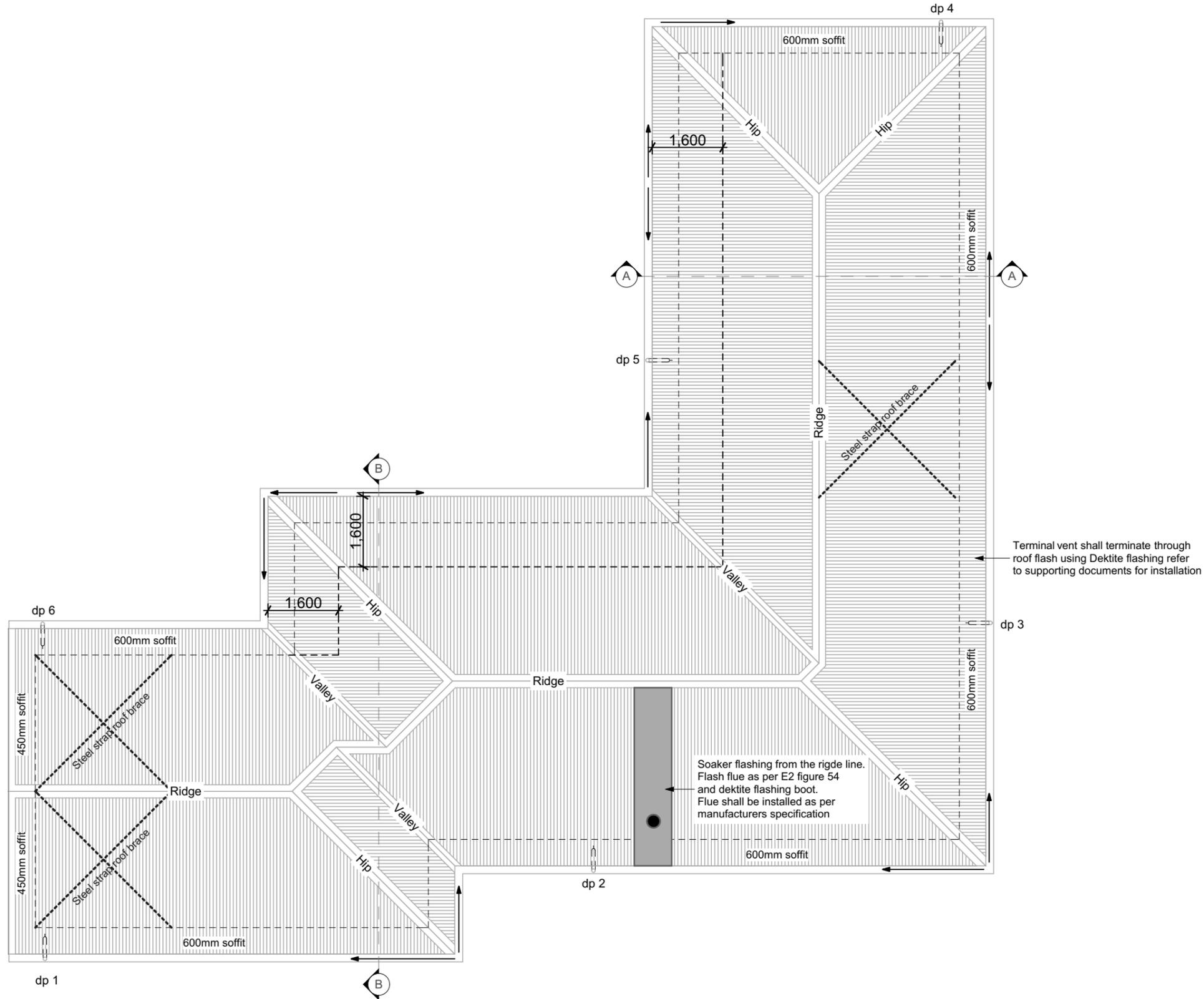
**Spouting Calculations:**  
 Spouting Capacity Calculation (dp5):  
 Catchment area=70m<sup>2</sup>  
 Freely exposed to wind factor (70m<sup>2</sup>) x 1.1= 77m<sup>2</sup>  
 Rain fall intensity: 55mm/hour Roof pitch: 20°  
 Catchment area 77m<sup>2</sup> x 0.55 x 1.1=47m<sup>2</sup>  
 =47m<sup>2</sup> x 100 = 4700mm cross sectional required

**Spouting Requirement Note:**  
 Selected spouting shall have a cross-sectional area of no less than: 4700mm<sup>2</sup>

**Penetration Note:**  
 Roof penetrations shall be in accordance with E2/AS1 section 8.4.17 figures 53,54,54.Refer to supporting documents for solar panel and evacuated tubes penetration requirements as per the manufacturers specification

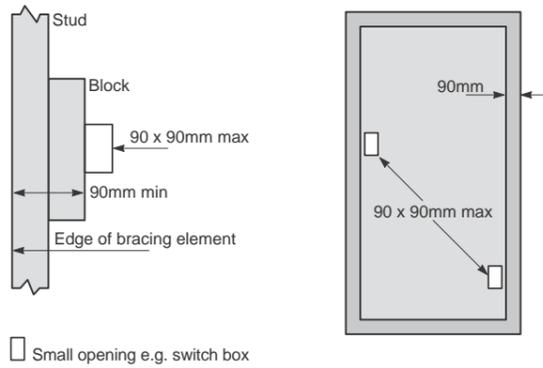
**General Note:**  
 All aspects of roofing shall be installed as per NZBC/E1/E2. Refer to supporting documents & details for installation of roofing materials

**Flashing Note:**  
 Colour steel fascia and spouting 0.55B.M.T (Colour to match roof)



**Openings in Bracing Elements**

Openings are allowed within the middle third of a wall bracing element's length and height. Neither opening dimension shall be more than one third of the element height. Wall linings are fixed to opening trimmers at 150mm centres. Small openings (e.g., power outlets) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the braced element. A block may need to be provided alongside the perimeter stud as shown below.



**ELECTRICAL LEGEND**

- Switchboard
- Door Bell
- TV Point
- Single Power Point
- Double Power Point
- Permanent Connection
- Smoke Alarm
- Telephone/Data
- Heated Towelrail
- Light Switch
- Bathroom Heaters
- Fan Vent
- Earth

**LIGHTING LEGEND**

- Down Lights
- Pendant Lights
- Wall Mounted Light
- Feature Lighting

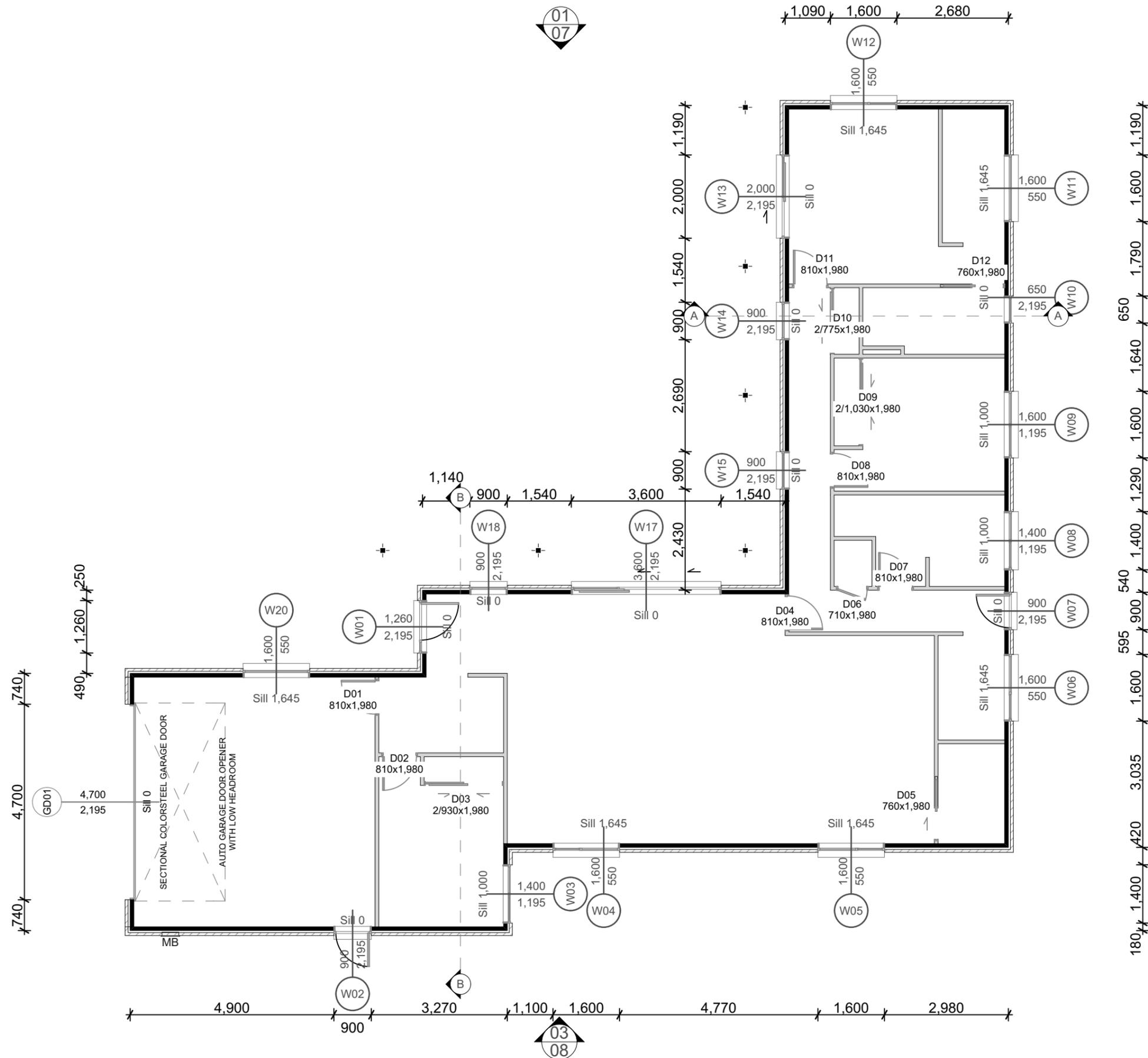
**Venting Note:**  
Auto extractor fans shall terminate through soffit with an extraction rate as set out in NZBC G4

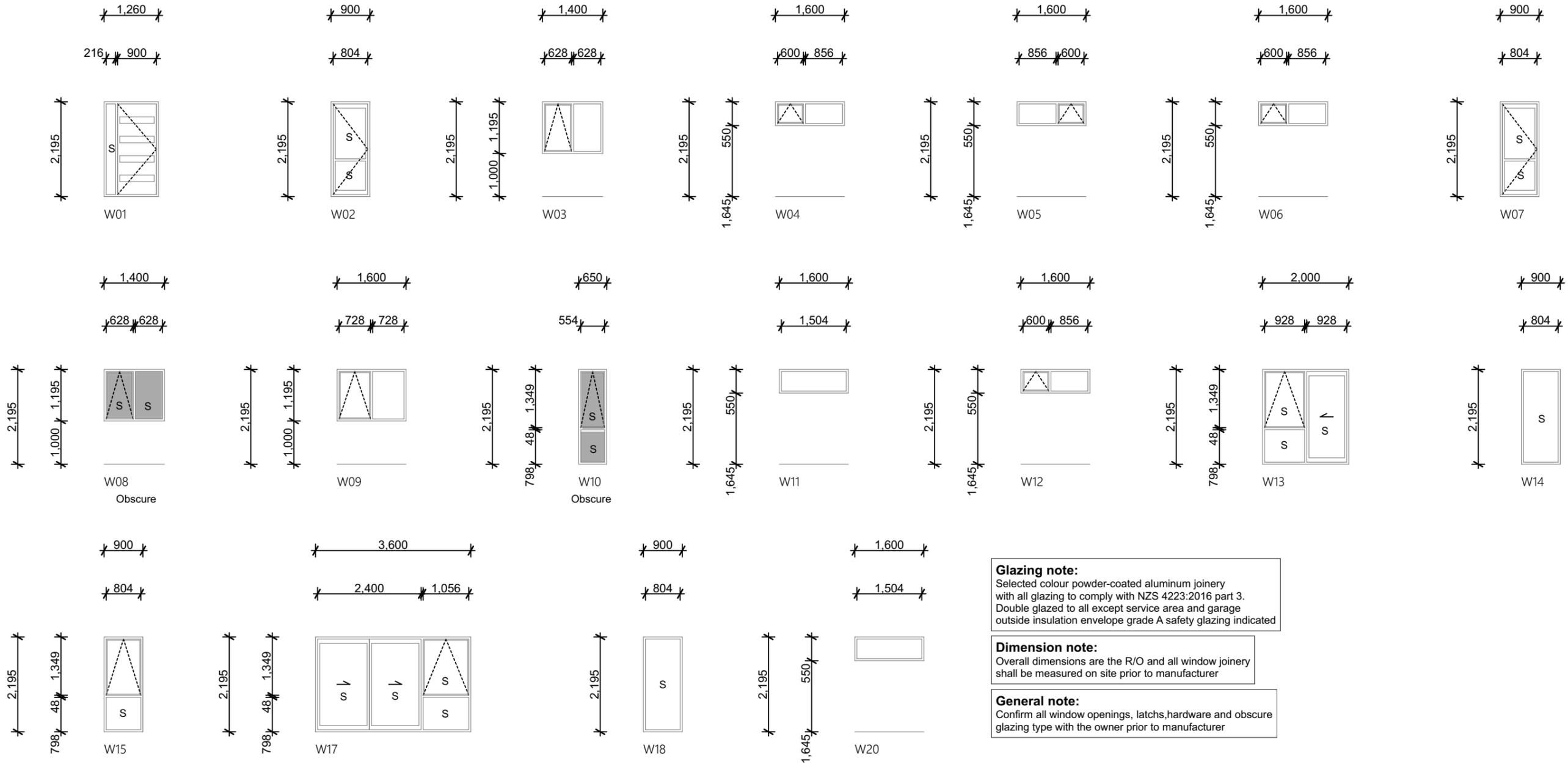
**General Note:**  
Kitchen wiring to:  
-waste master  
-oven  
-fridge  
-microwave  
-rangehood

**Layout Note:**  
Owner to confirm layout on site

**Downlight Note:**  
Downlights shall be CA80 check the insulation manufacturers instructions to ensure their product is safe when installed along side proposed downlights ratings shall be as per AS/NZS60598.2.2 Amendment A

**Smoke Alarm Note:**  
Photoelectric smoke alarms shall be installed and have test and hush buttons to comply with F7/AS1





**Glazing note:**  
 Selected colour powder-coated aluminum joinery with all glazing to comply with NZS 4223:2016 part 3. Double glazed to all except service area and garage outside insulation envelope grade A safety glazing indicated

**Dimension note:**  
 Overall dimensions are the R/O and all window joinery shall be measured on site prior to manufacturer

**General note:**  
 Confirm all window openings, latches, hardware and obscure glazing type with the owner prior to manufacturer

Generally construct exterior walls with SG8 90x45 H1.2 framing with stud crs as per the schedule and nogs at 800mm crs as per NZS 3604:2011 Building wrap as per E2/AS1 table 23 over framing, nog for all fittings, fixtures, linings, bracing panels & trims. DPC (malthoid) between bottom plate & conc slab and fixed within 150mm of each end of the plate using **M12 cast in bolts** through the bottom plate spaced @ 1,200mm crs or **Proprietary post fixed anchors** shall be fixed @ 900crs max as per NZS3604:2011 section 7.5.12.2 or other appropriate proprietary fixing, refer to bracing details for additional fixing

Generally construct interior non-load bearing walls with SG8 90x45 Pine H1.2 timber framing with studs @600mm crs to NZS3604:2011. Nog for all fittings, fixtures, linings, bracing panels & trims. DPC (malthoid) between bottom plate and conc. slab and fixed with ramset or other appropriate fixing, 75mmx3.8mmØ shot fired fasteners@ 600mm crs max & 150mm maximum from each end of the plate with 16mm washers (internal load bearing walls as per truss layout shall be fixed as per exterior wall requirements) refer to bracing details for additional plate fixing. Generally line with 10mm standard Gib board (Aqualine to wet areas) stopped for selected paint finish (unless otherwise indicated). Refer also specific fitout dwgs & bracing schedule for specialist wall linings & requirements.

**SCHEDULE OF FRAMING TIMBERS - GRADING AND TREATMENT**

Wall framing	SG8, H1.2, Pinus radiata
Exterior walls	SG8, H1.2, Pinus radiata
Interior walls (loadbearing)	SG8, H1.2, Pinus radiata
Interior walls (non-loadbearing)	SG8, H1.2, Pinus radiata
Cavity Battens	H3.1, Pinus radiata
Roof framing	SG8, H1.2, Pinus radiata
Roof trusses - typical	SG8, H1.2, Pinus radiata
Gable end truss	SG8, H1.2, Pinus radiata
Coved or attic trusses	SG8, H1.2, Pinus radiata
Purlins	SG8, H1.2, Pinus radiata
Valley boards, barge boards	H3.1, Pinus radiata
Windows	Dressed 25mm, H3.1, Pinus radiata
Framing and reveals	Pre-Primed

Refer to NZS3604:2011 for further information

**SCHEDULE OF FRAMING TIMBERS - SIZING AND SPACING**

External Load Bearing Walls 2.4m max	Studs 90x45 @600crs, Dwangs 800crs max
Internal Load Bearing Walls	Studs 90x45 @600crs, Dwangs 800crs max
Internal Non-Loadbearing Walls	Studs 90x45 @600crs, Dwangs 800crs max

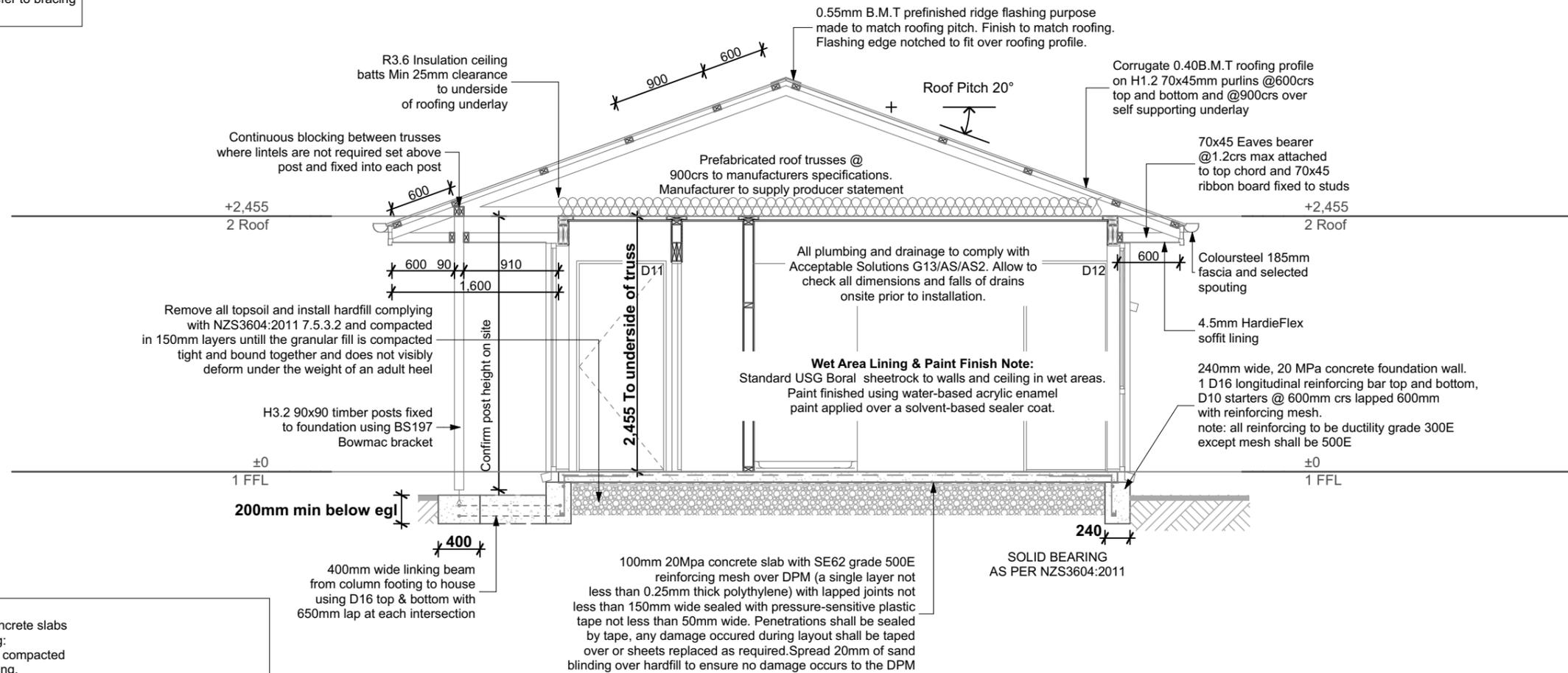
**Achieved R-values are as follows:**  
 Refer to Elevations for schedule method calculations.  
 R2.6 wall insulation gives a combined wall R-value of above R2.1  
 R3.6 ceiling insulation gives a combined ceiling R-value above of R3.4  
 Double glazing achieves R0.26  
 Concrete slab achieves R1.4

**KITCHEN NOTE:**  
 All surface finishes to the kitchen joinery, walls, etc. to comply with the requirements of NZBC G3.

**Wet Area Lining & Paint Finish Note:**  
 Standard USG Boral sheetrock to walls and ceiling in wet areas. Paint finished using water-based acrylic enamel paint applied over a solvent-based sealer coat.

**Site Note:**  
 Wind Zone: High  
 Earthquake Zone: 3  
 Exposure Zone: B  
 Snow Loading Zone: N4

Refer to the truss design for internal load bearing walls and fix with M12 cast in bolts through the bottom plate at 1,200mm crs & within 150mm of each end of the plate or Proprietary post fixed anchors shall be fixed @900crs max as per NZS3604:2011 section 7.5.12.2 or other appropriate proprietary fixing, refer to bracing details for additional fixing.



**Note:**  
 Water service pipes located beneath concrete slabs on ground shall comply with the following:  
 (a) Pipes shall be laid in a narrow trench compacted in a manner that will not damage the piping. There shall be a minimum distance of 75mm between the top of the pipe and the underside of the slab.  
 (b) The pipe ends shall be crimped or capped prior to pouring of the concrete and measures shall be taken to protect the exposed pipe from any form of damage.  
 (c) Any piping that penetrates the slab shall be at right angles to the surface of the slab and shall be lagged for the full depth of the slab penetration with either:  
 (i) an impermeable flexible material of not less than 6mm thickness or  
 (ii) impermeable plastic sleeve or conduit providing equivalent protection  
 (d) Metal pipes shall be continuously lagged with an impermeable material.  
 (e) Soft-soldered joints shall not be permitted.  
 (f) The number of joints shall be kept at a minimum  
 All buried pipes and penetrations through concrete shall be wrapped in 'DENSO TAPE' or similar product to allow for pipe expansion & movement. Allow for a 25mm separation from foundation wall NZBC G13/AS2 2.5.8.1

Pipe Materials for Hot and Cold Water shall be as per below requirements:

Material	Relevant Standard
Hot and Cold	
Copper	NZS 3501
Galvanised steel	NZS/BS 1387
Polybutylene	AS/NZS 2642: Parts 1, 2 and 3
Cold Only	
PVC-U	AS/NZS 1477
Polyethylene	NZS 7601 for pressures up to 0.9 MPa (Type 3) NZS 7602 for pressures up to 1.2 MPa (Type 5) NZS 7610 for pressures up to 1.2 MPa AS/NZS 4129 for fittings AS/NZS 4130 for pressures up to 2.5 MPa

Generally construct exterior walls with SG8 90x45 H1.2 framing with stud crs as per the schedule and noggs at 800mm crs as per NZS 3604:2011 Building wrap as per E2/AS1 table 23 over framing, nog for all fittings, fixtures, linings, bracing panels & trims. DPC (malthoid) between bottom plate & conc slab and fixed within 150mm of each end of the plate using **M12 cast in bolts** through the bottom plate spaced @ 1,200mm crs or **Proprietary post fixed anchors** shall be fixed @ 900crs max as per NZS3604:2011 section 7.5.12.2 or other appropriate proprietary fixing, refer to bracing details for additional fixing

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Purlins	SG8, H1.2, Pinus radiata
Valley boards, barge boards	H3.1, Pinus radiata
Windows	Dressed 25mm, H3.1, Pinus radiata
Framing and reveals	Pre-Primed

Refer to NZS3604:2011 for further information

**SCHEDULE OF FRAMING TIMBERS - SIZING AND SPACING**

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Internal Non-Loadbearing Walls	Studs 90x45 @600crs, Dwangs 800crs max

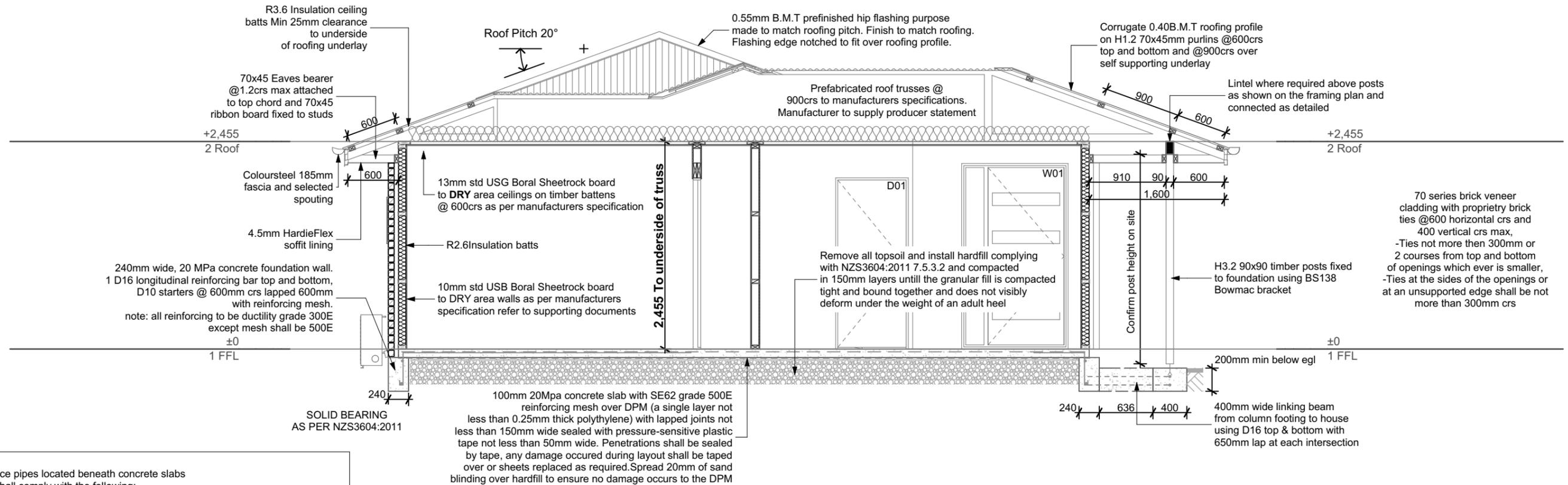
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**Site Note:**  
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Refer to the truss design for internal load bearing walls and fix with M12 cast in bolts through the bottom plate at 1,200mm crs & within 150mm of each end of the plate or Proprietary post fixed anchors shall be fixed @900crs max as per NZS3604:2011 section 7.5.12.2 or other appropriate proprietary fixing, refer to bracing details for additional fixing.



**Note:**  
 Water service pipes located beneath concrete slabs on ground shall comply with the following:  
 (a) Pipes shall be laid in a narrow trench compacted in a manner that will not damage the piping. There shall be a minimum distance of 75mm between the top of the pipe and the underside of the slab.  
 (b) The pipe ends shall be crimped or capped prior to pouring of the concrete and measures shall be taken to protect the exposed pipe from any form of damage.  
 (c) Any piping that penetrates the slab shall be at right angles to the surface of the slab and shall be lagged for the full depth of the slab penetration with either:  
 (i) an impermeable flexible material of not less than 6mm thickness or  
 (ii) impermeable plastic sleeve or conduit providing equivalent protection  
 (d) Metal pipes shall be continuously lagged with an impermeable material.  
 (e) Soft-soldered joints shall not be permitted.  
 (f) The number of joints shall be kept at a minimum  
 All buried pipes and penetrations through concrete shall be wrapped in 'DENSO TAPE' or similar product to allow for pipe expansion & movement. Allow for a 25mm separation from foundation wall NZBC G13/AS2 2.5.8.1

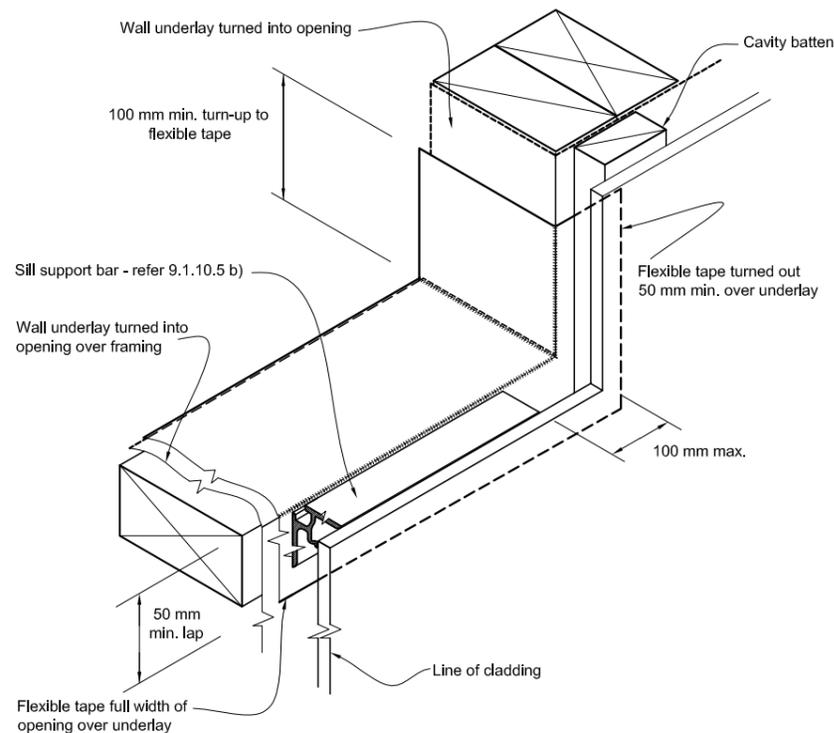
Pipe Materials for Hot and Cold Water shall be as per below requirements:

Material	Relevant Standard
Hot and Cold	
Copper	NZS 3501
Galvanised steel	NZS/BS 1387
Polybutylene	AS/NZS 2642: Parts 1, 2 and 3
Cold Only	
PVC-U	AS/NZS 1477
Polyethylene	NZS 7601 for pressures up to 0.9 MPa (Type 3) NZS 7602 for pressures up to 1.2 MPa (Type 5) NZS 7610 for pressures up to 1.2 MPa AS/NZS 4129 for fittings AS/NZS 4130 for pressures up to 2.5 MPa

**APPLICATION**

- 1) Cut the wall underlay/air barrier at a 45° angle away from each corner. Fold flaps tightly into the window or door opening and fix with staples on the back faces of the framing.
- 2) Fix the Thermakraft Corner Moulded Piece to the bottom corners by way of staples or clouts to the two jambs. **Always ensure that Aluband/Bulldog is applied to surfaces that are clean and free of dust, contaminates, solvents, oils or waxes. Note the following:** 150mm wide tape is used for 100mm wide window or door framing, and the 200mm wide tape is used for 140mm to 150mm wide reveals. (With steel framed houses use Double Sided Tape to attach the Thermakraft Aluband Corner Moulded Piece to metal framing).
- 3) Measure 200mm up both jambs, add 400mm to the length of the window sill and cut to suit that measurement.
- 4) First remove the release film from the tape; align the back edge of the tape with the inside edge of the sill.
- 5) Using the Thermakraft Tool, firmly press the tape onto the wall underlay to ensure good adhesion and ensure the tape is fitted tightly into the jamb to sill corners.
- 6) At the sill/jamb corners cut the tape from the external edge of the frame outwards. Fold flaps back onto the wall underlay/air barrier and press tape firmly for good adhesion.
- 7) Proceed to fit the Window Flashing Tape to the top corners of the frame (200mm across lintel x 200mm down jamb).
- 8) For window or door lintel to jamb junction, apply a butterfly using the 75mm wide x 100mm long Aluband/Bulldog. Fix at a 45° angle to the jamb with an overlap at the corner of 3mm.

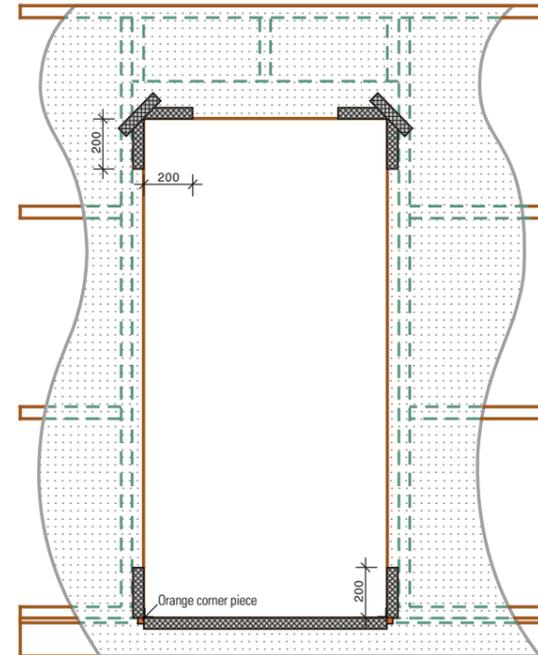
**NOTE:**  
 (1) Detailed cladding omitted for clarity, refer to specific claddings.  
 (2) Head to be treated similarly with continuous wall underlay and flexible tape at corners.  
 (3) Refer individual cladding details for jamb flashings.



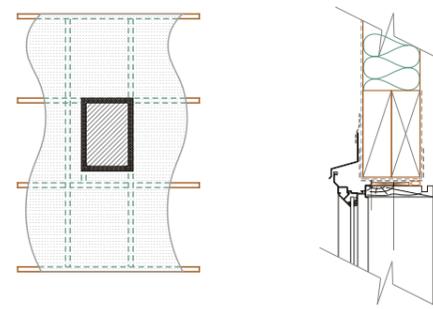
- 9) **Door frames are to be treated similarly to window openings. The sill may be either a timber or a concrete floor.**

**Window and door frames**

- A) Staple orange corner piece to the bottom corner sill. Place tape 200mm up the jambs and across the full width of the sill opening. Align tape with the back of the frame opening.
- B) At the top corner place tape 200mm down the jamb and 200mm across the lintel. Place a strip of 75mm tape across the top corner.



- 10) Meter boxes with built-in flanges to be taped with Window Flashing Tape along each flange to the building underlay.
- 11) Window Flashing Tape is used to seal the up stand of the window head flashing to the building underlay. (Refer to the cladding manufacturer's details).



**IMPORTANT INFORMATION**

**To assist the adhesion of window flashing tapes Thermakraft suggests the following two options this is particularly relevant in the following conditions:**

- In temperatures below 5°C
- When adhering to non-woven surfaces such as Covertex™
- When the tape has been lifted or moved after initial application

**Application of Heat:**

- Press the window sill tape into position in the usual manner
- Apply a gentle heat, using a heat gun on low heat to the top of the window sill tape
- Once the adhesive starts to soften use the Thermakraft tool or a roller to firmly press the tape into the wall underlay ensuring good adhesion
- Take care not to damage the foil face lining

**Application of Spray Adhesive:**

- Before installing the window sill flashing tape apply a light coating of suitable solvent based spray adhesive (not water based)
- Allow spray adhesive to flash dry. When dry to the touch apply the window sill flashing in the normal manner
- Take care once applied not to disturb the tape until fully cured

**Adhesives and Solvents:**

After the installation of Aluband/Bulldog, ensure that the edges do not come into contact with solvent based sealants or adhesives. Solvents in these products can adversely affect the adhesion or dissolve the bituminous adhesive and cause it to run. If the application of solvent based adhesives or sealants are necessary, cover the edges with Thermakraft F150 pure foil tape or equivalent foil tape to form a barrier.

**LOSP Treated Timber:**

Aluband/Bulldog should not be applied directly on to the timber, or indirectly on to a timber sheathed in underlay that has been freshly LOSP treated. Always allow the solvent to fully flash off prior to wrapping in underlay and applying Aluband/Bulldog.

**Surface Preparation:**

Always ensure that Aluband/Bulldog is applied to surfaces that are clean and free of dust, contaminates, solvents, oils or waxes.

**Exposure Time:**

Aluband/Bulldog must not be left exposed to the elements for more than 42 days.

**Proprietary Anchors Minimum Capacity:**

**External Walls;**

- (a) Horizontal loads in the plane of the wall 2kN
- (b) Horizontal loads out of the plane of the wall 3kN
- (c) Vertical loads in axial tension of the fastener 7kN

**Internal Walls;**

- (a) Horizontal loads in the plane of the wall 2kN
- (b) Horizontal loads out of the plane of the wall 2kN

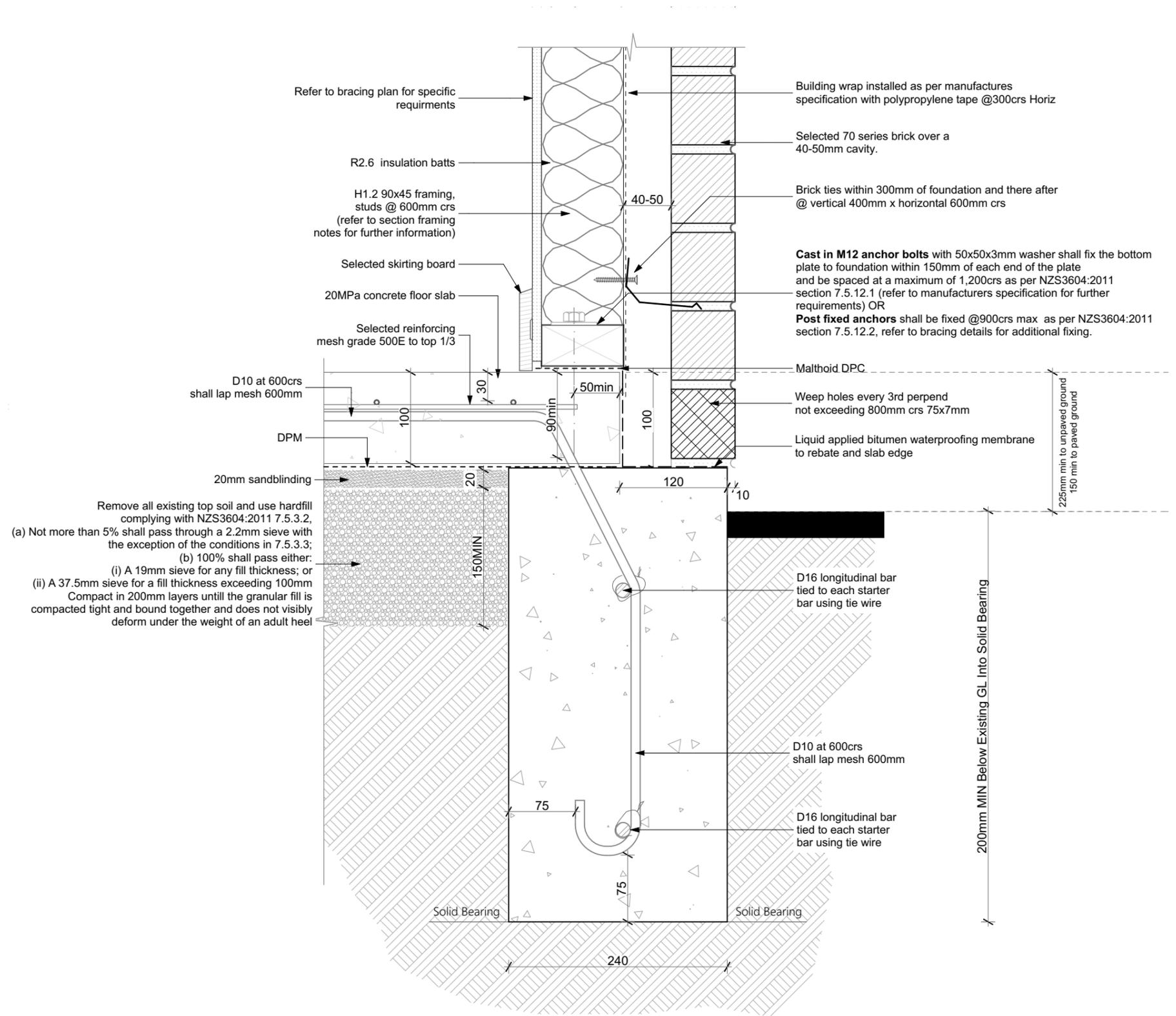
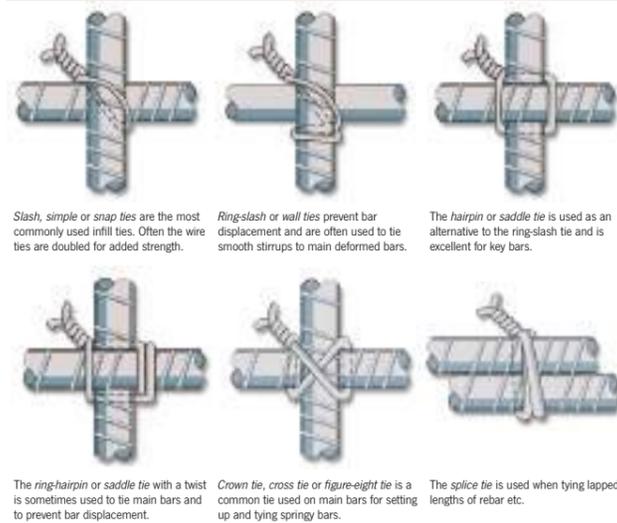
**Conrim all proprietary min edge and embedment requirements with the selected manufacturer.**

Minimum concrete cover to steel reinforcement shall be:

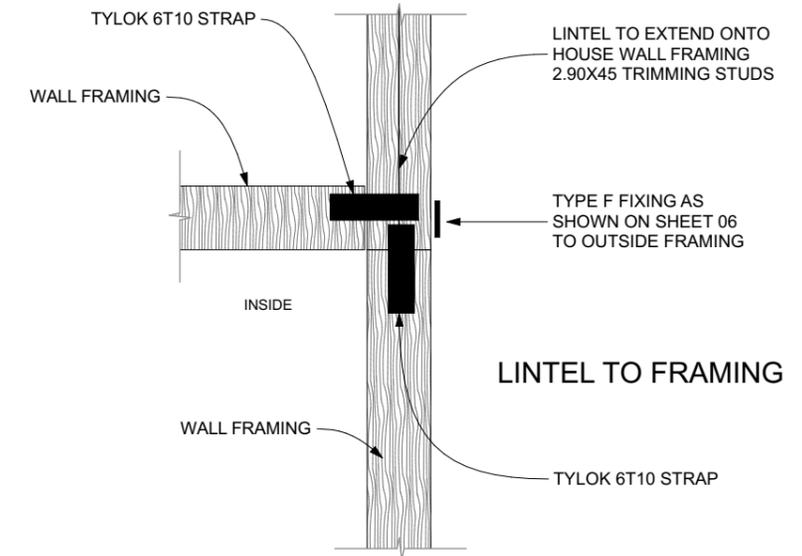
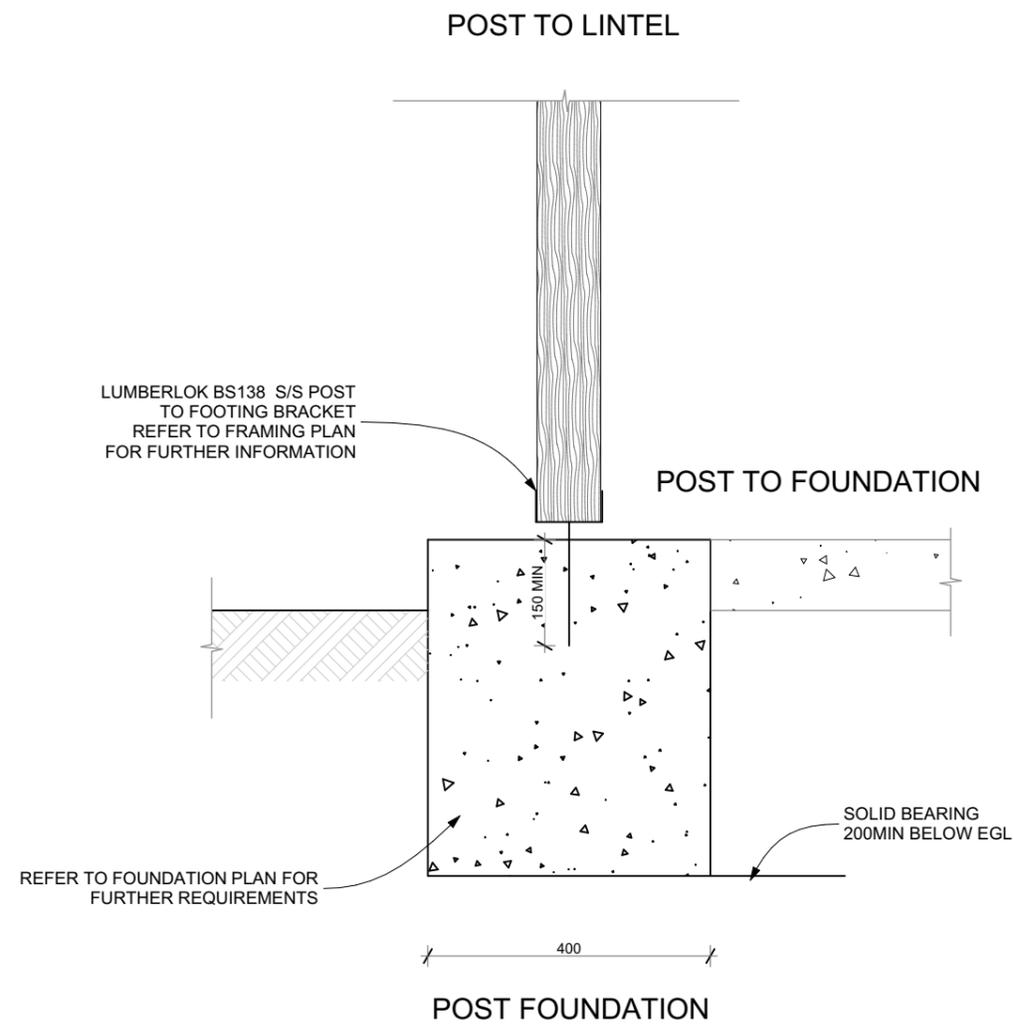
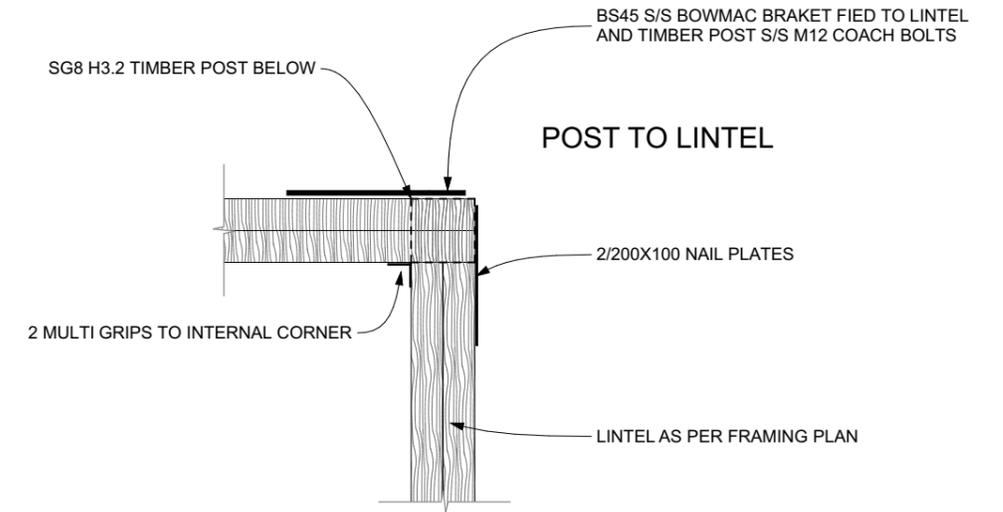
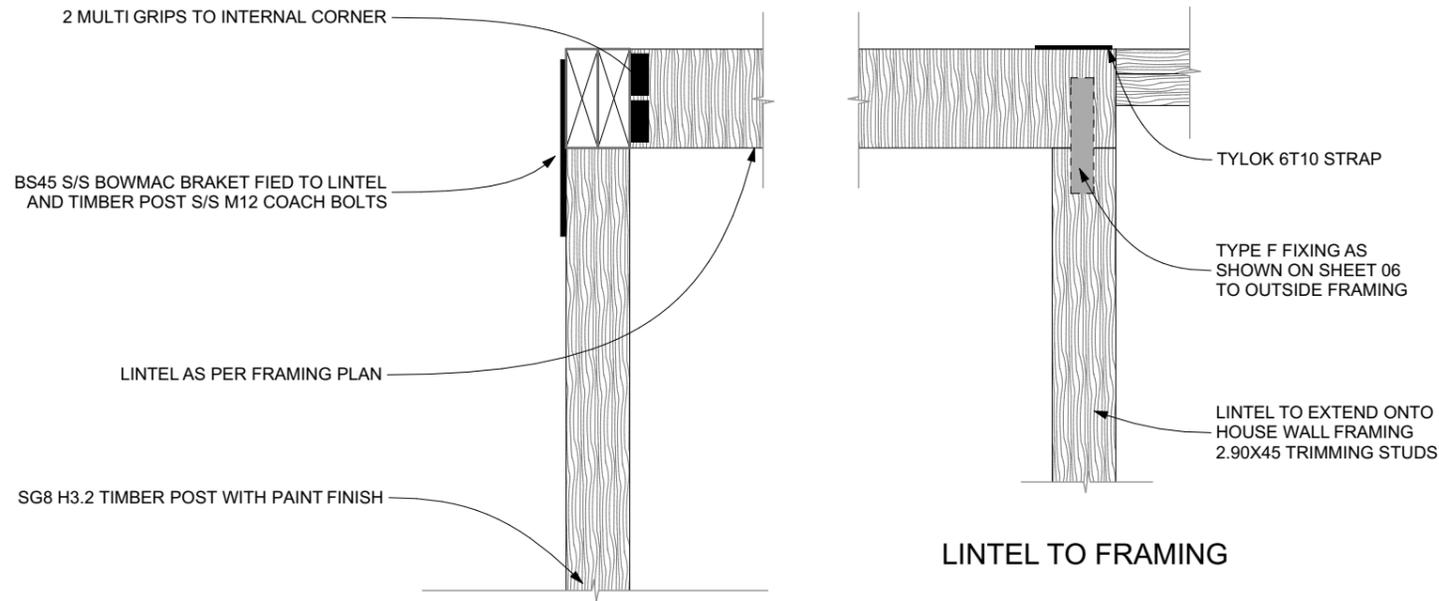
- (a) 75 mm when concrete is placed directly on or against the ground;
- (b) 50 mm in all other situations where the concrete is placed in formwork provided the concrete specifications follow the provisions of 4.5.2;
- (c) 30 mm from the top of a wall or floor slab which is in a closed area or 50 mm from the top of any exposed wall or floor slab.

**Table 5: Minimum bend diameters in mm for rebar (rounded up to the nearest 10 mm). From NZS 3101:2006 Tables 8.1 and 8.2 and clause 8.4.2.**

Rebar type	Bar diameter (mm)								
	6	10	12	16	20	25	28	32	40
Plain bars	30	50	60	80	100	150	170	200	240
Deformed bars	30	50	60	80	100	150	170	200	240
Plain bars (stirrups and ties)	20	20	30	40	40	80	-	-	-
Deformed bars (stirrups and ties)	30	40	50	70	80	150	-	-	-



D-01 Brick Foundation 1:5



PLAN VIEW

D-02 Post Details 1:10

Billie Anderson, Lot 86 Oakfields, Amberley

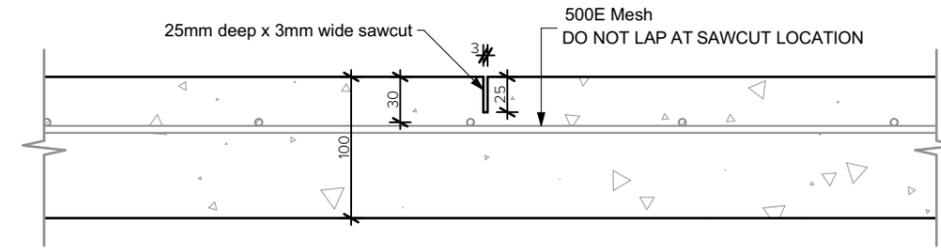
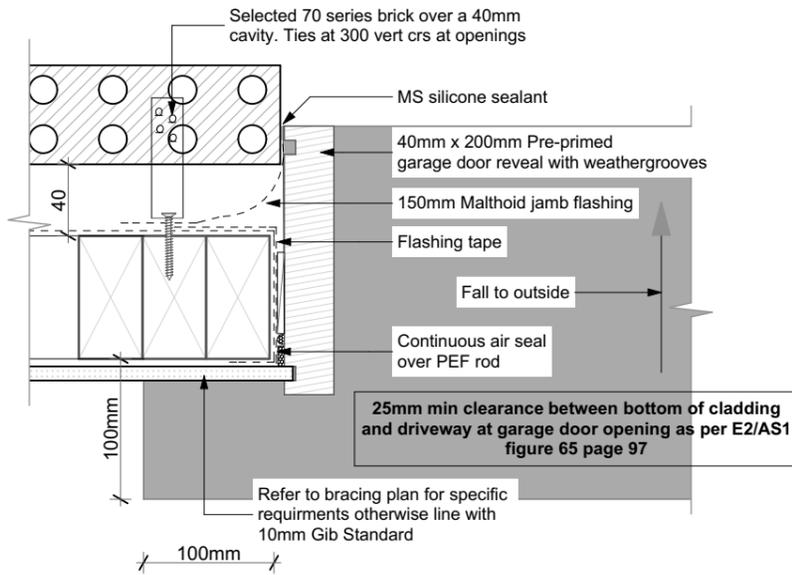
LMS drafting & design  
 Contact: Luke Seaford  
 PH:02108232226  
 Email:luke\_seaford@hotmail.com

Consent Plans

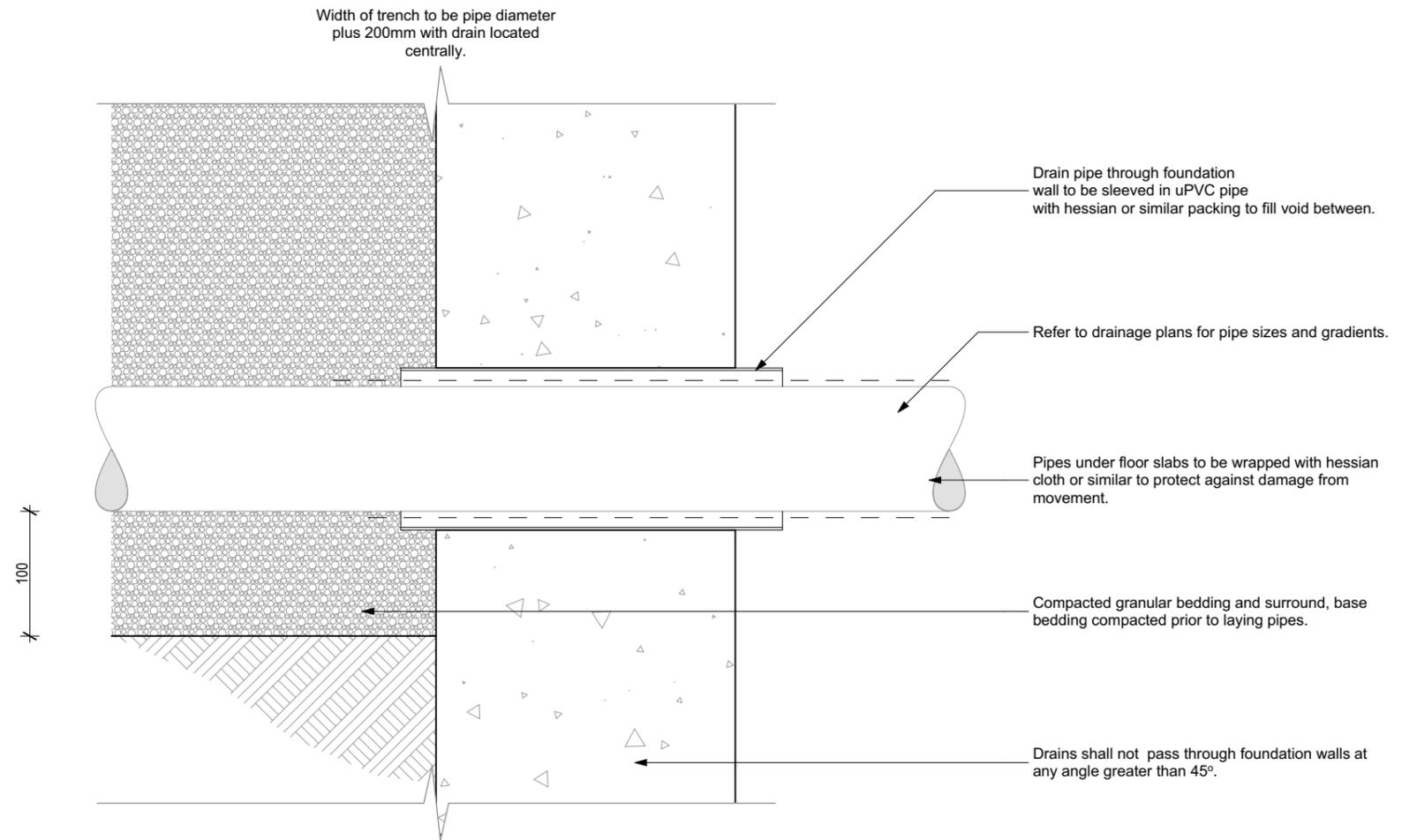
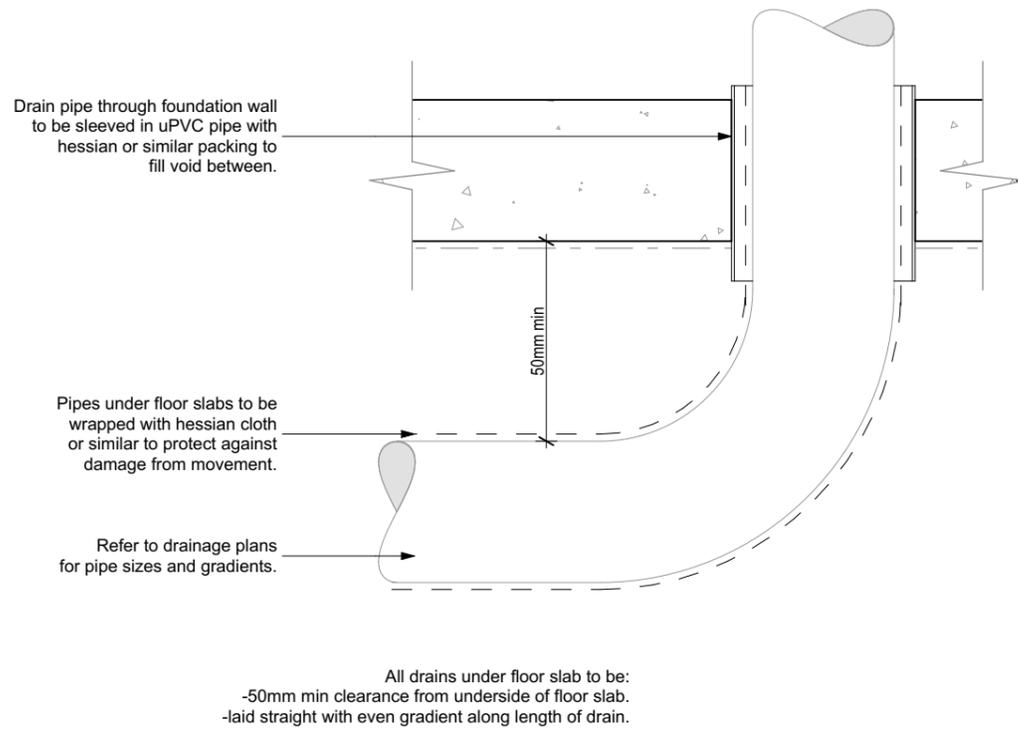
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 Details 02

Date: Wednesday, 20 September 2017  
 Drawn by: Luke Seaford  
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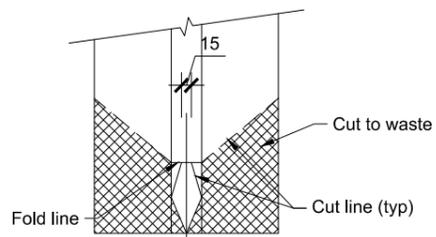
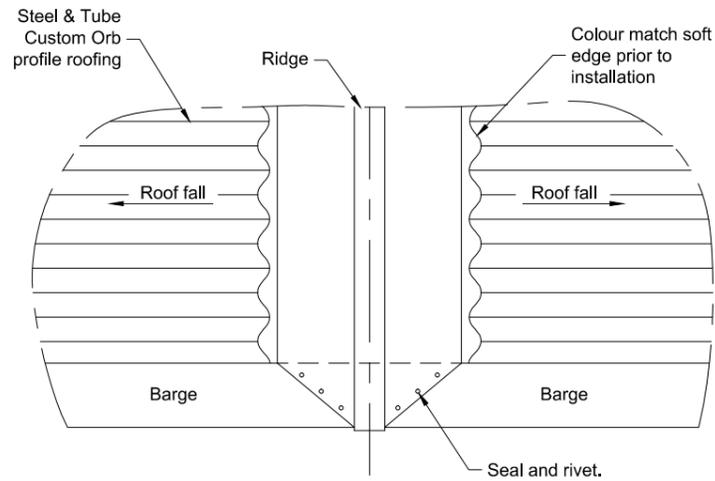
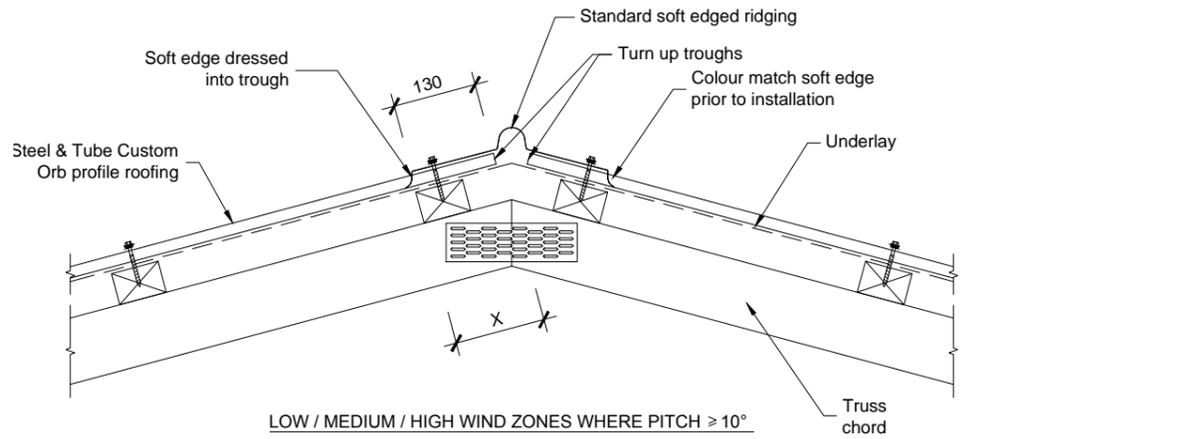
22/34



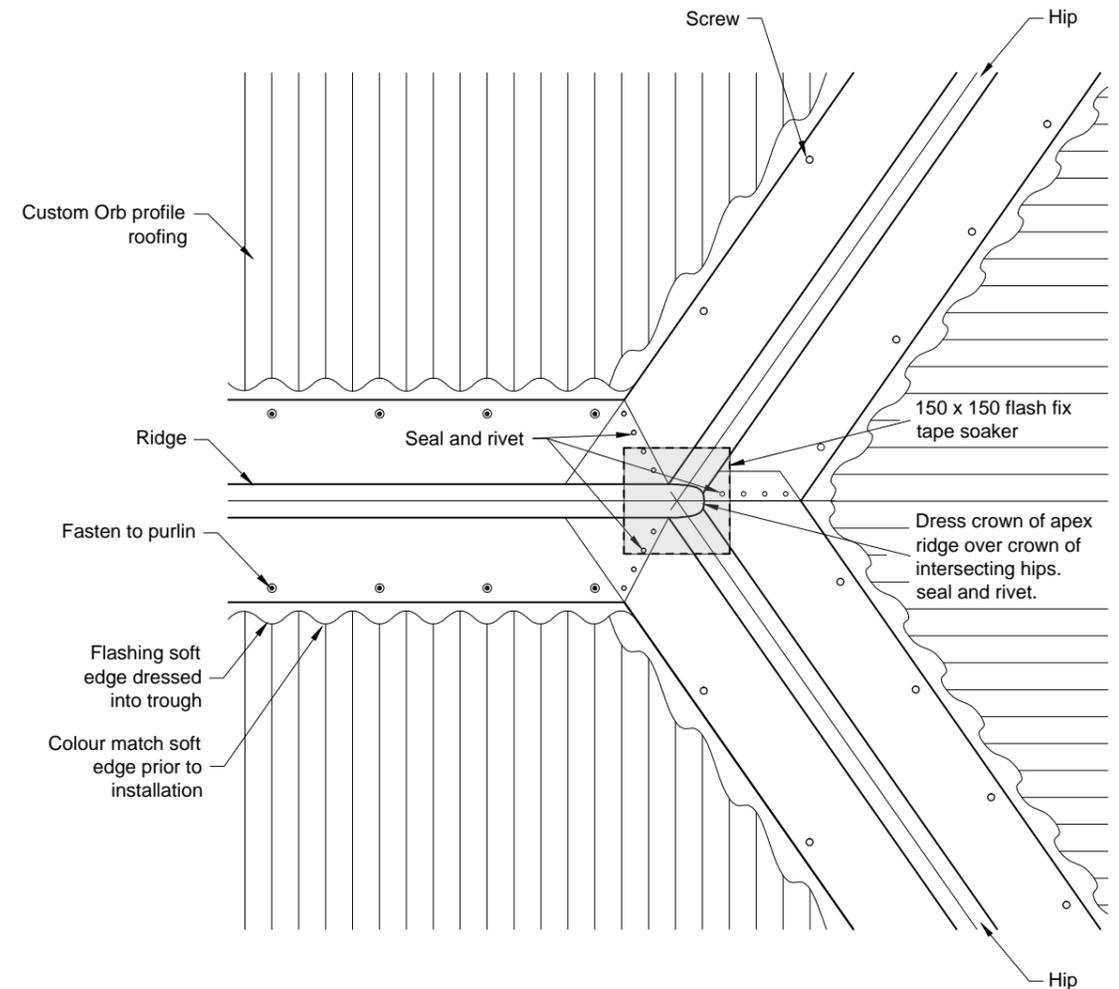
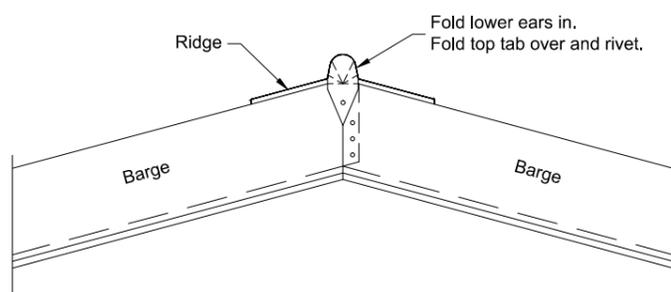
D-03 Garage Door Jamb 1:5



D-04 Foundation Details

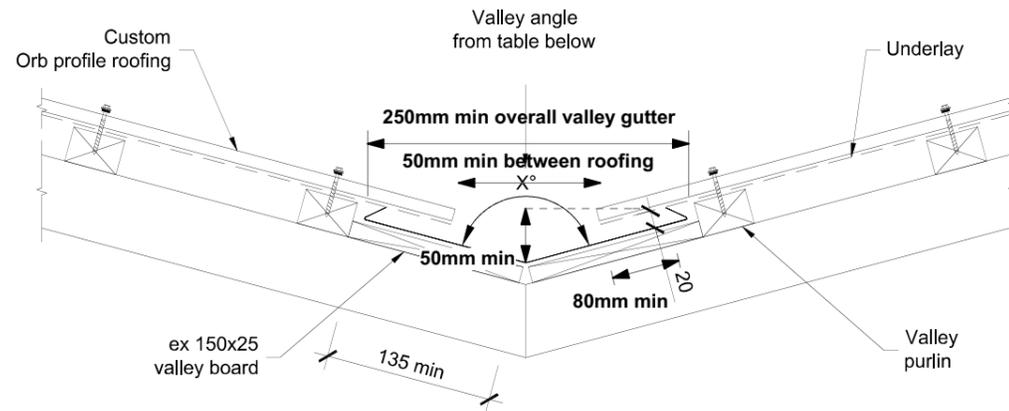


DETAIL  
RIDGE END CUT



D-05 Ridge Flasing

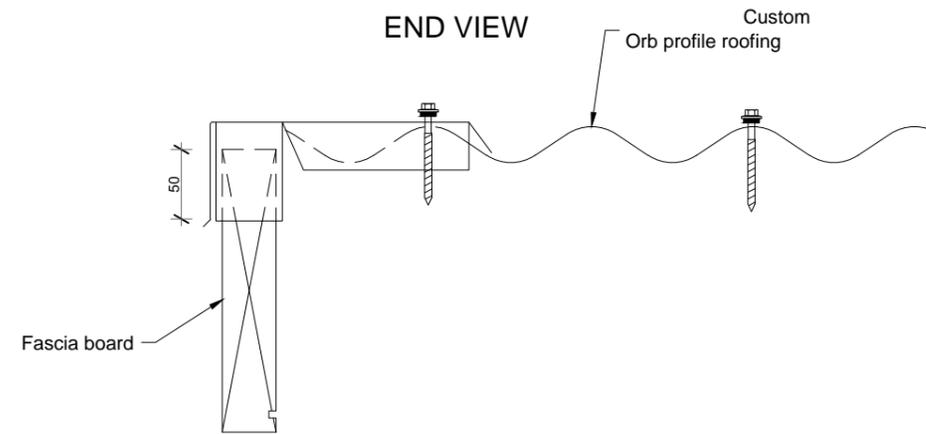
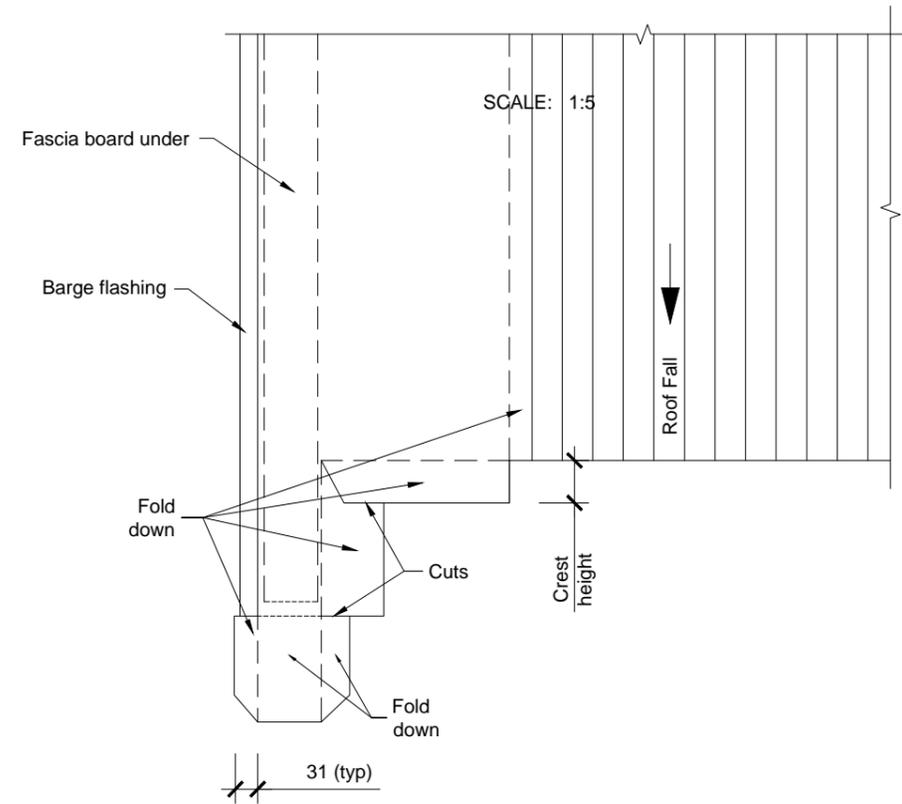
D-06 Hip Flashing



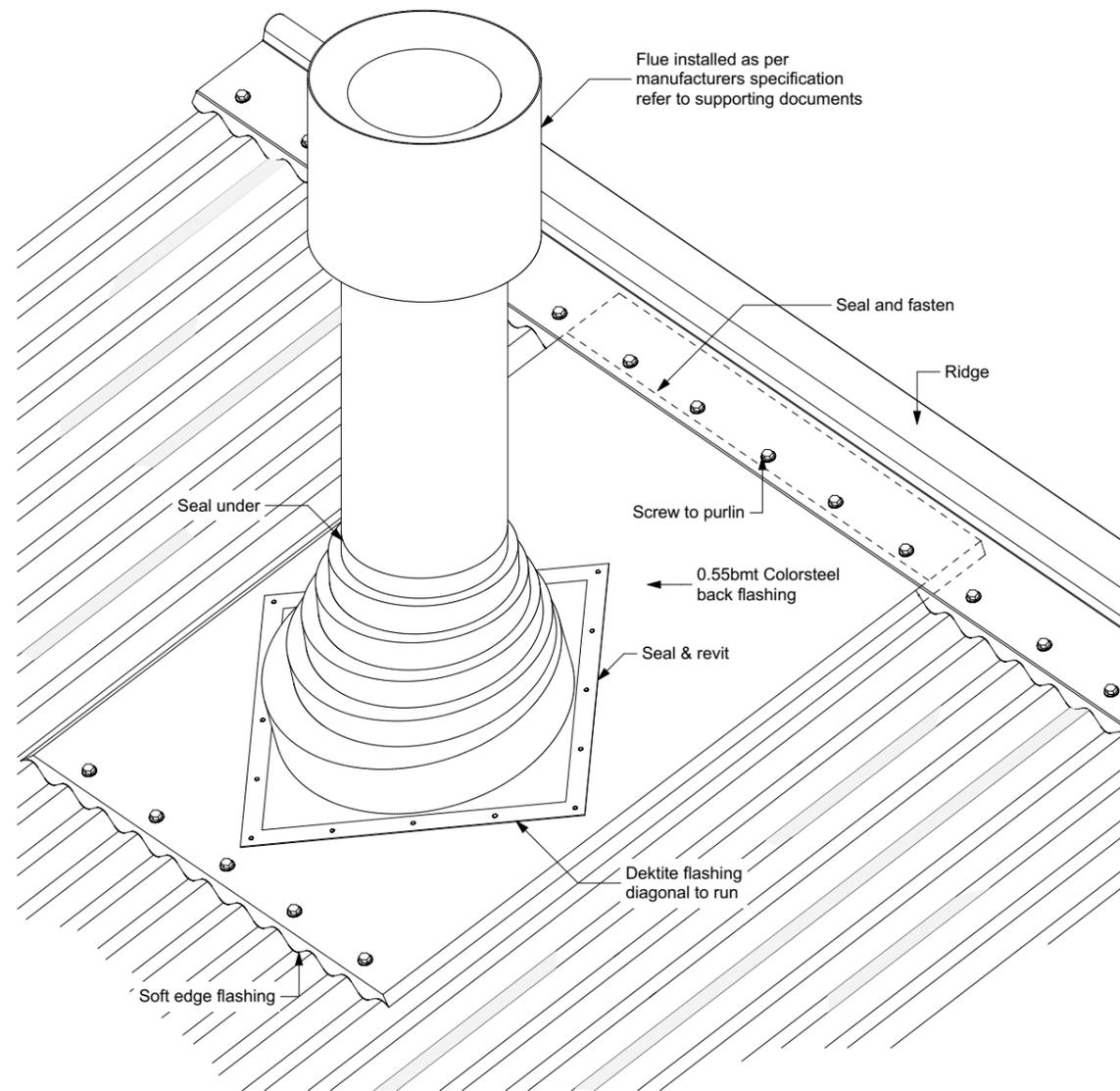
Valley Angles and Catchments

Roof Pitch	<8°	8°	10°	15°	20°	25°	30°	35°	45°
Valley Angle	Varies	169	166	159	152	145	139	132	120
Maximum Catchment	*	20m <sup>2</sup>	26m <sup>2</sup>	27m <sup>2</sup>	35m <sup>2</sup>	43m <sup>2</sup>	52m <sup>2</sup>	63m <sup>2</sup>	75m <sup>2</sup>

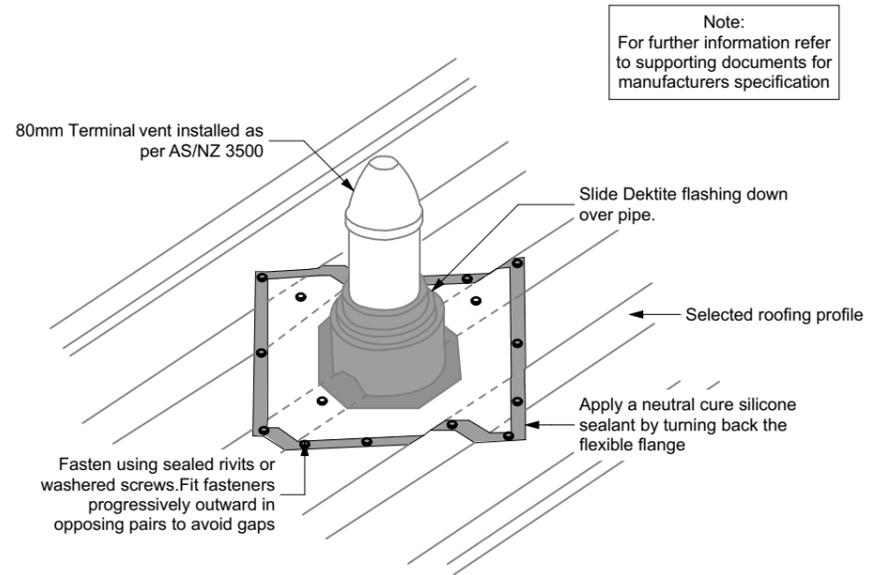
D-07 Valley Flashing



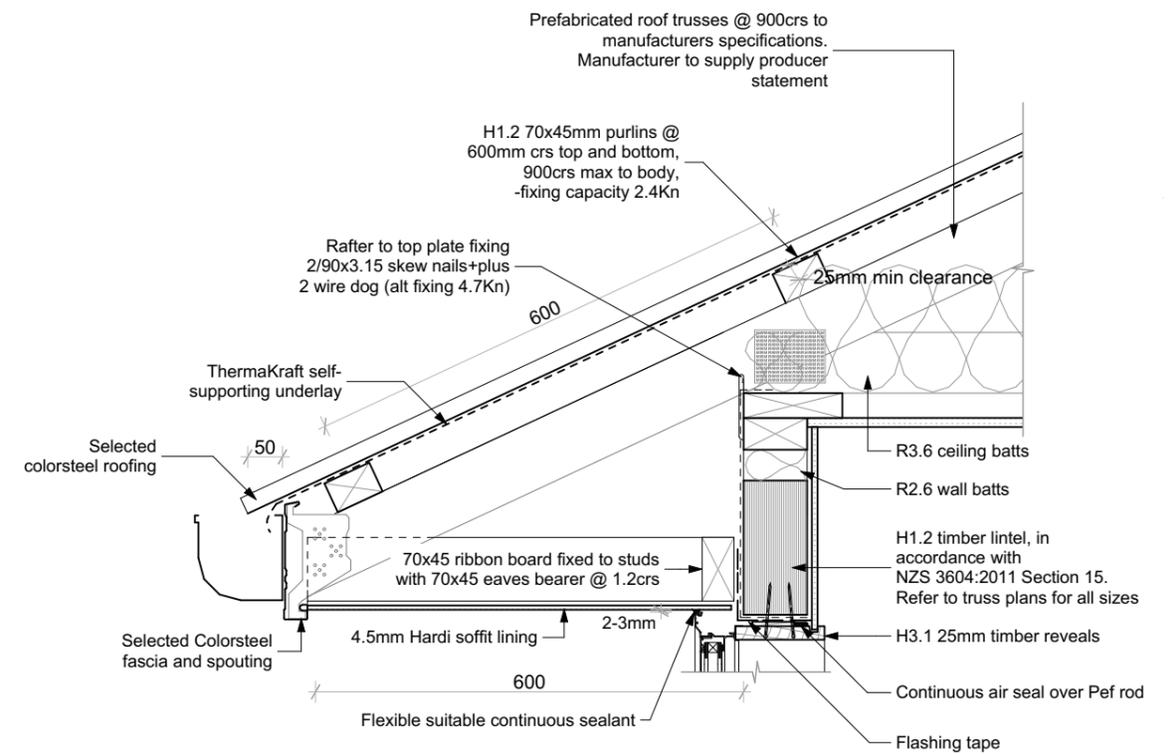
D-08 Barge Flashing



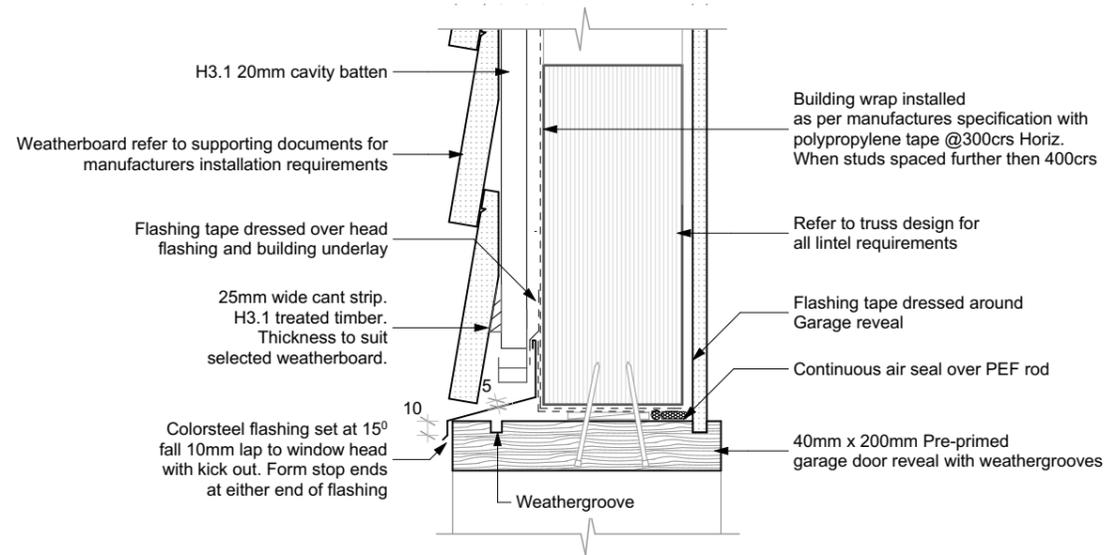
D-09 Flue Penetration



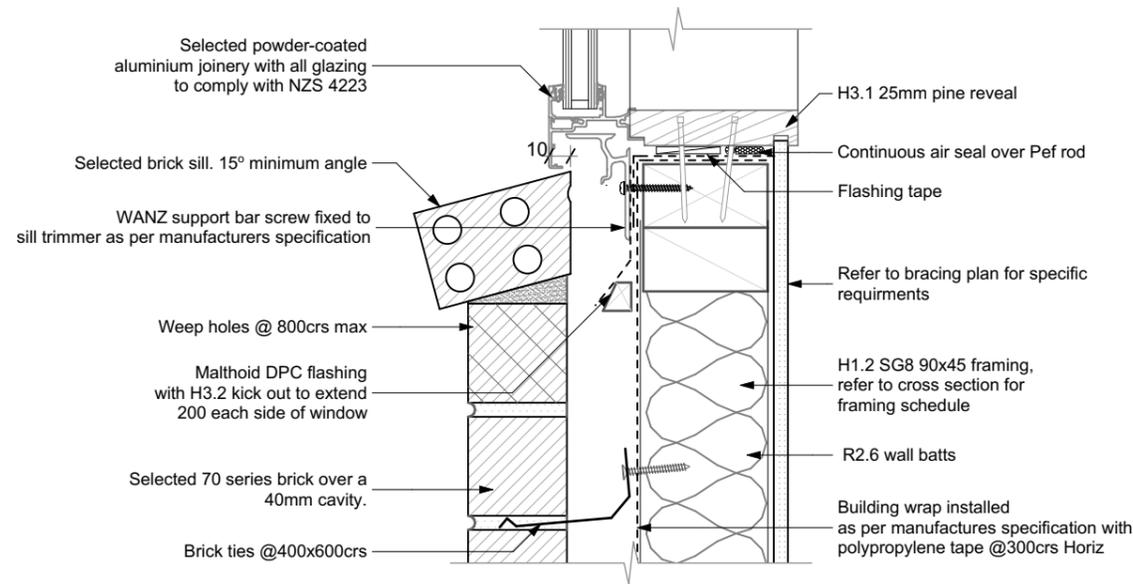
D-10 Pipe Penetration 1:5



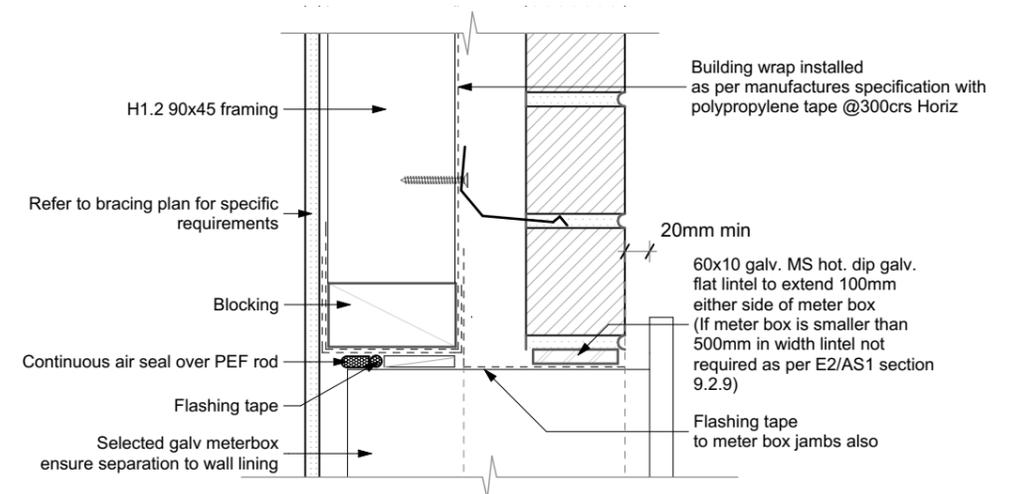
D-11 Joinery Soffit Junction 1:10



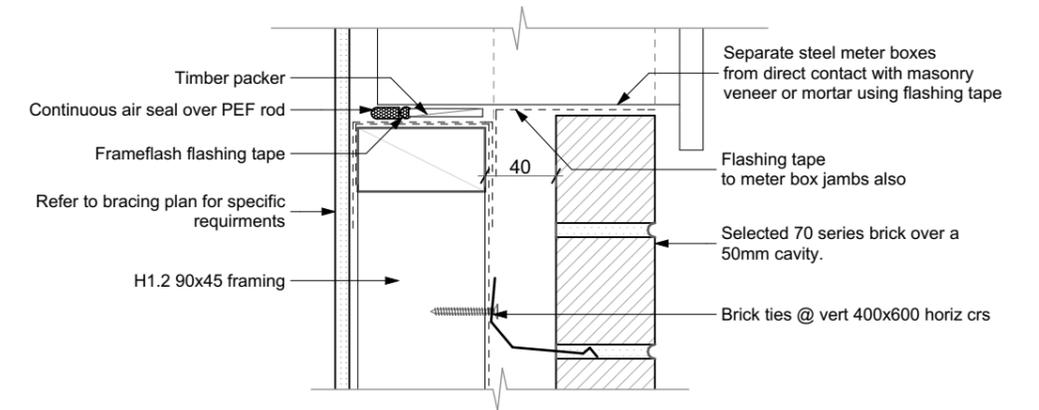
D-12 Garage Door Head Flashing 1:5

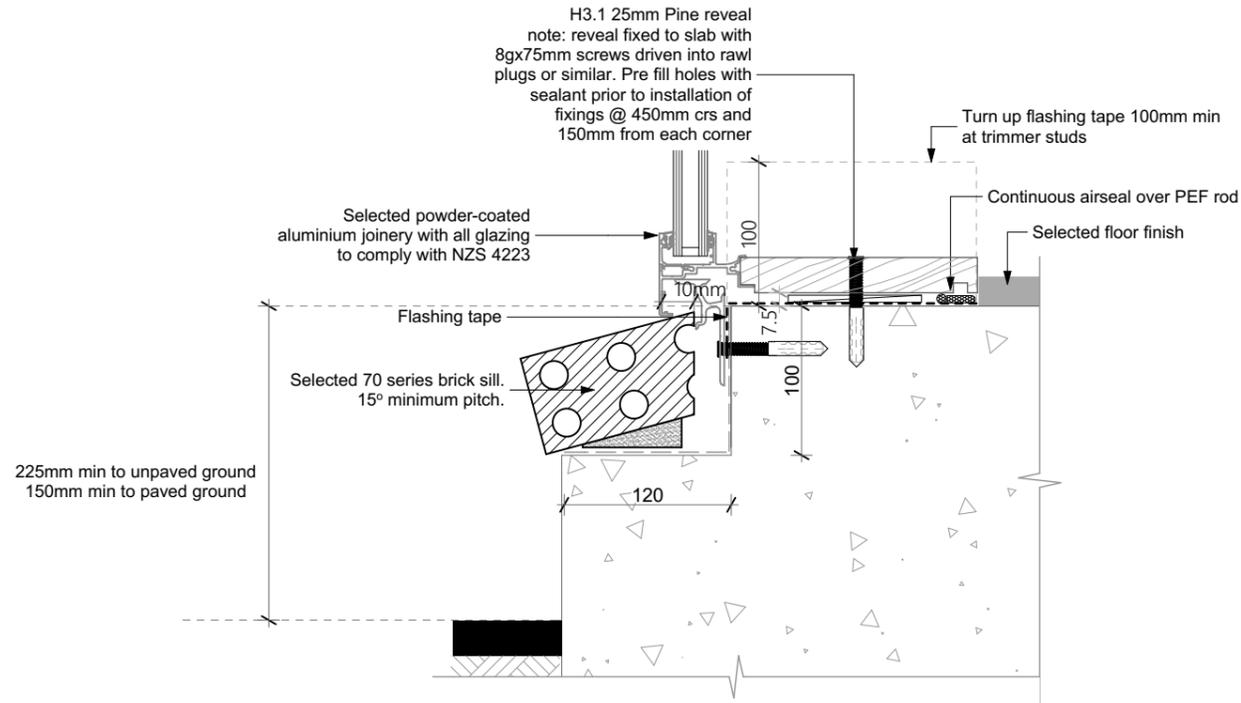


D-14 Joinery Brick Sill 1:5

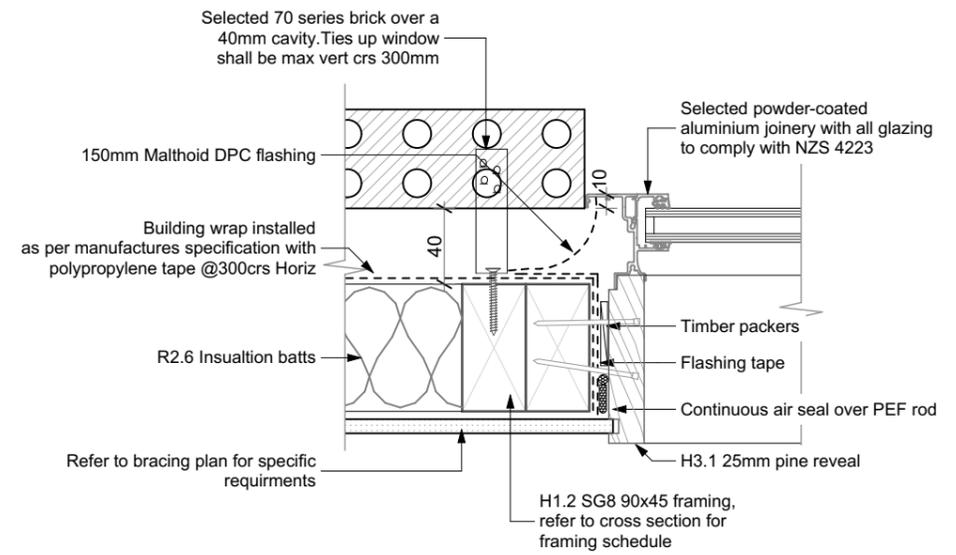


D-13 Meter Box 1:5

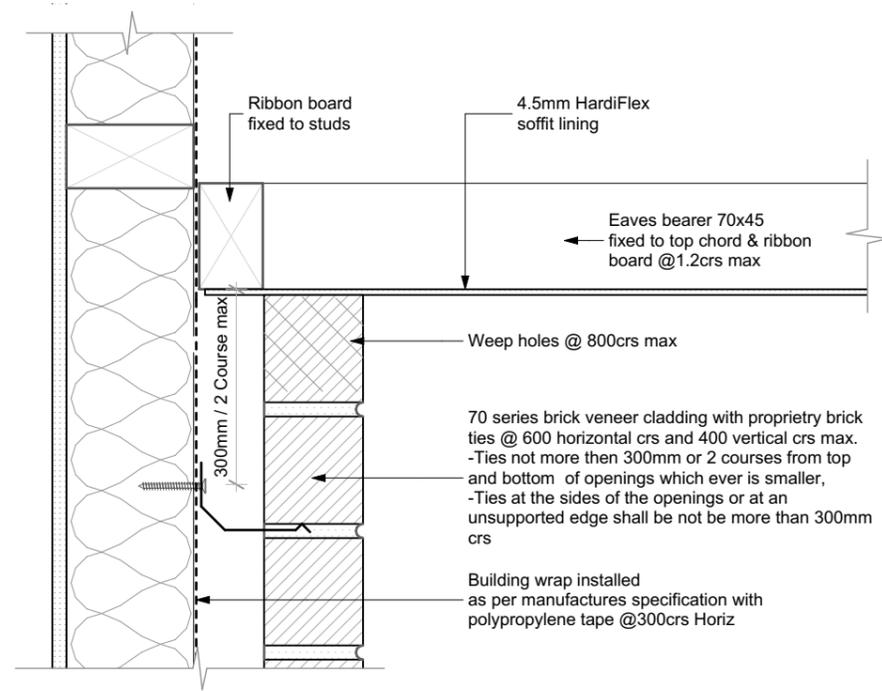




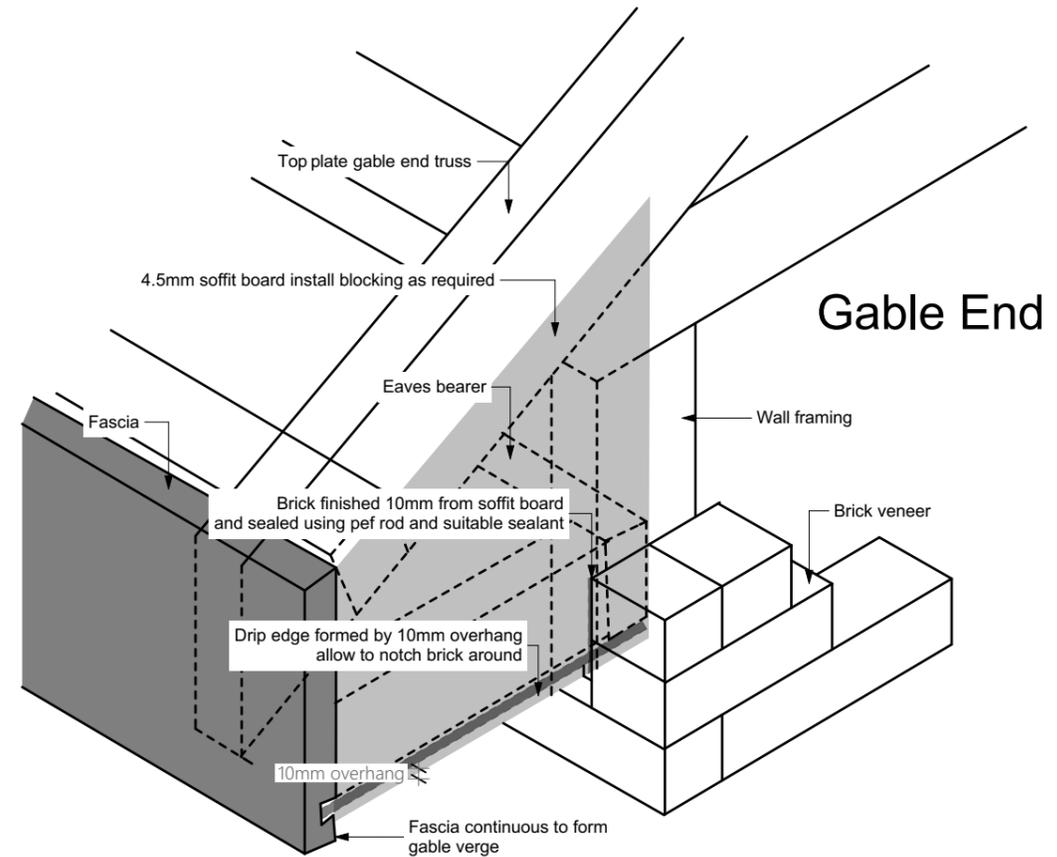
D-15 Joinery Brick Low Sill 1:5



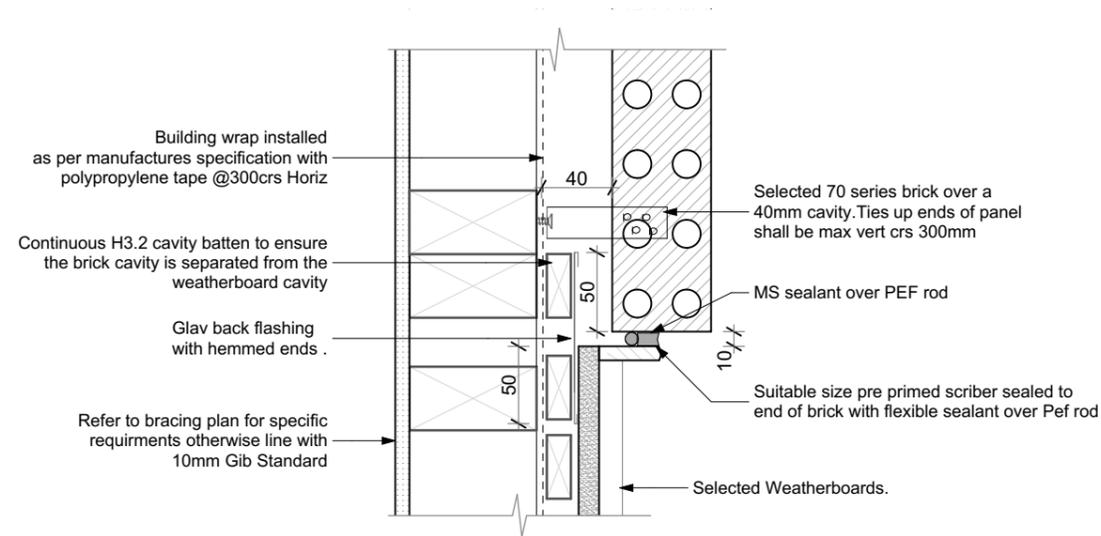
D-16 Joinery Brick Jamb 1:5



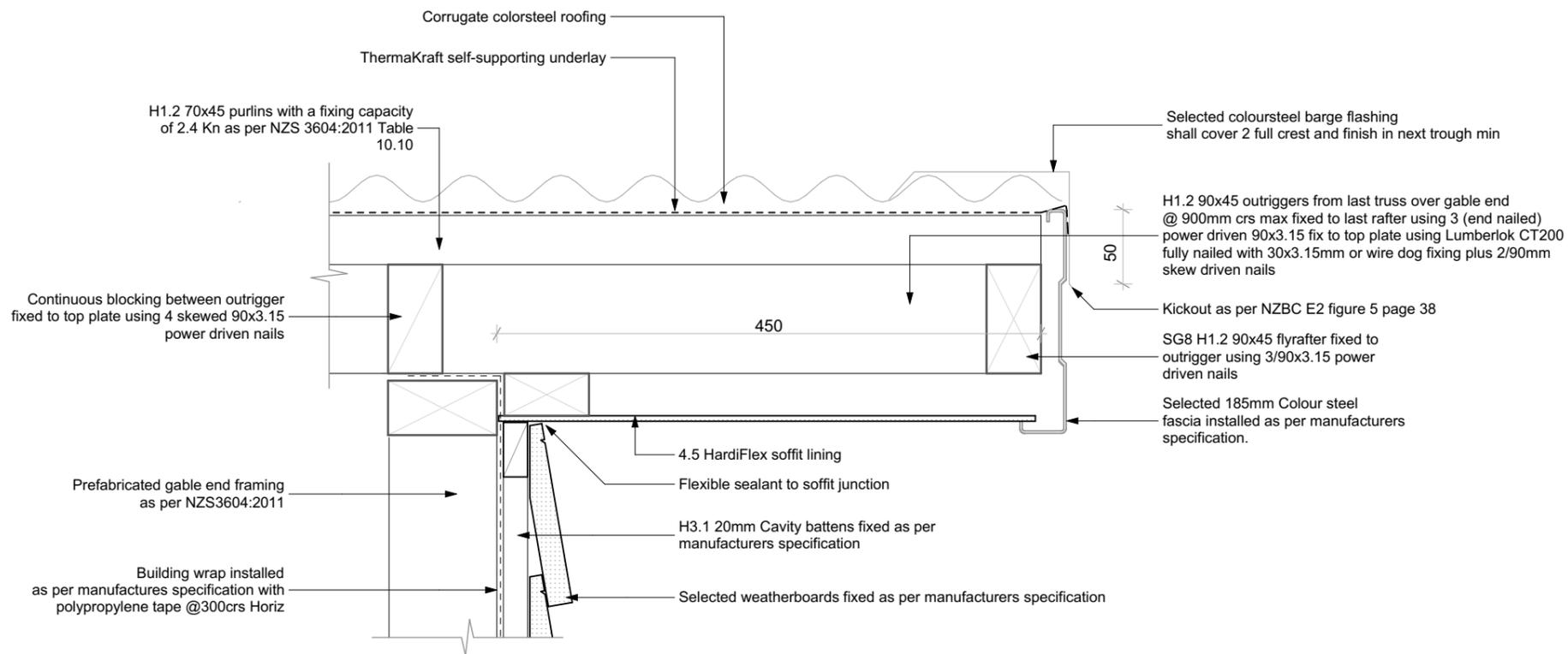
D-17 Brick Soffit 1:5



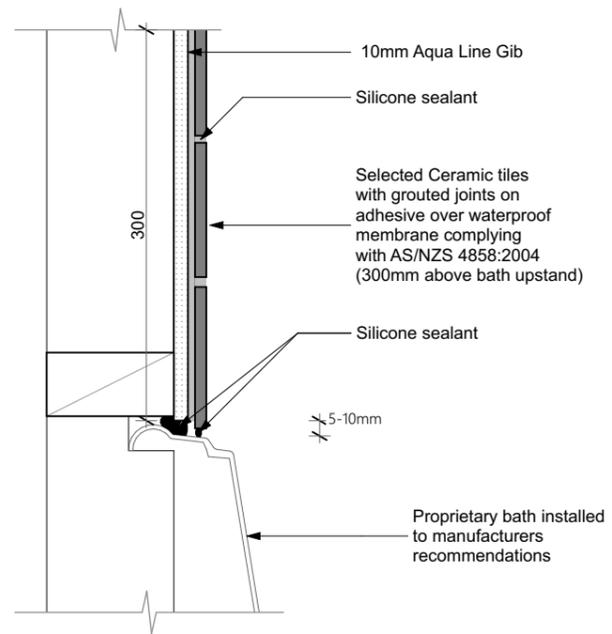
D-18 Brick Lower Gable End 1:5



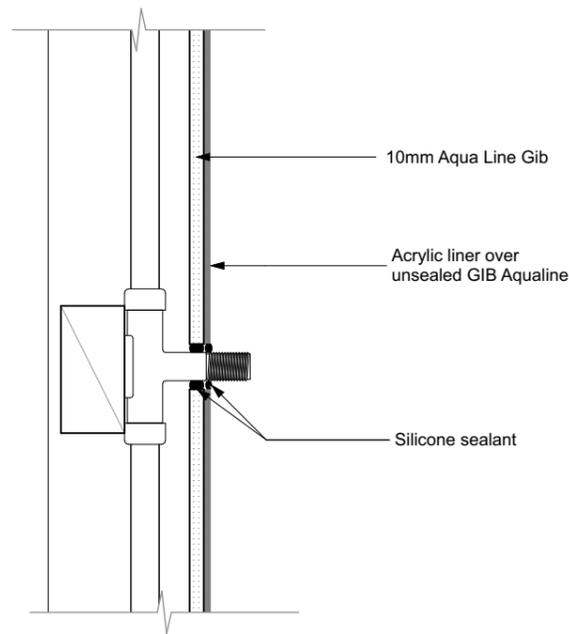
D-19 Vertical Cladding Junction 1:5



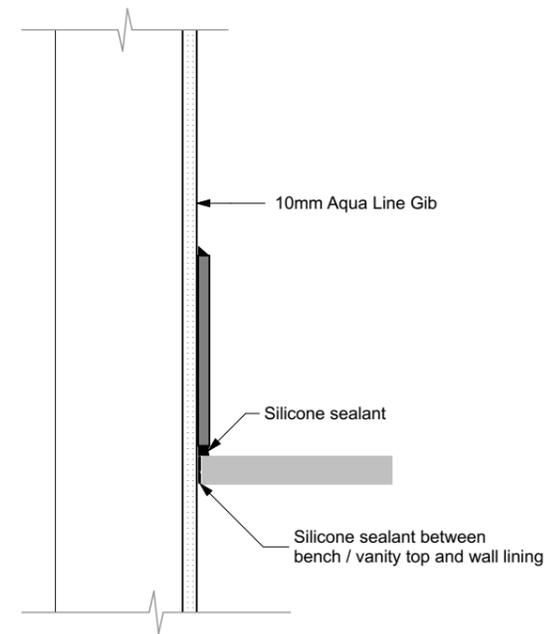
D-20 Linea Barge Flashing 1:5



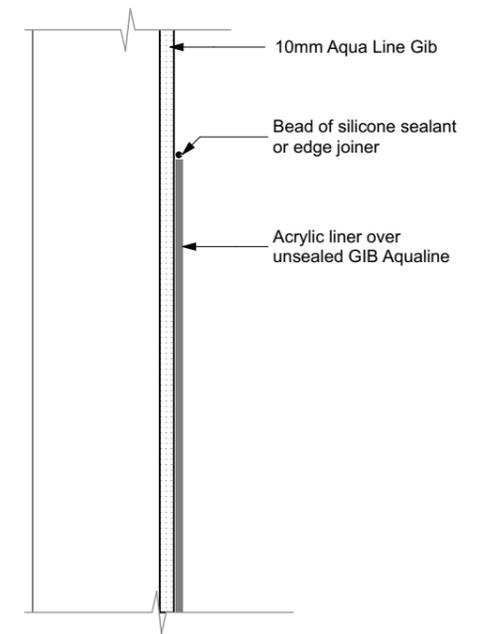
Bath Tiled Wall Upstand



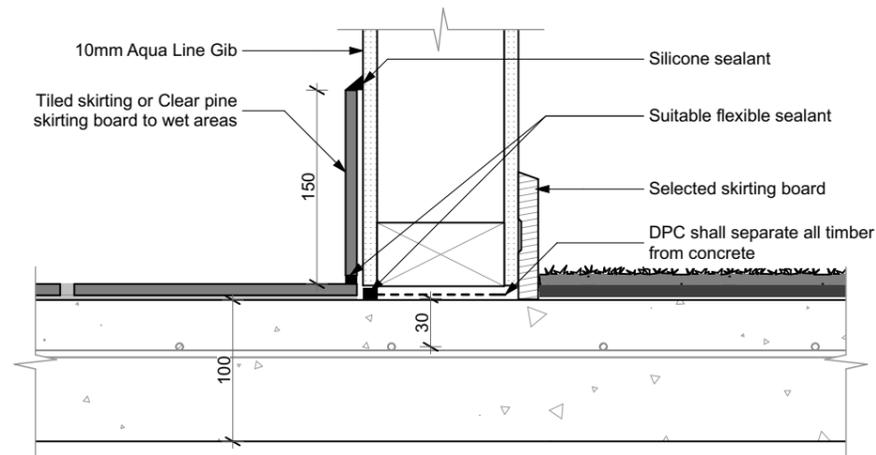
Typical Penetration



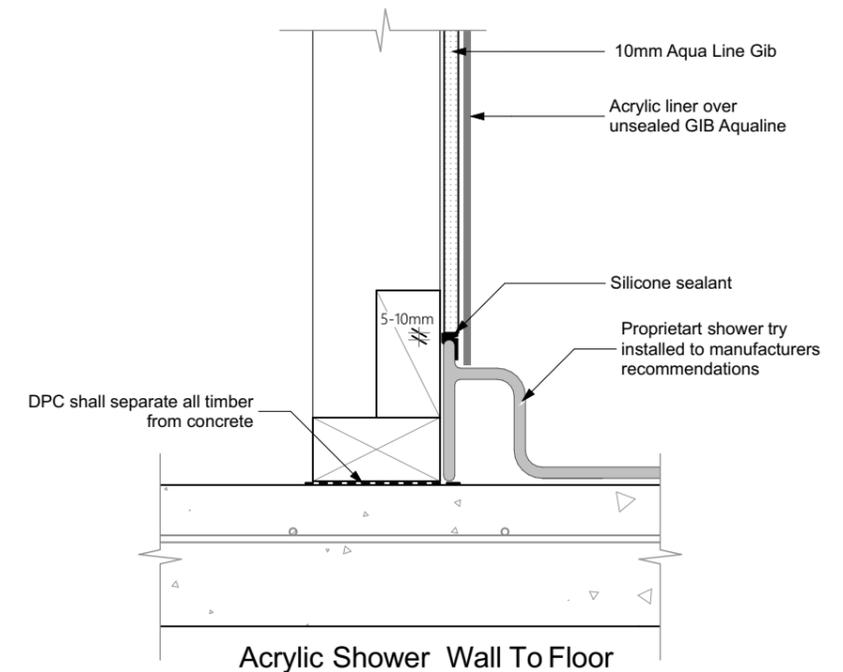
Bench / Vanity Wall Junction



Top Of Acrylic Liner



Wet Area Wall Junction



Acrylic Shower Wall To Floor

D-21 Wet Area Junctions 1:5

Billie Anderson, Lot 86 Oakfields, Amberley

LMS drafting & design  
 Contact: Luke Seaford  
 PH:02108232226  
 Email:luke\_seaford@hotmail.com

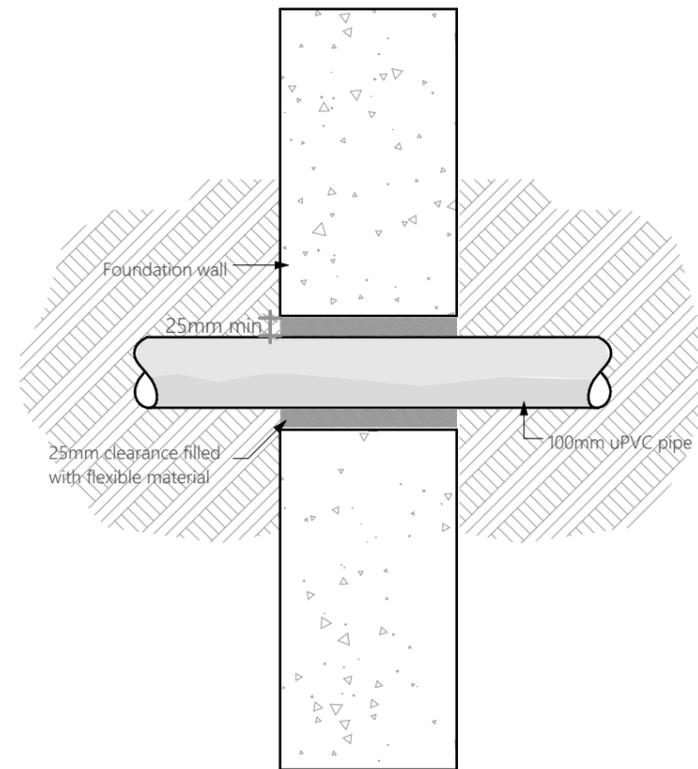
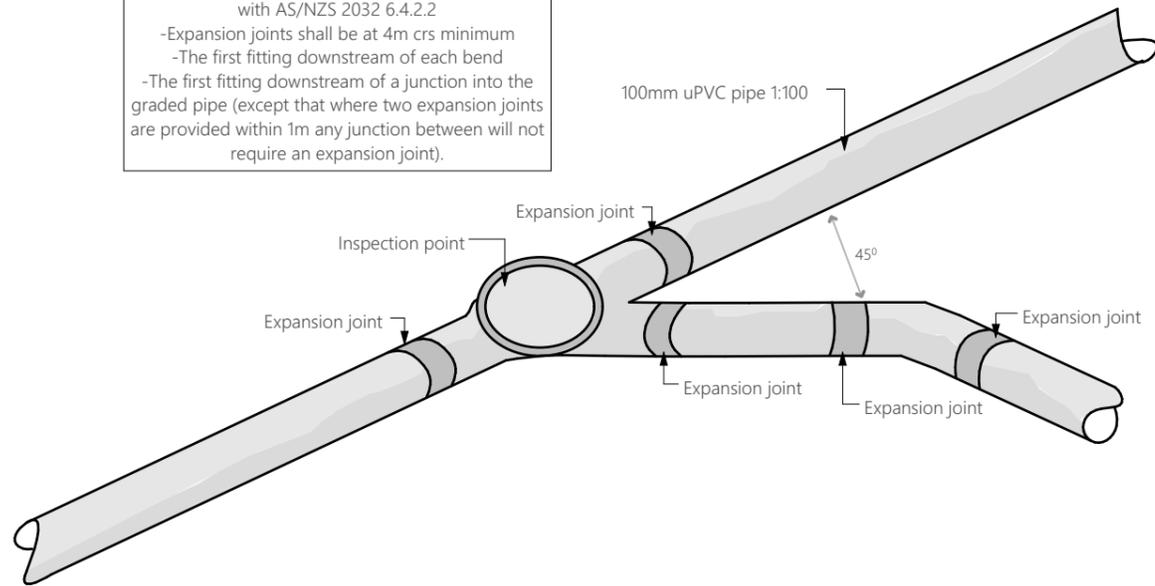
Consent Plans

Sheet title:  
 Details 10

Date: Wednesday, 20 September 2017  
 Drawn by: Luke Seaford  
 Scale: 1:5 @ A3

30/34

Note: Expansion joint requirements shall comply with AS/NZS 2032 6.4.2.2  
 -Expansion joints shall be at 4m crs minimum  
 -The first fitting downstream of each bend  
 -The first fitting downstream of a junction into the graded pipe (except that where two expansion joints are provided within 1m any junction between will not require an expansion joint).



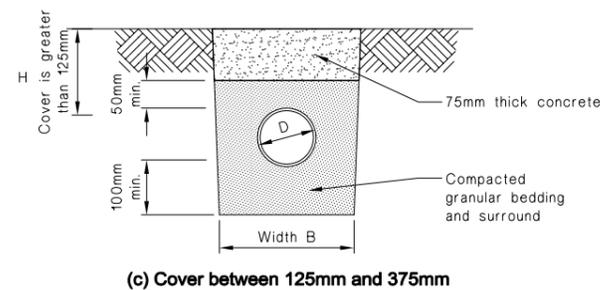
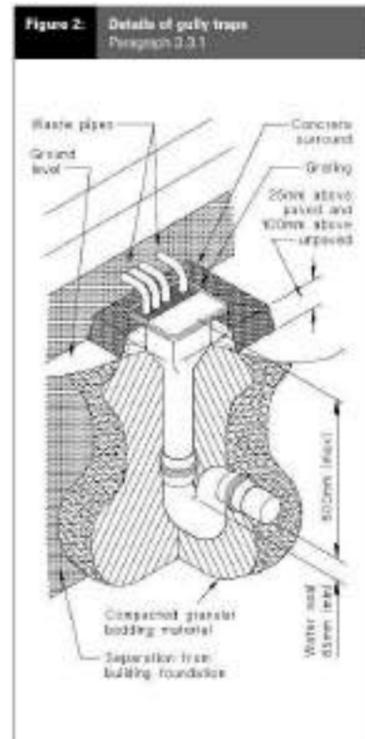
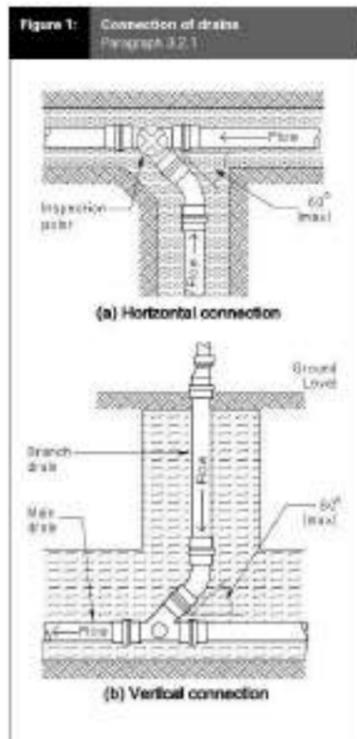
**5.5 Placing and compacting**

**5.5.1** Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid.

**5.5.2** Side bedding (along both sides of the pipe) and cover bedding (where used) up to 300 mm above the pipe, shall be compacted.

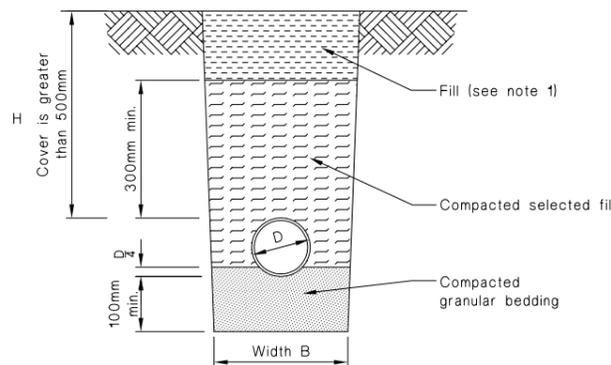
**5.6 Proximity of trench to building**

**5.6.1** For light timber framed and concrete masonry buildings founded on good ground and constructed in accordance with NZS 3604 or NZS 4229, pipe trenches which are open for no longer than 48 hours shall be located no closer than V to the underside of any building foundation, as shown in Figure 8. Where the trench is to remain open for periods longer than 48 hours the minimum horizontal separation shall increase to 3V in all ground except rock.

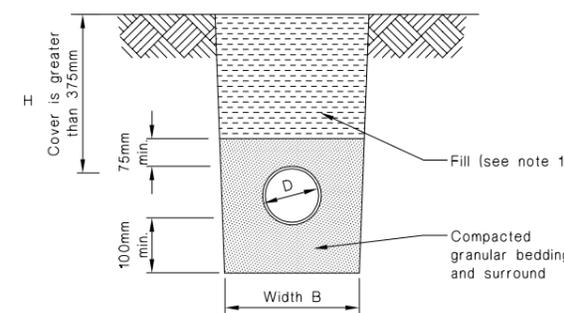
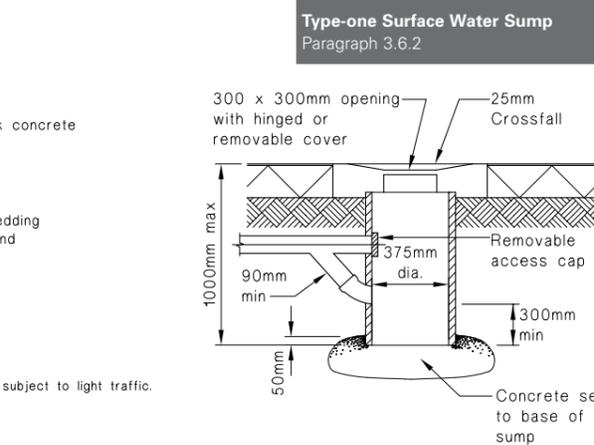


(c) Cover between 125mm and 375mm

NOTE:  
 1. Fill shall be:  
 -Ordinary fill where drains are located below gardens and open country.  
 -Compacted selected fill where the drains are located below residential driveways and similar areas subject to light traffic.

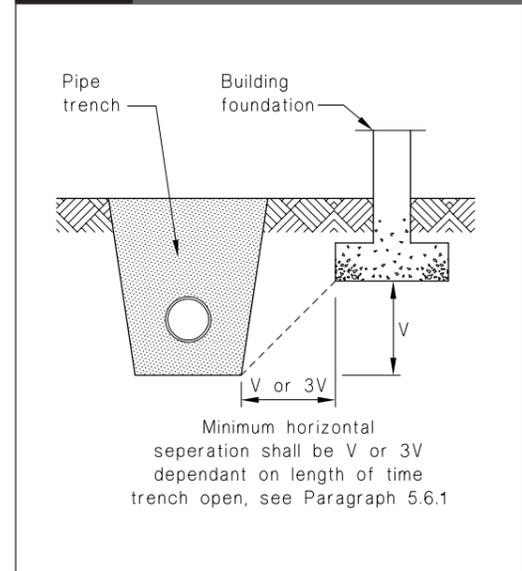


(a) Bedding type 'B' of NZS 7643  
 Cover greater than 500mm



(b) Bedding type 'D' of NZS 7643  
 Cover greater than 375mm

**Figure 8: Relationship of pipe trench to building foundation**  
 Paragraph 5.6.1

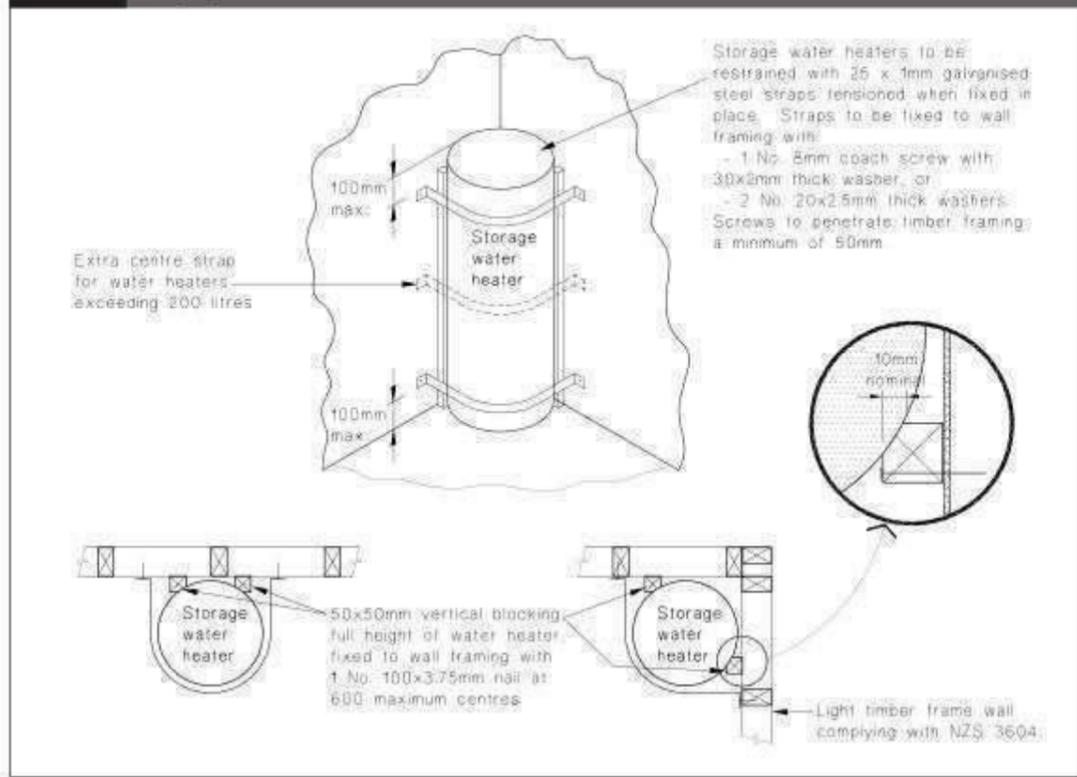


D-22

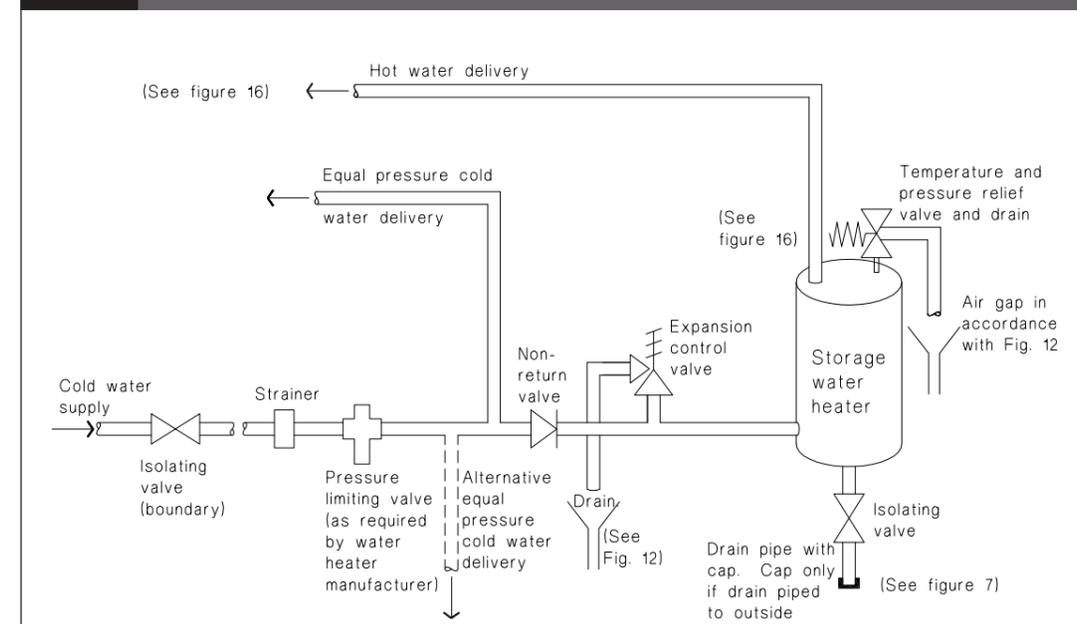
Drainage Details

1:10

**Figure 14: Seismic Restraint of Storage Water Heaters 90 – 360 litres**  
Paragraph 6.11.4



**Figure 8: Mains Pressure Storage Water Heater System (unvented)**  
Paragraphs 6.1.2 and 6.2.1 b)



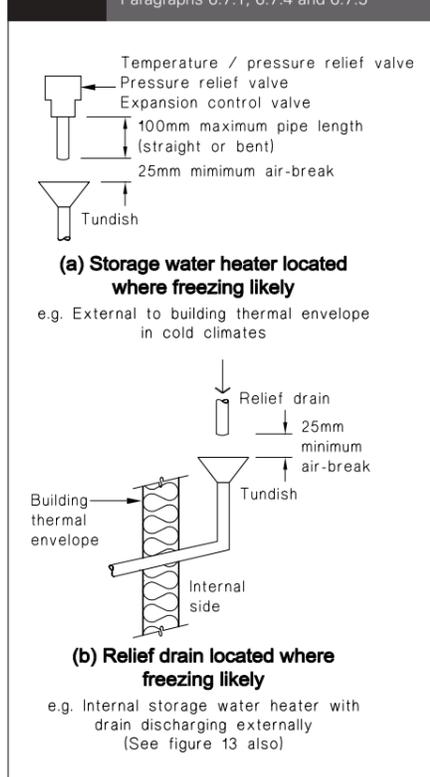
**Table 4: Tempering Valve and Nominal Pipe Diameters**  
Paragraphs 6.3.1 and 6.12.1

	Low pressure (i.e. header tank supply or low pressure)	Low and medium pressure unvented (valve vented) and open vented	Mains pressure
Pressure of water at tempering valve (kPa)	20 – 30	30 – 120	over 300
metres head (m)	2 – 3	>3 – 12	over 30
Minimum tempering valve size	25 mm	20 mm	15 mm
Pipes to tempering valve	25 mm (see Note 3)	20 mm	20 mm (15 mm optional) (see Note 1)
Pipes to shower	20 mm	20 mm (see Note 4)	20 mm (see Note 5) (15 mm optional) (see Note 1)
Pipes to sink/laundry (see Note 2)	20 mm	20 mm	15 mm
Pipes to bath (see Note 2)	20 mm	20 mm	15 mm
Pipes to basins (see Note 2)	15 mm	15 mm	10 mm

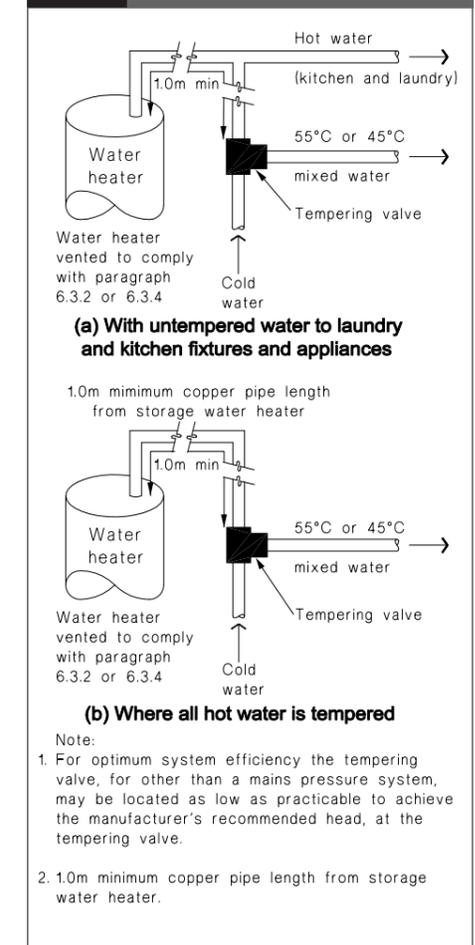
Notes:

1. If supplied by separate pipe from storage water heater to a single outlet.
2. This table is based on maximum pipe lengths of 20 metres.
3. 2 m maximum length from water heater outlet to tempering valve.
4. 15 mm if dedicated line to shower.
5. 10 mm if dedicated line to shower.
6. Table 2 pipe sizes have been calculated to deliver water simultaneously to the kitchen sink and one other fixture.

**Figure 12: Relief Valve Drains – Freezing Protection**  
Paragraphs 6.7.1, 6.7.4 and 6.7.5



**Figure 16: Tempering Valve Installation**  
Paragraph 6.14.2 a)



**7.2 Protection from freezing**

7.2.1 Where there is the likelihood of freezing, hot and cold water supply systems shall be protected in the following manner:

- a) Piping outside of the building thermal envelope shall be insulated.
- b) Piping buried in the ground shall be insulated or installed below a level affected by freezing, and
- c) Storage water heater vent pipes shall be insulated (see Figure 17).

7.2.2 In climates where freezing temperatures are likely for a period of greater than 24 hours an expansion control valve is required in addition to vent pipe insulation (see Figure 17).

**5.0 Hot Water Systems**

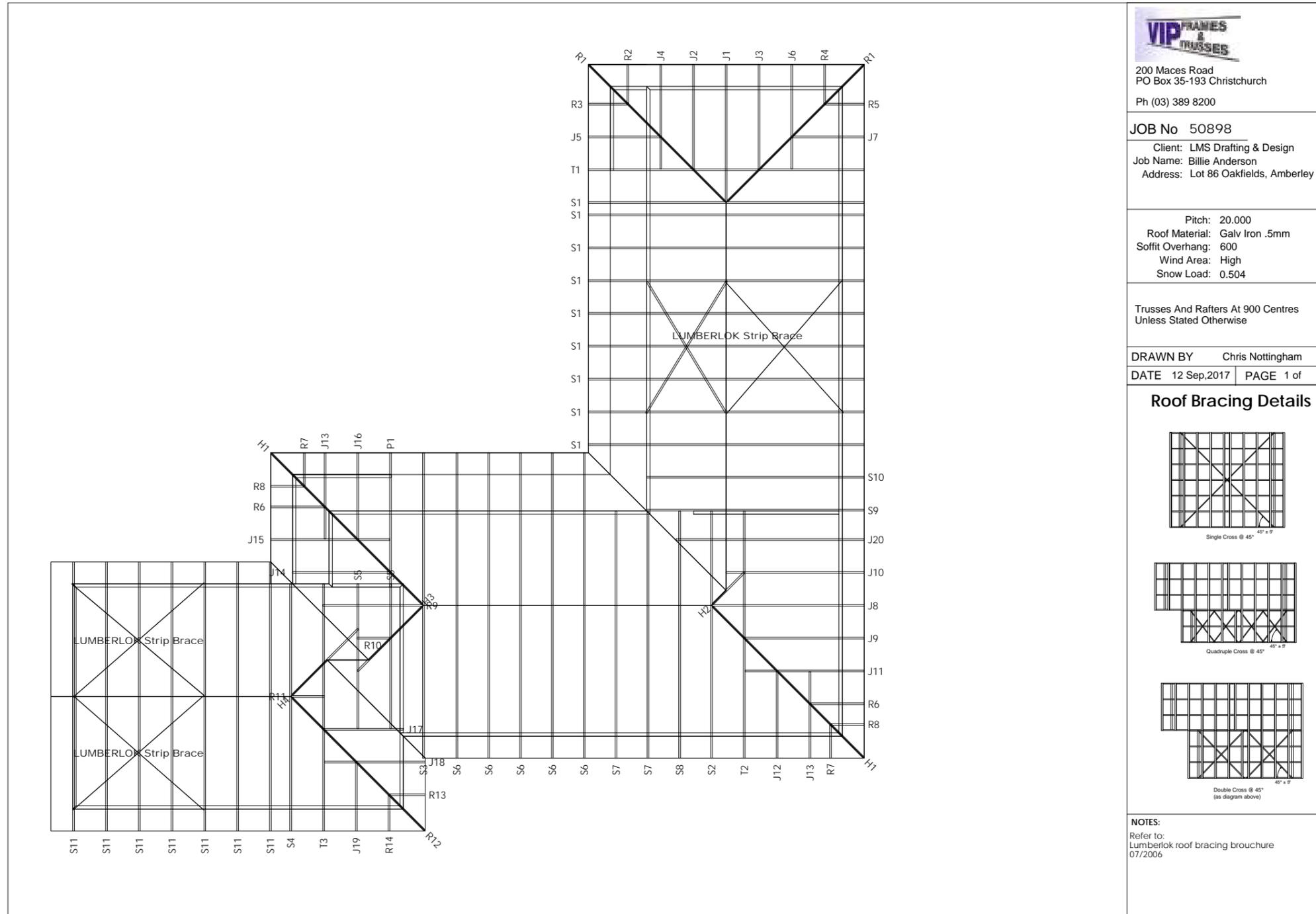
5.0.1 Hot water systems complying with NZS 4306 satisfy the requirements of NZBC H1.3.4 for the provision of hot water to sanitary fixtures and sanitary appliances.

Pipe sizes water heater to outlet	10	15	20
Nominal Pipe Size (mm)			
Length (m)	25	12	7

**Thermal movement**  
The plumbing system shall accommodate without failure the expected longitudinal movement in pipes resulting from temperature changes. All copper and uPVC pipes shall incorporate expansion joints. The provisions described in Chapter 8 of NZS 7643 shall be used for uPVC pipes. At supports, and at wall and floor penetrations not incorporating expansion joints, movement shall be accommodated using pipe sleeves or a durable and flexible lagging material

**6.14.3 Legionella bacteria**

Irrespective of whether a mixing device is installed, the storage water heater thermostat shall be set at a temperature of not less than 60°C to prevent the growth of Legionella bacteria.



200 Maces Road  
PO Box 35-193 Christchurch  
Ph (03) 389 8200

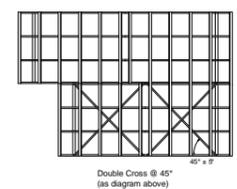
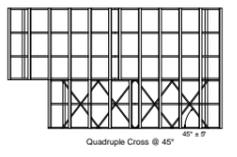
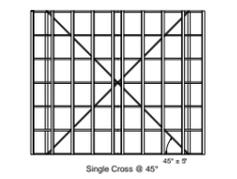
**JOB No** 50898  
Client: LMS Drafting & Design  
Job Name: Billie Anderson  
Address: Lot 86 Oakfields, Amberley

Pitch: 20.000  
Roof Material: Galv Iron .5mm  
Soffit Overhang: 600  
Wind Area: High  
Snow Load: 0.504

Trusses And Rafters At 900 Centres  
Unless Stated Otherwise

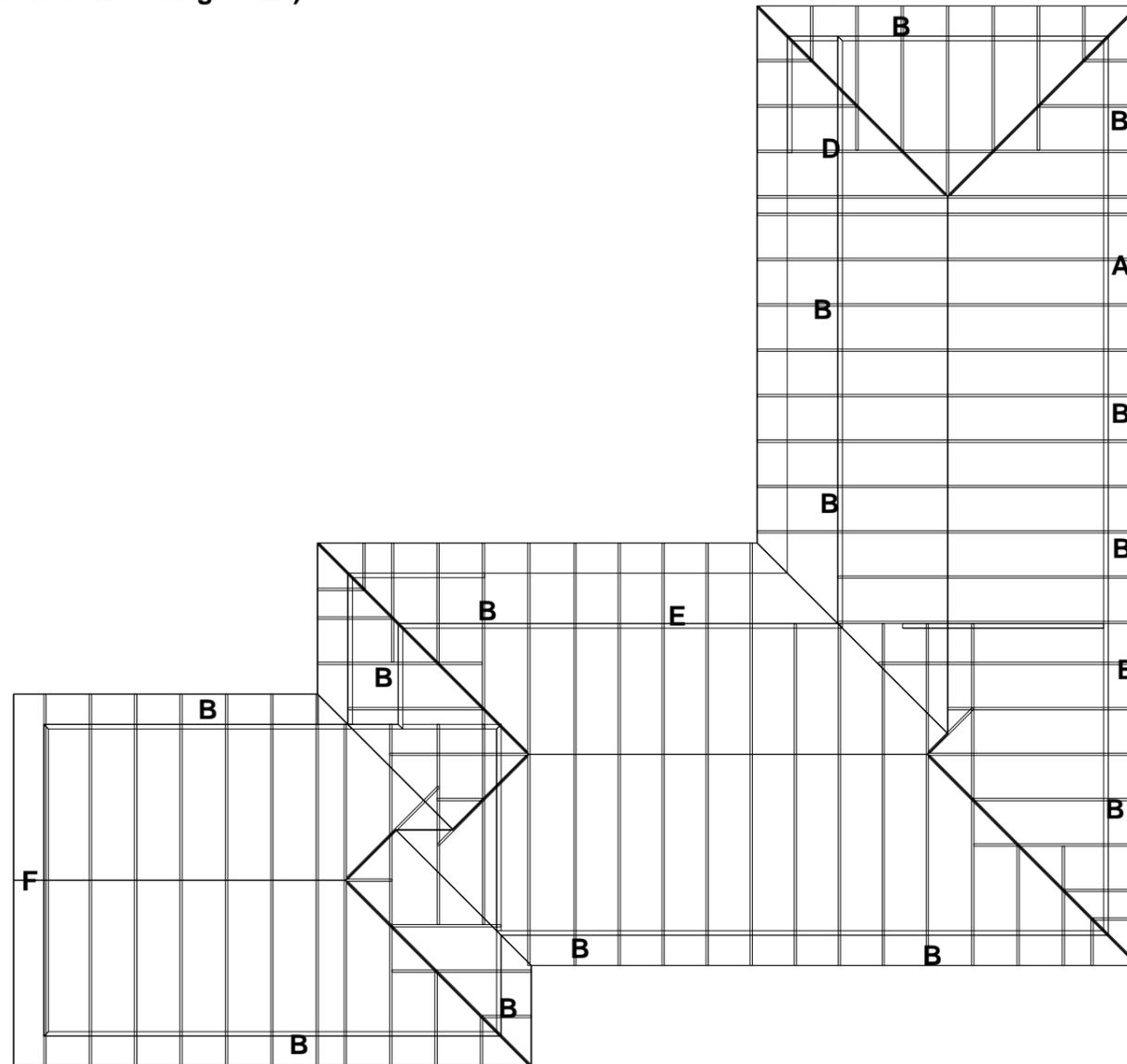
**DRAWN BY** Chris Nottingham  
**DATE** 12 Sep,2017 **PAGE** 1 of

**Roof Bracing Details**



**NOTES:**  
Refer to:  
Lumberlok roof bracing brochure  
07/2006

All internal wall shown on this layout are considered to be Load Bearing (loads not exceeding 10 kN)



200 Maces Road  
PO Box 35-193 Christchurch  
Ph (03) 389 8200

JOB No 50898

Client: LMS Drafting & Design  
Job Name: Billie Anderson  
Address: Lot 86 Oakfields, Amberley

Pitch: 20.000  
Roof Material: Galv Iron .5mm  
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Trusses And Rafters At 900 Centres  
Unless Stated Otherwise

DRAWN BY Chris Nottingham

DATE 12 Sep,2017 PAGE 1 of

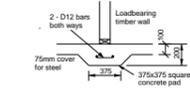
These lintels have been sized as per the GANGLAM and FLITCH BEAM selection manuals as provided by MITek NZ Ltd.

HYPAN lintels have been sized as per the HYPAN selection charts.

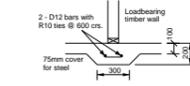
Unless otherwise stated all lintels are as per NZS3604 2011

LINTEL	SIZE	
A	2/90x45	PL8H1
B	2/140x45	PL8H1
C	2/190x45	PL8H1
D	2/240x45	PL8H1
E	2/290x45	PL8H1
F	PI 12 250 Prolam	

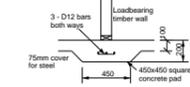
Slab Thickening Details



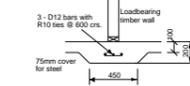
TYPE FP1 - 375x375mm Pad



TYPE FS1 - 300mm Strip footing



TYPE FP2 - 450x450mm Pad



TYPE FS2 - 450mm Strip footing



## Project Information Memorandum 170482

Section 34, Building Act 2004

Issued in accordance with Building Consent No. 170482

This project information memorandum is confirmation that the proposed building work may be undertaken, subject to the provisions of the Building Act 2004, and any requirements of the building consent attached.

This project information memorandum includes:

\_\_\_ Details of authorisations which have been granted

1. The Council is nearing the end of our District Plan Review process. The Proposed Hurunui District Plan as Amended by Decisions 2016 ('PDP') is at the stage where decisions on submissions and further submissions have been released and all appeals on provisions have been received. It is noted that the rules relevant to your proposal in the PDP are not subject to appeal and therefore in accordance with s86F of the Resource Management Act 1991, the PDP rules are to be treated as operative. As such this planning check has been completed against the PDP and not the Operative Hurunui District Plan.
2. **VEHICLE CROSSING CONSTRUCTION:** Resource consent required for breach of District Plan as Amended by Decisions rule 8.4.3.2 Vehicular access to collector or local roads for activities generating up to 100 equivalent car movements per day. A bond will need to be entered into with Council or the vehicle crossing constructed to the District Plan requirements prior to building work starting. Access is to be via an approved Oakfields Type B vehicle crossing which should be excavated and metalled before site works start - please contact the Duty Planner on 03 314 8816 to arrange a preconstruction meeting before excavation. Note that anyone working in the road reserve will first need to obtain a Works Access Permit (by applying for a Corridor Access permit from Council via the beforeUdig service - apply at [beforeUdig.co.nz](http://beforeUdig.co.nz) or ph 0800 248 344). \*\*Vehicle crossing bond form signed and paid for. Bond now entered into\*\*
3. Water: Connection to Amberley Township Water Supply available upon application. \$660 fee applies - form returned.  
Stormwater: To lateral for disposal in drainage swale along northern boundary as per RC120123.  
Wastewater: Connection to Amberley Township Sewerage available upon application. \$100.00 fee applies - form returned.
4. Please note that your water supply is rated as moderately hard. For further information and advice, head to our website: <http://www.hurunui.govt.nz/services/water-and-sewage-services/hard-water/> For a full chemical analysis of your water supply please visit our website: <http://www.hurunui.govt.nz/services/water-and-sewerage-services/water-testing-reports/>
5. An inspection chamber will be installed less than one metre inside the property boundary before connection of the sewer drain into the Council lateral. See Drawing D05 of the HDC Development Engineering Standards for details.
6. This structure must withstand the following:  
Wind region: A  
Snow zone: N4 - Altitude: 40  
Earthquake zone: 3  
Exposure zone: B  
Liquefaction zone:3

Signature

Position

Building Administration Officer

On behalf of: Hurunui District Council

Date: 27/10/17



## Required Items for Building Consent No 170482

Proposal: Three bedroom residential dwelling with attached garage and woodburner (Woodsman ECR Novo)  
Site Address: 18 Claremont Crescent, Amberley

Before Council can issue a Code Compliance Certificate, you will need to ensure the following inspections are completed and that you have provided the paperwork requested.

## Inspections Required

- 1 Foundation - Concrete footings
- 1 Foundation - Slab
- 1 Pre-Roof
- 1 Pre-Cladding - Wrap
- 1 Half-Height Masonry
- 1 Pre-Line
- 1 Pre-Stop
- 1 Drains
- 1 Heating Unit - Solid Fuel
- 1 Final - Residential
- 10 Total Inspections

## Documentation Required

Application for CCC  
Electrical safety certificate  
As-built drainage plan  
Plumbers pressure test declaration  
Water Test results  
Design statement (truss manufacturer)  
Design statement (frame manufacturer)  
PS3 - Foundation work  
PS3 - Cladding  
PS3 - Roofing  
PS3 - Glazing  
Hardfill compaction certificate  
Woodburner installers certificate

Your application for Code Compliance Certificate and all requested documents will be required prior to booking a final inspection.

## How do I book an inspection?

- Please give at least 24 hours' notice prior to any inspection
- HDC will make every attempt to book inspections when required. However, this is not always possible - flexibility is often required. Please note that inspections are not available in all areas every day, please check the table below to see when an inspector will be in your area

- When you call to book an inspection, please supply: Your building consent number, site address, type of inspection, contact name and phone number
- To make a booking for inspection, email [building@hurunui.govt.nz](mailto:building@hurunui.govt.nz) or telephone 03 314 8816
- Standard inspections are included in the consent fee.

#### **Hurunui District Council Building Inspection - days/areas**

- Amberley/Leithfield/Waipara areas: Monday - Friday, all days
- Hanmer Springs/Waiiau/Culverden/Waikari areas: Monday, Wednesday, Friday
- Omihi/Scargill/Cheviot/Parnassus areas: Tuesday & Thursday

#### **What does the inspector require on site?**

- The council approved building consent documents must be on site at the time of the inspection
- The work to be inspected must be completed
- Once the inspection is completed, the inspector will email a copy of the site notice to the email address provided

#### **What happens when the building project is finished?**

On completion of the project, please download and complete the Code Compliance Application (Form 6) and arrange for a final inspection. The Form 6 is an important legal document and indicates that consented building work has been completed in accordance with the consent documents

We look forward to working with you during the construction of your project. Please feel free to contact the Hurunui District Council Building Department to discuss any aspect of your project. Our contact details are Ph: 03 314 8816 or email: [building@hurunui.govt.nz](mailto:building@hurunui.govt.nz).



Form 4

# Certificate attached to project information memorandum 170482

Section 37, Building Act 2004

## Restrictions on commencing building work under the Resource Management Act 1991

The building work referred to in the attached project information memorandum is also required to have the following resource consents under the Resource Management Act 1991:

VEHICLE CROSSING CONSTRUCTION: Resource consent required for breach of District Plan as Amended by Decisions rule 8.4.3.2 Vehicular access to collector or local roads for activities generating up to 100 equivalent car movements per day. A bond will need to be entered into with Council or the vehicle crossing constructed to the District Plan requirements prior to building work starting. Access is to be via an approved Oakfields Type B vehicle crossing which should be excavated and metalled before site works start - please contact the Duty Planner on 03 314 8816 to arrange a preconstruction meeting before excavation. Note that anyone working in the road reserve will first need to obtain a Works Access Permit (by applying for a Corridor Access permit from Council via the beforeUdig service - apply at beforeUdig.co.nz or ph 0800 248 344). \*\*Vehicle crossing bond form signed and paid for. Bond now entered into\*\*

No building work to proceed until dug out, metalled and inspected by Councils Consent Engineer

As these resource consents will or may materially affect the building work to which the attached project information memorandum relates, until they have been granted no building work may proceed.

Failure to comply with the requirements of this notice may result in legal action being taken against you under the Resource Management Act 1991.

Signature:

Position: Building Administration Officer

On behalf of: Hurunui District Council

Date: 27/10/17



## Solid/Liquid/Fuel Heater Installer's Installation Certificate

Building Consent Number :

Site Address :

Make :

Model :

Clean Air Registration Number :

Solid Fuel Heater

Liquid Fuel Heater

Free Standing

Inbuilt

**Yes**

**No**

**N/A**

The existing chimney has been cleaned prior to installation

Is the fireplace surround/chimney face junction sealed up with heat resistant material

The flue pipe is constructed of austenitic stainless steel

Seismic restraint has been fitted

The flue sections are secured together with stainless steel rivets

The flue is secured to the appliance

The chimney void has been vented at the top

Is the Solid Fuel Burner and Flue as per the building consent

Flue joints sealed in accordance with manufactures instructions

Fire safety valve connected and working correctly (diesel burners)

Flue and appliance clearances have been achieved in terms of the manufacturer's instructions (NZS 7421 or AS/NZS 2918:2001)

The flue height meets the minimum specified in the manufacturer's instructions, NZS7421, and Regional Council rules

The application has been installed and commissioned in accordance with the manufacture's installation and operating instructions (Liquid fuel only)

The liquid fuel storage tank and feed system has been installed in accordance with AS1691, or equivalent, and with the requirements of the Council's Hazardous Substances Officer

Smoke detectors as detailed on the building consent documents are installed

If response to any of the items is 'no' please comment :

Water heater – model and part number :

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

Installers Signature :

(Installer) Date :

### RESOURCE MANAGEMENT ACT MATTERS – LIQUID FUEL HEATER

**Yes**

**No**

Does the fuel storage tank have secondary containment in accordance with the District Plan (NB: Audit monitoring will be carried out)

If response is 'no' please comment why :

**LMS drafting & design**

## **PROJECT SPECIFICATION**

### **Lot 86 Oakfields**

18 Claremont Crescent  
Amberley  
North Canterbury

**Issued for Consent**

## PROJECT OVERVIEW

### Scope

3 Bedroom residential dwelling with attached garage.

Concrete perimeter foundation.

Timber wall and roof framing.

70 Series brick veneer with Linea weatherboards

Colorsteel corrugate roofing profile.

### Address

<b>Site Address</b>	18 Claremont Crescent
<b>Suburb</b>	Amberley
<b>City</b>	North Canterbury
<b>Lot #</b>	86
<b>DP #</b>	485034

### Site Conditions

<b>Wind Zone</b>	H - High Wind Speed
<b>Earthquake Zone</b>	Zone 3
<b>Exposure Zone</b>	Zone B - Low
<b>Snow Loading Zone</b>	Zone N4

### Related Parties

#### Designer

LMS Drafting & Design, Luke Seaford, 105868, luke\_seaford@hotmail.com, 1/76 Hamilton Avenue, Ilam, Christchurch, Christchurch, 8041, 033516600

## TABLE OF CONTENTS

Preliminaries & General.....	4
Project Specifics .....	4
Project Overview .....	6
Establishment & Enabling.....	12
Concrete .....	16
Materials .....	16
Workmanship .....	17
Concrete .....	19
Reinforcing Steel .....	25
Brickwork.....	31
Brickwork.....	31
Waterproofing .....	33
Interior Wet Area Waterproofing Membrane Systems.....	33
Carpentry.....	36
Timber Framing .....	37
Thermakraft Underlay, DPM & DPC .....	41
Tekton Weatherization System .....	45
Plasterboard Linings from USG Boral .....	49
Roofing .....	57
Workmanship .....	57
Roofing Systems - Profiled Steel.....	58
Rainwater Goods.....	58
Aluminium Joinery.....	60
Aluminium Windows & Doors.....	60
Glazing .....	64
Non-Structural Glazing .....	64
Insulation.....	66
Pink® Batts® Insulation.....	66
Painting & Decorating.....	71
General.....	71
Plumbing.....	74
Workmanship .....	75
Materials .....	77
Systems .....	77
Drainlaying.....	79
Workmanship .....	79
Foul Water Drainage .....	80
Stormwater Drainage .....	91
Electrical .....	101
Workmanship .....	102
Materials & Control.....	103
Systems .....	104

# 1 PRELIMINARIES & GENERAL

## 1.1 Project Specifics

### 1.1.1 Insurance of the Works

Insurance of the works is at the risk of the Contractor, and shall be completely in accordance with the Conditions of Contract.

### 1.1.2 Other Insurance

The minimum amount of the Contractor's public liability insurance shall be \$2,000,000, the minimum amount of the Contractor's motor vehicle liability insurance shall be \$200,000, the Contractor shall insure all appliances, machinery and apparatus required for the Contract Works but not incorporated into the Contract Works, and no Contractor's professional indemnity (design) insurance is required.

### 1.1.3 Site Specifics

All Contractors shall visit the site so as to be fully acquainted with the facilities or difficulties of access there to and the nature and extent of the proposed works, as no allowance will be made beyond the contract sum for any alleged ignorance in regard to these matters. The main contractor shall verify all dimensions shown or figured on the drawings, and should obtain his own information on all matters which may in any way influence his tender as no allowance what so ever will be made beyond the contract some for any alleged ignorance in respect thereof. Figured dimensions are to be taken in preference to scaled dimensions and any discrepancies between the drawings, and between the drawings and specification, must bne referred to the employer, whose ruling shall be final. In the event of ambiguities or contradictions existing, the contractor shall, when making up his tender, allow for carrying out the work in accordance with the reading of the documents which will, in his or her opinion, involve the greater cost..

### 1.1.4 Sundry

The Contractor is responsible for accurate setting out of the works. It is recommended that the Contractor engage a Registered Surveyor to establish the basic site set-out and the floor levels.

Note that the 'Project North' direction is identified on the Site Plan, and that all direction or orientation references within this specification or on the drawings are in terms of this Project North.

A competent foreman shall be constantly on the works and any instructions or explanations given to such persons shall be deemed to have been given to the Contractor.

Contractor and Subcontractors must familiarise themselves with egress routes from the building, and must ensure that egress routes are NEVER obstructed with construction materials such as to prejudice egress.

Power, water and cable communications services are already on the site. Arrange and pay for adequate temporary connections to these services for the duration of the contract.

### 1.1.5 Warranties

#### *Provision of Warranties*

Provide executed warranties in favour of the Principal covering, but not limited to, materials, components, service, application, installation, finishing, etc., required for that section of work.

- The terms and conditions of the warranty provided shall not negate the minimum remedies available under common law as if no warranty had been offered.
- Failure to provide the required warranty does not reduce liability of warranty conditions required for that section of work.
- Where an Installer/Applicator warranty is included in this specification, it shall be provided in lieu of the warranty otherwise required, but only when it is subject to similar conditions and warranty period stated in the Schedule of Warranties.
- Conform to the Warranty Agreement form included in the conditions of contract.
- Commence all warranties from the date of practical completion of the contract works (unless otherwise stated).
- Maintain the effectiveness of all warranties for the period stated.
- Provide all warranties before practical completion of the contract works.

#### *Installer/Applicator Warranties*

Provide Installer/Applicator warranties in favour of the Principal, covering execution and materials of proprietary products or complete installations.

- An Installer/Applicator warranty may be offered in lieu of the warranty otherwise required for that section of work, but only when it is subject to similar conditions and period stated in the Schedule of Warranties.
- The terms and conditions of the Installer/Applicator warranty shall not negate the minimum remedies available under common law as if no warranty had been provided.
- Failure to provide the required Installer/Applicator warranty does not reduce liability for execution and materials required for that section of work.
- Conform to the Installer's/Applicator's standard warranty form, or to the Warranty Agreement form included in the contract documents if a standard form is unavailable.
- Commence all Installer/Applicator warranties from the date normally applicable for the work.
- Maintain the effectiveness of all Installer/Applicator warranties for the period stated.
- Provide all Installer/Applicator warranties before practical completion.

#### *Manufacturer/Supplier Warranties*

Provide Manufacturer/Supplier warranties in favour of the Principal, covering materials, equipment, appliances, proprietary products, etc.

- The terms and conditions of the Manufacturer/Supplier warranty provided shall not negate the minimum remedies available under common law as if no warranty had been offered.
- Failure to provide the required Manufacturer/Supplier warranty does not reduce liability for execution and materials required for that section of work.
- Conform to the Manufacturer's/Supplier's standard warranty form.
- Commence all Manufacturer/Supplier warranties from the date normally applicable.

- Maintain the effectiveness of all Manufacturer/Supplier warranties for the period stated.
- Provide all Manufacturer/Supplier warranties before practical completion.

## **1.2 Project Overview**

### **1.2.1 Contract Documents**

The Contract Documents are complementary and comprise this Specification, the accompanying drawings, the 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.

If the Architect/Designer has not been engaged to administer the Contract or observe the works, then the term Architect/Designer, where referred to in this specification, means Contract Administrator.

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.

### **1.2.2 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.

### **1.2.3 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.

#### 1.2.4 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.

The Contractor shall make provision for all temporary works and services required for the satisfactory completion of the contract works. The Contractor shall pay all associated costs and fees; carry out all necessary maintenance, alterations and servicing requirements; and remove temporary works and services on completion of the contract works. Temporary works and services shall comply with the requirements New Zealand Building Code.

#### **1.2.5 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).

#### **1.2.6 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.

#### **1.2.7 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.

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.

#### **1.2.8 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, Producer Statements, 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.

#### **1.2.9 Coordination of the Works**

Coordinate 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.

#### **1.2.10 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.

#### **1.2.11 Work Shown and Mentioned**

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 or 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.

### 1.2.12 Site 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. Comply with the relevant provisions of the New Zealand Building Code, in particular Clause F5.

So far as is reasonably practicable and according to a PCBU's (person conducting a business or undertaking) primary duty of care, take all necessary steps required 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.

Each PCBU, so far as is reasonably practicable, must ensure the health and safety of workers, and that other people are not put at risk by its work. If more than one PCBU has a duty in relation to the same matter, each PCBU with the duty must, so far as is reasonably practicable, consult, co-operate with, and co-ordinate activities with all other PCBUs who have a duty in relation to the same matter. PCBUs can enter reasonable agreements with other PCBUs to meet their duties, but cannot contract out of their duties.

Notify WorkSafe as soon as possible when a notifiable event occurs. Take all reasonable steps to preserve the site of the notifiable event in accordance with WorkSafe requirements. Ensure that the site of the event is not disturbed until authorised otherwise by WorkSafe. Keep records of all notifiable events.

Scaffolding shall comply with all Statutory and Local Authority Regulations, with the WorkSafe 'Best Practice Guidelines for Scaffolding', AS/NZS 1576 (Scaffolding equipment), AS/NZS 4576 (Guidelines for Scaffolding), and AS/NZS 4994 (Roof edge scaffolding), and shall be maintained for the duration and 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.

A PCBU's primary duty of care includes, but is not limited to, so far as is reasonably practicable:

- providing and maintaining a work environment that is without risks to health and safety;
- providing and maintaining safe plant and structures;
- providing and maintaining safe systems of work;
- ensuring the safe use, handling and storage of plant, structures and substances;
- providing adequate facilities for the welfare at work of workers in carrying out work for the business or undertaking, including ensuring access to those facilities;
- providing any information, training, instruction, or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking;

- monitoring the health of workers and the conditions at the workplace for the purpose of preventing injury or illness of workers arising from the conduct of the business or undertaking.

Before commencing work on the site, the Contractor shall prepare and submit to the contract administrator a health and safety plan. The health and safety plan shall include, but not be limited to:

- the health and safety of all people on the site and on other properties, and the general public;
- identification of existing and potential construction hazards and risks;
- safety procedures to eliminate, isolate or minimise construction hazards;
- the equipment to be used to minimise the hazards;
- the maintenance of a register of hazards for the site;
- the name and qualifications of the site safety person;
- emergency procedures;
- first aid facilities and safety equipment;
- the methodology for notifying, recording and investigating accidents and injuries.

Carry out all construction operations in accordance with the submitted health and safety plan.

### **1.2.13 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.

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).

## 1.3 Establishment & Enabling

### 1.3.1 Site Establishment

#### *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, in particular the '[OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#)'.

Carry out all construction operations in accordance with the Contractor's project-specific Health and Safety Plan.

#### *Site Inspection Assessment*

The Contractor (and sub-contractors where appropriate) shall be deemed to have examined and inspected, prior to tender, the site and its surroundings, and to have satisfied themselves as regards to access to the site, the form and nature of the site, all existing services, structures and features on the site, the risk of injury or damage to property, and the nature and extent of the work and materials and methodologies necessary for the execution of the works.

#### *Site Boundaries*

Establish the accurate location of property boundaries prior to setting out the works.

#### *Network Utility Operators*

The work shall also be carried out in accordance with all network utility operators having jurisdiction over utilities in or around the site.

Notify the network utility operators of the proposed works, and ascertain and become familiar with any particular requirements and the location of existing services prior to commencing site operations.

Attend on network utility operators as necessary to obtain approvals (in addition to Building Consent approval) for the satisfactory completion of the works.

Accept responsibility for notifying network utility operators and arranging for any inspections and testing and commissioning procedures required by them at various stages of construction.

#### *Temporary Buildings & Site Amenities*

As necessary, make arrangements for the provision of all site services and amenities and facilities required for the works and site staff, including storage sheds, offices, lunch rooms, sanitary facilities and other temporary buildings and facilities required for storage and the management of the works.

These temporary services and amenities shall be for the use of site staff while on site, and as required by the relevant Regulations and Acts, and shall be located in a position within the site boundaries - refer to the Site/Enabling drawings for designated area(s).

Rubbish and contained wastewater from site amenities and facilities shall be removed from the site as appropriate and at least on a weekly frequency.

### *Setting Out*

Accept responsibility for the correct and accurate setting out of the works to conform to the drawings, and that specified locations, orientations, depths and levels are strictly adhered to.

As necessary, locate and verify survey marks and datum points and maintain their accurate position.

Establish reference points, datums, profiles or similar clear of excavations and to allow for easy and accurate checking at all stages of construction. Ensure these are not damaged or dislodged during construction operations.

Where required, employ a licensed cadastral surveyor to establish and set out the positions of the foundations, grid lines and floor levels.

Where required, issue to the Building Consenting Authority a copy of the surveyor's certificate (Pegging Certificate or Building Location Certificate) in accordance with the conditions of the Building Consent.

### **1.3.2 Temporary Works & Services**

#### *General*

Make provision for all temporary works and services required for the satisfactory completion of the contract works.

Pay all associated costs and fees; carry out all necessary maintenance, alterations and servicing requirements; and remove temporary works and services on completion of the contract works. Temporary works and services shall comply with the requirements New Zealand Building Code.

#### *Site Water*

Make all necessary arrangements for the provision and reticulation of clean, fresh potable water required for site amenities and for the construction works.

#### *Site Electricity*

Make all necessary arrangements for the availability and connection of temporary electrical power required for operating site facilities and amenities, health and safety and security requirements, and plant operation and general construction use in strict accordance with electrical regulations.

Comply with the network utility operators requirements, and be responsible for maintaining and servicing temporary electrical distribution plant and equipment as necessary.

#### *Site Perimeter Fencing*

Provide and maintain all necessary fencing at the perimeter of the site in accordance with NZBC F5/AS1, prior to commencing the works, in order to prevent unauthorised entry by the public onto the site.

Site fences adjacent to public spaces shall:

- extend at least 2.0m from ground level on the side accessible to the public; and
- have a maximum 100mm gap between bottom of the fence and ground; and

- be constructed of galvanised chainlink netting with maximum 50 x 50mm grid size; and
- have posts spaced apart at maximum 2.5m.

#### *Site Cleaning & Waste Management*

Accept responsibility for and make all necessary provisions for periodic site cleaning, and for the management and disposal of all construction waste material, recyclable waste, and materials requiring special disposal during the contract period.

The Contractor and their subcontractors shall:

- conform to applicable regulations for disposal and removal of common and hazardous waste; and
- handle and dispose of all hazardous and banned materials in accordance with national and local regulations - such materials include, but are not limited to asbestos, underground storage tanks, polychlorinated biphenyls (PCBs), abandoned chemicals (petrol, pesticides, herbicides, flammable and combustible substances), freon from cooling equipment, lead-based paints, smoke detectors and mercury-containing switches; and
- pay all associated disposal fees.

If a project-specific waste management plan is to be implemented and deployed, ensure that all site personnel, including management and staff, subcontractors and material suppliers, are fully aware of the specific procedures and requirements and have access to or copies of the waste management plan.

The disposal of rubbish and construction waste materials by burning on the site is NOT permitted under any circumstances.

#### *Dust & Noise Control*

Take measures to minimise nuisance from dust, noise and other causes affecting adjoining properties and the public.

Dust:

- The effects of dust shall be appropriately managed within the boundary of the site.
- Comply with the conditions of the Resource Consent/Building Consent related to dust control.

Noise:

- Permitted construction noise levels shall be less than the maximum limits required by the Territorial Authority and NZS 6803.
- Comply with the conditions of the Resource Consent/Building Consent related to noise control.
- As required, prepare a site-specific Construction Noise Management Plan.

#### *Stormwater & Sediment Control*

Carry out excavation and construction works and operations to ensure that they fully comply with the relevant controlling environmental authority's sediment control and stormwater discharge guidelines.

Provide suitable measures to prevent or minimise sediment generation and silt runoff. If at any time the performance of the stormwater and sediment control works, or ongoing review of them, indicates

that they need to be extended or modified, the design modification and construction shall be undertaken at no extra cost to the Principal.

### **1.3.3 Protection of Existing Features**

#### *Survey Marks*

Preserve and maintain in their true position all survey marks other than marks which are required to be covered or removed by the contract works. Accept responsibility to reinstate/replace any survey mark that is disturbed or obliterated by the works.

#### *Adjacent Sites*

Take all necessary care to prevent damage to adjoining public and private property, such as existing buildings, existing roads, footpaths, fences, site services, trees, landscaping site features, until completion of the works. Any adjoining public or private property damaged by the Contractor's construction activities, or failure to protect these, shall be reinstated/made good to the required standard.

Accept responsibility for keeping all public thoroughfares clear and free of debris and contamination from the contract works.

## 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.

Comply with all relevant provisions and recommendations of:

1554.3:2014(AS/NZS)	Structural steel welding - Part 3: Welding of reinforcing steel
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
3112.2:1986(NZS)	Methods of test for concrete - Tests relating to the determination of strength of concrete
3114:1987(NZS)	Specification for concrete surface finishes
3121:2015(NZS)	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
3125:1991(NZS)	Specification for portland-limestone filler cement
3404.1&2:1997(NZS)	Steel Structures Standard
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
4672.1:2007(AS/NZS)	Steel prestressing materials - General requirements
4680:2006(AS/NZS)	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
NZBC B1	Structure
NZBC B2	Durability

### 2.3 Materials

#### 2.3.1 Damp Proof Membrane

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**

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)

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.

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.

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.

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 not shown otherwise to be:

- Foundations - 75mm where poured against ground, 50mm elsewhere.
- Beams and columns - 40mm (for main reinforcing).
- Slabs - 50mm where poured on ground, 40mm where exposed to weather, 30mm elsewhere.
- Walls - 40mm where exposed or against ground, 30mm elsewhere.

## **2.4 Workmanship**

### **2.4.1 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 be carried out to the latest and best trade practise standards by experienced and competent tradesmen, familiar with the materials specified and installation techniques.

### 2.4.2 Formwork

Provide all necessary formwork to produce finished concrete to the required dimensions, surface finishes and structural tolerances (NZS 3109 table 4, note that slab surfaces shall not vary by more than 3mm from a 3m straightedge placed anywhere on the surface, and that this maximum variation shall extend over a minimum distance of 1m).

Design and construct formwork to withstand total weights and all construction loads. Formwork constructed tightly to prevent undue slurry leaks, with no wire formwork ties, and no part of the formwork ties left within required concrete cover. 20 x 20mm fillet corners. Any release agents used shall be non staining and shall be compatible with all subsequently applied finishes.

As per the foundation plan.

Formwork suitable for required F2 finish to exposed locations for subsequent plastering.

Coordinate with all trades to build in all necessary starters, fixings, anchorages, chases, sleeves, bolts, conduits, electrical / plumbing devices etc., and check their exact positioning before pouring. Coordinate with all trades to form all necessary holes, openings etc. with their positions and sizes exactly as required.

Strike formwork without shock or vibration, and without disturbing, damaging or overloading the structure. Fill all bolt holes as soon as practicable.

### 2.4.3 Concreting & Curing

All concrete shall be power mixed in a plant approved by the Ready Mixed Concrete Association for required grade. All structural concrete shall have a compressive strength of 25MPa at 28 days. 19mm max aggregate, 80mm slump, and with a maximum water cement ratio of 0.55.

Where considered desirable the manufacturer may add an air entrainment agent complying with NZS 3109 and 3119. No other additives may be used without specific approval of the engineer. Mixes shall be capable of being readily placed and compacted and finished as specified. The manufacturer shall carry out quality control testing to NZS 3104. All other concrete 20 MPa Ordinary Grade with maximum water cement ratio 0.7.

Note that appropriate cold weather pouring and curing techniques MUST be adopted if construction timing/temperatures so dictate.

Advise for inspection 24 hours before placing any concrete. Sequence and size of concrete pours to approval. No concrete pouring in wet weather. Clean out all formwork thoroughly before pouring. Handling, placing and vibration/compaction of concrete shall all be exactly to NZS 3109 requirements, and carried out by skilled operatives. Slabs power float finished to NZS 3114 U2 surface by kelly float, with steel troweling to a similar finish in corners etc., and to a U3 finish localized to resilient flooring areas.

Cure all concrete for 14 days. Do not use sprayed membranes. As soon as practicable pond all horizontal surfaces, or fully cover with polythene or hessian (kept wet). Periodically hose down all formwork. Stripped vertical surfaces shall be kept wet with perforated hoses or similar.

Form shrinkage control joints in concrete floor slabs-on-ground by saw cutting, without chipping, spalling and tearing the surface, to the locations and layout shown on the drawings. Saw cuts shall extend to a quarter of the depth of the slab. Saw cutting shall take place no later than 24 hours after initial set for average ambient temperatures above 20°C, and 48 hours for average ambient temperatures below 20°C.

#### **2.4.4 Surface Finishes**

General floor slabs - U3 finish.

Top surface of foundations not exposed on completion - U2.

Foundation sides exposed to view - F5.

#### **2.4.5 Documentation**

Concrete delivery docket shall state job, date and time of mixer loading, grade, strength, and slump. Dockets shall be kept and forwarded to the Architect/Designer. Water must NOT be added after the concrete leaves the plant.

## **2.5 Concrete**

### **2.5.1 Scope**

This section sets out the requirements for the supply, forming, casting and finishing of all concrete and concrete elements, required for the satisfactory completion of the works. All aspects of this work shall be carried out to comply with the requirements of the New Zealand Building Code and relevant Standards, and in accordance with the project design documentation, and with any relevant product manufacturers' recommendations.

The supply and fixing of reinforcing for concrete is covered in separate specification Reinforcing Steel. The supply and placing of blockwork grout is covered in separate specification section Blockwork.

### **2.5.2 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, in particular the '[OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#)'.

Precast concrete shall be handled in accordance with the WorkSafe '[Approved Code of Practice for The Safe Handling, Transportation and Erection of Precast Concrete](#)'.

Carry out all construction operations in accordance with the Contractor's project-specific Health and Safety Plan.

*Quality Assurance - Option 1*

Ensure that the construction of all concrete work complies in all respects with the design drawings and the specifications.

Prepare and submit details of the quality assurance procedures for concrete work for approval. These procedures should encompass all aspects of concrete construction.

The quality assurance procedure shall encompass all aspects of concrete construction including, but not limited to:

- concrete quality; and
- formwork quality; and
- construction tolerances; and
- reinforcing steel placement; and
- cast-in items; and
- concrete finishes.

Notify the name of the concrete construction representative to be responsible for the quality control of concrete work. The nominated representative shall complete and sign a written quality control checklist for each on-site concrete pour. A copy of each completed checklist shall be submitted to the Contract Administrator before pouring commences, and in sufficient time for pre-pour inspections to be carried out. The format and detail of the checklist shall be agreed to prior to the commencement of any concrete work.

Supply evidence of concrete production quality standards in advance of construction in accordance with the requirements of NZS 3109.

*Tolerances*

Unless specified otherwise, dimensional tolerances of concrete work shall conform to NZS 3109: Table 5.2 - 'Tolerance for insitu construction', and NZS 3109: Table 5.1 - 'Tolerance for precast components', and to NZS 3114 for off-the-form and unformed surface tolerances.

To ensure that elements such as external cladding, precast items, and lifts will properly fit the building, maintain responsibility for the accurate control of the overall set-out of the concrete structure and concrete elements.

An absolute tolerance on the position of all structural elements of 15mm shall be maintained over the full height of the structure in all directions.

Employ a registered surveyor to reset all gridlines and column positions at every second floor. Column locations, slab edge positions and positions of openings shall be adjusted to ensure that each is within 10mm of the correct position through the height of the building.

Take particular care to ensure that individual members and the building structure as a whole do not twist over the height of the building.

#### *Erection & Temporary Works*

Maintain responsibility for all erection, propping and temporary support of the works, and any other works required for the completion of the contract works, including lifting design, rigging analysis, propping and shoring design.

The extent and details of the erection systems, propping, etc., will be dependent on proposed construction methods, transport and handling methods, and construction programme. Where required, engage a Chartered Professional Engineer experienced in this type of work to undertake the design and supervision of erection systems, propping, etc. Provide written confirmation that this has been done to the Contract Administrator.

Any additional reinforcement to suit temporary erection or support methods shall be the responsibility of the Contractor.

#### *Inspections*

All stages of the concrete construction work shall be reviewed in accordance with the requirements of NZS 3109: Section 1.3, and the conditions of the Building Consent.

All inspections shall be properly documented by the Contractor. Provide all necessary quality control checklists prior to pouring and in sufficient time for pre-pour inspection.

Give notice and provide reasonable opportunity to inspect the section of work prior to pouring. Give at least 1 working day's notice of intent to place concrete in any area.

Any instructions issued shall be carried out before concrete placing commences. Unless approval is given by the Contract Administrator and/or BCA, no concrete shall be placed in that section of work.

Any concrete placed without authorisation may require removal from the works at the Contractor's expense.

#### *Materials & Workmanship*

Adhere to the requirements of NZS 3109, except where specified otherwise or instructed by the Contract Administrator.

#### *Producer Statement*

Furnish a fully completed Producer Statement when the works are sufficiently complete and are ready for application for a Code Compliance Certificate. The Producer Statement shall cover all concrete construction work completed under this section of the specification - Concrete.

### **2.5.3 Reinforcement**

Refer to separate section Reinforcing Steel.

Store reinforcing steel material flat, clear of the ground, on evenly spaced bearers, in a secure area clear of the building works. Keep materials protected from damage and contamination at all times. Do not use damaged, distorted or defective material.

Ensure that all reinforcing is adequately supported off the ground and remains clean from delivery until placing. Before placing reinforcing steel, check that it is free of any loose mill scale and any contamination that may impair bonding to concrete.

Take all necessary measures to ensure that reinforcing steel is not damaged or displaced during concreting.

#### **2.5.4 Finishes**

##### *NZS 3114*

Unless specified otherwise in this specification or on the drawings, concrete finishes shall comply with the provisions of NZS 3114 applicable to the surface finish class specified.

Concrete surface finishes not specified in this specification or on the drawings shall be in accordance with Table 1 or Table 2 of NZS 3114 according to surface type, location and application/use.

##### *Slab Finishes*

Refer to the Schedule of Surface Finishes below for the finishes required unless specified otherwise in the contract documents.

Arrange the pouring to allow adequate time for floating and finishing.

Floating and any subsequent finishing shall be at the correct time to obtain the quality of compaction and finish required. No finishing work shall be carried out on any area where there is free surface water. The application of dry cement or sand to absorb free water is not permitted.

All trowelling ridges shall be removed while soft, or by subsequent light grinding. Slabs not fulfilling the standard of finish required shall be ground smooth or otherwise treated to the satisfaction of the Contract Administrator. Care shall be taken to avoid ridges where a newly poured slab meets existing edges.

#### **2.5.5 Concrete**

##### *Normal Concrete*

Unless specified otherwise herein, all concrete except for 'no fines' concrete shall be Normal Concrete (N) Grade as defined by NZS 3109, manufactured in accordance with NZS 3104 from a New Zealand Ready Mixed Concrete Association audited plant, with sufficient cement quantity to ensure satisfactory finish and durability.

Normal Concrete maximum aggregate size shall be 19mm. Calcium chloride shall not be used.

Cement shall comply with:

NZS 3122: 'Specification for Portland and blended cements (General and special purpose)';

NZS 3125: 'Specification for portland-limestone filler cement'.

Chemical admixtures use in Normal Concrete shall comply with AS 1478.

'No fines' concrete shall be coarse aggregate/cement/water mix without sand but with selected aggregate where necessary.

The aggregate used, and overall mix design (including the use of additives) of Normal Concrete, shall meet the provisions of Section 2 of CCANZ TR 3 Alkali Silica Reaction. Evidence of this may be required by the Contract Administrator. Use of low alkali cements or aggregates from an alternative source may be required where the aggregate contains deleterious material.

Normal Concrete used in the works shall have the following minimum strengths at 28 days unless noted otherwise on the drawings:

- Foundation pads and strip footings: 20 MPa.
- Floor slab-on-grade: 20 MPa.

Supply details of Normal Concrete mix designs for review prior to the ordering of any concrete.

Where a mix from the Normal Concrete range is specified with a special requirement as specified in NZS 3109, then it becomes a Special Concrete (S) - refer to Special Concrete.

## **2.5.6 Concreting**

### *Handling, Placing & Compaction*

All concreting shall conform to NZS 3109 unless modified in this specification.

Concrete shall be transported, handled, placed and compacted so as to:

- Prevent segregation or loss of materials;
- Produce a monolithic mass between planned joints or the extremities of members, or both;
- Completely fill the formwork to the intended level, expel entrapped air, and closely surround all reinforcement, tendons, ducts, anchorages and embedments; and
- Provide the specified finish to the formed surfaces of the member;
- Ensure there is no contamination of the concrete;
- Ensure that the transporting, handling, placing and compaction of the concrete is complete before setting reactions have passed the point which prevents the concrete from attaining its potential fully cured properties.

Concrete shall not be pumped without the Contract Administrator's approval. Where such approval is given, only a standard 'structural' concrete mix design may be used - the use of a pump mix design will not be accepted.

Vibrators shall be used for the compaction of all concrete, including floor slabs. Immersion vibrators shall be moved to new positions as frequently as necessary to ensure uniform vibration of the whole mass and fully compacted concrete. On no account shall immersion vibrators be allowed to come

into contact with the face of formwork. Vibrators shall not be used to transport concrete along the forms.

#### *Curing & Protection*

All concrete shall be cured in accordance with NZS 3109:Section 7.8.

The use of concrete curing compounds shall be only as agreed with the Contract Administrator (specifically for each occasion before it is used). Ensure that any agreed concrete curing compound is compatible with subsequent floor coverings or surface treatments, including any sealers, paints, waterproofing membranes, etc.

All concrete elements shall be protected from damage at all times. Any damaged items shall be repaired or remade to the satisfaction of the Contract Administrator.

#### *Unfavourable Conditions*

Take all necessary precautions and measures during unfavourable conditions, as required by NZS 3109: Section 7.2, to ensure quality and finish of the concrete is not compromised or reduced in any manner.

### **2.5.7 Construction Joints**

#### *Shrinkage-Control Joints - Saw Cutting*

Shrinkage-control joints shall be formed in concrete slab-on-grade floors by saw-cut grooves to the layout and details shown on the drawings.

Saw cutting shall be carried out as soon as possible, after the concrete has set and before shrinkage cracking has occurred - typically within 24 hours of pouring, and without excessive chipping, spalling or tearing of the concrete. Saw cuts shall be straight and true and within 10mm of the true joint alignment.

Unless shown otherwise on the drawings, saw cut grooves shall extend to one quarter of the of the slab thickness, and be between 3-5mm in width. Under no circumstances shall the reinforcement through the joint be cut by saw cutting.

As detailed on the drawings, the joint shall be sealed with the specified sealant.

### **2.5.8 Penetrations and Detailing**

Form all penetrations, rebates, fillets, nibs, upstands, and other detailing as shown on the drawings. Sleeves, conduits, pipes, cores or other penetrations shall not be cast in concrete unless they are indicated on the drawings. If not indicated, they must be approved by the Contract Administrator. All penetrations and concrete detailing shall be accurately positioned and formed at the time of pouring the concrete (without movement or displacement).

Set concrete shall not be cut, hacked or cored unless specific approval is obtained from the Contract Administrator.

### 2.5.9 Foundations

Form concrete foundations to the layout and details shown on the drawings. Concrete foundations shall be cast against formwork on each side unless otherwise approved by the Contract Administrator. Where approval is given to cast against ground, an additional 25mm thickness of concrete will be required on each unformed face to provide additional cover.

Allow to underpin or otherwise support adjacent foundations as necessary to ensure complete stability and no damage to adjacent structures at all times.

Cast in sleeves for all pipes and cables that pass through foundations - coordinate the location of each sleeve with the relevant trade.

Give notice and provide reasonable opportunity to inspect all foundation excavations before placing any tidy concrete or hardfill.

## 2.6 Reinforcing Steel

### 2.6.1 Scope

Supply, bend, tie, place, fix, etc. all reinforcing steel required for concrete work and reinforced blockwork, as indicated on the approved drawings and as required for proper completion of the works, complete with accessories. All aspects of this work shall be carried out to comply with the requirements of the New Zealand Building Code and relevant Standards, and in accordance with the approved project design documentation, and with any relevant product manufacturers' recommendations.

All materials and workmanship shall conform to the requirements of NZS 3109, the New Zealand Building Code, and conditions of the Building Consent.

Reinforcing steel for concrete work shall be placed by the Reinforcing Steeworker.

Reinforcing steel for concrete blockwork shall be placed by the Concrete Blockworker.

Reinforcing steel and stressing strand/wire for precast concrete and prestressed precast concrete shall be placed by the Precast Concrete Manufacturer.

### 2.6.2 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, in particular the '[OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#)'.

Carry out all construction operations in accordance with the Contractor's project-specific Health and Safety Plan.

### *Quality Assurance*

Ensure that the reinforcement placed complies in all respects with the design drawings and specification. The reinforcing steelworker shall nominate a foreman reinforcing steel placer, or equivalent, for approval by the Contract Administrator before commencement on site. The foreman reinforcing steel placer shall inspect all completed sections of reinforcing steelwork and confirm that the work has been carried out in accordance with the design drawings and specification.

The foreman reinforcing steel placer will be required to sign a pre-pour reinforcing check list prepared by the Contractor prior to concrete being placed for that section of the works. A copy of the completed pre-pour checklist must be given to the Contract Administrator prior to observing the finished section of work.

During pouring, the reinforcing steelworker shall be available to correct any displaced or damaged reinforcing.

### *Inspections*

Inform the Contract Administrator when reinforcing steel is being fixed. Give at least 1 working day's notice for the inspection of fixed steel reinforcing before concreting.

### *Testing*

Provide reinforcing steel manufacturer's certificates of origin to the Contract Administrator. Should such certificates indicate the requirements of this specification may not be met, pay for such tests as required by the Contract Administrator to establish its compliance.

## **2.6.3 Reinforcing Steel**

### *Reinforcing Steel*

Reinforcing bars shall conform to AS/NZS 4671 Grade 300E or Grade 500E, except that the use of Grade 250N or Grade 500N is permitted where specifically indicated in the drawings and specifications. The use of Grade 500L bars is not permitted.

Grade 500E reinforcement shall be manufactured by Pacific Steel micro-alloy process. Alternative manufacturers of Grade 500E reinforcement will only be approved if written evidence is provided, including test certificates, verifying the product. The use of Grade 500E reinforcement manufactured by a quench and tempered process is not permitted.

All mesh shall be factory made and machine welded and conform to AS/NZS 4671.

Hard-drawn reinforcing mesh shall be Grade E complying with AS/NZS 4671.

Ductile reinforcing mesh shall be Grade E complying with AS/NZS 4671 in accordance with the requirements of NZBC B1/VM1.

Mill certificates must be provided to the Contract Administrator for all reinforcing steel used.

All bundles of reinforcing steel supplied to the job shall be clearly marked with numbers relating to the Bending Schedule and related drawing.

#### 2.6.4 Bending of Bars

##### *Bending of Bars*

Bars shall be cut and bent in accordance with NZS 3109:Section 3 and to the dimensions and shapes indicated on the drawings.

Bend diameters for main reinforcing bars and of stirrups shall be as given by NZS 3109:Table 3.1.

Stirrups shall be bent to standard shapes as shown in NZS 3109.

Cranks or sets at laps shall have their inclined portions 12 diameters or a minimum of 300mm long unless specifically shown otherwise on the drawings.

Bars with bends or kinks not shown on the drawings shall not be used.

Bent bars shall not be rebent in the reverse direction unless specifically called for on the drawings.

Rebending of steel reinforcement must be carried out to the steel manufacturer's requirements and only with approval of the Contract Administrator. Rebending of Grade 500E reinforcing steel is not permitted.

##### *Bending Schedules*

Where bending schedules are not included in the contract documents, it is the reinforcing steelworker's responsibility to produce a Bending Schedule for review by the Contractor before bending and cutting commences. Inform the Contract Administrator of any discrepancies in the contract drawings, before cutting and bending commences.

##### *Bend Diameters*

Unless otherwise noted on the drawings, main reinforcing bars shall be bent to the following internal diameters:

Steel Grade	Bar Size	Min. Bar Diameters
300E & 500E	6mm - 20mm	5 bar diameters
300E & 500E	25mm - 40mm	6 bar diameters

Bend diameters for stirrups and ties shall be to suit the diameter of the enclosed bar with a minimum of 2 bar diameters for plain bars and 4 bar diameters for deformed bars. Grade 500E steel for stirrups and ties shall be bent as for Grade 300E steel.

#### 2.6.5 Laps, Cover & Tolerances

##### *Laps in Reinforcing*

The positions of reinforcing bar laps shall be as shown on the drawings. The positions of reinforcing bar laps other than those detailed must be approved in writing by the Engineer/Designer before cutting and bending commences. All lapping bars shall be tied to each other.

Lap lengths shall generally be as detailed on the drawings, but in any case not less than 400mm. Where laps have not been specifically detailed, laps shall comply with the table below.

Bar Diameter	Grade 300E Deformed	Grade 500E Deformed
10mm	400mm	600mm
12mm	480mm	720mm
16mm	640mm	960mm
20mm	800mm	1200mm
25mm	1000mm	1500mm
32mm	1280mm	1920mm

Lap lengths for plain round bars shall be two times the length given in the table above for the corresponding grade of deformed bar.

Laps to reinforcing mesh shall fully comply with the requirements of NZS 3101 but shall not be less than 225mm at all edges, and in any case give a minimum of 2 overlapping cross wires plus 50mm. Where Ductile 500E mesh is lapped, the lap length between outer cross bars shall be to the manufacturer's requirements.

#### *Cover*

Minimum cover shall be as specified on the drawings or otherwise as specified in NZS 3109. Covers specified on the drawings shall take precedence over those specified in NZS3109.

The ends of wire ties shall be turned away from the concrete face to maintain cover. Wire ties shall not be tied to formwork.

#### *Tolerances*

Tolerances for bending and fixing of reinforcing steel and fixing of prestressing tendons, ducts and strands shall comply with NZS 3109.

Unless tighter tolerances are specified the following tolerances shall apply:

#### Bending tolerances:

- Cranks stirrups and ties where -
  - the member depth is less than 200mm: +0mm, -5 mm;
  - the member depth is 200mm or more: +0mm, -10mm;
- Other steel: +0mm, -15mm;
- Length of straight bars: +0mm, -15mm;
- Length of straight bars where length fitment is not critical: +20mm.

#### Tolerances on bar spacing/position:

- Spacing of main bars in beams and columns:  $\pm 10$ mm;
- Distance between layers of main steel except it shall not be less than 25mm:  $\pm 5$ mm;
- Distance between bars along the face of walls or slabs:  $\pm 20$ mm;

- Spacing of stirrups or ties in beams and columns:  $\pm 20\text{mm}$ ;
- Longitudinal position of splice:  $\pm 30\text{mm}$ .

Tolerances on concrete cover relative to the values specified and shown on the drawings are:

- In slabs and walls:  $+10\text{mm}$ ;  $-0\text{mm}$ ;
- In beams and columns:  $+10\text{mm}$ ;  $-0\text{mm}$ ;
- At ends of members:  $+25\text{mm}$ ;  $-0\text{mm}$ .

### 2.6.6 Placing & Fixing

#### *Fixing*

Reinforcement shall prior to commencement of concrete placement, be placed, supported and secured against displacement in accordance with the specified tolerances.

Metal supports and tie wires to the reinforcing shall not extend into the concrete cover zone.

Reinforcement shall be supported by appropriate proprietary chairs or spacers, or tied up with wire, such that the durability and strength of the structure is not compromised. The types of distance pieces and spacers to be used shall be such as to firmly hold the steel against displacement. Cementitious spacers shall at least match the quality of the concrete being cast and shall have a minimum compressive strength of 40 MPa.

Fixing of reinforcing steel shall conform to NZS 3109. Bars shall be positioned accurately according to the drawings and securely tied with wire ties to form a rigid cage. Particular attention shall be paid to the correct lapping of all steel and laps shall be checked after fixing.

Take all necessary care when handling and fixing Grade 500E reinforcing bars. Do not use or place any excessively damaged Grade 500E bar, such damaged bars shall be rejected and replaced.

Reinforcing steel shall not be cut or bent on site without the Contract Administrator's specific approval.

All starters shall project the minimum distance prescribed for lap lengths unless detailed otherwise. All starters and other reinforcing protruding from a concrete pour shall be securely braced to prevent any movement during concreting. Starters shall NOT be placed into concrete after it has been poured.

Clean reinforcement prior to concreting to remove any dirt, release agent, slurry and other contaminants likely to affect bonding to concrete. Thoroughly clean all projecting cast-in starter bars before installing subsequent reinforcing steel.

#### *Concrete Slab-on Grade Floor*

Supply and place mesh to the slab-on-grade or the toppings over precast concrete floor units as detailed. Mesh laps shall fully comply with NZS 3101 but shall not be less than 225mm minimum at all edges, and in any case give a minimum of 2 overlapping cross wires plus 50mm. Sheets shall be cut at 4-sheet overlapping corner junctions so as to limit the overlapping to two of the four sheets.

All mesh is to extend to within 75mm of the perimeter of the building floor edges.

Mesh shall be continuous over pads and foundation beams unless additional compensating lap bars are placed across the top to lap with the mesh reinforcement each side. Unless noted otherwise, all saddle bars and other steel shown over the beams on the drawings are additional to the mesh and cannot be included in the required area of compensating steel.

Place topping tie bars as detailed on the drawings.

## 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.

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

Supply and lay the selected 70 series 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

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-operate with the concreter 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.

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.

### **3.3.3 Installation**

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 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.

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 tie type, durability, spacing, fixing and installation shall be as defined in NZBC E2/AS1 Tables 18A, 18B, 18C, and NZS 4210.

Install steel angle lintels to openings as required by NZBC E2/AS1 Table 18E and as noted on the drawings.

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.

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.

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**

Mortar joints shall be raked out, pointed and tooled to a depth not exceeding 6mm after the initial stiffening has occurred.

## 4 WATERPROOFING

### 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.

Comply with all relevant provisions and recommendations of:

3740:2010 (AS)	Waterproofing of domestic wet areas
4858:2004(AS/NZS)	Wet area membranes
NZBC B2/AS1	Durability
NZBC E3/AS1	Internal Moisture

### 4.3 Interior Wet Area Waterproofing Membrane Systems

#### 4.3.1 Scope

Supply and install the specified Interior Wet Area Waterproofing System, to the locations shown on the drawings, complete with all accessories. All aspects of this work shall be in strict accordance with the manufacturer's technical guidelines, installation specifications and details, other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for the specified Interior Wet Area Waterproofing System.

#### 4.3.2 Waterproofing System

Liquid-Applied Waterproofing Membrane System. A liquid applied, modified polyurethane, high-build acrylic, flexible waterproof membrane, suitable for residential and commercial interior wet area floor and wall applications to be subsequently tiled or otherwise covered and protected.

Installed as an interior wet area undertile waterproofing membrane system in accordance with the manufacturer's requirements, NZBC E3/AS1, AS 3740, and as shown on the drawings.

Brand & Product: Ardex WPM 001

#### 4.3.3 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 install the specified Interior Wet Area Waterproofing System as required.

#### 4.3.4 Workmanship

All installation work shall be carried out by experienced contractors, authorised by the manufacturer, familiar with the specified products and installation techniques, to fully comply with all of the manufacturer's warranty requirements in accordance with the manufacturer's installation requirements and as noted and detailed on the drawings.

#### 4.3.5 Delivery & Handling

Store products off the ground on a flat surface undercover, keep materials dry and out of direct sunlight, and protect from damage. Do not use damaged or faulty products, or products beyond the designated shelf life. Handle materials and products in accordance with the manufacturer's recommendations.

#### 4.3.6 Preparation

Check that the internal wet area substrate and any channel drains are to the falls and levels as shown on the drawings, and that any floor waste and drain outlets are correctly installed.

Check that crack control and movement joints are incorporated to the locations as shown on the drawings, and are constructed as recommended by the manufacturer - do not bridge or cover them with the waterproofing.

Ensure the substrate is clean and free of oil, grease, and other contaminants, and is smooth with any defects filled to an even surface prior to installation.

Ensure the concrete substrate surface is U3 finished to NZS 3114 (by steel trowel) and to the manufacturer's recommendations, that it has cured for at least 28 days, that the relative humidity of the concrete is 75% or less, and that it is surface dry at the time of waterproofing.

Grind off any high spots on the concrete slab, FLC (proprietary levelling compound) repair flush with feathered edges any low spots or damaged areas then grind smooth. Lightly grind or shot blast any surface glazed to the extent that may compromise bonding.

Location:

Check that the plasterboard has been installed in accordance with the manufacturer's recommendations.

Check that fixings do not protrude above the plasterboard surface, and that sheet joints have been correctly stopped.

Plasterboard manufacturer, brand name & type:

Location:

#### 4.3.7 Installation

Liquid Applied Waterproofing Membrane System. Install the undertile membrane waterproofing system, including surface priming, membrane application, jointing, flashing and sealing etc., and system-supplied accessories in strict accordance with the manufacturer's installation requirements and details, and as shown on the drawings. Application and workmanship shall be in accordance with AS/NZS 4858:2004 and AS 3740:2004.

Substrates shall be free of dust, grease, wax, oil, dirt, loose plaster, laitance, curing compounds, paint and other contaminants likely to prevent proper bonding, and shall be structurally sound, securely fastened and properly supported to eliminate any movement which may cause cracking. New concrete should be sufficiently aged for a minimum of 4 to 6 weeks. Allow proprietary floor levelling compounds and screeds to cure in accordance with the manufacturer's recommendations prior to application.

Seal substrate corner junctions and substrate joints and fixings and visible cracks, with a suitable sealant. Prepare all substrate floor/wall junctions and sheet joints with a system-approved pressure sensitive bond breaker tape. Prime all surfaces with the specified system primer.

Apply the specified liquid-applied membrane undiluted on to a dry and primed substrate uniformly by brush or roller in accordance with the manufacturer's instructions.

Finish the membrane at control joints, floor wastes and drain outlets to the manufacturer's requirements. Consult the manufacturer regarding any detail where a standard system detail does not exist.

Allow to membrane dry in accordance with the manufacturer's requirements. Where required; carry out a full flood test prior to tiling. Protect the installed membrane as required; avoid puncturing or damaging when exposed - repair as necessary

#### **4.3.8 Completion**

Check that the internal wet area waterproofing system has been installed correctly, and that any system accessories are correctly installed and finished. Check for damage, repair or replace as necessary.

Leave the completed waterproofing system leak free and watertight.

Leave the working area clean and tidy ready for tiling, remove rubbish from site.

Advise the Main Contractor to protect the completed works from damage until tiling is completed.

Issue to the Owner a copy of the product and installation warranty for the completed works.

## 5 CARPENTRY

### 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.

Comply with all relevant provisions and recommendations of:

1080.1:2012(AS/NZS)	Timber - Methods of test - Method 1: Moisture content
2295:2006(NZS)	Pliable, permeable building underlays
2588:1998(AS/NZS)	Gypsum plasterboard
2589:2017(AS/NZS)	Gypsum linings - Application and finishing
2904:1995(AS/NZS)	Damp-proof courses and flashings
3601:1973(NZS)	Metric dimensions for timber
3602:2003(NZS)	Timber and wood-based products for use in building
3603:1993(NZS)	Timber Structures Standard
3604:2011(NZS)	Timber-framed buildings
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
4389:2015(AS/NZS)	Roof safety mesh
4859.1:2002(AS/NZS)	Materials for the thermal insulation of buildings - General criteria and technical provisions
NZBC B2	Durability
NZBC E2	External moisture
NZBC E2/AS1	External Moisture
NZBC E3	Internal Moisture

### 5.3 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.

## **5.4 Timber Framing**

### **5.4.1 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.

### **5.4.2 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.

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-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.

### **5.4.3 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 use damaged, faulty or defective materials.

#### *Timber Treatment*

All non-durable timber framing shall be appropriately treated against moisture and/or insect decay by treatment plants with recognised quality assurance systems that are administered by the Timber Preservation Council (NZTPC). 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.

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 dawning, 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.

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.

#### **5.4.4 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.

##### *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.

#### **5.4.5 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.

Unless noted otherwise, studs in loadbearing walls for 3 kPa floor loads shall be in accordance with NZS 3604 Table 14.10.

#### *Lintels*

Lintels shall be to the dimensions and locations shown on the drawings, 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.

#### *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.

#### *Ribbon Boards*

Ribbon boards shall be as dimensioned and located on the drawings, and installed on edge and checked 25mm into studs at the required height, true to line and level, and fixed in place in accordance with NZS 3604 Table 8.19.

### **5.4.6 Posts**

Timber posts shall be H3.2 90x90 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 STainless Steel BS138

### **5.4.7 Roof Framing**

#### *Valley Boards*

Valley boards shall be sized to the dimensions and installed to the supporting framing as detailed on the drawings.

#### *Purlins*

Purlins shall be to the dimensions and spacings shown on the drawings and as required by the cladding material, and fixed to rafters and/or trusses in accordance with NZS 3604 Table 10.10

(purlins on their flat) and/or Table 10.11 (purlins on their edge).

Purlins on their flat shall be continuous over a minimum of two spans.

Provide all necessary blocking and lateral support to purlins laid on edge in accordance with NZS 3604 10.2.1.16.6, and as detailed.

Extend purlins to form gable verges as detailed and in accordance with NZS 3604 10.2.1.15.

#### *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 fabricator's 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.

### **5.4.8 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.

## **5.5 Thermakraft Underlay, DPM & DPC**

### **5.5.1 Scope**

Supply and install the specified Underlays and Membranes from Thermakraft Ltd to the locations identified on the drawings, complete with all accessories. All aspects of this work shall be in complete accordance with Thermakraft Ltd technical information and installation requirements (check [www.thermakraft.co.nz](http://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 the specified Underlays and Membranes from Thermakraft Ltd.

### **5.5.2 Damp-Proof Membrane**

[Thermathene Black](#) (250µm). A 250 micron thick (0.25mm), tear resistant, polyethylene film sheet concrete underlay. Coloured black.

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.

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.

Installed Location:

### 5.5.3 Damp-Proof Course

[Supercourse 500 DPC](#). A 0.75mm thick, high-impact, single-layer Polyethylene film, embossed on both sides. Available in 50mm, 75mm, 90mm, 100mm, 150mm, 200mm, 250mm, 300mm, 400mm, 500mm and 1000mm roll widths. Supercourse 500 DPC is suitable for use as separation barrier between most incompatible and dissimilar materials.

Used as a general 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.

Also used as a concealed flashing behind brick veneer cladding in accordance with NZS 4229 and NZBC E2/AS1.

Installed in accordance with the manufacturer's requirements, [BRANZ Appraisal No.329 \(2016\)](#) and as shown on the drawings.

### 5.5.4 Roof Underlay

[Thermakraft 213 Building Paper](#). A heavy-weight, absorbent, breathable, bituminous-impregnated non-synthetic underlay (non-fire retardant). Heavy class, nominal weight 230g/m<sup>2</sup>.

Installed as a roof underlay over timber or steel roof framing in accordance with the manufacturer's requirements and as shown on the drawings.

Thermakraft 213 Building Paper roof underlay can be used directly under direct-fixed roof claddings, or directly under roof tile battens in accordance with Thermakraft requirements. Do not install Thermakraft 213 Building Paper on roofs sloped less than 10°.

Thermakraft 213 Building Paper roof underlay must installed in a manner that prevents ponding of water, and supported on safety mesh or netting as specified.

Do not leave Thermakraft 213 Building Paper exposed on roofs for more than a total of 7 days before covering - same day coverage recommended.

Installed Location:

### 5.5.5 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 install Thermakraft Underlays, DPMs, and DPCs as required.

### 5.5.6 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.

All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

All cutting, joining, and fixing techniques shall be exactly as recommended by the manufacturer, and carried out with the use of suitable tools and equipment appropriate for the application. All work shall be such as to leave a neat, efficient, and weathertight installation.

### 5.5.7 Delivery & Handling

Store underlay rolls on end, undercover, on a flat, clean and dry surface. Keep stored materials dry, out of direct sunlight, and protected from damage and contamination at all times.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the product.

Do not use damaged or defective materials, or products that are beyond their designated shelf life.

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use, and shall 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](#), as well as the [Best practice guidelines for working on roofs](#) for roofing installations.

### 5.5.8 Preparation

#### *General*

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.

Supporting timber structures shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content in accordance with the requirements of NZS 3602 at the time of installation.

Supporting lightweight steel framed structures shall comply with NASH 3405, or the NZBC for specific design.

Supporting steel structures shall comply with NZS 3404.

#### *Under-Slab Basecourse*

Under-Slab Basecourse - prior to laying under-slab DPM, check all aspects of preparatory works, including but not limited to:

- Check that the under-slab basecourse has been correctly laid and compacted as specified.
- Check that the surface has been properly prepared and compacted to the required standard, and is smooth and flat.
- Ensure any sand blinding is free of aggregate, sharp protrusions.
- Ensure the final surface is free of hollows and ponded water prior to laying the DPM.

#### *Timber Framing*

Timber Framing - check all aspects of preparatory works, including but not limited to:

- 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.
- Check 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.
- Check that timber framing has a maximum moisture content of 20% at the time of installation.
- Check that there are no projections due to structural bracing and bracketry etc.

### **5.5.9 Roof Underlay Installation**

#### *Thermakraft 213 Building Paper*

Thermakraft 213 Building Paper shall be installed over the specified support netting/strapping, 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.

The maximum run length shall be no greater than 10 metres.

Fix at maximum 300mm centres to purlins, with 8-12mm stainless steel staples or 20mm large-head galvanised clouts or galvanised proprietary grippers.

For tiled roofs, lay Thermakraft 213 over the anti-ponding board and specified support netting/strapping, and fix at maximum 300mm centres to the rafters/trusses before the tile battens are installed.

Finish Thermakraft 213 along roof edges and junctions, valley gutters, and at the ridge as shown on the drawings. Carefully cut underlay at roof openings at 45° 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.

### 5.5.10 Completion

Check that all underlays have been installed correctly and are properly supported, and that all underlay edges, joins and ends are correctly finished prior to closing off with claddings - all in accordance with Thermakraft installation requirements.

Check installed membranes and underlays for defective work and damage - replace and/or repair as necessary to the required standard.

Leave all of this work complete, and free of defects, and to the required standard in accordance with the manufacturer's warranty requirements.

Issue to the Owner a copy of the Thermakraft maintenance requirements and the Thermakraft product warranties for the installed products.

## 5.6 Tekton Weatherization System

### 5.6.1 Scope

Supply and install the Tekton Weatherization System from Marshall Innovations to the locations shown on the drawings as a multi-component flexible wall underlay and weathertightness system, complete with all accessories. All aspects of this work shall be in accordance with Tekton Weatherization technical literature (check [www.mwnz.co.nz](http://www.mwnz.co.nz), or call 0800 776 9727 for the latest edition), [BRANZ Appraisal No.621 \(2014\)](#), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Tekton Weatherization System components and accessories.

### 5.6.2 Flexible Wall Underlay

#### *Flexible Wall Underlay*

[Tekton Building Wrap](#). A light weight, flexible, fire retardant, breathable, synthetic wall underlay, manufactured from spun-bonded polypropylene, 100g/m<sup>2</sup> nominal weight. Tekton Building Wrap can be fixed to timber and steel framing with studs at maximum 600mm centres and nogs/dwangs at maximum 1200mm centres.

In Low, Medium, High, and Very High NZS 3604 Wind Zone situations:

- Tekton Building Wrap shall be installed over timber or steel wall framing as a wall underlay, in accordance with the manufacturer's requirements, [BRANZ Appraisal No.548 \(2013\)](#) and [BRANZ Appraisal No.621 \(2014\)](#) and as shown on the drawings, with absorbent direct-fixed wall claddings, or with absorbent and non-absorbent wall claddings over a 20mm drained cavity, and with masonry veneer in accordance with NZBC E2/AS1 and SNZ HB 4236.

In Extra High NZS 3604 Wind Zone situations:

- Tekton Building Wrap shall be installed directly over a rigid air barrier, in accordance with NZBC E2/AS1 9.1.7.2, to the manufacturer's requirements, [BRANZ Appraisal No.548 \(2013\)](#) and [BRANZ Appraisal No.621 \(2014\)](#) and as shown on the drawings, with absorbent and non-absorbent wall

claddings over a 20mm drained cavity, and with masonry veneer in accordance with NZBC E2/AS1 and SNZ HB 4236.

Tekton Building Wrap must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the NZ Building Code.

Do not leave Tekton Building Wrap exposed for more than 60 days before covering with the wall cladding.

Do not use Tekton Building Wrap behind direct-fixed non-absorbent claddings.

### 5.6.3 Flexible Flashing Tape

[Super-Stick® Building Tape](#). A very thin, high performance, window and door flashing tape designed to be installed in temperatures down to -5°C (appraised). Available in 75mm, 150mm and 230mm wide rolls. Manufactured from multi-layered silver polyester faced, pressure-sensitive self-adhesive tape. Maximum 90 day UV stability and outdoor exposure. Adheres to damp surfaces.

Super-Stick® Building Tape can be used in NZS 3604 Wind Zones up to, and including, 'Extra High'.

Installed as a component of the Tekton Weatherization System as a secondary flashing system to window and door joinery openings (sill flashing and lintel/stud corner junction flashing) in timber and steel framed buildings in accordance with the manufacturer's requirements and [BRANZ Appraisal No.846 \(2013\)](#).

### 5.6.4 Pipe & Services Penetration Seal

[Trade-Seal](#). A one-piece, pressure-sensitive, flexible, self-adhesive, weatherproof flanged collar for sealing around pipes and conduits that penetrate a flexible wall underlay. Manufactured from an EDPM rubber sleeve bonded to a spun-bonded, high density polyethylene flange with a self-adhesive back. Available with various diameter EDPM sleeve sizes to accommodate different size pipe and conduit - 8mm to 220mm diameter. Maximum 90 day UV stability and outdoor exposure.

Trade-Seal can be used in NZS 3604 Wind Zones up to, and including, 'Extra High'. Substrate surfaces must be clean and dry prior to application.

Installed as a component of the Tekton Weatherization System as a secondary flashing system to seal around pipes and services penetrations through clean, dry Tekton Building Wrap in accordance with the manufacturer's requirements, [BRANZ Appraisal No.719 \(2011\)](#) and [BRANZ Appraisal No.621 \(2014\)](#).

Trade-Seal must not be used as a primary flashing.

### 5.6.5 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 install Tekton Weatherization System components as required.

### 5.6.6 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.

All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques, in accordance with the manufacturer's installation requirements and [The Tekton Weatherization System BRANZ Appraisal No.621 \(2014\)](#) and as noted and detailed on the drawings.

### 5.6.7 Delivery & Handling

Store Tekton Weatherization System materials undercover, away from direct sunlight, on a flat, clean and dry surface. Protect stored materials from damage, moisture and contamination.

Do not use or install damaged or defective materials.

Handle products in accordance with the manufacturer's requirements and in a manner that prevents damage or deterioration to the material.

### 5.6.8 Preparation

Timber Framing - check all aspects of preparatory works, including but not limited to:

- Check that timber framing has been completed as shown on the drawings, complies with NZS 3604, or NZS 3603 and AS/NZS 1170 for specific design, and is in accordance with Tekton Weatherization System requirements.
- Check that the framing has studs and nogs/dwangs at the required centres, is plumb and in true alignment, and includes all blocking required for fixing the cladding at openings, joints, corners and soffits etc., and that there are no projections due to structural bracing and bracketry.
- Check that timber framing has a maximum moisture content of 20% at the time of installation.
- Check that window and door openings and any other opening in the wall framing have been trimmed correctly, and that all timber frame junctions with other building elements have been completed to the details shown on the drawings.
- Check that any rigid air barrier has been installed in accordance with NZBC E2/AS1 and the manufacturer's requirements.
- Where Tekton Weatherization System components will be in contact with LOSP (light organic solvent preservative) treated timber; the solvent from the timber treatment must be allowed to evaporate prior to the installation of the system.

### 5.6.9 Installation

#### *Tekton Building Wrap - Timber Frame*

Tekton Building Wrap. Tekton Building Wrap shall be installed with the printed face out, to the exterior face of the timber wall framing, run horizontally, starting from the bottom edge and finishing at the top edge, extending 35mm below the bottom plate or bearer, and lapped such that any water will be shed to the outside of the underlay, with minimum 75mm horizontal laps and minimum 150mm end laps made over a stud, and kept straight and taut without sagging or bulging.

Fix Tekton Building Wrap at maximum 300mm centres with 6mm - 8mm zinc plated staples or 20mm long large-head hot-dip galvanised clouts or galvanised proprietary wrap fixings.

Cut window and door openings just prior to window and door joinery installation; cut the underlay at 45° angle away from each corner, fold the underlay full depth into the opening and fix to the inside face of the opening. Trim underlay flush with the inside of the frame after fixing.

#### *Super-Stick Building Tape*

Super-Stick Building Tape. To the bottom corner junctions of the window and door openings (sill/jamb junctions) apply a 75mm x 150mm long strip of SUPER-STICK Building Tape at a 45° angle and overlapping the corner by 3mm.

Cut a length of SUPER-STICK Building Tape 300mm longer than the length of the sill allowing for a minimum 150mm return up each jamb. Install the tape in a continuous length along the sill trimmer with the back edge flush with the inside edge of the frame and returned up 150mm up each jamb. Press the tape firmly on to the wrap to ensure adequate adhesion.

Cut two pieces of SUPER-STICK Building Tape at 300mm for the top corners. The tape is installed 150mm down the jamb and 150mm along the underside of the lintel and folded 50mm over the face of the Tekton.

Cut two pieces of SUPER-STICK 150mm x 75mm. Apply at a 45° angle overlapping the corner by 3mm. Press firmly onto the wrap to ensure adequate adhesion.

Avoid joining SUPER-STICK Building Tape, where necessary, form joins with a minimum 100mm overlap.

#### **5.6.10 Completion**

Check that all components of the Tekton Weatherization System have been installed correctly. Check that the wall underlay is properly supported with all lap joints sealed with the specified jointing tape, and that window and door openings and penetrating pipes are correctly flashed prior to installing joinery and cladding.

Check the underlay for tears and punctures and other damage - repair or replace as necessary.

Check sealants for compatibility when applying them over the top of any of the Protecto Sill Tapes or Trade-Seals.

Leave this work complete in accordance with the manufacturer's installation requirements.

Remove work-related rubbish and debris and unused material from the site.

Issue to the Owner a copy of the manufacturer's warranty for any warranted product installed as a component of the Tekton Weatherization System.

## 5.7 Plasterboard Linings from USG Boral

### 5.7.1 Scope

Supply, install and finish the specified Plasterboard Linings from USG Boral to the walls and/or ceilings identified on the drawings, complete with all USG Boral components and accessories required for proper installation and finishing. All aspects of this work shall be in complete accordance with USG Boral product literature and the [USG Boral Plasterboard Installation Manual - NZ](#) (check [www.usgboral.com](http://www.usgboral.com), call 0800 874 26725, or email [info.nz@usgboral.com](mailto:info.nz@usgboral.com) for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for the specified Plasterboard Linings from USG Boral.

### 5.7.2 Standard Plasterboard

*SHEETROCK® Brand 13mm Standard Board*

[USG Boral Sheetrock Brand 13mm Standard Board](#). A 13mm thick plasterboard interior lining to ceilings. Suitable for use in residential and commercial applications for non-fire rated wall systems. Manufactured to the requirements of AS/NZS 2588: Gypsum plasterboard, and in accordance with AS/NZS ISO 9001: Quality management systems - Requirements.

Specifications:

- Thickness: 13mm.
- Edge Profiles: Tapered edge; Tapered edge/Square edge.
- Sheet Size: 1200mm wide x 2400-6000mm long (subject to availability).
- Weight: 6.9 kg/m<sup>2</sup>.
- Paper Colour: Buff.
- VOC: Less than 0.5mg/m<sup>3</sup> TVOC.

Applications:

- Suitable for use in all commercial and residential situations provided that its specification and installation is in accordance with USG Boral Plasterboard Installation Manual - NZ.
- Suitable for installation on framed walls and ceilings, where the building design falls within the design scope of NZS 3604 or AS/NZS 1170.
- Where Sheetrock® Brand 13mm Standard Board is to be installed in an existing building, the installer must assure themselves that the framing and existing building are suitable for the proposed building work.

Performance Data:

- Fire: Sheetrock® Brand 13mm Standard Board is a non-combustible building product. It achieves a material Group 1-S depending on finished coating applied (BRANZ Assessment FAR4435).
- Acoustic: Sheetrock® Brand 13mm Standard Board may be used in an acoustic system to provide required levels of sound insulation to achieve specified acoustic ratings.

Installed as an interior wall and/or ceiling lining in accordance with the manufacturer's requirements and USG Boral Plasterboard Installation Manual - NZ, to the locations and details indicated on the drawings.

Installed location:

*Sheetrock® Brand 10mm Ceiling & Wall Board*

[USG Boral Sheetrock Brand 10mm Ceiling & Wall Board](#). A 10mm thick plasterboard interior lining to walls. Suitable for use in residential and commercial applications for non-fire rated wall and ceiling systems. Manufactured to the requirements of AS/NZS 2588: Gypsum plasterboard, and in accordance with AS/NZS ISO 9001: Quality management systems - Requirements.

Specifications:

- Thickness: 10mm.
- Edge Profile: Tapered edge.
- Sheet Size: 1200mm wide x 2400-6000mm long (subject to availability).
- Weight: 5.9 kg/m<sup>2</sup>.
- Paper Colour: Buff.
- VOC: Less than 0.5mg/m<sup>3</sup> TVOC.

Applications:

- Suitable for use in all commercial and residential situations provided that its specification and installation is in accordance with USG Boral Plasterboard Installation Manual - NZ.
- Where Sheetrock® Brand 10mm Ceiling & Wall Board is to provide bracing to the building, it must be installed in accordance with the USG Boral Plasterboard Bracing Manual - NZ.
- Suitable for installation on framed walls and ceilings, where the building design falls within the design scope of NZS 3604 or AS/NZS 1170.
- Where Sheetrock® Brand 10mm Ceiling & Wall Board is to be installed in an existing building, the installer must assure themselves that the framing and existing building are suitable for the proposed building work.

Performance Data:

- Fire: Sheetrock® Brand 10mm Ceiling & Wall Board is a non-combustible building product. It achieves a material Group Number 1-S depending on finished coating applied (BRANZ Assessment FAR4435).
- Acoustic: Sheetrock® Brand 10mm Ceiling & Wall Board may be used in an acoustic system to provide required levels of sound insulation to achieve specified acoustic ratings.

Installed as an interior wall and/or ceiling lining in accordance with the manufacturer's requirements and the USG Boral Plasterboard Installation Manual - NZ, or the USG Boral Plasterboard Bracing Manual - NZ, to the locations and details indicated on the drawings.

Installed location:

### **5.7.3 Fixings**

*Screw Fixing - to Timber Frame*

Screw-fix USG Boral Plasterboard to timber framing with Type W, Bugle Head, Self-drilling, Zinc Plated, Plasterboard Screws in accordance with the requirements of the USG Boral Plasterboard

Installation Manual - NZ, and the USG Boral Bracing Manual - NZ for bracing fixing. Set screw heads slightly below the sheet surface without breaking the paper facing.

Except where specified otherwise on the drawings, the screw size shall be:

- For fixing 1 x 10mm thick plasterboard sheet: 25mm x 6g. 30mm x 6g when direct-fixed to a timber framed ceiling.
- For fixing 1 x 13mm thick plasterboard sheet: 30mm x 6g.
- For fixing 2 x 10mm thick plasterboard sheets: 40mm x 6g.
- For fixing 2 x 13mm thick plasterboard sheets: 50mm x 7g.

#### 5.7.4 Joint & Finishing Compounds

##### *Joint & Finishing Compounds*

USG Boral Joint & Finishing Compounds. Use only the most appropriate system compounds to join and finish the specified USG Boral plasterboard surfaces according to the plasterboard type and durability, and the finish required. All compounds shall be used and finished in accordance with the manufacturer's requirements to the specified finish level.

USG Boral Joint & Finishing Compounds:

- [Sheetrock Durabond](#): A setting-type joint compound. Suitable for Tape Coat; 2nd Coat.
- [Sheetrock Easy Sand](#): A lightweight setting-type joint compound. Suitable for Tape Coat; 2nd Coat.
- [Sheetrock Taping](#): A ready-mixed joint compound. Suitable for Tape Coat.
- [Sheetrock Total](#): A ready-mixed all-purpose joint compound. Suitable for Tape Coat; 2nd Coat; Finish Coat. Sandable.
- [Sheetrock Total Lite](#): A ready-mixed lightweight all-purpose joint compound. Suitable for 2nd Coat; Finish Coat. Sandable.
- [Sheetrock Midweight](#): A ready-mixed, all-purpose joint compound. Suitable for Tape Coat; 2nd Coat; Finish Coat. Sandable.
- [Sheetrock Topping](#): A ready-mixed joint compound. Suitable for 2nd Coat; Finish Coat. Sandable.
- [USG Boral BaseCote](#): A setting-type joint compound. Suitable for Tape Coat; 2nd Coat.
- [USG Boral All Purpose Premix](#): A ready-mixed lightweight joint compound. Suitable for Tape Coat; 2nd Coat; Finish Coat. Sandable.
- [USG Boral FinalCote®](#): A ready-mixed semi-lightweight finishing compound. Suitable for Finish Coat. Sandable.
- [USG Boral TopCote 550®](#): A ready-mixed standard-weight finishing compound. Suitable for Finish Coat. Sandable.

#### 5.7.5 Joint Tape

##### *Sheetrock Paper Joint Tape*

[USG Boral Sheetrock Paper Joint Tape](#). A 50mm wide high-strength cross-fibre paper drywall joint tape, centre-creased for application to angles. Recommended for jointing USG Boral plasterboard wall and ceiling linings. USG Boral Sheetrock Paper Joint Tape must be used in Wet Area and Fire Rated applications and with ready-mixed air-drying type compounds.

### 5.7.6 Finish Levels

#### *Level 4 Finish*

Level 4 Finish. Except where specified otherwise, all decorated plasterboard shall be finished to Level 4 Finish in accordance with AS/NZS 2589.

All joints and interior angles shall have jointing tape embedded in jointing compound and minimum of two separate coats of jointing compound applied over all joints, angles, fastener heads and accessories.

Plasterboard butt joints in walls and ceilings must be between framing members and in certain cases back-blocked. Plasterboard recessed joints in ceilings must be back-blocked in any area containing three or more recessed joints.

Jointing and finishing compounds shall be applied and finished evenly and be free of ridges and tool marks in preparation for decoration in accordance with the manufacturer's requirements.

Agree in writing with the Decorator that a Level 4 Finish has been achieved when complete and before decorating commences.

### 5.7.7 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-operate with the Decorator to ensure that the specified Finish Level for plasterboard jointing and finishing is achieved before decoration commences.

Coordinate with other trades to install Plasterboard Linings from USG Boral as required, and to ensure that:

- appropriate tolerances and clearances allow for adjacent internal linings, fixtures, fittings, services, etc; and
- the linings correctly allow for proper door and window installation; and
- penetrations for building services are correctly handled to maintain sheet integrity.

### 5.7.8 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.

USG Boral Plasterboard Lining installation and finishing work shall be carried out by qualified and experienced tradespersons, familiar with the specified materials and installation and finishing techniques, in accordance with the USG Boral Plasterboard Installation Manual - NZ and relevant USG Boral technical/product literature, and to fully comply with all warranty requirements.

USG Boral Plasterboard Linings shall be jointed and finished to the specified Finish Level in accordance with AS/NZS 2589. Make all necessary arrangements for the quality assessment of plasterboard jointing and finishing Finish Levels prior to commencing decorating.

All cutting, fixing, jointing, finishing and sealing 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 and free from damage and defects.

Protect surrounding surfaces and areas from jointing compound splashes and sanding dust.

### **5.7.9 Delivery & Handling**

Store USG Boral Plasterboard Linings indoors, in neat, flat stacks off the floor, in dry conditions and without any sagging or distortion, in accordance with the manufacturer's requirements. Keep plasterboard linings, compounds and accessories dry, out of direct sunlight, and protected from damage, moisture and contamination at all times.

Do not use damaged or defective materials and products, or products that are beyond the designated shelf life.

Handle all products and materials in accordance with the manufacturer's requirements and relevant Product Data Sheets, and in a manner that prevents damage. Carry plasterboard sheets on edge, and avoid damage to sheet edges, ends, and surfaces.

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](#).

### **5.7.10 Preparation**

#### *General*

All framing and substrates shall be complete and ready for plasterboard lining installation.

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 plasterboard lining installation.

Lightweight steel framing shall comply with the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. Comply with the manufacturer's specifications and requirements for plasterboard installation.

Steel stud partitioning shall comply with AS 1397 and as specified and shown on the drawings. Comply with the manufacturer's specifications and requirements for plasterboard installation.

Carry out all necessary moisture readings. Do not commence installation until the moisture readings are below the required level.

Carry out all necessary substrate inspections and preparatory work in accordance with the manufacturer's recommendations prior to installation.

Check that all fixtures, fittings and built-in items are correctly installed, and that all framing and substrate edges are completed as detailed.

Confirm the location and details of movement control joints, as indicated on the drawings, prior to installation.

Remove all debris and rubbish from framing voids prior to installing linings.

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.

#### *Framing Check*

Check all aspects of preparatory works, including but not limited to:

- Check that the framing is straight and true to line, and is plumb/level and correctly aligned.
- Check that the framing is within the required deviation tolerances defined in AS/NZS 2589 according to the specified Finish Level.
- Check that vertical and horizontal framing members are at the spacings shown on the drawings, and that any required battens or furring channels are installed to the required layout.
- Check that the framing has no projections due to structural and bracing bracketry, etc. Ensure that framing brackets, plates, braces, hold-downs, etc., are correctly installed.
- Check that the building envelope has been finished at all penetrations including doors, windows, services, etc., and is weathertight.
- Check junctions to all other building elements and ensure that all necessary works have been completed, including cavity insulation.

### **5.7.11 Installation**

#### *General*

Install USG Boral Plasterboard Linings and accessories in accordance with the requirements of the USG Boral Plasterboard Installation Manual - NZ and associated fixing schedules, to the locations and details shown on the drawings.

#### *Ceilings*

Plasterboard spans and loads directly supported on ceiling linings must not exceed the maximum values indicated in Table 15 of the USG Boral Plasterboard Installation Manual - NZ.

As detailed, install USG Boral Plasterboard sheets right angles to the ceiling battens or structural ceiling members, with sheet end-joints staggered and located over a batten or solid framing. Fully support sheets during positioning and fixing - for ceiling installations, the use of a mechanical lifting machine is recommended.

Fix sheets with the specified fastenings in accordance with USG Boral fixing schedules. Position fasteners 10-16mm from sheet edges and ends. For bracing fixing, refer to the USG Boral Plasterboard Bracing manual - NZ for specific layouts and fastening requirements.

Install all necessary paper-faced metal beads, casing beads, shadow and reveal beads and other edge trims to plasterboard corners and edges as necessary and as detailed on the drawings.

Install proprietary movement-control joint mouldings to the locations, layout and details shown on the drawings. Movement-control joints shall be spaced at maximum 12m intervals in both directions on any single ceiling and located at the junctions between adjoining spaces.

Accommodate recessed light fittings, heating and ventilating diffusers and grilles and other utility fixtures and fittings that penetrate the ceiling lining.

#### *Walls*

Carefully install USG Boral plasterboard sheets horizontally, at right angles to studs or furrings, with any end-joints staggered and located over solid framing or a furring.

Fix sheets with the specified fastenings in accordance with USG Boral fixing schedules. Place fasteners no closer than 12mm from sheet edges and ends. For bracing fixing, refer to the USG Boral Plasterboard Bracing manual - NZ for specific layouts and fastening requirements.

Install all necessary paper-faced metal beads, casing beads, shadow and reveal beads and other edge trims to plasterboard corners and edges as necessary and as detailed on the drawings.

Install proprietary vertical movement-control joints to the locations and details shown on the drawings. Vertical movement-control joints shall be aligned with control joints in the structure and spaced at maximum 12m intervals on an uninterrupted wall section.

Accommodate all cabled services and other building services fixtures and fittings that penetrate the wall lining.

#### *Jointing & Finishing*

Joint and finish USG Boral Plasterboard linings with USG Boral joint and finishing compounds appropriate for the plasterboard type and durability, and the finish level required.

Carry out jointing and finishing according to the specified Finish Level in accordance with the manufacturer's technical literature. Reinforce sheet joints and internal corners with joint tape bedded into the Tape Coat.

Sheet joints, internal and external corners, and fastener heads shall be evenly finished with USG Boral compounds. When dry, lightly sand to a smooth finish with 180-220 drywall sanding screen or paper to remove tool marks, ridges and other imperfections prior to subsequent sealing and decorating.

#### **5.7.12 Completion**

Check that the plasterboard linings and accessories from USG Boral have been installed correctly and finished to the specified Finish Level.

Check for damage and defects. Carry out any required repairs to the required standard and finish level.

Ensure that inspection and assessment of the jointing and finishing Finish Level has been carried out; and that written agreement the completed jointing and finishing is acceptable for subsequent surface sealing and decoration has been provided.

Leave this work complete and to the required standard for subsequent painting or finishing in accordance with USG Boral requirements.

Clean up thoroughly and leave the finished work and surrounding surfaces clean and free of contamination from compound splashes and sanding dust. Remove all associated rubbish and excess material from the site.

Issue to the Owner a copy of the USG Boral warranty for the installed products.

## 6 ROOFING

### 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.

Comply with all relevant provisions and recommendations of:

1397:1993(AS/NZS)	Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc-coated
1562.1(AS)	Design and installation of sheet roof and wall cladding - Metal
1562.2:1999(AS/NZS)	Design and installation of sheet roof and wall cladding - Corrugated fibre-reinforced cement
2295:2006(NZS)	Pliable, permeable building underlays
3604:2011(NZS)	Timber-framed buildings
NZS 3441	Zinc coated steel coil

### 6.3 Workmanship

#### 6.3.1 Guarantees

The whole of the roof covering work shall be complete in all respects and absolutely watertight. Commencement of roofing works by any Subcontractor indicates their full agreement to and acceptance of an unwritten guarantee to maintain the whole of their work in a satisfactory and watertight condition, and to arrange and pay for any damage consequential upon the failure of their materials or workmanship, for the periods stated below, irrespective of the 90 day general maintenance period.

- Butyl roofer - ten years from completion.
- Galvanised steel roofer - two years after completion.
- Aluminium roofer - ten years after completion.
- Acrylic/f.glass roofer - ten years after completion.

#### 6.3.2 Co-operation

Co-operate with other trades to ensure that framed roofing substrates have appropriate spacings, alignments and fixings, and to ensure that sheet roofing substrates have the correct edge and central fixings, appropriate alignments and gradients, edge priming if necessary, and are completely clean.

Ensure that each section is waterproofed as soon as possible after preparatory work is complete; allow to carry out the works in several operations if necessary to comply with this condition.

## 6.4 Roofing Systems - Profiled Steel

### 6.4.1 Scope

Supply standard corrugated profile 0.40BMT galvanized steel roofing and install it to the areas shown on the Roof Plan. All handling and fixing techniques, and all jointing and sealing materials and techniques, shall be exactly as recommended by the roofing manufacturer.

### 6.4.2 Preparation

Co-operate to ensure that roof framing has appropriate spacings and fixings, is in accordance with NZS 3604, and coordinate to ensure that all timber members required for ridges, hips, valleys, barges, penetrations, junctions with vertical faces, etc. are correctly in place. Lap sheets away from the prevailing wind. Set-out the roofing sheets exactly square to the building axis and maintain this throughout the works.

### 6.4.3 Fixings

#### *Fixings - Corrugated Steel Roofing*

Screw fix with screws that comply with AS 3566 (Self-drilling construction screws) Class 3 or 4. Use only low carbon (15% or less content) non-conductive sealing washers. Screw at centres as advised by the local Rollformer, to fully comply with the Wind Zone requirements, purlins spacings etc. Use fixing systems that will accommodate thermal expansion for long lengths. NO use of abrasive disc cutters.

### 6.4.4 Flashing

Ridges, hips, and barge flashings etc. shall all be matching galvanized steel, and as detailed. Soft edge flashings very neatly dressed down where required, plumbing penetrations custom flexible rubber flashed (fully sealed), and instruct the Plumber that no copper (or brass) pipes are to discharge on to the roof.

### 6.4.5 Completion

Protect the galvanizing from damage at all times; replace the whole sheet where a significant depth of the coating has been damaged. Completely clean off all drill and power saw swarf and pop-rivet shanks as the work proceeds (at least daily, and keep them and other rubbish out of the spoutings).

## 6.5 Rainwater Goods

### 6.5.1 Prefinished Steel Rainwater Goods

Standard 'half round' (or equal) profile longrun prefinished steel spouting as for the roofing with flanged downpipe droppers siliconed into the gutter to take 65mm dia. PVC downpipes. Standard external spouting brackets at approximately 600mm centres.

The downpipes shall drop directly into the stormwater drains - ensure the drains are accurately positioned.

(Any offsets and bends required in a downpipe shall be verified with the Architect/Designer before fabrication - ugly items fabricated in contravention of this must be replaced). Close off joints between

downpipes and stormwater pipes with a upvc transition piece. Fix bird proof plastic 'wire' balloons to the top inlet of all downpipes.

## 7 ALUMINIUM JOINERY

### 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.

Comply with all relevant provisions and recommendations of:

1734:1997(AS/NZS)	Aluminium and aluminium alloys - Flat sheets, coiled sheet and plate
1866:1997(AS/NZS)	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
2208:1996(AS/NZS)	Safety glazing materials in buildings
4211:2008(NZS)	Specification for performance of windows
4223.1:2008(NZS)	Code of practice for glazing in buildings - Glass selection and glazing
4223.2:2016(NZS)	Glazing in buildings - Part 2: Insulating glass units
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
4666:2012(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 Aluminium Windows & Doors

#### 7.3.1 Alternatives

No specific supplier is nominated, although a list of acceptable brands is given below. The Contractor shall state with his tender which brand he is using.

Thermal performance (NZBC H1/AS1) must be as required to meet the Designer's Thermal Evaluation.

APL Brands:

- Altherm
- First
- Vantage
- Smartwood
- Metro Series
- Thermal Heart
- Architectural Series
- Commercial

**ASL Brands:**

- Elite
- Fairview
- Residential
- Evolution
- Architectural
- Commercial

**Fletcher Aluminium Brands:**

- Pacific Residential
- Pacific Thermal
- Pacific Architectural
- Atlantic High Performance
- ALTI
- Nubulite
- Rylock

**Nalco Brands:**

- Nulook
- Bradnams

**7.3.2 Installation Type***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 45° 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 specified 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 15° down to the exterior, and turning down to cover the top of the aluminium frame by at least 10mm,

before finishing with a 5mm 45° 'kick out'. Upstand the head flashing ends as detailed. Install jamb flashings/ sealant or scribes as detailed.

After frames installation install closed cell backing rods as required and expanding foam air-seal the gap between framing and liners.

### **7.3.3 Interior Finish**

GIB Groove.

### **7.3.4 Reveal**

Timber reveals for paint finish with all sides primed.

### **7.3.5 Glass Platform**

Double Glazed.

### **7.3.6 Requirements**

#### *Samples*

Sample of profiles to be used are required.

### **7.3.7 Workmanship**

These windows will be manufactured 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.

Flashings as detailed will be supplied. Flashing materials will be compatible with the windows.

### 7.3.8 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/m<sup>2</sup>, may be used where not exposed.

Thoroughly check all preparatory work to openings prior to installation, including underlay, corner seal tapes, adjacent cladding, pre-installed flashings, waterproofing systems 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 manufacturer's 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.

## 8 GLAZING

### 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.

Comply with all relevant provisions and recommendations of:

1170.0:2002(AS/NZS)	Structural design actions - Part 0: General principles
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
4223.2:2016(NZS)	Glazing in buildings - Part 2: Insulating glass units
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
4232.2:1988(NZS)	Performance criteria for fire resisting enclosures - Part 2: Fire resisting glazing systems
4666:2012(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

### 8.3 Non-Structural Glazing

#### 8.3.1 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.

#### 8.3.2 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 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.

### **8.3.3 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.

### **8.3.4 Glass Type**

#### *Clear Float Glass*

Clear Float Glass. Clear annealed float glass, complying with AS/NZS 4667 and in accordance with NZS 4223.1. Installed to the locations identified on the drawings and schedules.

Manufacturer, brand name & type:

### **8.3.5 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.

## 9 INSULATION

### 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.

Comply with all relevant provisions and recommendations of:

4218:2004(NZS)	Energy efficiency - Small building envelope
4218:2009(NZS)	Thermal insulation - Housing and small 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
4246:2016(NZS)	Energy efficiency - Installing bulk thermal insulation in residential buildings
NZBC H1/AS1	Energy efficiency

### 9.3 Pink® Batts® Insulation

#### 9.3.1 Scope

The following is a list and a general description of the extent of the Pink® Batts® Insulation works, which are more specifically defined in the contract documents, required for the completion of the contract works:

Supply and install Pink® Batts® Insulation, as specified herein, to the locations identified on the drawings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with Tasman Insulation technical information and installation requirements (check [pinkbatts.co.nz](http://pinkbatts.co.nz), call 0800 746 522, or email [customer@pinkbatts.co.nz](mailto:customer@pinkbatts.co.nz) for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Pink® Batts® Insulation.

Pink® Batts® insulation is certified under the GREENGUARD Certification Program (UL 2818). Being certified for indoor air quality gives an assurance that products meet strict chemical emissions limits (including minimal levels of VOCs and formaldehyde), to help create healthier indoor environments.

### 9.3.2 Requirements

#### *Inspections*

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and manufacturer guidelines.

Complete a Pre-Installation Checklist prior to installation, and a Pre-Line Checklist before handing over for subsequent work.

Note: Pink® Batts® checklist applies only to Pinkfit.

*Warranty - applies to BRANZ Appraised Pink® Batts® Ceiling & Wall products*

#### Pink® Batts® Lifetime Product Warranty:

- 50 Years Warranty for BRANZ Appraised Pink® Batts® ceiling and wall products installed according to the warranty conditions.
- Provide the Pink® Batts® Lifetime Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

#### *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.

### 9.3.3 Wall Thermal Insulation

#### *Pink® Batts® Ultra® R2.6 Wall*

Pink® Batts® Ultra® R2.6 Wall - product code 7127126. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-2.6. 90mm thick x 560mm wide x 1140mm long segments.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238 (2012).

Pink® Batts® Ultra® R2.6 Wall is licenced with Environmental Choice New Zealand: Thermal Building Insulants Licence No.2504017.

Installed as wall cavity thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

### 9.3.4 Ceiling Thermal Insulation

*Pink® Batts® Classic R3.6 Ceiling*

[Pink® Batts® Classic R3.6 Ceiling](#) - product code 7110136. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-3.6. 180mm thick x 432mm wide x 1220mm long segments.

BRANZ Appraised for use as a thermal insulating material for ceilings of domestic and commercial buildings according to the conditions and limitations of [BRANZ Appraisal No.238 \(2012\)](#).

Pink® Batts® Classic R3.6 Ceiling is licenced with Environmental Choice New Zealand: Thermal Building Insulant [Licence No.2504017](#).

Installed as ceiling thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

### 9.3.5 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 trades to install Pink® Batts® Insulation as required.

### 9.3.6 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.

The building envelope must be fully enclosed and weatherproof, with construction materials framing at or below the required moisture content, before insulation installation commences.

All installation work shall be carried out by registered PinkFit® Installers, or by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and the manufacturer's guidelines. Inspect all Pink® Batts® insulation work before it is closed off with linings or made inaccessible.

Insulation should be installed without leaving gaps or compressing the material. Always maintain full insulation thickness to ensure that the stated thermal and acoustic values are achieved. Do not install insulation into closed cavities with a cavity depth less than the insulation's stated thickness.

### 9.3.7 Delivery & Handling

Store the Pink® Batts® Insulation materials undercover, in a weatherproof environment, off the floor, on a flat, even surface in accordance with the manufacturer's requirements. Keep materials dry and protected from damage, moisture and contamination at all times.

Do not use damaged or defective materials.

Should a problem be encountered with any Pink® Batts® Insulation product, immediately contact Pink® Batts® on 0800 746 522. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the bale package documentation with batch number and/or date of manufacture.

Handle Pink® Batts® Insulation products in accordance with the manufacturer's requirements and in a manner that prevents damage to and contamination of the product. Ensure installed Pink® Batts® Insulation remains dry at all times.

Installers shall be familiar with and comply with the manufacturer's [Safety Data Sheet](#) precautions for use, and use recommended safety gear when handling materials.

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](#).

### 9.3.8 Installation

#### *General*

Install Pink® Batts® Insulation in accordance with NZS 4246 and the manufacturer's requirements.

Each installation is unique, so prior to installation:

- check for all hazards that may cause injury; and
- carry out any required repair work before starting installation; and
- ensure there's adequate lighting to identify any hazards; and
- treat all electrical cables as live, being careful not to cut or expose cables and wires; and
- beware of other sharp objects (protruding nails, splinters etc.), pests (bees and wasps), loose boards and pipe work.

#### *Pink® Batts® Wall*

Pink® Batts® wall insulation segments shall be oversized by no more than 10mm than the wall framing spacings. If cutting is required, cut oversize by 5mm to ensure a good friction fit.

Friction fit the insulation segments between wall framing members ensuring there is no undue compression, gaps, creases, tucks or folds, and the insulation is finished flush with the framing edges.

Firmly butt all insulation segment joins together, ensuring there are no gaps, and maintain full thickness of the insulation to ensure maximum thermal performance.

Fit Pink® Batts® insulation tight and close around electrical cables and pipes. As necessary, partially cut and fit insulation around cables and pipes. Take extreme care when working around exposed electrical cables - treat all cables as live.

*Pink® Batts® Ceiling - Truss/Framed Roof*

Pink® Batts® insulation segments shall be oversized by no more than 10mm wider than the ceiling framing spacings.

Lay the insulation segments over the ceiling, friction fitted between the ceiling joists/truss chords, ensuring there is no undue compression, gaps, creases, tucks or folds in the insulation.

Firmly butt all insulation segment joins together, ensuring there are no gaps, and maintain full thickness of the insulation to ensure maximum thermal performance.

Cover the entire ceiling, including the outer edge of the top plate of external walls - the insulation must cover at least 50% of external top plates.

Maintain a minimum 25mm clearance between the top of the ceiling insulation and any roofing material, including underlay. If required, trim the insulation or use a thinner product around the perimeter.

Ensure that the appropriate clearances are maintained for electrical equipment, heating and ventilation equipment, heated flues and pipes, etc. Where possible, place insulation beneath electrical wiring and plumbing. Take extreme care when working around exposed electrical cables - treat all cables as live.

### **9.3.9 Completion**

Check that all specified Pink® Batts® Insulation products have been installed correctly in accordance with the manufacturer's requirements.

Check for damage and defects - replace damaged and defective insulation as necessary to the required standard.

Check that the installed insulation will be adequately protected for durability and performance in accordance with the manufacturer's warranty requirements.

Leave all of this work complete, and in the condition required for proper performance, including for the installation of subsequent linings, in accordance with the manufacturer's warranty requirements.

Leave adjacent surfaces and finished work clean and free of damage. Remove all associated rubbish and waste material from site.

Issue to the Owner a copy of the Pink® Batts® Lifetime Product Warranty for all Pink® Batts® Insulation products installed.

## 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.

Comply with all relevant provisions and recommendations of:

2310:2002(AS/NZS)	Glossary of paint and painting terms
2311:2017(AS/NZS)	Guide to the painting of buildings
3750.0:2008(AS/NZS)	Paints for steel structures - Introduction and list of Standards
BRANZ IB 257	Wood primers

### 10.3 General

#### 10.3.1 Alternatives

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-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

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.

#### **10.3.4 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**

The Painting Subcontractor must be a member of the Master Painters Association. All work shall be of the highest reasonable standard, and executed by experienced and competent tradesmen to the Architect/Designer's approval.

#### **10.3.6 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 Wallpapers & Lining Papers**

Wallpapers and lining papers, where scheduled, shall be hung plumb, true and square, and with precise butts. Patterns shall be accurately matched at each join. All rolls used in any one area shall be from the same batch. Use a fungicide incorporated adhesive that is recommended by the supplier. Edges neatly and precisely cut to the adjacent element. Finish free of air bubbles, wrinkles, gaps or stains.

### **10.3.8 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.

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.

Paint putties within one month of glazing timber frames; paint to impinge on glass to assist sealing.

### **10.3.9 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.

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).

### **10.3.10 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.

# 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.

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
1596:2014(AS/NZS)	The storage and handling of LP Gas
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
3500.1:2015(AS/NZS)	Plumbing and drainage - Part 1: Water services
3500.2:2015(AS/NZS)	Plumbing and drainage - Part 2: Sanitary plumbing and drainage
3500.3:2015(AS/NZS)	Plumbing and drainage - Part 3: Stormwater drainage
3500.4:2003(AS/NZS)	Plumbing and drainage - Part 4: Heated water services
3500.5:2012(AS/NZS)	Plumbing and drainage - Part 5: Housing 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
4517:2010(NZS)	Fire sprinkler systems for houses
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
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
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
NZBC G11	Gas as an Energy Source
NZBC G12	Water Supplies
NZBC G13	Foul Water

### 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-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

All plumbing work shall be carried out by, or under the direct control of, properly qualified tradesmen, and shall be to recognised high standards.

Observe best local trade practice to avoid problems which arise from freezing winter conditions.

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.

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.

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 between pipes of different materials shall always be to the approval of the TA Plumbing Inspector.

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.

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.

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.

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.

Close open ends of the systems during construction to prevent the entry of foreign matter.

#### **11.4.4 Temperature Movement**

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**

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**

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. Testing of piped water services shall be by hydrostatic testing in accordance with AS/NZS 3500.1 and shall not show any leakage when subjected to a hydrostatic pressure of 1500kPa for a period of not less than 30 minutes. 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**

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 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.

#### **11.5.2 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 inert 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**

All traps sized to AS1G13. Wastes and vents all uPVC. Wastes shall be to AS1G13 falls as a minimum. Vents shall be generally as indicated, but avoid where permissible in compliance with AS1G13, or shall be combined above the flood level of the fittings.

Fit bird proof domes to all vents.

#### **11.6.2 Cold Water System**

##### *Supply From Existing Toby*

All cold water supply pipework above ground shall be polybutylene, arranged and fixed so that all joints are in a fully 'relaxed' condition, without any stress or tension.

Install a 20mm Medium density polyethylene main pipe from the existing toby to the required connection position (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, reducing to 12mm for the final feed to individual items. 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**

#### *Electric Storage, High Pressure Hot Water Cylinder*

Supply the electric storage high pressure hot water cylinder noted on the drawings and install it where shown. Where appropriate install the cylinder on a safetray, with its drain discharging in a visible location.

Install temperature and pressure relief valves, cold water expansion valves, flow control valves, line strainers, pressure limit valves, and non-return/isolating valves as required to leave the hot water system in full design operational order. Install a tempering valve for each cylinder to control the hot water temperature at any sanitary fixture used for personal hygiene at not more than 55°C.

Check that the water pressure is suitable for the cylinders operation, and install PRV's if excessive.

Pressure relief discharges shall be copper and to the exterior in approved positions.

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.

Irrespective of whether a mixing device is installed, the storage water heater control thermostat shall be set at a temperature of not less than 60°C to prevent the growth of Legionella bacteria.

## 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.

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
3500.0:2003(AS/NZS)	Plumbing and drainage - Glossary of terms
3500.2:2015(AS/NZS)	Plumbing and drainage - Part 2: Sanitary plumbing and drainage
3500.3:2015(AS/NZS)	Plumbing and drainage - Part 3: 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 E1	Surface Water
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

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**

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**

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.

#### **12.4.4 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**

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 Foul Water Drainage**

#### **12.5.1 Scope**

Supply, install, test and commission new, gravity-flow foul water drains on the site, to the locations, layout and details shown on the drawings, complete with all necessary components and accessories required for satisfactory completion and performance of the foul water drainage system. All aspects of this works shall comply with the requirements of the NZ Building Code, related compliance Standards, Regulations and Acts, and to the requirements of the Territorial Authority, and as specified herein and on the approved drawings and schedules. Ancillary work and/or services not specifically mentioned but necessary to complete the work to specified levels of performance shall be deemed included.

Install foul water drains in natural ground, beneath and external to the building, for the distances indicated on the drawings. Allow for all ventilation requirements, inspection openings, bends, branches, manholes, inspection chambers, overflow gully traps, etc., as required and indicated on the drawings. Unless shown otherwise, the foul water drains shall be connected to the building's sanitary drainage system, and discharge to the foul water network.

The foul water drainage plans are diagrammatic only. Allow for all necessary vents, inspection fittings, cleaning eyes, traps and venting in accordance with AS/NZS 3500.2 and to comply with the New Zealand Building Code, and as required by the Territorial Authority. Refer to the drawings for the dimensioned locations of sanitary waste pipes and outlets.

The following is a list and a general description of the extent of Foul Water Drainage works, which are more specifically defined in the contract documents, required for the completion of the contract works:

### **12.5.2 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, in particular the '[OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#)', and the '[Excavation Safety - Good Practice Guidelines](#)'

Carry out all construction operations in accordance with the Contractor's project-specific Health and Safety Plan.

#### *Compliance*

Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the foul water drainage works.

The Drain Layer shall be deemed to have allowed for all work associated with the safe and orderly execution of the foul water drainage work, including complying with all Territorial Authority requirements, Building Consent, Building Act, Health and Safety requirements, and all other acts, laws, by-laws and regulations that may affect the execution of the work.

#### *Work on Public Property*

Excavation and reinstatement of public property shall comply with the requirements of the relevant controlling authorities.

Obtain all necessary approvals and permits from the controlling authorities before commencing work on public property.

Arrange and pay for any excavation and reinstatement inspections of public property required by the controlling authorities.

Before commencing any excavation in or reinstatement work to public footpaths, driveway crossings, roads or other public property, make all necessary enquiries to the relevant controlling authority for their standards for excavation and reinstatement.

Provide at all times, adequate safeguards to the public in respect of temporary fences, signals, signs and lights. Where traffic signs are necessary, these shall be provided and operated in accordance with the Regulatory Authority or NZ Transport Agency (NZTA) guidelines, as applicable, but erected only with the prior written approval of the Regulatory Authority or NZTA and the Contract Administrator.

Where a Traffic Management Plan (TMP) is required, prepare, operate and update this plan as necessary throughout the duration of the works. The TMP shall conform to the requirements of the Regulatory Authority or NZTA, as applicable. Obtain TMP prior-approvals, and maintain the TMP for the entire construction duration.

Remove dirt and contamination deposited on public property to the satisfaction of the controlling authorities.

#### *Inspections*

Inspections of foul water drainage works shall take place at each of the stages as scheduled in the Building Consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Obtain and pay all fees for any required inspections which are additional to the Building Consent.

#### *Testing*

Carry out all necessary testing of the foul water drainage installations, and demonstrate to the Contract Administrator and the controlling Territorial Authority that the installations are watertight and comply with the requirements of the New Zealand Building Code, related compliance Standards, and the design documents.

#### *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 as necessary to install foul water drains to the required locations and layouts.

#### *Workmanship*

Foul water drainage work shall be carried out by qualified and experienced tradespersons, familiar with the required installation requirements, under the direct supervision of a NZ certified Registered Drainlayer, in accordance with AS/NZS 3500.2 in compliance with the New Zealand Building Code, and all local codes and regulatory authority requirements, and the conditions of the Building Consent.

All pipe cutting, jointing, and supporting techniques shall be exactly as recommended by the pipe manufacturer. Pipes, fittings and accessories shall be handled and installed in such a manner that prevents any damage to the component.

All work shall be such as to leave a neat, efficient, robust and watertight installation.

Carry out all necessary inspections and tests during installation to ensure compliance with the design specifications and regulatory requirements. Provide test result sheets to the Contract Administrator to show compliance has been achieved.

Take all necessary measures during installation to protect the foul water drainage system from damage, and to prevent the entry of:

- extraneous water;
- soil, sand, or rock,
- the contents of any septic tank; or
- any other substance, the discharge or which could impede the operation of the foul water drainage network.

Ensure that any installed drain is adequately protected from any damage and excessive loading during the remaining construction period.

Protect adjacent finished work and surfaces from damage and contamination during installation. Any damage to fittings or finished surfaces shall be made good by the appropriate trade at the Drain Layer's expense.

Any associated electrical wiring and prescribed electrical work (by others) shall be carried out by a qualified electrician in accordance with the electrical standards and regulations and the Electrical specification.

#### *Defective Materials & Work*

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. All rejected foul water drainage materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional expense to the Principal.

#### *Delivery & Handling*

Store foul water drain pipes and accessories undercover, out of direct sunlight, clear of the ground, on an even surface, and protected from damage and contamination in accordance with the manufacturer's requirements. Keep pipes and accessories out of direct sunlight and protected from damage and contamination at all times.

Where possible, store pre-packed PVC pipes in the original delivery crate.

Store loose PVC pipes on evenly spaced bearers at maximum 1.0m centres, with pipe sockets alternated so the the sockets do not bear on each other, and with side supports if pipes are stacked more than two layers high. When loose PVC pipes are stacked in a pyramid, the maximum stack height shall be 1.0m and the bottom pipes shall be chocked.

Do not use damaged or faulty materials or products, or products that are beyond their designated shelf life. Do not use PVC materials that have been exposed to or stored in direct sunlight longer than the period specified by the manufacturer.

Handle all products and materials in accordance with the manufacturer's requirements, and in a manner that prevents damage or deterioration of the material/product.

Installers shall be familiar with and comply with manufacturer's Material Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Conform with all relevant [WorkSafe NZ](#) Guidelines and Codes of Practice - in particular the '[OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#)' and the '[Excavation Safety - Good Practice Guidelines](#)'.

#### *As-Built Drawings*

On completion and before application for Code Compliance Certificate, prepare As-Built Drawings of the foul water drainage system, that accurately record the new and/or modified foul water drainage installation.

Information shall include, but not limited to, type, class and size of all pipes, the location, grade and direction of flow of all pipes, the location of all bends, changes in direction, cleaning access positions, manholes, and all dimensions, levels, inverts, etc.

Submit prepared as-built drawings to the Contract Administrator for review. Issue as-built drawings in accordance with the Contract Administrator's instruction, and in the required format.

#### *Warranties*

On completion and before Practical Completion, provide all relevant manufacturer/supplier warranties in favour of the Principal, covering materials, equipment, proprietary products, etc., supplied and installed.

### **12.5.3 Materials**

#### *General*

Supply and deliver to the site all pipes, fittings, precast manholes, granular bedding material and other materials required for incorporation in the drainlaying work. All drainlaying materials shall be fit for purpose and intended use, new, of good quality and free from defects, and as specified herein and on the approved drawings and schedules.

#### *PVC-U Pipes & Fittings*

PVC-U foul water drain pipes and fittings for non-pressure applications shall comply with AS/NZS 1260: 'PVC-U pipes and fittings for drain, waste and vent application'. Installed in accordance with AS/NZS 3500.2, and AS/NZS 2032 or AS/NZS 2566.2.

#### Pipe Classification:

Class SN4-SN6 - Rubber Ring Joint or Solvent Welded Joint. For domestic and residential applications, and low load areas.

Class SN8-SN10 - Rubber Ring Joint or Solvent Welded Joint. For commercial and industrial applications, and medium load areas.

Class SN16 - Rubber Ring Joint or Solvent Welded Joint. For heavy traffic load areas.

#### *Gullies*

Gully traps shall be of an approved type and installed in accordance with AS/NZS 3500.2 and the requirements of the Territorial Authority.

Gully traps shall be PVC construction, including dish and lid.

The overflow level of gully dishes shall be set no less than 25mm above paved surfaces, and no less than 100mm above unpaved surfaces.

Provide adequate support to gully riser and dish with compacted bedding or concrete.

Where subject to damage, protect gully traps with a smooth-finished concrete surround, or with 2:1 sand/cement mortar, surrounding the entire gully and separated from the building foundation, in accordance with AS/NZS 3500.2 and as shown on the drawings.

#### *Cement Mortar*

Cement mortar shall consist of one part cement and two parts of fine aggregate measured by volume, properly mixed with the minimum amount of clean water necessary to render the mix workable. Do not use cement mortar that has been mixed and left standing for more than one hour.

#### *Bedding & Surround Material*

Except where specified otherwise on the drawings, bedding (underlay, side support, overlay) material shall be compacted clean granular non-cohesive material - crushed rock or gravel screenings - of nominal particle size range of 7-10mm with a maximum particle size of 20mm, that is free from organic material and clay, and have a moisture content appropriate to the degree of compaction required. If the bedding material is contaminated or an excessive amount of oversized particles are present, the bedding material shall be rejected and not used.

#### *Backfill Material*

Except where specified otherwise, backfill material above the pipe embedment layer (150mm above the top of pipe) shall be selected excavated material that is free from any builder's waste, any organic material, any rocks or hard matter larger than 20mm, and any soil lumps larger than 75mm.

Except where specified otherwise, pipes beneath private roadways and where subject to vehicular traffic - all backfill from the top of the embedment layer (150mm above top of pipe) to the underside of the pavement layer shall be GAP 65 - General All Passing 65mm.

Mechanically compact backfill material in layers not exceeding 300mm to a relative compaction no less than 95% of the NZ Standard Compaction.

Trenches in public footpaths and roads shall be backfilled in accordance with the requirements of the controlling authority.

### *Marking Tape*

Marking tape shall be located just above the top of the pipe embedment zone, and centred over the pipe.

#### Non-Detectable Marking Tape:

- Non-detectable marking tape shall comply with AS/NZS 2648.1.
- Tape width shall be 100mm minimum.
- Height of message letters shall be 40mm minimum.

#### Detectable Marking Tape:

- Detectable marking tape shall comply with AS/NZS 2648.1.
- Tape width shall be 100mm minimum.
- Tracer wire shall be stainless steel grade 316 or copper alloy designation 122.
- Tracer wire shall allow at least 25% elongation of the plastic tape before breakage of the wire.
- Height of message letters shall be 40mm minimum.

## **12.5.4 Trench Excavation**

### *Clearing of Surfaces*

Where trenches are to be excavated in a grassed area, garden or a berm, the topsoil shall be stripped from the area of the excavation and stockpiled separately adjacent to the trench for use in reinstating the surface.

Where trenches are to be excavated in existing concrete or asphalt paved areas, the paving shall be cut to neat, straight lines, parallel to the trench prior to excavation, with a nominal 100mm trimming allowance either side of the excavation width. The excavation shall be carried out with minimal damage to the existing paved surface.

Where trenches are to be excavated in existing segmental paved areas, the pavers shall be removed by hand, cleaned and set aside for later reinstatement.

Subsequent trench backfill shall be adequately compacted to avoid subsidence of reinstated surfaces.

### *Excavation*

Locate all existing buried services before commencing excavation work in any area.

Excavations for trenches and pits shall be properly executed and supported in accordance with the requirements of AS/NZS 3500.2.

Carry out excavation work to comply with all relevant health and safety regulations and guidelines, including the '[Excavation Safety - Good Practice Guidelines](#)' where appropriate.

Unless specified otherwise, the excavation of trenches shall be taken out by open cut to the levels and grades shown or implied on the drawings. Excavate trenches to the depths which will provide for the appropriate type of bedding.

Trench excavations shall be of sufficient width to allow all operations necessary for the jointing of pipes and placing of the specified backfill. The bottom width of the trenches shall at least the combined measurement of the outside diameter of the pipe plus 200mm - with a minimum clearance of 100mm on each side of the drain barrel. The trench width at the top of the pipe shall not exceed the outside diameter of the pipe plus 600mm unless the pipe in the trench is covered with concrete. The trench above the top of the pipe may be cut wider, either by excavating a wider bench or by battering the trench wall.

### **12.5.5 Pipe Laying**

#### *Bedding Pipes*

Provide a minimum 75mm thick underlay layer of well compacted bedding material for all pipes. A chase shall be excavated in the bedding to accommodate any jointing socket or fitting in the drain. The pipe embedment material shall be laid and compacted so that the pipe is evenly and continuously supported along its length on either side of the pipe, and with an overlay layer minimum 150mm thick.

When trench support systems are used, the bedding material shall be placed and compacted in a manner so that no loss of compaction results from removal of the trench side support systems. The trench support shall be removed in such a way as to ensure that the placing and compaction of the bedding material occurs below the trench supports and directly against the undisturbed ground of the trench walls.

After completion of the jointing and inspection of drain pipes, place and compact the bedding surround material around the pipe to the required depth over the pipe. The material shall be carefully placed around and over the pipe using hand tamping and in a manner that ensures the pipe is uniformly supported all round its perimeter and without voids. Take care during placement and compaction to ensure the pipe is not displaced or damaged.

#### *Laying Pipes*

Install foul water drains in accordance with AS/NZS 3500.2 to the layout, levels and grades shown on the drawings. Drain pipes shall be laid to provide maximum falls, in straight lines and at an even grade, without obstruction to flow, and with full allowance for bedding.

Before installing the pipes, check the bore of each pipe is free from foreign matter and that the pipe exterior and the socket have not been damaged in handling or storage. All pipelines shall be kept clean and free of dirt and debris at all times during installation, testing and commissioning.

PVC-U foul water drain pipes shall be properly jointed (rubber ring joint or solvent welded joint) to produce a watertight seal in accordance with the manufacturer's instructions.

Start laying main drains at the point of outfall and insert junctions for branch drains as the work proceeds. Pipes shall be laid with the least number of bends, in the centre of the trench, in straight lines between bends, and to the grades and locations shown on the drawings.

Install all necessary fittings, including vents, inspection openings and access points, bends and junctions, to the locations shown on the drawings and in accordance with the manufacturer's instructions. Where not specified on the drawings or schedules, fittings for inspection openings, bends, junctions, etc., shall be selected from the PVC pipe system range of products and installed in accordance with the manufacturer's instructions.

Other than precautions against damage by displacement or floating pipes, no bedding surround material or backfill shall be placed until the laying of the drain has been inspected by the Territorial Authority.

#### *Underground Drains Near & Under Buildings*

Protect underground drains near and under buildings against damage in accordance with AS/NZ 3500.2 where the minimum cover specified cannot be provided.

#### *Concrete Support*

Concrete pads used to support foul water drains, gully traps, risers, etc., shall be minimum 100mm thick and in accordance with AS/NZS 3500.2: Section 5.3.

#### *Jointing - Solvent Cement Welded Joints*

Solvent welded joints shall only be used for jointing PVC-U pipes and fittings where rubber-ring jointed fittings are not manufactured. Use only cleaner primers and solvent cements specified by the manufacturer for the application and socket type. Only sockets complying with the relevant Standard shall be installed. Do not use cleaner primers or solvent cements if the 'use by' date has expired. The marking of pipes by scoring is not permitted. All joints shall be watertight and prevent the infiltration of groundwater and the intrusion of tree roots.

Solvent welded joints shall be assembled in accordance with the manufacturer's instructions and generally as follows:

- Solvent welding shall only be carried out in dry conditions above 5°C.
- Ensure the components are dry, clean and free of dust, dirt, grease and surface contaminants during all stages of the jointing process.
- Prior to welding, the components shall be assembled dry and checked for position and alignment to ensure accurate re-assembly in the correct position.
- Mark the spigot with a witness mark (pencil, not scored) at a distance equivalent to the internal depth of the socket.
- Dry the spigot end, up to the witness mark, and the socket interior, then clean and degrease with a clean cloth moistened with the pipe or fitting manufacturer's specified priming fluid.
- Apply an even coating of solvent cement to the internal surface of the socket for the full engagement length, and to the external section of the spigot up to the witness mark.
- Only use the minimum amount of solvent cement in the socket necessary for a fully solvent-welded joint.
- Insert the spigot close to, but not beyond, the witness mark. Do not use excessive force. Firmly restrain the joint for the minimum period recommended by the pipe manufacturer.
- Wipe off excess solvent cement from the outside of the joint, and where possible from the inside.
- Adhere to the manufacturer's specified procedures and time frames for filling and testing pipework.

- Allow all solvent welded joints to fully cure before subjecting pipework to any imposed load or testing.

#### *Pipe Cover*

Unless specified otherwise on the drawings, the minimum pipe cover (finished surface to top of pipe) shall be:

- where not subject to vehicular loading: 300mm.
- where subject to vehicular loading - not in roadways: 500mm.
- where subject to vehicular loading - in sealed roadways: 500mm.
- where subject to vehicular loading - in unsealed roadways: 500mm.
- pipes in embankment conditions or subject to loading from heavy construction equipment: 750mm.

#### *Marking Tape*

Install marking tape on top of the pipe embedment zone and centred over the pipe before commencing backfilling.

### **12.5.6 Connection**

#### *Public Network - Boundary Connection*

Connect to discharge the foul water drainage line directly to the public mains street-edge/boundary connection in accordance with the requirements of the Territorial Authority and as shown on the drawings.

### **12.5.7 Testing**

#### *Foul Water Drains*

Test the foul water drainage installation, including all drains, connections and system components, for water tightness in accordance with the requirements of the Territorial Authority (TA).

Where required by the Territorial Authority, the testing shall be undertaken in the presence of a representative of the TA. Demonstrate to the Contract Administrator and the Territorial Authority that the installation complies with the requirements of the contract documents, related standards and regulatory bodies. Lodge all certificates of approval with the Contract Administrator.

Unless specified otherwise by the Territorial Authority, the test method shall be the Water Test procedure for non-pressure pipelines as defined in AS/NZS 2302. Where appropriate, the procedures in NZBC E1/VM1 may be used as an alternative. The acceptability of other test methods are be subject to the approval of the Territorial Authority and the Contract Administrator.

Provide all necessary plant, equipment and instruments required for the specified testing procedure. All testing and commissioning shall be undertaken by suitably skilled and experienced technicians.

Pressure testing shall be carried out after the pipes have been laid and the bedding material has been placed over the pipes as specified.

Prior to testing ensure that all pipe junctions and inspection eyes are exposed, and pipelines have been flushed and all residual debris cleaned out.

Foul water manholes shall be tested for watertightness by plugging all pipes and filling with water. After absorption has taken place the water level shall remain constant for thirty minutes.

Test results shall be recorded clearly on properly formatted Test Result sheets, and submitted to the Contract Administrator within 48 hours of completion of testing.

Repair or replace any materials or workmanship found to be defective or faulty during testing, and repeat the test until a satisfactory test result is achieved.

Leave the installation watertight and free of defects, and operating to the required performance standard.

The work shall be deemed incomplete unless all required testing and commissioning has been carried out and has passed the requirements of the testing specification and the Territorial Authority.

#### *Water Test Procedure - to AS/NZS 2302*

Water test procedure of foul water drains (non-pressure) - to AS/NZS 2302: Section 7.3.2.

- The pipeline shall be filled with water to a height of not less than 1m above the natural ground level at the highest point of the section being tested, or to the flood level of the lowest sanitary fixture, but not exceeding 5m at the lowest point of the test section.
- The pressure shall be maintained without leakage for at least 15 minutes.
- The source of any leaks shall then be ascertained and any defects repaired.
- The pipeline shall then be retested.

*Note: Testing should not be carried out if groundwater is present above the pipeline. If groundwater is present, the test pressure should be increased to compensate for the depth of groundwater at a rate of 10 kPa for every 1m of groundwater depth.*

### **12.5.8 Backfilling**

#### *Backfilling*

Trenches shall be backfilled as soon as possible after the laying, inspecting and testing of the pipeline.

Where required, lay marker tape along the length of the drain, just above the top of the pipe embedment zone, before backfilling.

Trench backfill materials shall be placed over the pipe embedment, and compacted to restore the trench as near as practicable to the normal surrounding ground surface level and reduce the likelihood of subsidence. Backfill material shall be placed in uncompacted layers not exceed 300mm, then mechanically compacted to the required density.

Temporary trench support systems shall be lifted progressively above each layer of backfill to ensure each layer is compacted against undisturbed ground.

Any deficiencies of trench filling exposed by settlement shall be corrected to the required standard.

### 12.5.9 Reinstatement of Surfaces

#### *Public Property*

Reinstatement of surfaces to public property shall comply with the requirements of the relevant controlling authorities.

## 12.6 Stormwater Drainage

### 12.6.1 Scope

Supply, install, test and commission new, gravity-flow stormwater drains on the site, to the locations, layout and details shown on the drawings, complete with all necessary components and accessories required for the satisfactory completion and performance of the stormwater system. All aspects of this works shall comply with the requirements of the NZ Building Code, related compliance Standards, Regulations and Acts, and to the requirements of the Territorial Authority, and as specified herein and on the design drawings and schedules. Ancillary work and/or services not specifically mentioned but necessary to complete the installation shall be deemed included.

Install stormwater drains in natural ground, beneath and/or external to the building, for the distances indicated on the drawings. Allow for all inspection openings, bends, branches, manholes, inspection chambers, etc., as required and indicated on the drawings. Unless shown otherwise on the drawings, the stormwater drains shall be connected to the roof and surface stormwater installations, and discharge to the stormwater network.

The stormwater drainage plans are diagrammatic only. Allow for all necessary inspection fittings, cleaning eyes, and traps in accordance with AS/NZS 3500.3 and to comply with the New Zealand Building Code, and as required by the Territorial Authority. Refer to the drawings for the dimensioned locations of roof drainage system rainwater pipes and outlets, and surface drainage outlets, etc.

The following is a list and a general description of the extent of Stormwater Drainage works, which are more specifically defined in the contract documents, required for the completion of the contract works:

### 12.6.2 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, in particular the '[OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#)', and the '[Excavation Safety - Good Practice Guidelines](#)'

Carry out all construction operations in accordance with the Contractor's project-specific Health and Safety Plan.

### *Compliance*

Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the stormwater drainage works.

The Drain Layer shall be deemed to have allowed for all work associated with the safe and orderly execution of the stormwater drainage work, including complying with all Territorial Authority requirements, Building Consent, Building Act, Health and Safety requirements, and all other acts, laws, by-laws and regulations that may affect the execution of the work.

### *Work on Public Property*

Excavation and reinstatement of public property shall comply with the requirements of the relevant controlling authorities.

Obtain all necessary approvals and permits from the controlling authorities before commencing work on public property.

Arrange and pay for any excavation and reinstatement inspections of public property required by the controlling authorities.

Before commencing any excavation in or reinstatement work to public footpaths, driveway crossings, roads or other public property, make all necessary enquiries to the relevant controlling authority for their standards for excavation and reinstatement.

Provide at all times, adequate safeguards to the public in respect of temporary fences, signals, signs and lights. Where traffic signs are necessary, these shall be provided and operated in accordance with the Regulatory Authority or NZ Transport Agency (NZTA) guidelines, as applicable, but erected only with the prior written approval of the Regulatory Authority or NZTA and the Contract Administrator.

Where a Traffic Management Plan (TMP) is required, prepare, operate and update this plan as necessary throughout the duration of the works. The TMP shall conform to the requirements of the Regulatory Authority or NZTA, as applicable. Obtain TMP prior-approvals, and maintain the TMP for the entire construction duration.

Remove dirt and contamination deposited on public property to the satisfaction of the controlling authorities.

### *Inspections*

Inspections of stormwater drainage works shall take place at each of the stages as scheduled in the Building Consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Obtain and pay all fees for any required inspections which are additional to the Building Consent.

### *Testing*

Carry out all necessary testing of the stormwater drainage installations, and demonstrate to the Contract Administrator and the Territorial Authority that the installations are watertight and comply with the requirements of the New Zealand Building Code, related compliance Standards, and the design documents.

### *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 as necessary to install stormwater drains to the required locations and layout.

### *Workmanship*

Stormwater drainage work shall be carried out by qualified and experienced tradespersons, familiar with all required installation requirements, under the direct supervision of a NZ certified Registered Drain Layer, in accordance with AS/NZS 3500.3 and to comply with the New Zealand Building Code, and all local codes and regulatory authority requirements, and the conditions of the Building Consent.

All pipe cutting, jointing, and supporting techniques shall be exactly as recommended by the pipe manufacturer. Pipes, fittings and accessories shall be handled and installed in such a manner that prevents any damage to the component.

All work shall be such as to leave a neat, efficient, robust and watertight installation.

Carry out all necessary inspections and tests during installation to ensure compliance with the design specifications and regulatory requirements. Provide test result sheets to the Contract Administrator to show compliance has been achieved.

Take all necessary precautions during installation to protect the stormwater drainage system from damage, and to prevent the entry of:

- soil, sand, or rock;
- sewage, including the contents of any septic tank, or trade waste; or
- any other substance that could damage or impede the operation of the stormwater drainage network.

Ensure that any installed drain is adequately protected from any damage and excessive loading during the remaining construction period.

Protect adjacent finished work and surfaces from damage and contamination during installation. Any damage to fittings or finished surfaces shall be made good by the appropriate trade at the Drain Layer's expense.

Any associated electrical wiring and prescribed electrical work (by others) shall be carried out by a qualified electrician in accordance with the electrical standards and regulations and the Electrical specification.

*Defective Materials & Work*

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. All rejected stormwater drainage materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional expense to the Principal.

*Delivery & Handling*

Store stormwater drain pipes and accessories undercover, out of direct sunlight, clear of the ground, on an even surface, and protected from damage and contamination in accordance with the manufacturer's requirements. Keep pipes and accessories out of direct sunlight and protected from damage and contamination at all times.

Store loose PVC-U pipes on evenly spaced bearers at maximum 1.0m centres, with pipe sockets alternated so the the sockets do not bear on each other, and with side supports if pipes are stacked more than two layers high. When loose PVC-U pipes are stacked in a pyramid, the maximum stack height shall be 1.0m and the bottom pipes shall be chocked.

Do not used damaged or faulty materials or products, or products that are beyond their designated shelf life. Do not use PVC-U materials that have been exposed to or stored in direct sunlight longer than the period specified by the manufacturer.

Handle all products and materials in accordance with the manufacturer's requirements, and in a manner that prevents damage or deterioration of the material/product.

Installers shall be familiar with and comply with manufacturer's Material Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Conform with all relevant [WorkSafe NZ](#) Guidelines and Codes of Practice - in particular the '[OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#)' and the '[Excavation Safety - Good Practice Guidelines](#)'.

*As-Built Drawings*

On completion and before application for Code Compliance Certificate, prepare As-Built Drawings of the stormwater drainage system, that accurately record the new and/or modified stormwater drainage installation.

Information shall include, but not limited to, type, class and size of all pipes, the location, grade and direction of flow of all pipes, the location of all bends, changes in direction, cleaning access positions, manholes, and all dimensions, levels, inverts, etc.

Submit prepared as-built drawings to the Contract Administrator for review. Issue as-built drawings in accordance with the Contract Administrator's instruction, and in the required format.

### *Warranties*

On completion and before Practical Completion, provide all relevant manufacturer/supplier warranties in favour of the Principal, covering materials, equipment, proprietary products, etc., supplied and installed.

## **12.6.3 Materials**

### *General*

Supply and deliver to the site all pipes, junctions, precast manholes, granular bedding material and other materials required for the satisfactory completion of the stormwater drainage works. All drainlaying materials shall be fit for purpose, new and free from damage and defects.

### *PVC-U Pipes & Fittings*

PVC-U stormwater drain pipes and fittings for non-pressure applications shall comply with AS/NZS 1254: 'PVC-U pipes and fittings for stormwater and surface water applications'. Installed in accordance with AS/NZS 3500.3 and AS/NZS 2032 or AS/NZS 2566.2

### Pipe Classification:

Class SN4-SN6 - Rubber Ring Joint or Solvent Welded Joint. For domestic and residential applications, and low load areas.

Class SN8-SN10 - Rubber Ring Joint or Solvent Welded Joint. For commercial and industrial applications, and medium load areas.

Class SN16 - Rubber Ring Joint or Solvent Welded Joint. For heavy traffic load areas.

### *Cement Mortar*

Cement mortar shall consist of one part cement and two parts of fine aggregate measured by volume, properly mixed with the minimum amount of clean water necessary to render the mix workable. Do not use cement mortar that has been mixed and left standing for more than one hour.

### *Bedding & Surround Material*

Except where specified otherwise, bedding (underlay, side support, overlay) material for PVC-U pipes shall be GAP 7 - General All Passing 7mm - clean, granular, non-cohesive crushed rock or gravel screenings, that is free from organic material and clay, with a moisture content appropriate to the degree of compaction required. If the bedding material is contaminated or an excessive amount of oversized particles are present, the bedding material shall be rejected and not used.

### *Backfill Material*

Except where specified otherwise, backfill material above the pipe embedment layer (150mm above the top of pipe) shall be selected ordinary excavated material that is free from any builder's waste, any organic material, any rocks or hard matter larger than 20mm, and any soil lumps larger than 75mm.

Except where specified otherwise, pipes beneath private roadways and where subject to vehicular traffic - all backfill from the top of the embedment layer (150mm above top of pipe) to the underside of the pavement layer shall be GAP 65 - General All Passing 65mm.

Mechanically compact backfill material in layers not exceeding 300mm to a relative compaction no less than 95% of the NZ Standard Compaction.

Trenches in public footpaths and roads shall be backfilled in accordance with the requirements of the controlling authority.

#### **12.6.4 Trench Excavation**

##### *Clearing of Surfaces*

Where trenches are to be excavated in a grassed area, garden or a berm, the topsoil shall be stripped from the area of the excavation and stockpiled separately adjacent to the trench for use in reinstating the surface.

Where trenches are to be excavated in existing concrete or asphalt paved areas, the paving shall be cut to neat, straight lines, parallel to the trench prior to excavation, with a nominal 100mm trimming allowance either side of the excavation width. The excavation shall be carried out with minimal damage to the existing paved surface.

Where trenches are to be excavated in existing segmental paved areas, the pavers shall be removed by hand, cleaned and set aside for later reinstatement.

Subsequent trench backfill shall be adequately compacted to avoid subsidence of reinstated surfaces.

##### *Excavation*

Locate all existing buried services before commencing excavation work in any area.

Excavations for trenches and pits shall be properly executed and supported in accordance with the requirements of AS/NZS 3500.3.

Carry out excavation work to comply with all relevant health and safety regulations and guidelines, including the '[Excavation Safety - Good Practice Guidelines](#)'.

Unless specified otherwise, the excavation of trenches shall be taken out by open cut to the levels and grades shown or implied on the drawings. Excavate trenches to the depths which will provide for the appropriate type of bedding.

Trench excavations shall be of sufficient width to allow all operations necessary for the jointing of pipes and placing of the specified backfill. The bottom width of the trenches shall at least be the combined measurement of the outside diameter of the pipe plus 200mm - with a minimum clearance of 100mm on each side of the drain barrel. The trench width at the top of the pipe shall not exceed the outside diameter of the pipe plus 600mm unless the pipe in the trench is covered with concrete. The trench above the top of the pipe may be cut wider, either by excavating a wider bench or by battering the trench wall.

Where a trench has been excavated deeper than required without authorisation, the excess depth shall be filled either with bedding material compacted to achieve a density as near to the original soil density as possible, or with concrete.

### 12.6.5 Pipe Laying

#### *Bedding Pipes*

Provide a minimum 75mm thick underlay layer of well compacted bedding material for all pipes. A chase shall be excavated in the bedding to accommodate any jointing socket or fitting in the drain. The pipe embedment material shall be laid and compacted so that the pipe is evenly and continuously supported along its length on either side of the pipe, and with an overlay layer minimum 150mm thick.

When trench support systems are used, the bedding material shall be placed and compacted in a manner so that no loss of compaction results from removal of the trench side support systems. The trench support shall be removed in such a way as to ensure that the placing and compaction of the bedding material occurs below the trench supports and directly against the undisturbed ground of the trench walls.

After completion of the jointing and inspection of drain pipes, place and compact the bedding surround material around the pipe to the required depth over the pipe. The material shall be carefully placed around and over the pipe using hand tamping and in a manner that ensures the pipe is uniformly supported all round its perimeter and without voids. Take care during placement and compaction to ensure the pipe is not displaced or damaged.

#### *Laying Pipes*

Install stormwater drains in accordance with AS/NZS 3500.3 to the layout, levels and grades shown on the drawings. Drain pipes shall be laid to provide maximum falls, in straight lines and at an even grade, without obstruction to flow, and with full allowance for bedding.

Before installing the pipes, check the bore of each pipe is free from foreign matter and that the pipe exterior and the socket have not been damaged in handling or storage. All pipelines shall be kept clean and free of dirt and debris at all times during installation, testing and commissioning.

PVC-U stormwater drain pipes shall be properly jointed (rubber ring joint or solvent welded joint) to produce a watertight seal in accordance with the manufacturer's instructions.

Start laying main drains at the point of outfall and insert junctions for branch drains as the work proceeds. Pipes shall be laid with the least number of bends, in the centre of the trench, in straight lines between bends, and to the grades and locations shown on the drawings.

Install all necessary fittings, including inspection openings, bends and junctions, to the locations shown on the drawings and in accordance with the manufacturer's instructions. Where not specified on the drawings or schedules, fittings for inspection openings, bends, and junctions shall be selected from the PVC-U pipe system range of products and installed in accordance with the manufacturer's instructions.

Other than precautions against damage by displacement or floating pipes, no bedding surround material or backfill shall be placed until the laying of the drain has been inspected by the Territorial Authority.

*Jointing - Solvent Welded Joints*

Solvent welded joints shall be used for jointing PVC-U pipes and fittings where rubber-ring jointed fittings are not manufactured. Use only cleaner primers and solvent cements specified by the manufacturer for the application and socket type. Only sockets complying with the relevant Standard shall be installed. Do not use cleaner primers or solvent cements if the 'use by' date has expired. The marking of pipes by scoring is not permitted. All joints shall be watertight and prevent the infiltration of groundwater and the intrusion of tree roots.

Solvent welded joints shall be assembled in accordance with the manufacturer's instructions and generally as follows:

- Solvent welding shall only be carried out in dry conditions above 5°C.
- Ensure the components are dry, clean and free of dust, dirt, grease and surface contaminants during all stages of the jointing process.
- Prior to welding, the components shall be assembled dry and checked for position and alignment to ensure accurate re-assembly in the correct position.
- Mark the spigot with a witness mark (pencil, not scored) at a distance equivalent to the internal depth of the socket.
- Dry the spigot end, up to the witness mark, and the socket interior, then clean and degrease with a clean cloth moistened with the pipe or fitting manufacturer's specified priming fluid.
- Apply an even coating of solvent cement to the internal surface of the socket for the full engagement length, and to the external section of the spigot up to the witness mark.
- Only use the minimum amount of solvent cement in the socket necessary for a fully solvent-welded joint.
- Insert the spigot close to, but not beyond, the witness mark. Do not use excessive force. Firmly restrain the joint for the minimum period recommended by the pipe manufacturer.
- Wipe off excess solvent cement from the outside of the joint, and where possible from the inside.
- Adhere to the manufacturer's specified procedures and time frames for filling and testing pipework.
- Allow all solvent welded joints to fully cure before subjecting pipework to any imposed load or testing.

*Pipe Cover*

Unless specified otherwise on the drawings, the minimum pipe cover (finished surface to top of pipe) shall be:

- where not subject to vehicular loading: 300mm.
- where subject to vehicular loading - not in roadways: 450mm.
- where subject to vehicular loading - in sealed roadways: 600mm.
- where subject to vehicular loading - in unsealed roadways: 750mm.
- pipes in embankment conditions or subject to loading from heavy construction equipment: 750mm.

**12.6.6 Connection***Public Network - Street Kerb Connection*

Connect to discharge the stormwater drainage line directly to the street kerb outlet in accordance with the requirements of the Territorial Authority and as indicated on the drawings.

### 12.6.7 Testing

#### *Stormwater Drains*

Test the stormwater installation, including all drains, connections and system components, for water tightness in accordance with the requirements of the Territorial Authority (TA).

Where required by the Territorial Authority, the testing shall be undertaken in the presence of the representative of the TA. Demonstrate to the Contract Administrator and the Territorial Authority that the installation complies with the requirements of the contract documents, related standards and regulatory bodies. Lodge all certificates of approval with the Contract Administrator.

Unless specified otherwise by the Territorial Authority, the testing procedure shall be the Water Test procedure as defined in AS/NZS 3500.3: Section 9. Where appropriate, the procedures in NZBC E1/VM1 may be used as an alternative. The acceptability of other test methods are be subject to the approval of the Territorial Authority and the Contract Administrator.

Provide all necessary plant, equipment and instruments required for the specified testing procedure. All testing and commissioning shall be undertaken by suitably skilled and experienced technicians.

Pressure testing shall be carried out after the pipes have been laid and the bedding material has been placed over the pipes as specified.

Prior to testing ensure that all pipe junctions and inspection eyes are exposed, and pipelines have been flushed and all residual debris cleaned out.

Stormwater manholes shall be free of visible faults, or permeable zones, and jointing or penetration repairs shall be to best trade practice and standards.

Test results shall be recorded clearly on properly formatted test result sheets, and submitted to the Contract Administrator within 48 hours of completion of testing.

Repair or replace any materials or workmanship found to be defective or faulty during testing, and repeat the test until a satisfactory test result is achieved.

Leave the installation watertight and free of defects, and operating to the required performance standard.

The work shall be deemed incomplete unless all required testing and commissioning has been carried out and has passed the requirements of the testing specification and the Territorial Authority.

#### *Water Test Procedure - to AS/NZS 3500.3*

Water test procedure of stormwater drains (non-pressure) - to AS/NZS 3500.3: Section 9.4: The head of water on any section of drain shall not exceed 3m.

The procedure shall be as follows:

- Seal all openings except the top of the section of the below-ground drain to be tested.
- Fill the below-ground drain with water to the highest level in that section.

- 10 minutes for vitrified clay drains; or
- 5 minutes for drains of any other material.

The drain shall be deemed to have passed the test if no make-up water is required.

#### **12.6.8 Backfilling**

##### *Backfilling*

Trenches shall be backfilled as soon as possible after the laying, inspecting and testing of the pipeline.

Where required, lay marker tape along the length of the drain, just above the top of the pipe embedment zone, before backfilling.

Trench backfill materials shall be placed on the pipe embedment, and compacted to restore the trench as near as practicable to the normal surrounding ground surface level and reduce the likelihood of subsidence. Backfill material shall be placed in uncompacted layers not exceed 300mm, then mechanically compacted to the required density.

Temporary trench support systems shall be lifted progressively above each layer of backfill to ensure each layer is compacted against undisturbed ground.

Any deficiencies of trench filling exposed by settlement shall be corrected to the required standard.

#### **12.6.9 Reinstatement of Surfaces**

##### *Reinstatement of Surfaces*

Refer to separate specification section - Siteworks - Reinstatement of Surfaces. Ground and paved surfaces above excavated stormwater drainage trenches shall be reinstated to the standard specified.

Reinstatement shall generally achieve a standard equal to or better than the pre-existing situation - in no case will a lower standard be accepted.

Hedges, fences and other features to be retained that have been damaged or removed during the work shall be reinstated to the satisfaction of the Contract Administrator.

##### *Public Property*

Reinstatement of surfaces to public property shall comply with the requirements of the relevant controlling authorities.

## 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.

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)
3012:2010(AS/NZS)	Electrical installations - Construction and demolition sites
3100:2009(AS/NZS)	Approval and test specification - General requirements for electrical equipment
3112:2011(AS/NZS)	Approval and test specification - Plugs and socket-outlets
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
60335.2.35:2004(AS/NZS)	Household and similar electrical appliances - Safety - Particular requirements for instantaneous water heaters
60598.2.2:2001(AS/NZS)	Luminaires - Particular requirements - Recessed luminaires
60598.2.22:2005(AS/NZS)	Luminaires - Particular requirements - Luminaires for emergency lighting
6104:1981(NZS)	Specification for emergency electricity supply in buildings
AS/NZS 2053	Specification for unplasticized PVC conduit and fittings for electrical wiring
AS/NZS 3085	Telecommunications installations
AS/NZS 3191	PVC insulated flexible cords
AS/NZS 3439	Electrical switchgear and controlgear
AS/NZS 60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Flexible cables (cords)
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)
NZCEP 54	Recessed luminaires

## **13.3 Workmanship**

### **13.3.1 General**

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).

Obtain all necessary permits and consents, serve all notices and pay all fees in and customary charges connection with the works.

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; 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).

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-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**

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.

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.

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**

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.

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 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).

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.

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.

Wire exterior lighting in screened cable.

### **13.4 Materials & Control**

#### **13.4.1 Materials**

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.

#### **13.4.2 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.

## **13.5 Systems**

### **13.5.1 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.

### **13.5.2 Mains**

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.

# HURUNUI DISTRICT COUNCIL

P.O. Box 13 | Amberley | 7441 | 66 Carters Road | Amberley | 7410  
Phone 03 314 0006 | Fax 03 314 9181 | Email info@hurunui.govt.nz  
Web hurunui.govt.nz | facebook.com/HurunuiDistrictCouncil  
Skype hdc\_customer\_services | twitter.com/hurunuidc



## Agent Nomination

I Billie Anderson / DANIELA TURPIN  
(Name of owner)

Being the owner of 18 CLAREMONT CRESCENT  
(Property address)

Hereby give consent for Luke Seaford  
(Name of agent)

To act as my agent for this building project.

Signed [Signature]

Date 19/9/2017

**AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE**

This form is approved by the Real Estate Institute of New Zealand Incorporated and by Auckland District Law Society Incorporated.

DATE:

VENDOR: Daniel Alan THIRUPP and Linda ANDERSON

PURCHASER: Billie May ANDERSON and Rickie Trevor GOODGAME

and/or nominee

The vendor is registered under the GST Act in respect of the transaction evidenced by this agreement and/or will be so registered at settlement:

Yes/No

**PROPERTY**

Address: 18 Claremont Crescent, Amberley

Estate:	<b>FEE SIMPLE</b>	<del>LEASEHOLD</del>	<del>STRATUM-IN-FREEHOLD</del>	<del>STRATUM-IN-LEASEHOLD</del>
	<b>CROSSLEASE (FEE SIMPLE)</b>		<b>CROSSLEASE (LEASEHOLD)</b>	(fee simple if none is deleted)

Legal Description:

Area (more or less):

800m<sup>2</sup>

Lot/Flat/Unit:

36

DP:

DP485034

Unique Identifier or CT:

688514

**PAYMENT OF PURCHASE PRICE**

Purchase price: \$\* in accordance with Clause 23

~~Plus GST (if any)~~ OR Inclusive of GST (if any)

If neither is deleted, the purchase price includes GST (if any).

GST date (refer clause 14.0):

Deposit (refer clause 2.0): \$

Balance of purchase price to be paid or satisfied as follows:

(1) By payment in cleared funds on the settlement date which is as per attached Further Terms

OR

(2) In the manner described in the Further Terms of Sale.

Interest rate for late settlement: 12 % p.a.

**CONDITIONS (refer clause 10.0)**

Finance condition

LIM required: (refer clause 10.2)

Yes/No

Lender:

Building report required: (refer clause 10.3)

Yes/No

Amount required:

OIA Consent required: (refer clause 10.4)

Yes/No

Finance date:

Land Act/OIA date:

**TENANCIES (if any)**

Vacant Possession

Name of tenant:

~~Bound~~~~Rent~~~~Term~~~~Right of renewal~~

SALE BY:

Private Treaty

Licensed Real Estate Agent under Real Estate Agents Act 2006

It is agreed that the vendor sells and the purchaser purchases the property, and the chattels listed in Schedule 1, on the terms set out above and in the General Terms of Sale and any Further Terms of Sale.

## GENERAL TERMS OF SALE

### 1.0 Definitions, time for performance, notices, and interpretation

#### 1.1 Definitions

- (1) Unless the context requires a different interpretation, words and phrases not otherwise defined have the same meanings ascribed to those words and phrases in the Goods and Services Tax Act 1985, the Property Law Act 2007, the Resource Management Act 1981 or the Unit Titles Act 2010.
- (2) "Agreement" means this document including the front page, these General Terms of Sale, any Further Terms of Sale, and any schedules and attachments.
- (3) "Building Act" means the Building Act 1991 and/or the Building Act 2004.
- (4) "Building warrant of fitness" means a building warrant of fitness supplied to a territorial authority under the Building Act.
- (5) "Cleared funds" means:
  - (a) An electronic transfer of funds that has been made strictly in accordance with the requirements set out in the PLS Guidelines; or
  - (b) A bank cheque, but only in the circumstances permitted by the PLS Guidelines and only if it has been paid strictly in accordance with the requirements set out in the PLS Guidelines.
- (6) "Default GST" means any additional GST penalty (civil or otherwise), interest or other sum imposed on the vendor (or where the vendor is or was a member of a GST group its representative member) under the GST Act or the Tax Administration Act 1994 by reason of non-payment of any GST payable in respect of the supply made under this agreement but does not include any such sum levied against the vendor (or where the vendor is or was a member of a GST group its representative member) by reason of a default or delay by the vendor after payment of the GST to the vendor by the purchaser.
- (7) "Electronic Instrument" has the same meaning as ascribed to that term in the Land Transfer (Computer Registers and Electronic Lodgement) Amendment Act 2002.
- (8) "GST" means Goods and Services Tax arising pursuant to the Goods and Services Tax Act 1985 and "GST Act" means the Goods and Services Tax Act 1985.
- (9) "Landonline Workspace" means an electronic workspace facility approved by the Registrar-General of Land pursuant to the provisions of the Land Transfer (Computer Registers and Electronic Lodgement) Amendment Act 2002.
- (10) "LIM" means a land information memorandum issued pursuant to the Local Government Official Information and Meetings Act 1987.
- (11) "LINZ" means Land Information New Zealand.
- (12) "Local authority" means a territorial authority or a regional council.
- (13) "OIA Consent" means consent to purchase the property under the Overseas Investment Act 2005.
- (14) "PLS Guidelines" means the most recent edition, as at the date of this agreement, of the Property Transactions and E-Dealing Practice Guidelines prepared by the Property Law Section of the New Zealand Law Society.
- (15) "Property" means the property described in this agreement.
- (16) "Purchase price" means the total purchase price stated in this agreement which the purchaser has agreed to pay the vendor for the property and the chattels included in the sale.
- (17) "Regional council" means a regional council within the meaning of the Local Government Act 2002.
- (18) "Remote settlement" means settlement of the sale and purchase of the property by way of the purchaser's lawyer paying the moneys due and payable on the settlement date directly into the trust account of the vendor's lawyer. In consideration of the vendor agreeing to meet the vendor's obligations under subclause 1.8(2), pursuant to the protocol for remote settlement recommended in the PLS Guidelines.
- (19) "Secure web document exchange" means an electronic messaging service enabling messages and electronic documents to be posted by one party to a secure website to be viewed by the other party immediately after posting.
- (20) "Settlement date" means the date specified in this agreement.
- (21) "Settlement statement" means a statement showing the purchase price, plus any GST payable by the purchaser in addition to the purchase price, less any deposit or other payments or allowances to be credited to the purchaser, together with apportionments of all income and outgoings ascertained at the settlement date.
- (22) "Territorial authority" means a territorial authority within the meaning of the Local Government Act 2002.
- (23) "Unit title" means a unit title under the Unit Titles Act 2010.
- (24) The terms "principal unit", "accessory unit", "owner", "unit plan", and "unit" have the meanings ascribed to those terms in the Unit Titles Act 2010.
- (25) The term "rules" includes both body corporate rules under the Unit Titles Act 1972 and body corporate operational rules under the Unit Titles Act 2010.
- (26) The terms "building", "building consent", "code compliance certificate", "compliance schedule", "household unit", and "commercial on-site" have the meanings ascribed to those terms in the Building Act.
- (27) The term "title" includes where appropriate a computer register within the meaning of the Land Transfer (Computer Registers and Electronic Lodgement) Amendment Act 2002.
- (28) The terms "going concern", "goods", "principal place of residence", "recipient", "registered person", "registration number", "supply", and "taxable activity" have the meanings ascribed to those terms in the GST Act.
- (29) The terms "tax information" and "tax statement" have the meanings ascribed to those terms in the Land Transfer Act 1952.
- (30) The terms "associated person", "conveyancer", "residential land purchase amount", "children RLWT person", "RLWT", "RLWT certificate of exemption" and "RLWT rules" have the meanings ascribed to those terms in the Income Tax Act 2007.
- (31) The term "Commissioner" has the meaning ascribed to that term in the Tax Administration Act 1994.
- (32) "Working day" means any day of the week other than:
  - (a) Saturday, Sunday, Waitangi Day, Good Friday, Easter Monday, Anzac Day, the Sovereign's Birthday, and Labour Day;
  - (b) if Waitangi Day or Anzac Day falls on a Saturday or Sunday, the following Monday;
  - (c) a day in the period commencing on the 24th day of December in any year and ending on the 5th day of January (or in the case of clause 10.2(2) the 15th day of January) in the following year (both days inclusive); and
  - (d) the day observed as the anniversary of any province in which the property is situated.
 A working day shall be deemed to commence at 8.00 am and to terminate at 5.00 pm.
- (33) Unless a contrary intimation appears on the front page or elsewhere in this agreement:
  - (a) the interest rate for late settlement is equivalent to the interest rate charged by the inland Revenue Department on unpaid tax under the Tax Administration Act 1994 during the period for which the interest rate for late settlement is payable, plus 5% per annum; and
  - (b) a party is in default if it did not do what it has contracted to do to enable settlement to occur, regardless of the cause of such failure.

#### 1.2 Time for Performance

- (1) Where the day nominated for settlement or the fulfilment of a condition is not a working day, then the settlement date or the date for fulfilment of the condition shall be the last working day before the day so nominated.
- (2) Any act done pursuant to this agreement by a party, including service of notices, after 5.00 pm on a working day, or on a day that is not a working day, shall be deemed to have been done at 9.00 am on the next succeeding working day.
- (3) Where two or more acts done pursuant to this agreement, including service of notices, are deemed to have been done at the same time, they shall take effect in the order in which they would have taken effect but for subclause 1.2(2).

#### 1.3 Notices

The following apply to all notices between the parties relevant to this agreement, whether authorized by this agreement or by the general law:

- (1) All notices must be served in writing.
- (2) Any notice under section 28 of the Property Law Act 2007, where the purchaser is in possession of the property, must be served in accordance with section 25.1 of that Act.
- (3) All other notices, unless otherwise required by the Property Law Act 2007, must be served by one of the following means:
  - (a) on the party as authorized by sections 354 to 36.1 of the Property Law Act 2007; or
  - (b) on the party or on the party's lawyer:
    - (i) by personal delivery; or
    - (ii) by posting by ordinary mail; or
    - (iii) by facsimile; or
    - (iv) by email; or
    - (v) in the case of the party's lawyer only, by sending, by document exchange or, if both parties' lawyers have agreed to subscribe to the same secure web document exchange for this agreement, by secure web document exchange.
- (4) In respect of the means of service specified in subclause 1.3(3)(b), a notice is deemed to have been served:
  - (a) in the case of personal delivery, when received by the party or at the lawyer's office;
  - (b) in the case of posting by ordinary mail, on the third working day following the date of posting to the address for service notified in writing by the party or to the postal address of the lawyer's office;
  - (c) in the case of facsimile transmission, when sent to the facsimile number notified in writing by the party or to the facsimile number of the lawyer's office;
  - (d) in the case of email, when acknowledged by the party or by the lawyer orally or by return email or otherwise in writing, except that return emails generated automatically shall not constitute an acknowledgment;

- (4) in the case of sending by document exchange, on the second working day following the date of sending to the document exchange number of the lawyer's office;
- (5) in the case of sending by secure web document exchange, at the time when in the ordinary course of operation of that secure web document exchange, a notice posted by one party is accessible for viewing or downloading by the other party;
- (6) Any period of notice required to be given under this agreement shall be computed by excluding the day of service;
- (7) In accordance with section 20(1) of the Electronic Transactions Act 2002, the parties agree that any notice or document that may be given in writing by one party to the other may be given in electronic form and by means of an electronic communication, subject to the rules regarding service set out above.

#### 1.4 Interpretation

- (1) If there is more than one vendor or purchaser, the liability of the vendors or of the purchasers, as the case may be, is joint and several.
- (2) Unless the purchaser enters into the agreement with provision for a nominee, or as agent for an undisclosed or disclosed but unidentified principal, or on behalf of a company to be formed, the purchaser and at all times remain liable for all obligations on the part of the purchaser.
- (3) If any inserted term (including any Further Terms of Sale) conflicts with the General Terms of Sale the inserted term shall prevail.
- (4) Headings are for information only and do not form part of the agreement.
- (5) References to statutory provisions shall be construed as references to those provisions as they may be amended or re-enacted or as their application is modified by other provisions from time to time.

## 2.0 Deposit

- 2.1 The purchaser shall pay the deposit to the vendor or the vendor's agent immediately upon execution of this agreement by both parties (and/or at such other time as is specified in this agreement).
- 2.2 If the deposit is not paid on the due date for payment, the vendor may at any time thereafter serve on the purchaser notice requiring payment. If the purchaser fails to pay the deposit on or before the third working day after service of the notice (the being of this agreement, the vendor may cancel the agreement by serving notice of cancellation on the purchaser. No notice of cancellation shall be effective if the deposit has been paid before the notice of cancellation is served.
- 2.3 The deposit shall be in part payment of the purchase price.
- 2.4 The person to whom the deposit is paid shall hold it as a stakeholder until:
- (1) the requisition procedure under clause 8.0 is completed without either party cancelling this agreement; and
  - (2) where this agreement is entered into subject to any condition expressed in the agreement, each such condition has been fulfilled or waived; and
- where the property is a unit title:
- (a) a pre-settlement disclosure statement, certified correct by the body corporate, under section 147 of the Unit Titles Act 2010; and
  - (b) an additional disclosure statement under section 148 of the Unit Titles Act 2010 (if requested by the purchaser within the time prescribed in section 145(2))
- have been provided to the purchaser by the vendor within the limits prescribed in those sections or otherwise the purchaser has given notice under section 149(2) of the Unit Titles Act 2010 to postpone the settlement date until after the disclosure statements have been provided; or
- (4) this agreement is cancelled pursuant to subclause 8.2(3)(c) or avoided pursuant to subclause 19.8(5) or, where the property is a unit title and the purchaser having the right to cancel this agreement pursuant to section 151(4) of the Unit Titles Act 2010 has cancelled the agreement pursuant to that section, or has waived the right to cancel by giving notice to the vendor, or by completing settlement of the purchase.

## 3.0 Possession and Settlement

### Possession

- 3.1 Unless particulars of a tenancy are included in this agreement, the property is sold with vacant possession and the vendor shall so yield the property on the settlement date.
- 3.2 If the property is sold with vacant possession, then subject to the rights of any tenants of the property, the vendor shall permit the purchaser or any person authorised by the purchaser in writing upon reasonable notice:
- (1) to enter the property on one occasion prior to the settlement date for the purposes of examining the property, chattels and fixtures which are included in the sale; and
  - (2) to re-enter the property on or before the settlement date to confirm compliance by the vendor with any agreement made by the vendor to carry out any work on the property and the chattels and the fixtures.
- 3.3 Possession shall be given and taken on the settlement date. Outgoings and incoming in respect of the settlement date are the responsibility of and belong to the vendor.
- 3.4 On the settlement date, the vendor shall make available to the purchaser keys to all entrance doors that are locked by key, electronic door openers to all doors that are opened electronically, and the keys and/or security codes to any alarms. The vendor does not have to make available keys, electronic door openers, and security codes where the property is tenanted and these are held by the tenant.

### Settlement

- 3.5 The vendor shall prepare, at the vendor's own expense, a settlement statement. The vendor shall send the settlement statement to the purchaser or the purchaser's lawyer a reasonable time prior to the settlement date.
- 3.6 The purchaser's lawyer shall:
- (1) within a reasonable time prior to the settlement date create a Landline Workspace for the transaction, notify the vendor's lawyer of the dealing number allocated by LNZ, and prepare in that workspace a transfer instrument in respect of the property; and
  - (2) prior to settlement:
    - (a) lodge in that workspace the tax information contained in the transferor's tax statement; and
    - (b) certify and sign the transfer instrument.
- 3.7 The vendor's lawyer shall:
- (1) within a reasonable time prior to the settlement date prepare in that workspace all other electronic instruments required to confer title on the purchaser in terms of the vendor's obligations under this agreement; and
  - (2) prior to settlement:
    - (a) lodge in that workspace the tax information contained in the transferor's tax statement; and
    - (b) have those instruments and the transfer instrument certified, signed and, where possible, pre-validated.
- 3.8 On the settlement date:
- (1) the balance of the purchase price, interest and other moneys, if any, shall be paid by the purchaser in cleared funds or otherwise satisfied as provided in the agreement (credit being given for any amount payable by the vendor under subclause 3.12 or 3.14);
  - (2) the vendor's lawyer shall immediately thereafter:
    - (a) release or procure the release of the transfer instrument and the other instruments mentioned in subclause 3.7(1) so that the purchaser's lawyer can then submit them for registration;
    - (b) pay to the purchaser's lawyer the LNZ registration fees or all of the instruments mentioned in subclause 3.7(1), unless these fees will be invoiced to the vendor's lawyer by LNZ directly; and
    - (c) deliver to the purchaser's lawyer any other documents that the vendor must provide to the purchaser on settlement in terms of this agreement.
- 3.9 All obligations under subclause 3.8 are immediate and due.
- 3.10 The parties shall complete settlement by way of remote settlement, provided that where payment by bank cheque is permitted under the RLS Guidelines, payment may be made by the personal delivery of a bank cheque to the vendor's lawyer's office, so long as it is accompanied by the undertaking from the purchaser's lawyer required by those Guidelines.

### Last Minute Settlement

- 3.11 If due to the delay of the purchaser, settlement takes place between 4.30 am and 5.00 am on the settlement date ("last minute settlement"), the purchaser shall pay the vendor:
- (1) one day's interest at the interest rate for late settlement on the portion of the purchase price paid in the last minute settlement; and
  - (2) if the day following the last minute settlement is not a working day, an additional day's interest (calculated in the same manner) for each day until, but excluding, the next working day.

**Purchaser Default: Late Settlement**

- 3.12 If any portion of the purchase price is not paid upon the due date for payment, then, provided that the vendor provides reasonable evidence of the vendor's ability to perform any obligation the vendor is obliged to perform on that date in consideration for such payment:
- (1) the purchaser shall pay to the vendor interest at the interest rate for late settlement on the portion of the purchase price so unpaid for the period from the due date for payment until payment ("the default period"), but notwithstanding, this stipulation is without prejudice to any of the vendor's rights or remedies, including any right to claim for additional expenses and damages. For the purposes of this subclause, a payment made on a day other than a working day or after the termination of a working day shall be deemed to be made on the next following working day and interest shall be computed accordingly; and
  - (2) the vendor is not obliged to give the purchaser possession of the property or to pay the purchaser any amount for remaining in possession, unless this agreement relates to a tenanted property, in which case the vendor must elect either to:
    - (a) accede to the purchaser's settlement for borrowings in respect of the property which are payable and received during the default period, in which event the purchaser shall be responsible for the outgoings relating to the property during the default period; or
    - (b) retain such income (net of receiving interest from the purchaser pursuant to subclause 3.12(1)).
- 3.13 Where subclause 3.12(1) applies and the parties are unable to agree upon any amount claimed by the vendor for additional expenses and damages:
- (1) an interim amount shall on settlement be paid to a stakeholder by the purchaser until the amount payable is determined;
  - (2) the interim amount must be a reasonable sum having regard to all the circumstances;
  - (3) if the parties cannot agree on the interim amount, the interim amount shall be determined by an experienced property lawyer appointed by the parties. The appointee's costs shall be met equally by the parties. If the parties cannot agree on the appointee, the appointment shall be made on the application of either party by the president for the time being of the New Zealand Law Society;
  - (4) the stakeholder shall lodge the interim amount on interest-bearing call deposit with a bank registered under the Reserve Bank of New Zealand Act 1989 in the joint names of the vendor and the purchaser;
  - (5) the interest earned on the interim amount net of any withholding tax, and any bank or legal administration fees and commission charges shall follow the destination of the interim amount;
  - (6) the amount determined to be payable shall not be limited by the interim amount; and
  - (7) if the parties cannot agree on a stakeholder, the interim amount shall be paid to a stakeholder nominated on the application of either party by the president for the time being of the New Zealand Law Society.

**Vendor Default: Late Settlement in Failure to Give Possession**

- 3.14 (1) For the purposes of this subclause 3.14:
- (a) the default period means:
    - (i) in subclause 3.14(2) the period from the settlement date until the date when the vendor is able and willing to provide vacant possession and the purchaser takes possession; and
    - (ii) in subclause 3.14(3) the period from the date the purchaser takes possession until the date when settlement occurs; and
    - (iii) in subclause 3.14(5) the period from the settlement date until the date when settlement occurs; and
  - (b) the vendor shall be deemed to be unwilling to give possession if the vendor does not offer to give possession;
- (2) If this agreement provides for vacant possession but the vendor is unable or unwilling to give vacant possession on the settlement date, then, provided that the purchaser provides reasonable evidence of the purchaser's ability to perform the purchaser's obligations under this agreement:
- (a) the vendor shall pay the purchaser, at the purchaser's election, either:
    - (i) compensation for any reasonable costs incurred for temporary accommodation for persons and storage of chattels during the default period; or
    - (ii) an amount equivalent to interest at the relevant rate for late settlement on the entire purchase price during the default period; and
  - (b) the purchaser shall pay the vendor an amount equivalent to the interest earned on which would be earned on overnight deposits lodged in the purchaser's lawyer's trust bank account on such portion of the purchase price (including any deposit) as is payable under the agreement on or by the settlement date but remains unpaid during the default period less:
    - (i) any withholding tax; and
    - (ii) any bank or legal administration fees and commission charges; and
    - (iii) any interest payable by the purchaser to the purchaser's lender during the default period in respect of any mortgage or loan taken out by the purchaser in relation to the purchase of the property;
- (3) If this agreement provides for vacant possession and the vendor is able and willing to give vacant possession on the settlement date, then, provided the purchaser provides reasonable evidence of the purchaser's ability to perform the purchaser's obligations under this agreement, the purchaser may elect to take possession in which case the vendor shall not be liable to pay any interest or other moneys to the purchaser but the purchaser shall pay the vendor the same amount as that specified in subclause 3.14(2)(b) during the default period. A purchaser in possession under this subclause 3.14(3) is a licensee only.
- (4) Notwithstanding the provisions of subclause 3.14(3) the purchaser may elect not to take possession when the purchaser is entitled to take it. If the purchaser elects not to take possession, the provisions of subclause 3.14(2) shall apply as though the vendor were unable or unwilling to give vacant possession on the settlement date.
- (5) If this agreement provides for the property to be sold tenanted then, provided that the purchaser provides reasonable evidence of the purchaser's ability to perform the purchaser's obligations under this agreement, the vendor shall on settlement account to the purchaser for moneys which are payable and received in respect of all the property during the default period less the outgoings paid by the vendor during that period. Apart from accounting for such moneys, the vendor shall not be liable to pay any other moneys to the purchaser but the purchaser shall pay the vendor the same amount as that specified in subclause 3.14(2)(b) during the default period.
- (6) The provisions of this subclause 3.14 shall be without prejudice to any of the purchaser's rights or remedies including any right to claim for any additional expenses and damages suffered by the purchaser.
- (7) Where the parties are unable to agree upon any amount payable under this subclause 3.14:
- (a) an interim amount shall on settlement be paid to a stakeholder by the party against whom it is claimed until the amount payable is determined;
  - (b) the interim amount shall be the lower of:
    - (i) the amount claimed; or
    - (ii) an amount equivalent to interest at the interest rate for late settlement for the relevant default period on such portion of the purchase price (including any deposit) as is payable under the agreement on or by the settlement date;
  - (c) the stakeholder shall lodge the interim amount or interest-bearing call deposit with a bank registered under the Reserve Bank of New Zealand Act 1989 in the joint names of the vendor and the purchaser;
  - (d) the interest earned on the interim amount net of any withholding tax and any bank or legal administration fees and commission charges shall follow the destination of the interim amount;
  - (e) the amount determined to be payable shall not be limited by the interim amount; and
  - (f) if the parties cannot agree on a stakeholder, the interim amount shall be paid to a stakeholder nominated on the application of either party by the president for the time being of the New Zealand Law Society.

**Deferral of Settlement and Possession**

- 3.15 If:
- (1) the sale is an agreement for the sale by a commercial or seller of a household unit; and
  - (2) a code compliance certificate has not been issued by the settlement date in relation to the household unit;
- then, unless the parties agree otherwise (in which case the parties shall enter into a written agreement in the form (if any) prescribed by the Building (Forms) Regulations 2004), the settlement date shall be deferred to the fifth working day following the date upon which the vendor has given the purchaser notice that the code compliance certificate has been issued (such notice must be accompanied by a copy of the certificate).
- 3.16 In every case, if either party is ready, willing, and able to settle on the settlement date, the settlement date shall be deferred to the third working day following the date upon which one of the parties gives notice it has become ready, willing, and able to settle.
- 3.17 If:
- (1) the property is a unit title;
  - (2) the settlement date is deferred pursuant to either subclause 3.15 or subclause 3.16; and
  - (3) the vendor considers on reasonable grounds that an extension of time is necessary or desirable in order for the vendor to comply with the warranty by the vendor in subclause B.2(3);
- then the vendor may extend the settlement date:
- (a) where there is a deferral of the settlement date pursuant to subclause 3.15, to the fifth working day following the date upon which the vendor gives the purchaser notice that the code compliance certificate has been issued, provided the vendor gives notice of the extension to the purchaser no later than the second working day after such notice; or
  - (b) where there is a deferral of the settlement date pursuant to subclause 3.16, to the fifth working day following the date upon which one of the parties gives notice that it has become ready, willing, and able to settle, provided the vendor gives notice of the extension to the purchaser no later than the second working day after such notice.

## New Title Provision

## 2.19 (3) When

- (a) the transfer of the property is to be registered against a new title yet to be issued, and
  - (b) a search copy, as defined in section 172A of the Land Transfer Act 1952, of that title is not obtainable by the fifth working day prior to the settlement date,
  - (c) then, unless the purchaser elects that settlement shall still take place on the agreed settlement date, the settlement date shall be deferred to the fifth working day following the later of the date on which:
    - (i) the vendor has given the purchaser notice that a search copy is obtainable; or
    - (ii) the registrar's procedure under clause 6.0 is complete
- (4) Subclause 3.1(1) shall not apply where it is necessary to register the transfer of the property to enable a plan to deposit and title to the property to issue.

**4.0 Residential Land Withholding Tax**

4.1 If the vendor does not have a conveyancer or the vendor and the purchaser are associated persons, then:

- (1) the vendor must provide the purchaser or the purchaser's conveyancer on or before the second working day before the due date for payment of the first residential land purchase amount payable under this agreement, and:
  - (A) sufficient information to enable the purchaser or the purchaser's conveyancer to determine to their reasonable satisfaction whether section 54C of the Tax Administration Act 1994 applies to the sale of the property; and
  - (B) if the purchaser or the purchaser's conveyancer determines to their reasonable satisfaction that section 54C of the Tax Administration Act 1994 does apply, all of the information required by that section and either an RLWT certificate of exemption in respect of the sale or otherwise such other information that the purchaser or the purchaser's conveyancer may reasonably require to enable the purchaser or the purchaser's conveyancer to determine to their reasonable satisfaction the amount of RLWT that may be withheld from each residential land purchase amount;
- (2) the vendor shall be liable to pay any costs reasonably incurred by the purchaser or the purchaser's conveyancer in relation to RLWT, including the cost of obtaining professional advice in determining whether there is a requirement to withhold RLWT and the amount of RLWT that must be withheld, if any; and
- (3) any payments payable by the purchaser or account of the purchase price shall be deemed to have been paid to the extent that:
  - (a) RLWT has been withheld from those payments by the purchaser or the purchaser's conveyancer as required by the RLWT rules; and
  - (b) any costs payable by the vendor under subclause 4.1(2) have been deducted from those payments by the purchaser or the purchaser's conveyancer

4.2 If the vendor does not have a conveyancer or the vendor and the purchaser are associated persons and if the vendor fails to provide the information required under subclause 4.1(1), then the purchaser may:

- (1) defer the payment of the first residential land purchase amount payable under this agreement (and any residential land purchase amount) that may subsequently fall due for payment until such time as the vendor supplies that information, or
- (2) on the due date for payment of that residential land purchase amount, or at any time thereafter if payment has been deferred by the purchaser pursuant to this subclause and the vendor has still not provided that information, treat the sale of the property as if it is being made by an offshore RLWT person where there is a requirement to pay RLWT.

4.3 If pursuant to subclause 4.2 the purchaser treats the sale of the property as if it is being made by an offshore RLWT person where there is a requirement to pay RLWT, the purchaser or the purchaser's conveyancer may:

- (1) make a reasonable assessment of the amount of RLWT that the purchaser or the purchaser's conveyancer would be required by the RLWT rules to withhold from any residential land purchase amount if the sale is treated in that manner; and
- (2) withhold that amount from any residential land purchase amount and pay it to the Commissioner as RLWT.

4.4 Any amount withheld by the purchaser or the purchaser's conveyancer pursuant to subclause 4.3 shall be treated as RLWT that the purchaser or the purchaser's conveyancer is required by the RLWT rules to withhold.

4.5 The purchaser or the purchaser's conveyancer shall give notice to the vendor a reasonable time before payment of any sum due to be paid on account of the purchase price of:

- (1) the costs payable by the vendor under subclause 4.1(2) that the purchaser or the purchaser's conveyancer intends to deduct; and
- (2) the amount of RLWT that the purchaser or the purchaser's conveyancer intends to withhold.

**5.0 Risk and insurance**

5.1 The property and chattels shall remain at the risk of the vendor until possession is given and taken.

5.2 If prior to the giving and taking of possession the property is destroyed or damaged and such destruction or damage has not been made good by the settlement date, then the following provisions shall apply:

- (1) if the destruction or damage has been sufficient to render the property untenable and it is untenable on the settlement date, the purchaser may:
  - (a) complete the purchase at the purchase price, less a sum equal to any insurance moneys received or receivable by or on behalf of the vendor in respect of such destruction or damage, provided that no reduction shall be made to the purchase price if the vendor's insurance company has agreed to indemnify for the benefit of the purchaser to the extent of the vendor's insurance cover; or
  - (b) cancel this agreement by serving notice on the vendor in which case the vendor shall return to the purchaser immediately the deposit and any other moneys paid by the purchaser, and neither party shall have any right or claim against the other arising from this agreement or its cancellation;
- (2) if the property is not untenable on the settlement date the purchaser shall complete the purchase at the purchase price less a sum equal to the amount of the diminution in value of the property which, to the extent that the destruction or damage to the property can be made good, shall be deemed to be equivalent to the reasonable cost of replacement or repair;
- (3) in the case of a property zoned for rural purposes under an operative District Plan, damage to the property shall be deemed to have rendered the property untenable where the diminution in value exceeds an amount equal to 20% of the purchase price; and
- (4) if the amount of the diminution in value is disputed, the parties shall follow the same procedure as that set out in subclause 8.4 for when an amount of compensation is disputed.

5.3 The purchaser shall not be required to take over any insurance policies held by the vendor.

**6.0 Title, boundaries and requisitions**

6.1 The vendor shall not be bound to point out the boundaries of the property except that on the sale of a vacant residential lot which is outlined as to parcels the vendor shall ensure that all boundary markers required by the Cadastral Survey Act 2002 and any related rules and regulations to identify the boundaries of the property are present in their correct positions at the settlement date.

6.2 (1) The purchaser is deemed to have accepted the vendor's title, except as to objections or requisitions which the purchaser is entitled to make and notice of which the purchaser serves on the vendor on or before the earlier of:

- (a) the fifth working day after the date of this agreement; or
- (b) the settlement date.

(2) Where the transfer of the property is to be registered against a new title yet to be issued, the purchaser is deemed to have accepted the title except as to such objections or requisitions which the purchaser is entitled to make and notice of which the purchaser serves on the vendor on or before the fifth working day following the date the vendor has given the purchaser notice that the title has been issued and a search copy of it as defined in section 172A of the Land Transfer Act 1952 is obtainable.

(3) If the vendor is unable or unwilling to remove or comply with any objection or requisition as to title, notice of which has been served on the vendor by the purchaser, then the following provisions will apply:

- (a) the vendor shall notify the purchaser (a vendor's notice) of such inability or unwillingness on or before the fifth working day after the date of service of the purchaser's notice;
- (b) if the vendor does not give a vendor's notice the vendor shall be deemed to have accepted the objection or requisition and it shall be a requirement of settlement that such objection or requisition shall be complied with before settlement;
- (c) if the purchaser does not on or before the fifth working day after service of a vendor's notice notify the vendor that the purchaser waives the objection or requisition, either the vendor or the purchaser may (notwithstanding any intermediate negotiations) by notice to the other, cancel this agreement;

(4) In the event of cancellation under subclause 6.2(3), the purchaser shall be entitled to the immediate return of the deposit and any other moneys paid under this agreement by the purchaser and neither party shall have any right or claim against the other arising from this agreement or its cancellation. In particular, the purchaser shall not be entitled to any interest or to the expense of investigating the title or to any compensation whatsoever.

6.3 (1) If the title to the property being sold is a cross lease title or a unit title and there are:

- (a) in the case of a cross lease title:
    - (i) alterations to the external dimensions of any leased structure; or
    - (ii) buildings or structures not intended for common use which are situated on any part of the land that is not subject to a restricted user covenant;
  - (b) in the case of a unit title, encroachments out of the principal unit or accessory unit title space (as the case may be);
- then the purchaser may requisition the title under subclause 6.2 requiring the vendor:
- (c) in the case of a cross lease title, to deposit a new plan depicting the buildings or structures and register a new cross lease or leases (as the case may be) and any other ancillary dealings in order to convey good title; or
  - (d) in the case of a unit title, to deposit an amendment to the unit plan, a redevelopment plan or new unit plan (as the case may be) depicting the principal and/or accessory units and register such transfers and any other ancillary dealings in order to convey good title.

- (2) The words "alterations to the external dimensions of any leased structure" shall only mean alterations which are attached to the leased structure and enclosed.
- 6.4 Except as provided by section 7 of the Contractual Remedies Act 1979, no error, omission, or misdescription of the Deed or the L&E shall enable the purchaser to cancel this agreement or compensation, if claimed by notice before settlement in accordance with subclause 6.1 but not otherwise, shall be made or given as the case may require.
- 6.5 The vendor shall not be liable to pay for or contribute towards the expense of erection or maintenance of any fence between the property and any contiguous land of the vendor but this proviso shall not ensure for the benefit of any subsequent purchaser of the contiguous land, and the vendor shall be entitled to require the inclusion of a fencing covenant to this effect in any transfer of the property.

## 7.0 Vendor's warranties and undertakings

- 7.1 The vendor warrants and undertakes that at the date of this agreement the vendor has not:
- (1) received any notice or demand and has no knowledge of any requisition or outstanding requirement:
    - (a) from any local or government authority or other statutory body; or
    - (b) under the Resource Management Act 1991; or
    - (c) from any tenant of the property; or
    - (d) from any other party; or
  - (2) given any consent or waiver, which directly or indirectly affects the property and which has not been disclosed in writing to the purchaser.
- 7.2 The vendor warrants and undertakes that at settlement:
- (1) The chattels and all plant, equipment, systems or devices which provide any services or amenities to the property, including without limitation, security, heating, cooling, or air-conditioning, are delivered to the purchaser in reasonable working order, but in all other respects in their state of repair as at the date of this agreement (fair wear and tear excepted) but failure so to deliver them shall only create a right of compensation.
  - (2) All electrical and other installations on the property are free of any charge whatsoever.
  - (3) There are no arrears of rates, water rates or charges outstanding on the property.
  - (4) Where an allowance has been made by the vendor in the settlement statement for incoming receivables, the settlement statement correctly records these allowances (including, in particular, the debit up to which the allowances have been made).
  - (5) Where the vendor has done or caused or permitted to be done on the property any work:
    - (a) any permit, resource consent, or building consent required by law was obtained; and
    - (b) to the vendor's knowledge, the work was completed in compliance with those permits or consents; and
    - (c) where appropriate, a code compliance certificate was issued for those works.
  - (6) Where under the Building Act any building on the property sold requires a compliance schedule:
    - (a) the vendor has fully complied with any requirements specified in any compliance schedule issued by a territorial authority under the Building Act in respect of the building;
    - (b) the building has a current building warrant of fitness; and
    - (c) the vendor is not aware of any reason, that the vendor has not disclosed in writing to the purchaser, which would prevent a building warrant of fitness from being supplied to the territorial authority when the building warrant of fitness is next due.
  - (7) Since the date of this agreement, the vendor has not given any consent or waiver which directly or indirectly affects the property.
  - (8) Any notice or demand received by the vendor, which directly or indirectly affects the property, after the date of this agreement:
    - (a) from any local or government authority or other statutory body; or
    - (b) under the Resource Management Act 1991; or
    - (c) from any tenant of the property; or
    - (d) from any other party,
 has been delivered forthwith by the vendor to either the purchaser or the purchaser's lawyer, unless the vendor has paid or complied with such notice or demand if the vendor fails to so deliver or pay the notice or demand, the vendor shall be liable for any penalty incurred.
  - (9) Any chattels included in the sale are the unencumbered property of the vendor.
- 7.3 If the property is or includes part only of a building, the warranty and undertaking in subclause 7.2(6) does not apply, notwith the vendor warrants and undertakes at the date of this agreement that, where under the Building Act the building of which the property forms part requires a compliance schedule:
- (1) to the vendor's knowledge, there has been full compliance with any requirements specified in any compliance schedule issued by a territorial authority under the Building Act in respect of the building;
  - (2) the building has a current building warrant of fitness; and
  - (3) the vendor is not aware of any reason, that the vendor has not disclosed in writing to the purchaser, which would prevent a building warrant of fitness from being supplied to the territorial authority when the building warrant of fitness is next due.
- 7.4 The vendor warrants and undertakes that on or immediately after settlement:
- (1) If the water and wastewater charges are determined by meter, the vendor will have the water meter read and will pay the amount of the charge payable pursuant to that reading; but if the water supplier will not make special readings, the water and wastewater charges shall be apportioned.
  - (2) Any outgoings included in the settlement statement are paid in accordance with the settlement statement and, where applicable, in the dates shown in the settlement statement, or will be so paid immediately after settlement.
  - (3) The vendor will give notice of sale in accordance with the Local Government (Rating) Act 2002 to the territorial authority and regional council in whose district the land is situated and will also give notice of the sale to every other authority that makes and levies rates or charges on the land and to the supplier of water.
  - (4) Where the property is a unit title, the vendor will notify the body corporate in writing of the transfer of the property and the name and address of the purchaser.
- 7.5 If the purchaser has not validly cancelled this agreement, the breach of any warranty or undertaking contained in this agreement does not defer the obligation to settle but that obligation shall be subject to the rights of the purchaser at law or in equity, including any rights under subclause 8.4 and any right of equitable set-off.

## 8.0 Claims for compensation

- 8.1 If the purchaser claims a right to compensation either under subclause 6.4 or for an equitable set-off:
- (1) the purchaser must serve notice of the claim on the vendor on or before the last working day prior to settlement; and
  - (2) the notice must:
    - (a) in the case of a claim for compensation under subclause 6.4, state the particular error, omission, or misdescription of the property or title in respect of which compensation is claimed;
    - (b) in the case of a claim to an equitable set-off, state the particular matters in respect of which compensation is claimed;
    - (c) contain a genuine pre-estimate of the loss suffered by the purchaser; and
    - (d) be particularised and quantified to the extent reasonably possible as at the date of the notice.
- 8.2 For the purposes of subclause 8.1(1), "settlement" means the date for settlement fixed by this agreement unless, by reason of the conduct or omission of the vendor, the purchaser is unable to give notice by that date, in which case notice may be given on or before the last working day prior to the date for settlement fixed by a valid settlement notice served by either party pursuant to subclause 11.1.
- 8.3 If the amount of compensation is agreed, it shall be deducted on settlement.
- 8.4 If the amount of compensation is disputed:
- (1) An interim amount shall be deducted on settlement and paid by the purchaser to a stakeholder until the amount of the compensation is determined;
  - (2) the interim amount must be a reasonable sum having regard to all of the circumstances;
  - (3) if the parties cannot agree on the interim amount, the interim amount shall be determined by an experienced property lawyer appointed by the parties. The appointee's costs shall be met equally by the parties. If the parties cannot agree on the appointee, the appointment shall be made on the application of either party by the president for the time being of the New Zealand Law Society;
  - (4) the stakeholder shall lodge the interim amount on interest-bearing call deposit with a bank registered under the Reserve Bank of New Zealand Act 1989 in the joint names of the vendor and the purchaser;
  - (5) the interest earned on the interim amount net of any withholding tax and any bank or legal administration fees and commission charges shall follow the destination of the interim amount;
  - (6) the amount of compensation determined to be payable shall not be limited by the interim amount; and
  - (7) if the parties cannot agree on a stakeholder, the interim amount shall be paid to a stakeholder nominated on the application of either party by the president for the time being of the New Zealand Law Society.
- 8.5 The procedures prescribed in subclauses 8.1 to 8.4 shall not prevent either party taking proceedings for the specific performance of the contract.

**9.0 Unit titles and cross lease provisions****Unit Titles**

- 9.1 If the property is a unit title, sections 144 to 153 of the Unit Titles Act 1972 (the Act) require the vendor to provide to the purchaser a pre-contract disclosure statement, a pre-settlement disclosure statement and, if so requested by the purchaser, an additional disclosure statement.
- 9.2 If the property is a unit title, the vendor warrants and undertakes as follows:
- (1) The information in the pre-contract disclosure statement provided to the purchaser was complete and correct.
  - (2) Apart from regular periodic contributions, no contributions have been levied or proposed by the body corporate that have not been disclosed in writing to the purchaser.
  - (3) Not less than five working days before the settlement date, the vendor will provide:
    - (a) a certificate of insurance for all insurances effected by the body corporate under the provisions of section 136 of the Act, and
    - (b) a pre-settlement disclosure statement from the vendor, certified correct by the body corporate, under section 147 of the Act. Any periodic contributions to the operating account shown in that pre-settlement disclosure statement shall be apportioned. There shall be no apportionment of contributions to any long-term maintenance fund, contingency fund or capital improvement fund.
  - (4) There are no other amounts owing by the owner under any provision of the Act or the Unit Titles Act 1972.
  - (5) There are no unsatisfied judgments against the body corporate and no proceedings have been instituted against or by the body corporate.
  - (6) No order or declaration has been made by any Court against the body corporate or the owner under any provision of the Act or the Unit Titles Act 1972.
  - (7) The vendor has no knowledge or notice of any fact which might give rise to or indicate the possibility of:
    - (a) the owner or the purchaser incurring any other liability under any provision of the Act or the Unit Titles Act 1972; or
    - (b) any proceedings being instituted by or against the body corporate; or
    - (c) any order or declaration being sought against the body corporate or the owner under any provision of the Act or the Unit Titles Act 1972.
  - (8) The vendor is not aware of proposals to pass any body corporate resolution relating to its rules or are there any unregistered changes to the body corporate rules which have not been disclosed in writing to the purchaser.
  - (9) No lease, licence, easement, or special privilege has been granted by the body corporate in respect of any part of the common property which has not been disclosed in writing to the purchaser.
  - (10) No resolution has been passed and no application has been made and the vendor has no knowledge of any proposal for:
    - (a) the transfer of the whole or any part of the common property;
    - (b) the addition of any land to the common property;
    - (c) the cancellation of the unit plan; or
    - (d) the deposit of an amendment to the unit plan, a redevelopment plan, or a new unit plan in substitution for the existing unit plan, which has not been disclosed in writing to the purchaser.
  - (11) As at settlement, all contributions and other moneys payable by the vendor to the body corporate have been paid in full.
- 9.3 If the property is a unit title, in addition to the purchaser's rights under sections 149 and 150 of the Act, and if the vendor does not provide the certificates of insurance and the pre-settlement disclosure statement under section 147 in accordance with the requirements of subclause 9.2(3), the purchaser may:
- (1) postpone the settlement date until the fifth working day following the date on which that information is provided to the purchaser; or
  - (2) elect that settlement shall still take place on the settlement date.
- 9.4 If the property is a unit title, each party specifies that:
- (1) the solicitor's number of the office of that party's lawyer shall be an address for service for that party for the purposes of section 216(1)(d) of the Act, and
  - (2) if that party is absent from New Zealand, that party's lawyer shall be that party's agent in New Zealand for the purposes of section 216(2) of the Act.
- 9.5 If the property is a unit title, any costs owing by the purchaser to the vendor pursuant to section 144(6) of the Act for providing an additional disclosure statement shall be included in the moneys payable by the purchaser on settlement pursuant to subclause 3.8(1). Such costs may be deducted from the deposit if the purchaser becomes entitled to a refund of the deposit upon cancellation or avoidance of this agreement.

**Unauthorized Structures – Cross Leases and Unit Titles**

- 9.6 (1) Where structures (not stated in clause 6.6 to be requisitionable) have been erected on the property without:
- (a) in the case of a cross lease title, any required lessors' consent; or
  - (b) in the case of a unit title, any required body corporate consent,
- the purchaser may demand within the period expiring on the earlier of:
- (i) the tenth working day after the date of this agreement; or
  - (ii) the settlement date,
- that the vendor obtain the written consent of the current lessors or the body corporate (as the case may be) to such improvements (the current consent) and provide the purchaser with a copy of such consent on or before the settlement date.
- (2) Should the vendor be unwilling or unable to obtain a current consent then the procedure set out in subclauses 6.2(3) and 6.2(4) shall apply with the purchaser's demand under subclause 9.6(1) being deemed to be an objection and requisition.

**10.0 Conditions and mortgage terms****Particular Conditions**

- 10.1 If particulars of any finance condition(s) are inserted on the front page of this agreement, this agreement is conditional upon the purchaser arranging finance in terms of those particulars on or before the finance date.
- 10.2 (1) If the purchaser has indicated on the front page of this agreement that a LIM is required:
- (a) that LIM is to be obtained by the purchaser at the purchaser's cost;
  - (b) the purchaser is to request the LIM on or before the fifth working day after the date of this agreement; and
  - (c) this agreement is conditional upon the purchaser approving the LIM provided that such approval must not be unreasonably or arbitrarily withheld.
- (2) If, on reasonable grounds, the purchaser does not approve the LIM, the purchaser shall give notice to the vendor (the purchaser's notice) on or before the fifth working day after the date of this agreement stating the particular matters in respect of which approval is withheld and, if those matters are capable of remedy, what the purchaser reasonably requires to be done to remedy those matters. If the purchaser does not give a purchaser's notice the purchaser shall be deemed to have approved the LIM. If through no fault of the purchaser, the LIM is not available on or before the fifth working day after the date of this agreement and the vendor does not give an extension when requested, this condition shall not have been fulfilled and the provisions of subclause 10.6(5) shall apply.
- (3) The vendor shall give notice to the purchaser (the vendor's notice) on or before the fifth working day after receipt of the purchaser's notice advising whether or not the vendor is able and willing to comply with the purchaser's notice by the settlement date.
- (4) If the vendor does not give a vendor's notice, or if the vendor's notice advises that the vendor is unable or unwilling to comply with the purchaser's notice, and if the purchaser does not, on or before the tenth working day after the date on which the purchaser's notice is given, give notice to the vendor that the purchaser waives the objection to the LIM, this condition shall not have been fulfilled and the provisions of subclause 10.6(5) shall apply.
- (5) If the vendor gives a vendor's notice advising that the vendor is able and willing to comply with the purchaser's notice, this condition is deemed to have been fulfilled, and it shall be a requirement of settlement that the purchaser's notice shall be complied with, and also, if the vendor must carry out work on the property, that the vendor shall obtain the approval of the territorial authority to the work done, both before settlement.
- 10.3 If the purchaser has indicated on the front page of this agreement that a building report is required, this agreement is conditional upon the purchaser obtaining of the purchaser's cost on or before the tenth working day after the date of this agreement a report on the condition of the building and any other improvements on the property that is satisfactory to the purchaser, on the basis of an objective assessment. The report must be prepared in good faith by a suitably-qualified building inspector in accordance with accepted principles and methods. Subject to the rights of any tenants of the property, the vendor shall allow the building inspector to inspect the property at all reasonable times upon reasonable notice for the purposes of preparation of the report. The building inspector may not carry out any invasive testing in the course of inspection without the vendor's prior written consent. If the purchaser avoids this agreement for non-fulfilment of this condition pursuant to subclause 10.6(5), the purchaser must provide the vendor immediately upon request with a copy of the building inspector's report.
- 10.4 (1) If the purchaser has indicated on the front page of this agreement that OIA Consent is required, this agreement is conditional upon OIA Consent being obtained on or before the Land Act/OIA date shown on the front page of this agreement; the purchaser being responsible for payment of the application fee.
- (2) If the purchaser has indicated on the front page of this agreement that OIA Consent is not required or has failed to indicate whether it is required, then the purchaser warrants that the purchaser does not require OIA Consent.
- 10.5 If the agreement relates to a transaction to which the Land Act 1948 applies, this agreement is subject to the vendor obtaining the necessary consent by the Land Act/OIA date shown on the front page of this agreement.
- 10.6 If the Land Act/OIA date is not shown on the front page of this agreement that date shall be the settlement date or a date 65 working days from the date of this agreement whichever is the sooner.
- 10.7 If this agreement relates to a transaction to which section 225 of the Resource Management Act 1991 applies then this agreement is subject to the appropriate condition(s) imposed by that section.

**Operation of Conditions**

- 10.8 Where an agreement is expressed to be subject either to the above or to any other condition(s) then in relation to each such condition the following shall apply unless otherwise expressly provided:
- (1) The condition shall be a condition subsequent.
  - (2) The party or parties for whose benefit the condition has been included shall do all things which may reasonably be necessary to enable the condition to be fulfilled by the date for fulfilment.
  - (3) Time for fulfilment of any condition and any extended time for fulfilment to a fixed date shall be of the essence.
  - (4) The condition shall be deemed to be not fulfilled until notice of fulfilment has been served by one party on the other party.
  - (5) If the condition is not fulfilled by the date for fulfilment, either party may at any time before the condition is fulfilled or waived avoid this agreement by giving notice to the other. Upon avoidance of the agreement the purchaser shall be entitled to the immediate return of the deposit and any other moneys paid by the purchaser under this agreement and neither party shall have any right or claim against the other arising from this agreement or its termination.
  - (6) At any time before this agreement is avoided, the purchaser may waive any finance condition and either party may waive any other condition which is for the sole benefit of that party. Any waiver shall be by notice.

**Mortgage Terms**

- 10.9 Any mortgage to be arranged pursuant to a finance condition shall be upon and subject to the terms and conditions currently being required by the lender in respect of loans of a similar nature.
- 10.10 If the vendor is to advance mortgage moneys to the purchaser then unless otherwise stated the mortgage shall be in the appropriate "fixed sum" form currently being published by Auckland District Law Society Incorporated.

**11.0 Notice to complete and remedies on default**

- 11.1 (1) If the sale is not settled on the settlement date, either party may at any time thereafter serve on the other party a settlement notice.
- (2) The settlement notice shall be effective only if the party serving it is at the time of service either in all material respects ready, able and willing to proceed to settle in accordance with this agreement or is not so ready, able and willing to settle only by reason of the default or omission of the other party.
- (3) If the purchaser is in possession, the vendor's right to cancel this agreement will be subject to sections 29 to 36 of the Property Law Act 2007 and the settlement notice may incorporate or be given with a notice under section 29 of that Act complying with section 29 of that Act.
- 11.2 Subject to subclause 11.1(3), upon service of the settlement notice the party on whom the notice is served shall settle:
- (1) on or before the seventh working day after the date of service of the notice; or
  - (2) on the first working day after the 13th day of January if the period of twelve working days expires during the period commencing on the 5th day of January and ending on the 12th day of January, both days inclusive, time being of the essence, but without prejudice to any intermediate right of cancellation by either party.
- 11.3 (1) If the agreement provides for the payment of the purchase price by instalments and the purchaser fails duly and punctually to pay any instalment on or within one month from the date on which it fell due for payment then, whether or not the purchaser is in possession, the vendor may immediately give notice to the purchaser making up the unpaid balance of the purchase price, which shall upon service of the notice be immediately due and payable.
- (2) The date of service of the notice under this subclause shall be deemed the settlement date for the purposes of subclause 11.1.
  - (3) The vendor may give a settlement notice with a notice under this subclause.
  - (4) For the purpose of this subclause a deposit is not an instalment.
- 11.4 If the purchaser does not comply with the terms of the settlement notice served by the vendor then, subject to subclause 11.1(3):
- (1) Without prejudice to any other rights or remedies available in law or in equity, the vendor may:
    - (a) sue the purchaser for specific performance; or
    - (b) cancel this agreement by notice and pursue either or both of the following remedies, namely:
      - (i) forfeiture of the deposit paid by the purchaser, but not exceeding in all 10% of the purchase price; and/or
      - (ii) sue the purchaser for damages.
  - (2) Where the vendor is entitled to cancel this agreement, the entry by the vendor into a conditional or unconditional agreement for the resale of the property or any part thereof shall have effect as a cancellation of this agreement by the vendor if this agreement has not previously been cancelled and such resale shall be deemed to have occurred after cancellation.
  - (3) The damages claimable by the vendor under subclause 11.4(1)(b)(i) shall include all damages claimable at common law or in equity and shall also include (but shall not be limited to):
    - (a) any loss incurred by the vendor on any bona fide resale contracted within one year from the date by which the purchaser should have settled in compliance with the settlement notice. The amount of that loss may include:
      - (i) interest on the unpaid portion of the purchase price at the interest rate for late settlement from the settlement date to the settlement of such resale; and
      - (ii) all costs and expenses reasonably incurred in any resale or attempted resale; and
    - (b) all outgoings (other than interest) on or maintenance expenses in respect of the property from the settlement date to the settlement of such resale.
  - (4) Any surplus money arising from a resale as aforesaid shall be retained by the vendor.
- 11.5 If the vendor does not comply with the terms of a settlement notice served by the purchaser then, without prejudice to any other rights or remedies available to the purchaser at law or in equity, the purchaser may:
- (1) sue the vendor for specific performance; or
  - (2) cancel this agreement by notice and require the vendor forthwith to repay to the purchaser any deposit and any other money paid on account of the purchase price and interest on such sum(s) at the interest rate for late settlement from the date or dates of payment by the purchaser until repayment.
- 11.6 The party serving a settlement notice may extend the term of the notice for one or more specifically stated periods of time and thereupon the term of the settlement notice shall be deemed to expire on the last day of the extended period or periods and it shall operate as though in a clause stipulated the extended period(s) of notice in lieu of the period otherwise applicable, and time shall be of the essence accordingly. An extension may be given either before or after the expiry of the period of the notice.
- 11.7 Nothing in this clause shall prejudice a party from suing for specific performance without giving a settlement notice.
- 11.8 A party who serves a settlement notice under this clause shall not be in breach of an essential term by reason only of that party's failure to be ready and able to settle upon the expiry of that notice.

**12.0 Non-merger**

- 12.1 The obligations and warranties of the parties in this agreement shall not merge with:
- (1) the giving and taking of possession;
  - (2) settlement;
  - (3) the transfer of title to the property;
  - (4) delivery of the chattels (if any); or
  - (5) registration of the transfer of title to the property.

**13.0 Agent**

- 13.1 If the name of a licensed real estate agent is recorded on this agreement, it is acknowledged that the date evidenced by the agreement has been made through that agent when the vendor appoints as the vendor's agent to effect the sale. The vendor shall pay the agent's charges including GST for effecting such sale.
- 13.2 The agent may provide additional data relating to the sale to the Real Estate Institute of New Zealand Incorporated.

**14.0 Goods and Services Tax**

- 14.1 If the agreement provides for the purchaser to pay (in addition to the purchase price stated without GST) any GST which is payable in respect of the supply made under this agreement then:
- (1) the purchaser shall pay to the vendor the GST which is so payable in one sum on the GST date;
  - (2) where the GST date has not been inserted on the front page of this agreement the GST date shall be the settlement date;
  - (3) where any GST is not so paid to the vendor, the purchaser shall pay to the vendor:
    - (a) interest on the interest rate for late settlement on the amount of GST unpaid from the GST date until payment; and
    - (b) any default GST.
  - (4) it shall not be a defence to a claim against the purchaser for payment to the vendor of any default GST that the vendor has failed to mitigate the vendor's damages by paying an amount of GST when it fell due under the GST Act; and
  - (5) any sum referred to in this clause is included in the moneys payable by the purchaser on settlement pursuant to subclause 3.0(1).
- 14.2 If the supply under this agreement is a taxable supply, the vendor will deliver a tax invoice to the purchaser on or before the GST date or such earlier date as the purchaser is entitled to delivery of an invoice under the GST Act.
- 14.3 The vendor warrants that any dwelling and outbuildings or part thereof supplied on sale of the property are not a supply to which section 6(16) of the GST Act applies.

- 14.4 (1) Without prejudice to the vendor's rights and remedies under subclause 14.3, where any GST is not paid to the vendor on or within one month of the GST date, then whether or not the purchaser is in possession, the vendor may immediately give notice to the purchaser calling up any unpaid balance of the purchase price, which shall upon service of the notice fall immediately due and payable.
- (2) The date of service of the notice under this subclause shall be deemed the settlement date for the purposes of subclause 11.1.
- (3) The vendor may give a retention notice under subclause 11.3 with a notice under this subclause.

### 15.0 Zero-rating

- 15.1 The vendor warrants that the statement on the front page regarding the vendor's GST registration status in respect of the supply under this agreement is correct at the date of this agreement.
- 15.2 The purchaser warrants that any particulars stated by the purchaser in Schedule 2 are correct at the date of this agreement.
- 15.3 Where the particulars stated on the front page and in Schedule 2 indicate that:
- (1) the vendor is and/or will be at settlement a registered person in respect of the supply under this agreement,
  - (2) the recipient is and/or will be at settlement a registered person,
  - (3) the recipient intends at settlement to use the property for making taxable supplies, and
  - (4) the recipient does not intend at settlement to use the property as a principal place of residence by the recipient or a person associated with the recipient under section 2A(1)(c) of the GST Act,
- GST will be chargeable on the supply under this agreement at 0% pursuant to section 11(1)(mb) of the GST Act.
- 15.4 If GST is chargeable on the supply under this agreement at 0% pursuant to section 11(1)(mb) of the GST Act, then on or before settlement the purchaser will provide the vendor with the recipient's name, address, and registration number if any of those details are not included in Schedule 2 or they have altered.
- 15.5 If any of the particulars stated by the purchaser in Schedule 2 should alter between the date of this agreement and settlement, the purchaser shall notify the vendor of the altered particulars and of any other relevant particulars in Schedule 2 which may not have been completed by the purchaser as soon as practicable and in any event no later than two working days before settlement. The purchaser warrants that any altered or added particulars will be correct as at the date of the purchaser's notification. If the GST treatment of the supply under this agreement should be altered as a result of the altered or added particulars, the vendor shall prepare and deliver to the purchaser or the purchaser's lawyer an amended settlement statement, if the vendor has already rendered a settlement statement, and a credit note or a debit note, as the case may be, if the vendor has already issued a tax invoice.
- 15.6 If
- (1) the particulars in Schedule 2 state that part of the property is being used as a principal place of residence at the date of this agreement, and
  - (2) that part is still being so used at the time of the supply under this agreement,
- the supply of that part will be a separate supply in accordance with section 5(15)(a) of the GST Act.
- 15.7 If
- (1) the particulars stated in Schedule 2 indicate that the recipient intends to use part of the property as a principal place of residence by the recipient or a person associated with the recipient under section 2A(1)(c) of the GST Act, and
  - (2) that part is the same part as that being used as a principal place of residence at the time of the supply under this agreement,
- then the references in subclauses 15.3 and 15.4 to "the property" shall be deemed to mean the remainder of the property excluding that part and the reference in "the supply under this agreement" shall be deemed to mean the supply under this agreement of that remainder.

### 16.0 Supply of a Going Concern

- 16.1 If there is a supply under this agreement to which section 11(1)(mb) of the GST Act does not apply but which comprises the supply of a taxable activity that is a going concern at the time of the supply, then, unless otherwise expressly stated herein:
- (1) each party warrants that it is a registered person or will be so by the date of the supply;
  - (2) each party agrees to provide the other party by the date of the supply with proof of its registration for GST purposes;
  - (3) the parties agree that they intend that the supply is of a taxable activity that is capable of being carried on as a going concern by the purchaser, and
  - (4) the parties agree that the supply made pursuant to this agreement is the supply of a going concern in which GST is chargeable at 0%.
- 16.2 If it subsequently transpires that GST is payable in respect of the supply and if this agreement provides for the purchaser to pay (in addition to the purchase price without GST) any GST which is payable in respect of the supply made under the agreement, then the provisions of clause 14.0 of this agreement shall apply.

### 17.0 Limitation of Liability

- 17.1 If any person enters into this agreement as trustee of a trust, then:
- (1) That person warrants that:
    - (a) the person has power to enter into this agreement under the terms of the trust,
    - (b) the person has properly signed this agreement in accordance with the terms of the trust,
    - (c) the person has the right to be indemnified from the assets of the trust and that right has not been lost or impaired by any action of that person including entry into this agreement; and
    - (d) all of the persons who are trustees of the trust have approved entry into this agreement.
  - (2) If that person has no right to or interest in any assets of the trust except in that person's capacity as a trustee of the trust, that person's liability under this agreement will not be personal and unlimited but will be limited to the actual amount recoverable from the assets of the trust from time to time ("the limited amount"). If the right of that person to be indemnified from the trust assets has been lost or impaired, that person's liability will become personal but limited to the extent of that part of the limited amount which cannot be recovered from any other person.

### 18.0 Counterparts

- 18.1 This agreement may be executed in two or more counterparts, all of which will together be deemed to constitute one and the same agreement. A party may enter into this agreement by signing a counterpart copy and sending it to the other party, including by facsimile or e-mail.

**FURTHER TERMS OF SALE**

Please refer to the **attached** Further Terms of Sale

**SCHEDULE 1**

List all chattels included in the sale  
(strike out or add as applicable)

**Stove****Fixed floor coverings****Blinds****Curtains****Light fittings**

**SCHEDULE 2**  
**(GST Information – see clause 16.0)**

This Schedule must be completed if the vendor has stated on the front page that the vendor is registered under the GST Act in respect of the transaction evidenced by this agreement and/or will be so registered at settlement. Otherwise there is no need to complete it.

**Section 1**

1.	The vendor's registration number (if already registered):	
2.	Part of the property is being used as a principal place of residence at the date of this agreement. That part is: (e.g. "the main farmhouse" or "the apartment above the shop")	Yes/No
3.	The purchaser is registered under the GST Act and/or will be so registered at settlement.	Yes/No
4.	The purchaser intends at settlement to use the property for making taxable supplies.	Yes/No

If the answer to either or both of questions 3 and 4 is "No", go to question 7

5.	The purchaser's details are as follows: (a) Full name _____ (b) Address _____ (c) Registration number (if already registered): _____	
6.	The purchaser intends at settlement to use the property as a principal place of residence by the purchaser or by a person associated with the purchaser under section 2A(1)(c) of the GST Act (connected by blood relationship, marriage, civil union, de facto relationship or adoption). <b>OR</b> The purchaser intends at settlement to use part of the property (and no other part) as a principal place of residence by the purchaser or by a person associated with the purchaser under section 2A(1)(c) of the GST Act. That part is: (e.g. "the main farmhouse" or "the apartment above the shop")	Yes/No  Yes/No
7.	The purchaser intends to direct the vendor to transfer title to the property to another party ("nominee").	Yes/No

If the answer to question 7 is "Yes", then please continue. Otherwise, there is no need to complete this Schedule any further.

**Section 2**

8.	The nominee is registered under the GST Act and/or is expected by the purchaser to be so registered at settlement.	Yes/No
9.	The purchaser expects the nominee at settlement to use the property for making taxable supplies.	Yes/No

If the answer to either or both of questions 8 and 9 is "No", there is no need to complete this Schedule any further.

10.	The nominee's details (if known to the purchaser) are as follows: (a) Full name: _____ (b) Address _____ (c) Registration number (if already registered): _____	
11.	The purchaser expects the nominee to intend at settlement to use the property as a principal place of residence by the nominee or by a person associated with the nominee under section 2A(1)(c) of the GST Act (connected by blood relationship, marriage, civil union, de facto relationship or adoption). <b>OR</b> The purchaser expects the nominee to intend at settlement to use part of the property (and no other part) as a principal place of residence by the nominee or by a person associated with the nominee under section 2A(1)(c) of the GST Act. That part is: (e.g. "the main farmhouse" or "the apartment above the shop").	Yes/No  Yes/No

**WARNING** (This warning does not form part of this agreement)

This is a binding contract. Read the information set out on the back page before signing.

**Acknowledgements**

Where this agreement relates to the sale of a residential property and this agreement was provided to the parties by a real estate agent, or by a licensee on behalf of the agent, the parties acknowledge that they have been given the guide about the sale of residential property approved by the Real Estate Agents Authority.

Where this agreement relates to the sale of a unit title property, the purchaser acknowledges that the purchaser has been provided with a pre-contract disclosure statement under section 146 of the Unit Titles Act 2010.

Signature of purchaser(s)

Signature of vendor(s)

.....  
.....

.....  
.....

## BEFORE SIGNING THE AGREEMENT

- It is recommended both parties seek professional advice before signing. This is especially so if:
  - there are any doubts. Once signed, this will be a binding contract with only restricted rights of termination.
  - property such as a hotel or a farm is being sold. The agreement is designed primarily for the sale of residential and commercial property.
  - the property is vacant land in the process of being subdivided or there is a new unit title or cross lease to be issued. In these cases additional clauses may need to be inserted.
  - there is any doubt as to the position of the boundaries.
  - the purchaser wishes to check the weather-tightness and soundness of construction of any dwellings or other buildings on the land.
- The purchaser should investigate the status of the property under the Council's District Plan. The property and those around it are affected by zoning and other planning provisions regulating their use and future development.
- The purchaser should investigate whether necessary permits, consents and code compliance certificates have been obtained from the Council where building works have been carried out. This investigation can be assisted by obtaining a LIM from the Council.
- The purchaser should compare the title plans against the physical location of existing structures where the property is a unit title or cross lease. Structures or alterations to structures not shown on the plans may result in the title being defective.
- In the case of a unit title, before the purchaser enters into the agreement:
  - the vendor must provide to the purchaser a pre-contract disclosure statement under section 140 of the Unit Titles Act 2010.
  - the purchaser should check the minutes of the past meetings of the body corporate, enquire whether there are any issues affecting the units and/or the common property, check the body corporate's long term maintenance plan and enquire whether the body corporate has imposed or proposed fees for a long term maintenance fund or any other fund for the maintenance of, or remedial or other work to, the common property.
- The vendor should ensure the warranties and undertakings in clauses 7.5 and 9.0:
  - are able to be complied with, and if not
  - the applicable warranty is deleted from the agreement and any appropriate disclosure is made to the purchaser.
- Both parties should ensure the chattels list in Schedule 1 is accurate.
- Before signing this agreement both parties should seek professional advice regarding the GST treatment of the transaction. This depends upon the GST information supplied by the parties and could change before settlement if that information changes.

**THE ABOVE NOTES ARE NOT PART OF THIS AGREEMENT AND ARE NOT A COMPLETE LIST OF MATTERS WHICH ARE IMPORTANT IN CONSIDERING THE LEGAL CONSEQUENCES OF THIS AGREEMENT.**

**PROFESSIONAL ADVICE SHOULD BE SOUGHT REGARDING THE EFFECT AND CONSEQUENCES OF ANY AGREEMENT ENTERED INTO BETWEEN THE PARTIES.**

**THE PURCHASER IS ENTITLED TO A COPY OF ANY SIGNED OFFER AT THE TIME IT IS MADE.**

## AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE

© This form is copyright to the Real Estate Institute of New Zealand Incorporated and Auckland Conveyancing Law Society Incorporated.

DATE: \_\_\_\_\_

**VENDOR:**

Daniel Alan THURPP and Linda ANDERSON

Contact Details

**VENDOR'S LAWYERS:**

Firm: Saunders Robinson Brown

Individual Acting: Chris Boivin

Contact Details:

PO Box 166

Rangiora 7440

Ph 03 313 4628

Fax 03 313 7646

**PURCHASER:**

Billie May ANDERSON and Rickie Trevor GOODGAME

Contact Details

**PURCHASER'S LAWYERS:**

Firm:

Individual Acting:

Contact Details

**LICENSED REAL ESTATE AGENT:**

Private Treaty

Agent's Name:

Manager:

Salesperson:

Contact Details:



# Building Consent / PIM Check Sheet (T-02-PS-01)

Ref : T-02-PS-01

Version: 12

Issued: 21 July 2015

## Check Sheet – Documents required before Application can be formally received

Applicant

Council

Deposit supplied (See current "Fees &amp; Charges" list for required amount)

HDC A/C # for direct online payment : **03-0802-0946666-00**

Building Consent Application - Form 2 (signed and correctly / fully completed)

Planning check/PIM declaration form (required for all new building work)

Certificate of Title (relevant to property &amp; no more than 6 months old)

Agent Nomination form (required if applicant is not the property owner)

Any relevant Resource Consents (copy of decision letter / info)

Design Memorandum – Form 2A (if project involves Restricted Building Work)

**Project details / drawings required (to scale) :**

Site plan (showing boundaries, site coverage, distances)

Floor plan

Elevations

Cross sections (through main construction areas requiring detail)

Construction details (including weather tightness details)

Drainage Plan

Bracing Plan &amp; Schedule / Calculations

Weathertightness Risk Matrix

Written specifications

Roof truss design and Producer Statement

Other Producer Statements (appropriate to site &amp; drawings produced, by suitably qualified person)

Liquefaction Assessment (required for Zones 1 &amp; 2 - see report on HDC website)

Compliance Schedule information (draft compliance schedule, for commercial applications)

**How to receive approved consent documents :****Electronic file : Dropbox****CD****USB stick****Printed paper****For BCA Use Only:**

This application is

as all relevant information

been supplied

Signed :

Name :

Date :

Notes :

**KEY:**

√ = Receive

X = Missing or inaccurate

NA = Not Applicable



# Wood burner Consent Check Sheet (T-02-PS-03)

Ref : T-02-PS-03

Version: 3

Issued: 6 July 2017

## Check Sheet – Documents required before Application can be formally received

Applicant

Council

Fee paid (\$390.00 – add \$20 if you require a Certificate of Title)

HDC A/C # for direct online payment : **03-0802-0946666-00**

Building Consent Application - Form 2 (signed and correctly / fully completed)

Certificate of Title (relevant to property &amp; no more than 6 months old)

Agent Nomination form (required if applicant is not the property owner)

**Project details / drawings required (to scale) :**

Floor plan (showing location of fire(s), smoke detectors and building exit points)

Elevations and/or photos (showing existing roof lines and inside where fire will be located)

Burner unit specifications and installation instructions

Flue specifications and installation instructions

Flashing details to any building envelope penetrations (e.g. flue and any other pipes)

ECAN approval (for non-clean-air burner to be installed within site &lt;2 ha in size)



Subject to fast processing : (see notes below for conditions)

**( applies ONLY to standard residential and inbuilt installations. 24 hour processing DOES NOT include :**

- free-standing wood burners installed into low height cavities
- if wall shields are required to allow reduced clearances to combustible materials
- wood-fired ovens
- second-hand fires
- open fires
- exterior fires/fire pits
- any fire/flue not tested to NZS 2918

Please ensure your day time contact number is included for the 24hr issue time to be achieved

Approved consent documentation will be available to download from our website. Printed copies will only be sent upon request and will incur printing and postage charges.

**For BCA Use Only:**

This application is \_\_\_\_\_ as all relevant information \_\_\_\_\_ been supplied

Signed :

Name :

Date :

Notes :

**KEY:**      ✓ = Receive      X = Missing or inaccurate      NA = Not Applicable



## FORM 2 APPLICATION FOR PROJECT INFORMATION MEMORANDUM AND / OR BUILDING CONSENT

*Section 33 or Section 45, Building Act 2004*

### APPLICATION

I request that you issue a:

Project Information Memorandum only (PIM)

Building Consent (including Project Information Memorandum)

Building Consent only, and the existing PIM No. (if applicable) is : \_\_\_\_\_

Amendment to an existing Building Consent and the existing BC No is : \_\_\_\_\_

### THE BUILDING

Street Address (or rapid number if applicable) :  
*(for structures that do not have a street address, state the nearest street intersection and the distance and direction from that intersection)*

Number of levels : \_\_\_\_\_  
*(include ground level and any levels below ground)*

Level/Unit No : \_\_\_\_\_

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

Floor Area (all floors included):

Total / Existing : \_\_\_\_\_ m<sup>2</sup>

New / Additional : \_\_\_\_\_ m<sup>2</sup>

Affected / Altered : \_\_\_\_\_ m<sup>2</sup>

*(indicate area affected by the building work if less than the total area)*

Building Name *(if applicable)* : \_\_\_\_\_

Year first constructed : \_\_\_\_\_

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

Current lawfully established use :

*(include number of occupants per level and per use if more than 1. If use was changed by the building work this application relates to, state previous use)*

### THE PROJECT

Description of Building Work:  
*(Provide sufficient information for scope of work to be fully understood, e.g. "3 bedroom dwelling with attached garage and wood burner" or "3 bay domestic farm shed" or "Commercial shop fit-out")*

Intended life of the building :

Indefinite but not less than 50 years

or specified as \_\_\_\_\_ years

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

Intended Use :

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

*(Refer to Building (Specified Systems, Change of Use, and Earthquake-prone Buildings) Regulations 2005 if in doubt)*

If "Yes", provide details of the new intended use :

Estimated Value of the building work (inc GST) :

\$ \_\_\_\_\_

*on which building levy will be calculated (including GST). State estimated value as defined in section 7 of the Building Act 2004.*

Water requirements:

New connection to Hurunui District Council Supply (if available)

Existing connection to Hurunui District Council Supply

Own private supply (well or community scheme)

THE OWNER	AGENT – APPLICANT	N/A <input type="checkbox"/> (leave section blank)
Owner's Name :	Agent's Name :	
Contact Person : <small>(if owner is not an individual)</small>	Contact Person :	
Mailing Address :	Mailing or Billing Address	
Postcode :	Postcode :	
Street Address or : Registered Office	Street Address or : Registered Office	
Postcode :	Postcode :	
Mobile Phone :	Mobile Phone :	
Phone :	Phone :	
After Hours Phone :	After Hours Phone :	
Landline number :	Landline number :	
Daytime phone :	Daytime phone :	
Fax number :	Fax number :	
E-mail Address :	E-mail Address :	
Website :	Website :	
The following evidence of ownership is attached to this application:  Certificate of Title  Sale and Purchase Agreement (only if new purchase)	Relationship to owner :  <small>(State details of authorisation from the owner to make the application on the owner's behalf)</small>  Note - The Agent will be the first point of contact for communications with the Council/Building Consent Authority regarding this application / Building Work and will receive all correspondence including all invoices.	

### RESTRICTED BUILDING WORK

Will the building work include any restricted building work      Yes      No

If yes, provide the following details of all licensed building practitioners who will be involved in the carrying out or supervising the restricted building work - *[if these details are unknown at the time of the application, they must be supplied before the work begins]*

Licensing Class	Name and address	Licensed practitioner number <small>(or registration number treated as being licensed under section 291 of the building Act 2004)</small>
<b>Foundations</b>		
<b>Carpentry</b>		
<b>Exterior Plasterer</b>		
<b>Brick-layer</b>		
<b>Block-layer</b>		
<b>Roofer</b>		



**BUILDING CODE ASSESSMENT** (Not required for PIM only applications)

**Producer Statements:** It is intended that the following Producer Statement(s) will be relied upon to certify or verify compliance of the plans, specifications or completed works with the Building Code. **Note:** Applications including a PS 1 or PS 2 must be supplied with a copy of any design calculations.

**PS 1 (Design)**

**PS 2 (Design Review)**

**PS 3 (Construction)**

**PS 4 (Construction Review)**

The building work will comply with the building code as follows :

<b>Building Code Clause</b> (Identify which clauses will be involved in the building work)		<b>Means of Compliance</b> (note that a project may include both Acceptable and Alternative solutions)							<b>Alternative Solution</b> (details verifying compliance required)	<b>Waiver/ Modification</b> (Provide sep. details for justification of acceptance)			
		<b>Acceptable Solution / Verification Method</b> (AS1, AS2, VM1, VM2 etc)											
<b>B1</b>	Structure	N/A	AS1	VM1	AS2	VM2	AS3	VM3	AS4	VM4	YES	YES	
<b>B2</b>	Durability	N/A	AS1	VM1							YES	YES	
<b>C1-6</b>	Protection from fire	N/A	AS1	AS2	AS3	AS4	C/VM1	AS5	AS6	AS7	C/VM2	N/A	YES
<b>D1</b>	Access Routes	N/A	AS1	VM1								YES	YES
<b>D2</b>	Mechanical Installations for Access	N/A	AS1	VM1	AS2	VM2	AS3	VM3				YES	YES
<b>E1</b>	Surface water	N/A	AS1	VM1								YES	YES
<b>E2</b>	External moisture	N/A	AS1	VM1	AS2	AS3						YES	YES
<b>E3</b>	Internal moisture	N/A	AS1	VM1								YES	YES
<b>F1</b>	Hazardous agents on site	N/A	VM1									YES	YES
<b>F2</b>	Hazardous building materials	N/A	VM1									YES	YES
<b>F3</b>	Hazardous substances and processes	N/A	VM1									YES	YES
<b>F4</b>	Safety from falling	N/A	AS1	VM1								YES	YES
<b>F5</b>	Construction and demolition hazards	N/A	AS1	VM1								YES	YES
<b>F6</b>	Lighting for emergency	N/A	AS1	VM1								YES	YES
<b>F7</b>	Warning systems	N/A	AS1	VM1								YES	YES
<b>F8</b>	Signs	N/A	AS1	VM1								YES	YES
<b>G1</b>	Personal hygiene	N/A	AS1	VM1								YES	YES
<b>G2</b>	Laundrying	N/A	AS1	VM1								YES	YES
<b>G3</b>	Food preparation and prevention of contamination	N/A	AS1	VM1								YES	YES
<b>G4</b>	Ventilation	N/A	AS1	VM1								YES	YES
<b>G5</b>	Interior environment	N/A	AS1	VM1								YES	YES
<b>G6</b>	Airborne and impact sound	N/A	AS1	VM1								YES	YES
<b>G7</b>	Natural light	N/A	AS1	VM1								YES	YES
<b>G8</b>	Artificial light	N/A	AS1	VM1								YES	YES
<b>G9</b>	Electricity	N/A	AS1	VM1								YES	YES
<b>G10</b>	Piped services	N/A	AS1	VM1								YES	YES
<b>G11</b>	Gas as an energy source	N/A	AS1	VM1								YES	YES
<b>G12</b>	Water supplies	N/A	AS1	AS2	VM1							YES	YES
<b>G13</b>	Foul water	N/A	AS1	VM1	AS2	VM2	AS3	VM4				YES	YES
<b>G14</b>	Industrial liquid waste	N/A	AS1	VM1								YES	YES
<b>G15</b>	Solid waste	N/A	AS1	VM1								YES	YES
<b>H1</b>	Energy efficiency provisions	N/A	AS1	VM1								YES	YES

**COMPLIANCE SCHEDULE (Inspection, Maintenance and Reporting Procedures)**

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

Are there specified systems in the building?      Yes                      No      *(If there are no specified systems, do not complete this section)*

If existing building, please state the Building Warrant of Fitness Number :

Are any specified systems affected by this application?      Yes                      No      *(If yes, continue completing this section; if no, do not complete this section)*

Hazard Category : N/A – no longer applicable                      Total Occupancy Numbers :

Purpose Group *(select all relevant)*

CS	CL	CO	CM	SC	SD	SA	SR	SH	WL	WM	WH	WF	IA	ID

The following systems are existing, being altered, added to, or removed in the course of the building work	Existing	New	Altered	Removed	Inspection performance standards	Maintenance performance standards	Reporting frequency	COUNCIL USE - CONFIRMED
<b>1: Automatic Systems for Fire Suppression</b>								
<b>2: Automatic or Manual Emergency Warning systems</b>								
<b>3/1: Electromagnetic or Automatic Doors and / or Windows</b>								
<b>3/2: Access Control Doors</b>								
<b>3/3: Automatic Fire Doors or Windows forming part of a Firewall</b>								
<b>4: Emergency Lighting systems</b>								
<b>5: Escape Route Pressurisation systems</b>								
<b>6: Riser Mains for use by Fire Services</b>								
<b>7: Automatic Backflow Preventers</b>								
<b>8: Lifts and / or Escalators</b>								
<b>9: Mechanical Ventilation or Air Conditioning systems</b>								

<b>10: Building Maintenance Units</b>								
<b>11: Laboratory Fume Cupboards</b>								
<b>12: Audio Loops or other Assistive Listening systems</b>								
<b>13: Smoke Control systems</b>								
<b>14/1: Emergency Power systems</b>								
<b>14/2: Signs relating to a system or feature specified in any clauses above</b>								
<b>15/1: Systems for communicating spoken information intended to facilitate evacuation</b>								
<b>15/2: Final Exits and other Exit Doors</b>								
<b>15/3: Fire Separations protecting a Means of Escape</b>								
<b>15/4: Signs for communicating information intended to facilitate evacuation</b>								
<b>15/5: Smoke Separations</b>								
<b>16: Cable cars</b>								



# COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



## Search Copy

**Identifier** 688514  
**Land Registration District** Canterbury  
**Date Issued** 28 July 2015

### Prior References

588566

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**Estate** Fee Simple  
**Area** 800 square metres more or less  
**Legal Description** Lot 86 Deposited Plan 485034

### Proprietors

Daniel Alan Thrupp and Linda Anderson

### Interests

Appurtenant hereto is a right to drain sewage specified in Easement Certificate A324953.8 - 5.11.1997 at 11:22 am

The easements specified in Easement Certificate A324953.8 are subject to Section 243 (a) Resource Management Act 1991

Land Covenant in Transfer A324953.17 - 5.11.1997 at 11:22 am (Limited as to duration)

7792570.1 Court Order modifying the Land Covenant in Transfer A324953.17 - 22.4.2008 at 9:00 am

Land Covenant in Easement Instrument 10128020.8 - 28.7.2015 at 11:34 am

10128020.9 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 28.7.2015 at 11:34 am

Form 2A

**Memorandum from licensed building practitioner: Certificate of design work  
Section 45 and Section 30C, 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: 18 Claremont Crescent / Lot 86 Oakfields

Suburb: Amberley

Town/City: Canterbury

Postcode:

**THE OWNER**

Name(s): Billie Anderson & Rickie Goodgame

Mailing Address: 71 Smiths Road

Suburb: Leithfield

PO Box/Private Bag:

Town/City:

Postcode:7481

Phone number: 0274504414

Email address: billienz@hotmail.com

**BASIS FOR PROVIDING THIS MEMORANDUM**

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

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

I Luke Seaford carried out the following design work that is restricted building work

**PRIMARY STRUCTURE: B1**

<b>Design work that is restricted building work</b>	<b>Description</b>	<b>Carried out/ supervised</b>	<b>Reference to plans and specifications</b>
<i>Tick(√)if included Cross ( X) if excluded</i>	<i>[If appropriate, provide details of the restricted building work]</i>	<i>[Specify whether you carried out this design work or supervised someone else carrying out this design work]</i>	<i>[If appropriate, specify references]</i>

**Primary structure**

<b>All RBW Design work relating to B1</b> ( )		( ) Carried out ( ) Supervised	
Foundations	√	<i>Foundation as per NZS3604</i>	(√) Carried out ( ) Supervised
Walls	(√)	<i>Timber framing as per NZS3604</i>	(√) Carried out ( ) Supervised
Roof	(√)	<i>Truss &amp; Lintel design as per truss manufacturer &amp; NZS3604</i>	( ) Carried out (√) Supervised Please refer to supporting documents PS1
Lintels	(√)	<i>Truss &amp; Lintel design as per truss manufacturer</i>	(√) Carried out & (√) Supervised Please refer to supporting documents PS1
Bracing	(√)	<i>NZS3604</i>	(√) Carried out ( ) Supervised
Other			

**EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2**

<b>All RBW design work relating to E2</b> (√)	<i>NZBC E2/AS1</i>	(√) Carried out ( ) Supervised	
Damp proofing	(√)	(√) 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	

		<input type="checkbox"/> Supervised	
Other	<input checked="" type="checkbox"/>	<input type="checkbox"/> Carried out	
		<input type="checkbox"/> Supervised	

**FIRE SAFETY SYSTEMS: C1 – C6**

Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other	<input checked="" type="checkbox"/>	Smoke alarms	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> 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.

**Note:** continue on another page if necessary.

**WAIVERS AND MODIFICATIONS**

Waivers or modifications of the building code are required  Yes  No

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

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

**Note:** continue on another page if necessary.

**ISSUED BY**

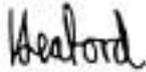
Name: Luke Seaford		LBP or Registration number: BP105868	
The practitioner is a:	<input checked="" type="checkbox"/> Design 2 LBP	<input type="checkbox"/> Registered architect	<input type="checkbox"/> Chartered professional engineer
Design Entity or Company (optional):			
Mailing address (if different from below):			
Street address / Registered office: 1/76 Hamilton Avenue			
Suburb: Ilam		Town/City: Christchurch	
PO Box/Private Bag:		Postcode: 8041	
Phone number: 03 351 6600		Mobile: 02108232226	
After Hours:		Fax:	
Email address: luke_seaford@hotmail.com		Website:	

**DECLARATION**

I Luke Seaford [*name of practitioner*], LBP, BP105868

state that I have applied the skill and care reasonably required of a competent design professional in 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



Signature:

Date: 20 / 09 / 2017



## Planning Check or Project Information Memorandum Declaration

*In order for the Council to undertake a planning check or project information memorandum (PIM) to identify any restrictions that relate to the proposed building project, the Council requires basic information with respect to the requirements of the District Plan. As such the applicant (or agent) is required to complete the relevant sections of this declaration form. Please note that it is important that the applicant provide correct information in order for the Council to provide an accurate planning check or issue a PIM.*

<b>Applicant's Name</b>	_____
<b>Project Location</b>	_____
<b>Proposal</b>	_____

Please answer the following questions by marking the relevant box.

1. Will the proposed building be located within **50 metres of a forestry plantation** on a separate lot under different ownership?  
Yes  No
  
2. Will the proposed building require **earthworks** to be carried out within **20 metres** of any river, **50 metres** of any wetland, or **100 metres** from any lake?  
Yes  No
  
3. Will the proposed building be located:
  - a. within **500 metres** of an intensive farming activity on a separate property?  
Yes  No
  - b. within **500 metres** of a sewage treatment facility, including effluent ponds for on-farm waste disposal and land based effluent disposal areas on a separate property?  
Yes  No
  - c. within **500 metres** of the operational area of a quarry or mine (excluding riverbed or on farm gravel extraction) on a separate property?  
Yes  No
  - d. within **1km** of any frost control fan?  
Yes  No
  
4. Will the building be **closer than 100 metres** from a dwellinghouse or principal building on a separate property?  
Yes  No



# Hazardous Activities and Industries List (HAIL)

October 2011



## **A Chemical manufacture, application and bulk storage**

1. Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application
2. Chemical manufacture, formulation or bulk storage
3. Commercial analytical laboratory sites
4. Corrosives including formulation or bulk storage
5. Dry-cleaning plants including dry-cleaning premises or the bulk storage of dry-cleaning solvents
6. Fertiliser manufacture or bulk storage
7. Gasworks including the manufacture of gas from coal or oil feedstocks
8. Livestock dip or spray race operations
9. Paint manufacture or formulation (excluding retail paint stores)
10. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds
11. Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application
12. Pesticide manufacture (including animal poisons, insecticides, fungicides or herbicides) including the commercial manufacturing, blending, mixing or formulating of pesticides
13. Petroleum or petrochemical industries including a petroleum depot, terminal, blending plant or refinery, or facilities for recovery, reprocessing or recycling petroleum-based materials, or bulk storage of petroleum or petrochemicals above or below ground
14. Pharmaceutical manufacture including the commercial manufacture, blending, mixing or formulation of pharmaceuticals, including animal remedies or the manufacturing of illicit drugs with the potential for environmental discharges
15. Printing including commercial printing using metal type, inks, dyes, or solvents (excluding photocopy shops)
16. Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products
17. Storage tanks or drums for fuel, chemicals or liquid waste
18. Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside

## **B Electrical and electronic works, power generation and transmission**

1. Batteries including the commercial assembling, disassembling, manufacturing or recycling of batteries (but excluding retail battery stores)
2. Electrical transformers including the manufacturing, repairing or disposing of electrical transformers or other heavy electrical equipment
3. Electronics including the commercial manufacturing, reconditioning or recycling of computers, televisions and other electronic devices
4. Power stations, substations or switchyards

## **C Explosives and ordinances production, storage and use**

1. Explosive or ordinance production, maintenance, dismantling, disposal, bulk storage or re-packaging
2. Gun clubs or rifle ranges, including clay targets clubs that use lead munitions outdoors
3. Training areas set aside exclusively or primarily for the detonation of explosive ammunition

**D Metal extraction, refining and reprocessing, storage and use**

1. Abrasive blasting including abrasive blast cleaning (excluding cleaning carried out in fully enclosed booths) or the disposal of abrasive blasting material
2. Foundry operations including the commercial production of metal products by injecting or pouring molten metal into moulds
3. Metal treatment or coating including polishing, anodising, galvanising, pickling, electroplating, or heat treatment or finishing using cyanide compounds
4. Metalliferous ore processing including the chemical or physical extraction of metals, including smelting, refining, fusing or refining metals
5. Engineering workshops with metal fabrication

**E Mineral extraction, refining and reprocessing, storage and use**

1. Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition
2. Asphalt or bitumen manufacture or bulk storage (excluding single-use sites used by a mobile asphalt plant)
3. Cement or lime manufacture using a kiln including the storage of wastes from the manufacturing process
4. Commercial concrete manufacture or commercial cement storage
5. Coal or coke yards
6. Hydrocarbon exploration or production including well sites or flare pits
7. Mining industries (excluding gravel extraction) including exposure of faces or release of groundwater containing hazardous contaminants, or the storage of hazardous wastes including waste dumps or dam tailings

**F Vehicle refuelling, service and repair**

1. Airports including fuel storage, workshops, washdown areas, or fire practice areas
2. Brake lining manufacturers, repairers or recyclers
3. Engine reconditioning workshops
4. Motor vehicle workshops
5. Port activities including dry docks or marine vessel maintenance facilities
6. Railway yards including goods-handling yards, workshops, refuelling facilities or maintenance areas
7. Service stations including retail or commercial refuelling facilities
8. Transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances

**G Cemeteries and waste recycling, treatment and disposal**

1. Cemeteries
2. Drum or tank reconditioning or recycling
3. Landfill sites
4. Scrap yards including automotive dismantling, wrecking or scrap metal yards
5. Waste disposal to land (excluding where biosolids have been used as soil conditioners)
6. Waste recycling or waste or wastewater treatment

**H Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment****I Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment**

## MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **VIP Frames & Trusses**, being licensed to use the MiTek 20/20<sup>®</sup> 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<sup>®</sup> TRUSS DESIGN DATA

The MiTek 20/20<sup>®</sup> 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<sup>®</sup> trusses.

#### Job Details

##### Roof Truss

Timber Group: -MSGx45 H1.2

##### Roof

Material: Galv Iron .5mm  
 Dead Load: 0.210 kPa  
 Restraints: 900 mm centres  
 Live Load: Qur = 0.250 kPa  
 Qc = 1.100 kN

Importance Level : 2

Pitch: 20.000 deg

##### Ceiling

Material: Gib Board 12mm  
 Dead Load: 0.200 kPa  
 Restraints: 600 mm centres  
 Live Load: Qc = 1.400 kN

Design Working Life : 50 years

Nominal Overhang: 600 mm

##### Wind

Area: High (44.0 m/s )  
 Pressure Coeff: Cpe = varies; Cpi = -0.30, 0.20

##### Snow

Location: Christchurch (N4) at 100 m  
 Open Ground Load: 0.900 kPa  
 Basic Roof Load: 0.504 kPa

The timber for these MiTek<sup>®</sup> trusses shall be treated to the requirements of NZS 3602:2003 and shall be graded to the requirements of NZS 3603:1993. Unless otherwise noted, this design assumes that the steel fixings and timber connectors proposed are located in a **"closed environment"**, as defined by NZS3604:2011 Section 4.

#### MiTek<sup>®</sup> 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)
*H1	2	5871	14.433	900	*R1	2	5299	14.433	900	S5	2	3968	20.000	898
*H2	1	1251	14.433	900	*R2	1	1075	20.000	900	S6	5	7180	20.000	874
*H3	1	2518	14.433	900	*R3	1	1075	20.000	900	S7	2	6180	20.000	874
*H4	1	2585	14.433	900	*R4	1	1075	20.000	900	S8	1	6180	20.000	874
J1	1	2262	20.000	900	*R5	1	1075	20.000	900	S10	1	5370	20.000	900
J2	1	2262	20.000	900	*R6	2	1480	20.000	900	S11	7	6180	20.000	900
J3	1	2262	20.000	900	*R7	2	913	20.000	900	J4	1	2262	20.000	900
J5	1	1362	20.000	900	*R8	2	913	20.000	900	J6	1	2262	20.000	900
J7	1	1362	20.000	900	*R9	1	2740	20.000	900	J11	1	2667	20.000	900
J8	1	2667	20.000	900	*R10	1	909	20.000	900	J15	1	2667	20.000	900
J9	1	2667	20.000	900	*R11	1	901	20.000	900	J17	1	2167	20.000	900
J10	1	2667	20.000	900	*R12	1	5164	14.433	900	J18	1	2167	20.000	900
J12	1	1767	20.000	900	*R13	1	980	20.000	900	S9	1	5370	20.000	900
J13	2	1767	20.000	900	*R14	1	980	20.000	900	P1	1	3090	0.000	900
J14	1	2667	20.000	900	S1	9	6370	20.000	900	T1	1	6370	20.000	900
J16	1	1767	20.000	900	S2	1	6180	20.000	900	T2	1	6180	20.000	900
J19	1	1267	20.000	900	S3	1	7180	20.000	900	T3	1	6180	20.000	900
J20	1	2667	20.000	900	S4	1	6180	20.000	900					

**Total quantity : 79**

The computer design input has been carried out by:

Signed:  .....

Date: ...Tuesday, 12 September 2017....

Name of Detailer: Chris Nottingham

Qualifications and Title: Detailer

On behalf of:

VIP Frames & Trusses



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

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

www.mitek.nz.co.nz

MiTek 20/20 Engineering 4.6.6.246

Printed: 06:03:23 12 Sep 2017

## PRODUCER STATEMENT for MiTek 20/20<sup>®</sup> TRUSS DESIGN - Version 4.6

ISSUED BY: **MiTek New Zealand Limited**

TO: **VIP Frames & Trusses**

IN RESPECT OF: **MiTek<sup>®</sup> Truss Designs**

This producer statement covers the MiTek 20/20<sup>®</sup> truss design and the structural performance of the GANG-NAIL<sup>®</sup> connector plate for the job reference **50898** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

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

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

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence

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

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

**On behalf of MiTek New Zealand Limited,**

**Date: Tuesday, 12 September 2017**

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

**TRUSS FIXING SELECTION REPORT - Characteristic Loads**

Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data)

**MiTek® Truss List**

Legend: \* = detail only, ? = input only, ✕ = failed design, Ø = non certified, Unmarked trusses = designed successfully

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	----- Fixing -----		
							Qty	Selected	
*H1	2	5871							Refer NZS3604:2011 Tables 15.6
*H2	1	1251							Refer NZS3604:2011 Tables 15.6
*H3	1	2518							Refer NZS3604:2011 Tables 15.6
*H4	1	2585							Refer NZS3604:2011 Tables 15.6
J1	1	2262	B	3.407	0.861	Cross	1	Pair of Wire Dog Staples	
			G	1.386	0.840	Butt	1	JH 47x90	
			E	0.514	0.352	Butt	1	Pair of 3.15d Nails	
			D	1.897	1.145	Cross	1	Pair of Wire Dog Staples	
J2	1	2262	B	3.380	0.994	Cross	1	Pair of Wire Dog Staples	
			G	2.258	1.268	Butt	1	JH 47x90	
J3	1	2262	B	3.380	0.994	Cross	1	Pair of Wire Dog Staples	
			G	2.258	1.268	Butt	1	JH 47x90	
J5	1	1362	B	2.483	0.605	Cross	1	Pair of Wire Dog Staples	
			F	0.897	0.760	Butt	1	Pair of 3.15d Nails	
			E	1.355	0.073	Cross	1	Pair of Wire Dog Staples	
J7	1	1362	B	2.558	0.618	Cross	1	Pair of Wire Dog Staples	
			E	1.241	0.736	Butt	1	Pair of 3.15d Nails	
J8	1	2667	B	3.784	1.022	Cross	1	Pair of Wire Dog Staples	
			E	0.531	0.364	Butt	1	Pair of 3.15d Nails	
			D	3.696	2.220	Cross	1	Pair of Wire Dog Staples	
J9	1	2667	B	3.864	1.207	Cross	1	Pair of Wire Dog Staples	
			F	1.800	1.060	Butt	1	JH 47x90	
			D	0.810	0.483	Butt	1	Pair of 3.15d Nails	
J10	1	2667	B	3.778	1.178	Cross	1	Pair of Wire Dog Staples	
			D	3.579	1.625	Cross	1	Pair of Wire Dog Staples	
J12	1	1767	B	2.988	0.824	Cross	1	Pair of Wire Dog Staples	
			E	1.069	0.489	Butt	1	Pair of 3.15d Nails	
			D	0.810	0.499	Butt	1	Pair of 3.15d Nails	
J13	2	1767	B	2.595	0.954	Cross	2	Pair of Wire Dog Staples	
			D	0.897	0.462	Butt	2	Pair of 3.15d Nails	
J14	1	2667	A	2.166	0.555	Cross	1	Pair of Wire Dog Staples	
			F	1.630	1.374	Butt	1	JH 47x90	
			C	0.737	0.463	Butt	1	Pair of 3.15d Nails	
			D	0.920	0.287	Cross	1	Pair of Wire Dog Staples	
J16	1	1767	B	2.834	0.827	Cross	1	Pair of Wire Dog Staples	
			F	0.613	0.357	Butt	1	Pair of 3.15d Nails	
			D	0.810	0.499	Butt	1	Pair of 3.15d Nails	
			E	0.771	0.000	Cross	1	Pair of Wire Dog Staples	
J19	1	1267	B	2.479	0.579	Cross	1	Pair of Wire Dog Staples	
			E	1.125	0.679	Butt	1	Pair of 3.15d Nails	
J20	1	2667	B	3.778	1.178	Cross	1	Pair of Wire Dog Staples	
			G	3.579	1.625	Butt	1	JH 47x90	
*R1	2	5299							Refer NZS3604:2011 Tables 15.6
*R2	1	1075							Refer NZS3604:2011 Tables 15.6
*R3	1	1075							Refer NZS3604:2011 Tables 15.6
*R4	1	1075							Refer NZS3604:2011 Tables 15.6
*R5	1	1075							Refer NZS3604:2011 Tables 15.6
*R6	2	1480							Refer NZS3604:2011 Tables 15.6
*R7	2	913							Refer NZS3604:2011 Tables 15.6
*R8	2	913							Refer NZS3604:2011 Tables 15.6
*R9	1	2740							Refer NZS3604:2011 Tables 15.6
*R10	1	909							Refer NZS3604:2011 Tables 15.6
*R11	1	901							Refer NZS3604:2011 Tables 15.6
*R12	1	5164							Refer NZS3604:2011 Tables 15.6
*R13	1	980							Refer NZS3604:2011 Tables 15.6
*R14	1	980							Refer NZS3604:2011 Tables 15.6
S1	9	6370	H	7.146	2.666	Cross	9	Pair of Wire Dog Staples	
			F	4.962	2.767	Cross	9	Pair of Wire Dog Staples	
S2	1	6180	B	5.950	3.181	Cross	1	Pair of Wire Dog Staples	
			J	5.119	3.035	Cross	1	Pair of Wire Dog Staples	
S3	1	7180	B	5.661	3.176	Cross	1	Pair of Wire Dog Staples	
			K	7.769	3.075	Cross	1	Pair of Wire Dog Staples	
S4	1	6180	A	5.023	3.113	Cross	1	Pair of Wire Dog Staples	
			E	5.903	3.181	Cross	1	Pair of Wire Dog Staples	
S5	2	3968	A	3.242	1.993	Butt	2	JH 47x90	
			C	3.253	1.996	Cross	2	Pair of Wire Dog Staples	
S6	5	7180	B	5.497	3.084	Cross	5	Pair of Wire Dog Staples	
			K	7.544	2.986	Cross	5	Pair of Wire Dog Staples	
S7	2	6180	B	5.778	3.089	Cross	2	Pair of Wire Dog Staples	
			J	4.971	2.947	Cross	2	Pair of Wire Dog Staples	
S8	1	6180	B	5.778	3.077	Cross	1	Pair of Wire Dog Staples	
			J	4.844	3.035	Butt	1	JH 47x90	
S10	1	5370	G	4.451	2.626	Cross	1	Pair of Wire Dog Staples	
			E	5.295	2.773	Cross	1	Pair of Wire Dog Staples	
S11	7	6180	B	5.866	3.177	Cross	7	Pair of Wire Dog Staples	
			F	5.866	3.177	Cross	7	Pair of Wire Dog Staples	
J4	1	2262	B	3.463	1.332	Cross	1	Pair of Wire Dog Staples	
			F	1.415	1.069	Butt	1	JH 47x90	

## VIP Frames &amp; Trusses

Job: 50898  
 Description: Building Consent No.:  
 MitTek 20/20 Engineering 4.6.6.246

Client: LMS Drafting & Design  
 Phone: (In accordance with BA 2004, Cl. 49(1))  
 Site: Billie Anderson  
 Lot 66 Oakfields, Amberley

HDC Approved Consent Document  
 Produced by: Steven N.T Laird - BC No. 170482

MitTek New Zealand Limited. Phone: Printed: 06/03/29 12 Sep 2017

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	Fixing	
							Qty	Selected
J6	1	2262	B	3.597	1.257	Cross	1	Pair of Wire Dog Staples
			F	1.626	0.951	Butt	1	JH 47x90
J11	1	2667	B	4.309	1.791	Cross	1	Pair of Wire Dog Staples
			F	2.422	1.514	Butt	1	JH 47x90
J15	1	2667	B	3.528	1.236	Cross	1	Pair of Wire Dog Staples
			G	1.817	1.097	Butt	1	JH 47x90
			E	1.162	0.840	Cross	1	Pair of Wire Dog Staples
J17	1	2167	A	5.101	2.840	Cross	1	Pair of Wire Dog Staples
			F	3.989	2.332	Butt	1	JH 47x90
J18	1	2167	B	3.464	1.198	Cross	1	Pair of Wire Dog Staples
			F	1.448	0.858	Butt	1	JH 47x90
S9	1	5370	G	7.905	4.777	Cross	1	CT400
			E	5.996	3.210	Cross	1	CT400
P1	1	3090	F	3.310	2.267	Cross	1	Pair of Wire Dog Staples
			I	2.445	1.648	Cross	1	Pair of Wire Dog Staples
			H	4.280	3.160	Cross	1	Pair of Wire Dog Staples
T1	1	6370	B	1.684	0.930	Cross	1	Pair of Wire Dog Staples
			J	13.342	8.552	Cross	1	CT400
			G	8.044	4.451	Cross	1	CT400
T2	1	6180	B	10.561	5.728	Cross	1	CT400
			O	11.822	5.932	Cross	1	CT400
T3	1	6180	A	6.602	4.115	Cross	1	CT400
			F	9.301	5.316	Cross	1	CT400

**Fixing List**

Qty	Selected Fixing
89	Pair of Wire Dog Staples
15	JH 47x90
13	Pair of 3.15d Nails
8	CT400

**Note:**

- 1) Fixings have been selected based on loading only. Please check that selected fixings are practical for each situation and that appropriate nailing can be applied on site.
- 2) Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data) with down and uplift characteristic loads of at least the values shown for each joint.

11 September 2017



SN-R10079848

# PROLAM SUMMARY

Customer/Project: LMS Drafting  
Physical Address: Lot 86 Oakfields, Amberley  
Designer: Chris Nottingham, Vip Frames and Trusses  
200 Maces Road, Bromley, Christchurch 8062  
E: chrisn@vft.co.nz P: 0800 7736245

## Beam - F

### Prolam Lintels Supporting Roof and Ceiling

Building Type	House	Roof Weight	Light with Ceiling
Timber	Pine, Machined	Roof Load	0.40 kPa
Treatment	H1.2	Live Load	0.25 kPa uniform 1.10 kN concentrated
Visual	No	Wind Zone	High (44.0 m/s)
Exposed	No	Snow Region	Region N4
Roof Pitch	20 °	Altitude	100 m
Eaves	400 mm	Ground Snow Load	0.90 kPa
Roof Span	2.58 m	Roof Snow Load	0.63 kPa
Lintel Span	4.86 m		

### Use Prolam PL12H1-250100 240 x 90mm PL12

Capacity Ratio	2.1
Long Term Deflection	2.0 mm
Max. Bearing Reaction	5.2 kN
Load Combination	1.2G + Su
Minimum Bearing Length	35 mm
Uplift Fixing Requirements	3.25 kN Characteristic Load

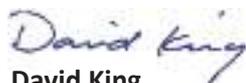
## PRODUCER STATEMENT



Tasman Consulting Engineers Limited has been engaged by Prowood to provide design services for the development of the Prolam Online calculator.

The design has been carried out using sound and widely accepted engineering principles to the requirements of AS/NZS1170:2002, NZS3603:1993 and NZS3604:2011 using the timber properties for GL8, GL12 and GL17 glulam and LVL15.

I believe on reasonable grounds that the above design will meet the requirements of clauses B1/VM1 of the Building Code Documents.



David King

ME (civil, MIPENZ CPEng (no 145511) IntPE

For Tasman Consulting Engineers, PO Box 3631, Richmond, NELSON 7050

11 September 2017

**283 Waiwhero Rd P O Box 413 Motueka New Zealand Phone 03 526 7436 Fax 03 526 7437**

**Email: info@prowoodnz.com • www.prolamnz.com**

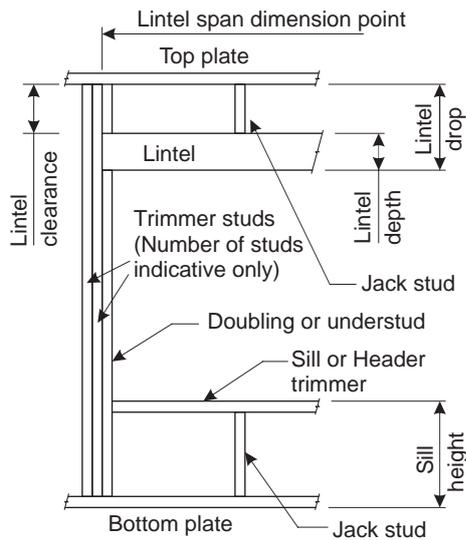


## LINTEL FIXING SCHEDULE ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

### NOTE:

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

### DEFINITIONS



### Lintel Supporting Girder Trusses:

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

### Notes:

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

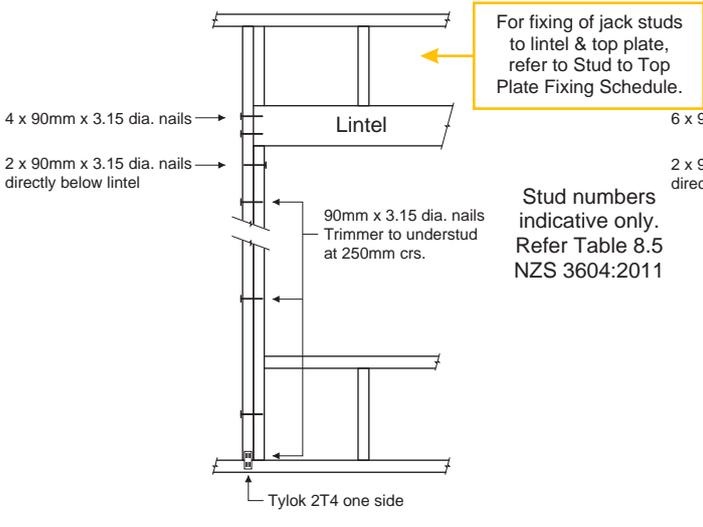
### SELECTION CHART FOR LINTEL FIXING

Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:2011)	Light Roof					Heavy Roof				
		Wind Zone					Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
0.7	2.0	E	E	E	E	F	E	E	E	E	E
	3.0	E	E	E	F	F	E	E	E	E	F
	4.0	E	E	F	F	F	E	E	E	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
0.9	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	E	F	F	F	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	F	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
6.0	G	H	-	-	-	E	F	H	-	-	
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	F	F	G	H	-
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
6.0	G	H	-	-	-	E	F	H	-	-	

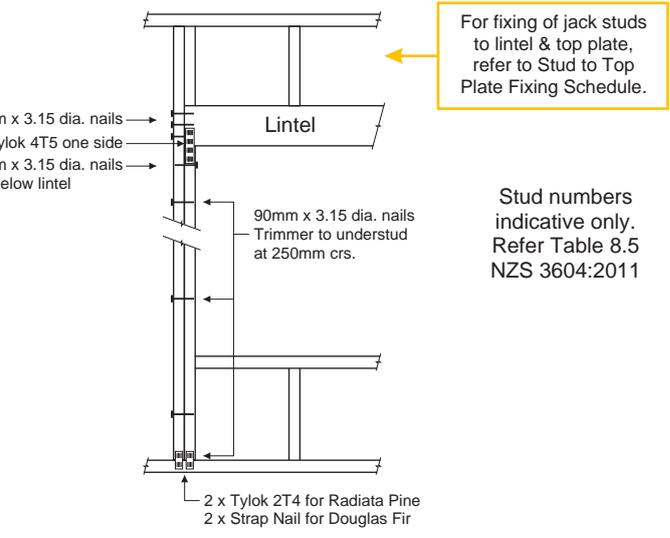


# LINTEL FIXING OPTIONS

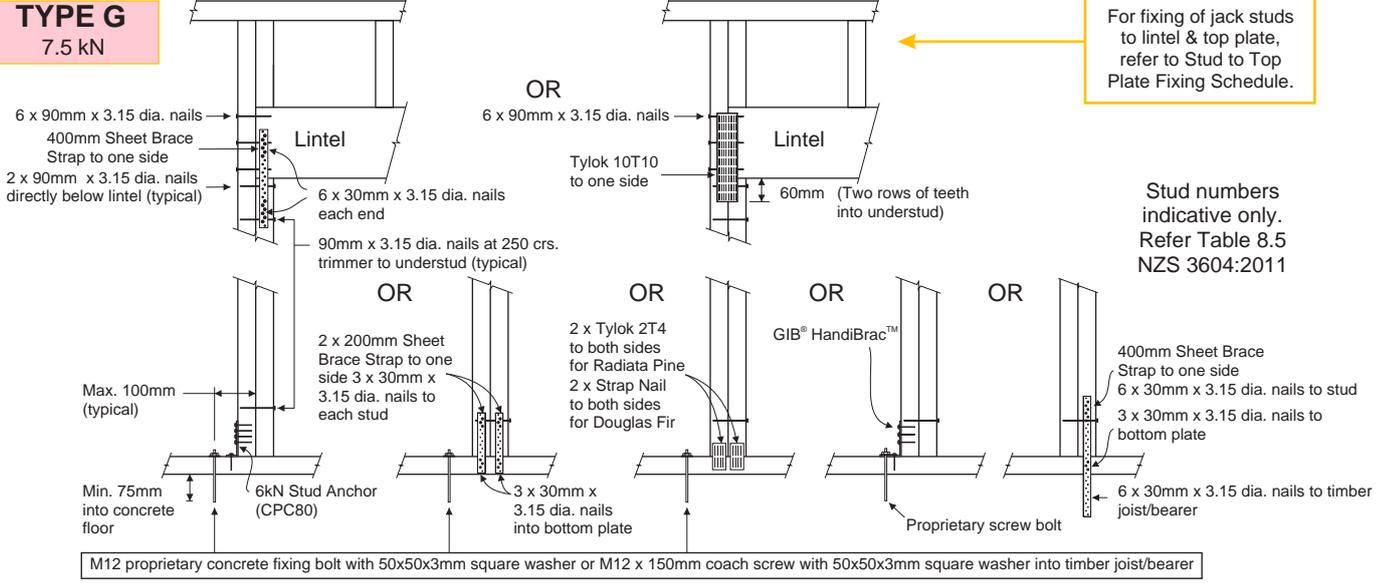
## TYPE E 1.4 kN



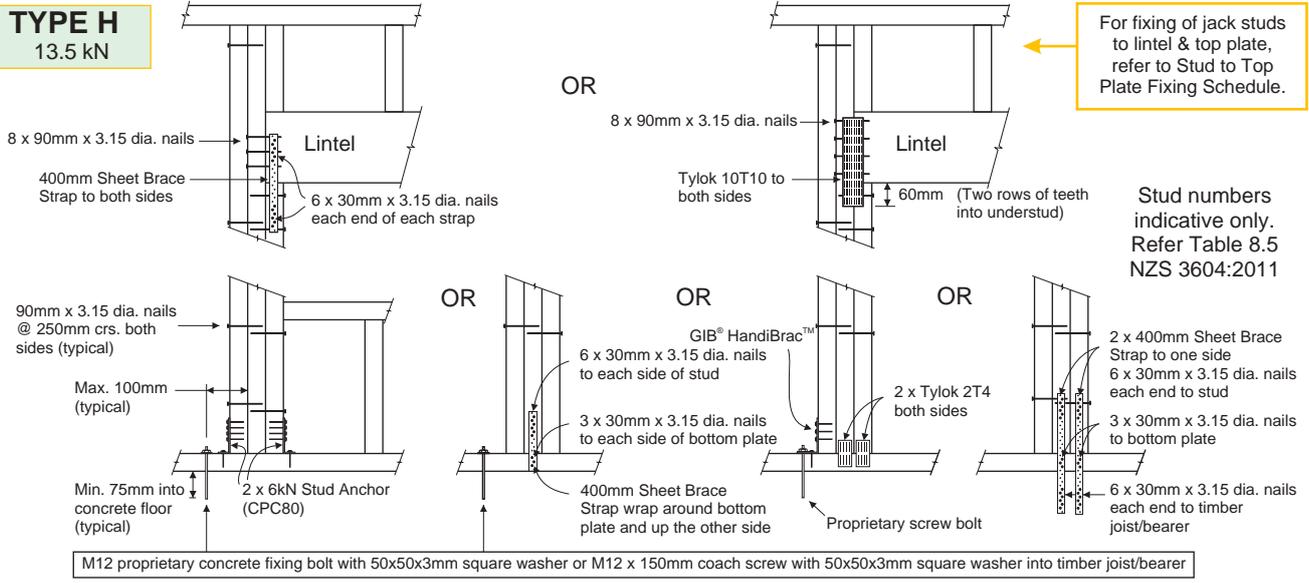
## TYPE F 4.0 kN



## TYPE G 7.5 kN



## TYPE H 13.5 kN



### MiTek New Zealand Limited

AUCKLAND  
PO Box 58-014, Botany 2163  
Phone: 09-274 7109  
Fax: 09-274 7100

CHRISTCHURCH  
PO Box 8387, Riccarton 8440  
Phone: 03-348 8691  
Fax: 03-348 0314

www.mitek.nz.co.nz

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**PROLAM**<sup>®</sup> products are manufactured to the requirements of AS/NZS 1328.1:1998 Glue Laminated Structural Timber, and AS/NZS 1491:1996 Finger Jointed Structural Timber under an approved quality system based on the 150 9000 series of standards. As such if the product is used in accordance with **PROLAM**<sup>®</sup> product literature, it will meet the durability clauses of the New Zealand Building Code B2.

#### Subfloor Applications:

- PROLAM**<sup>®</sup> may be used where approved practices for clearance and ventilation are used.

#### External Use:

- PROLAM**<sup>®</sup> is recommended for weather exposed applications if sealed and maintained in accordance with **PROLAM**<sup>®</sup> literature.

#### Preservative Treatment:

- PROLAM**<sup>®</sup> Beams are CCA H3.2 treated as defined by NZS 3640:2003, for weather exposed applications, such as verandah beams, deck bearers, and subfloor applications.
- PROLAM**<sup>®</sup> Posts are CCA H5 treated as defined by NZS 3640:2003 for in-ground and weather exposed applications, such as deck piles, verandah posts and similar applications.

#### Storage of **PROLAM**<sup>®</sup>:

- To ensure **PROLAM**<sup>®</sup> remains straight and true at the time of installation, follow the below recommendations:
  1. Store under cover so that it remains dry until installation.
  2. Stack clear of the ground for good ventilation.
  3. Stack on bearers to keep flat and straight.

#### Branded **PROLAM**<sup>®</sup>:

- PROLAM**<sup>®</sup> is branded for your protection. Look-alike materials may not perform to the standard of **PROLAM**<sup>®</sup>. For your protection do not accept unauthorized substitution



**Date:** 12 September 2017  
**Fabricator:** VIP Frames & Trusses  
**Job Name:** LMS Drafting & Design  
Billie Anderson  
Lot 86 Oakfields, Amberley

**Building Consent No:** \_\_\_\_\_  
(Provided by relevant Consenting Authority at time of Consent application)

**Attn:** City/District Council

We have been engaged to provide the trusses and frames for the above project. To allow completion of the consent application we have supplied the following information.

- (a) Truss Layout and Producer Statement.
- (b) Any slab thickening requirements detailed.
- (c) All truss loaded lintels that are either inside or outside the requirements of NZS3604:2011.
- (d) All roof bracing details as required by NZS3604:2011.

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

<b>Wind Zone</b>	<b><u>High</u></b>	<b>Altitude</b>	<b><u>100m</u></b>
		<b>Snow (Open Ground Load)</b>	<b><u>0.900 kPa</u></b>
<b>Roof Material</b>	<b><u>Longrun Iron</u></b>	<b>Snow (Basic Roof Load)</b>	<b><u>0.504kPa</u></b>

**Treatment Definition:**

**External Walls -** H1.2 Treated  
**Internals Walls -** H1.2 Treated  
**Trusses -** H1.2 Treated

We can advise that the following will be provided at the time of truss manufacture to both the the building owner and your office:

- (1) A full 'as-built' layout and Producer Statement.
- (2) Specific Truss/Truss fixings done as per NZS3604:2011, Clause 10.2.2.6.1
- (3) Specific top plate to stud fixings that comply with NZS3604:2011, Table 8.18
- (4) Specific lintel Fixings outside NZS3604:2011.

It should be noted that the details provided have been designed to comply with the Building Code and the relevant standards. Any increase above these standards is only at the preference and request of the building owner.

Acknowledgement of this letter, along with the Building Consent number, is required by our company as soon as possible.

Council Contacts:

Consents Officer: \_\_\_\_\_  
Fax #: \_\_\_\_\_  
Phone: \_\_\_\_\_

Please forward to:

Bruce Ramsay  
Dyers Road ITM  
Ph (03) 373 6049  
Fax (03) 376 6049



200 Maces Road  
PO Box 35-193 Christchurch  
Ph (03) 389 8200

JOB No 50898

Client: LMS Drafting & Design  
Job Name: Billie Anderson  
Address: Lot 86 Oakfields, Amberley

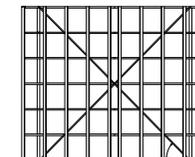
Pitch: 20.000  
Roof Material: Galv Iron .5mm  
Soffit Overhang: 600  
Wind Area: High  
Snow Load: 0.504

Trusses And Rafters At 900 Centres  
Unless Stated Otherwise

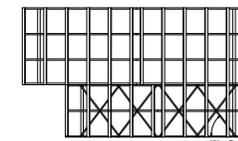
DRAWN BY Chris Nottingham

DATE 12 Sep,2017 PAGE 1 of

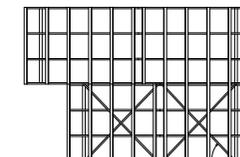
### Roof Bracing Details



Single Cross @ 45° 45° x 7'



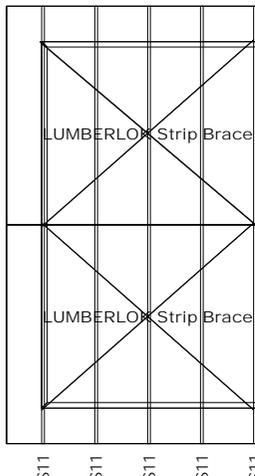
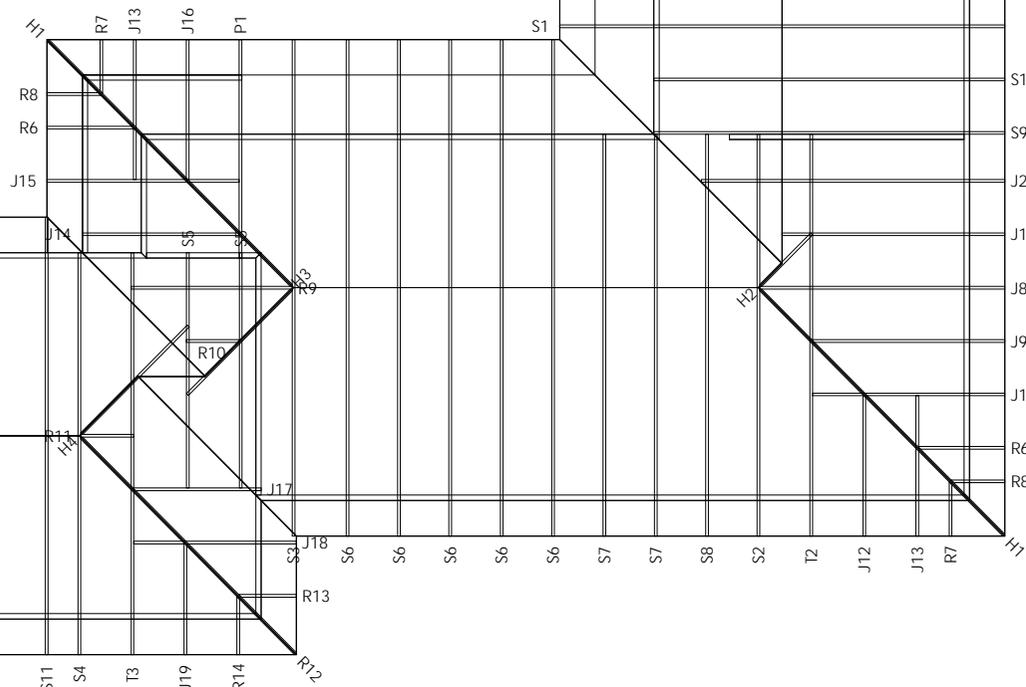
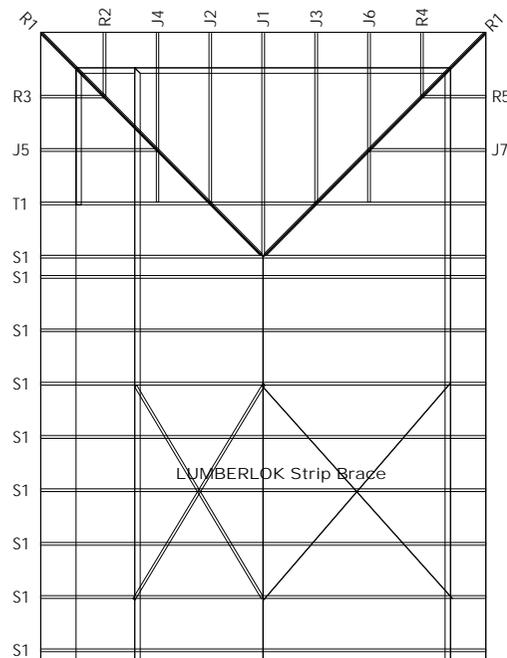
Quadruple Cross @ 45° 45° x 7'



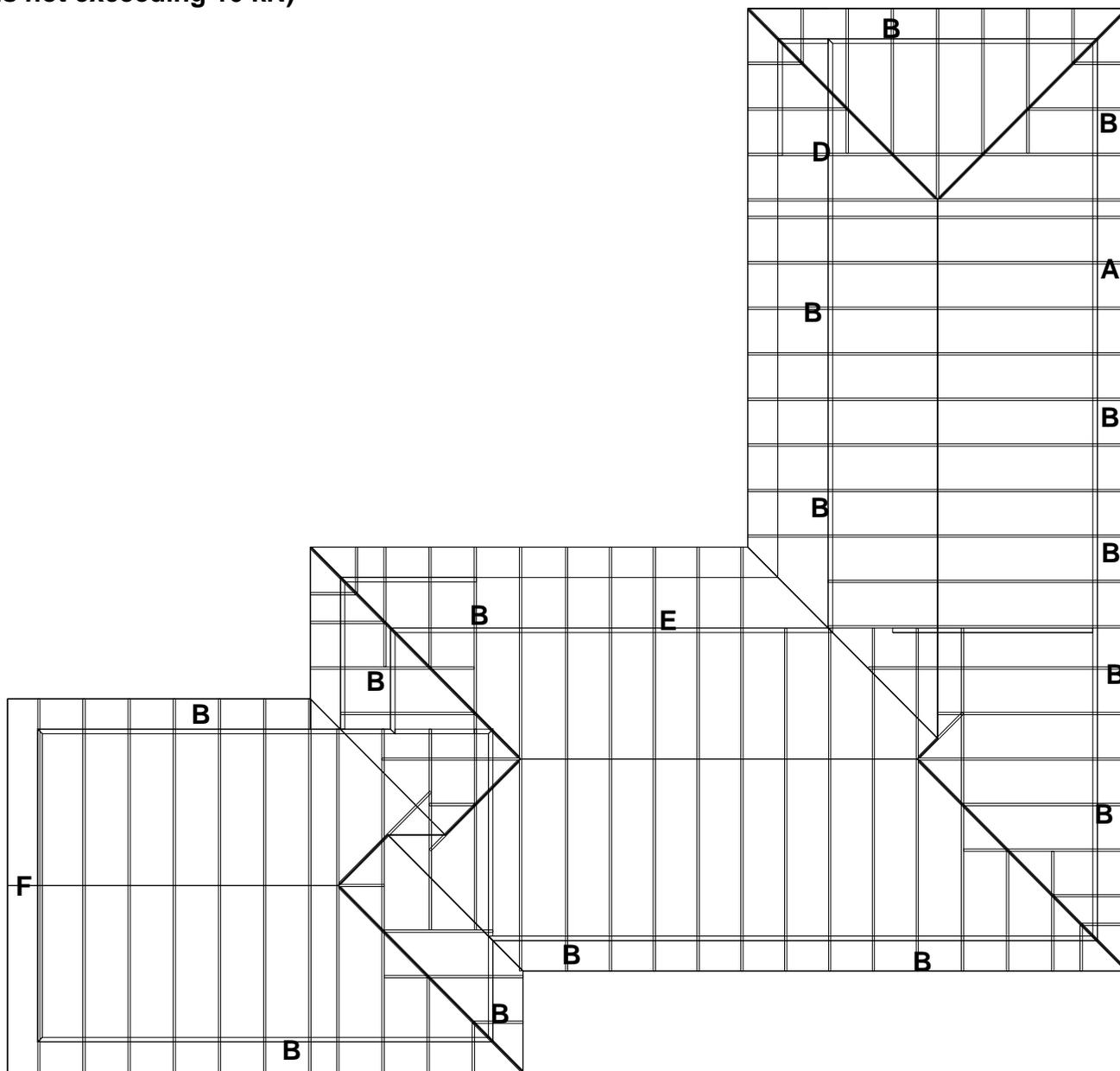
Double Cross @ 45°  
(as diagram above)  
45° x 7'

**NOTES:**

Refer to:  
Lumberlok roof bracing brochure  
07/2006



All internal wall shown on this layout are considered to be Load Bearing (loads not exceeding 10 kN)



200 Maces Road  
PO Box 35-193 Christchurch

Ph (03) 389 8200

JOB No 50898

Client: LMS Drafting & Design  
Job Name: Billie Anderson  
Address: Lot 86 Oakfields, Amberley

Pitch: 20.000  
Roof Material: Galv Iron .5mm  
Soffit Overhang: 600  
Wind Area: High  
Snow Load: 0.504

Trusses And Rafters At 900 Centres  
Unless Stated Otherwise

DRAWN BY Chris Nottingham

DATE 12 Sep,2017 PAGE 1 of

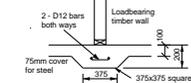
These lintels have been sized as per the GANGLAM and FLITCH BEAM selection manuals as provided by MiTek NZ Ltd.

HYSpan lintels have been sized as per the HYSpan selection charts.

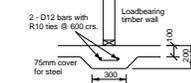
Unless otherwise stated all lintels are as per NZS3604 2011

LINTEL	SIZE	
A	2/90x45	PL8H1
B	2/140x45	PL8H1
C	2/190x45	PL8H1
D	2/240x45	PL8H1
E	2/290x45	PL8H1
F	PI 12 250 Prolam	

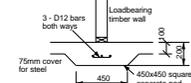
#### Slab Thickening Details



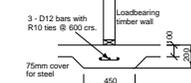
TYPE FP1 - 375x375mm Pad



TYPE FS1 - 300mm Strip footing



TYPE FP2 - 450x450mm Pad



TYPE FS2 - 450mm Strip footing

## 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).

### References:

NZS 3603:1993 Timber Structures Standard.

AS/NZS 1170:2002 Structural design actions, Parts 0 and 1.

NZS 3604:2011 Timber-framed buildings.

AS/NZS 1170:2011 Structural design actions, Part 2: Wind actions.

AS 1720.1:2010 Timber structures. Part 1: Design methods.

AS/NZS 1170:2003 Structural design actions, Part 3: Snow and ice actions.

AS 1720.3:2016 Timber structures. Part 3: Design criteria for timber-framed residential buildings

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

Version date: 3 May 2017

### For further information or advice contact:

Carter Holt Harvey Woodproducts New Zealand,  
173 Captain Springs Road, Onehunga. Auckland  
Telephone: 0800 808 131  
Facsimilie: 0800 808 132  
Email: [designit@chhwoodproducts.co.nz](mailto:designit@chhwoodproducts.co.nz)  
Web: <http://www.chhwoodproducts.co.nz>

### Specifier details:

<b>Specifier:</b>	Designer
<b>Business name:</b>	LMS Drafting & Design
<b>Email:</b>	luke_seaford@hotmail.com

### Project & site details:

<b>Project:</b>	Lot 86 Oakfields
<b>At (address):</b>	18 Claremont Crescent
<b>Design wind zone</b>	High
<b>Snow loading</b>	Design snow zone: N4, Altitude: 100 m (sub-alpine), Ground snow load, $S_g^{1,2} = 0.9$ kPa

1. designIT does not include any allowance for the effects of drifting and sliding of snow.

2. Snow loads are applied to roofed over structures only, the design of exposed floors/decks are not covered by designIT.

## MEMBER DESIGN DETAILS

### Member 1

<b>1) Member code and description</b>	L1 - Lintels - In single or upper storey load bearing walls
<b>2) Date prepared</b>	19 September 2017

**3) Serviceability criteria** AS 1720.1: 2010 and AS 1720.3: 2016

**4) Design inputs**

Span	2.9 m
Roof load width 'RLW'	1.0 m
Roof type and mass	Light roof and ceiling - 40 kg/m <sup>2</sup>
Nominal wall thickness	90 mm
Roof snow load	0.6 kPa, snow overhang 0.1 kN/m ( $\mu_i=0.7$ , $C_e=1.0$ , $k=0.5$ )

**5) Member specification**

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

**6) Serviceability**

Load case	Limit <sup>3</sup> on average deflection <sup>2</sup>	Estimated average deflection <sup>2</sup>	Rigidity ratio <sup>4</sup>
Long term load - G + $\Psi_L Q^*$	9.7 mm	3.5 mm (long term)	2.7
Live load - $\Psi_S Q$	11.6 mm	0.9 mm	12.6
Wind load - $W_s$	14.5 mm	2.8 mm	5.2
Snow load - $S_s$	9.7 mm	2.0 mm	4.8

\*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 <sup>2,3</sup>
		End kN <sup>4</sup>
1.35G	0.60	-1.1
1.2G + 1.5Q	0.80	-1.7
1.2G + $S_u$ + $\Psi_c Q$	0.80	-2.3
1.2G + $W_u$ + $\Psi_c Q$	1.00	-2.4
0.9G + $W_u$	1.00	1.4

**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** 19 September 2017

**3) Serviceability criteria** AS 1720.1: 2010 and AS 1720.3: 2016

**4) Design inputs**

Span	3.7 m
Roof load width 'RLW'	1.0 m
Roof type and mass	Light roof and ceiling - 40 kg/m <sup>2</sup>
Nominal wall thickness	90 mm
Roof snow load	0.6 kPa, snow overhang 0.1 kN/m ( $\mu_i=0.7$ , $C_e=1.0$ , $k=0.5$ )

**5) Member specification**

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

**6) Serviceability**

Load case	Limit <sup>3</sup> on average deflection <sup>2</sup>	Estimated average deflection <sup>2</sup>	Rigidity ratio <sup>4</sup>
Long term load - G + $\Psi_L Q^*$	10.0 mm	9.7 mm (long term)	1.0
Live load - $\Psi_S Q$	14.8 mm	2.5 mm	5.8
Wind load - $W_s$	18.5 mm	7.7 mm	2.4
Snow load - $S_s$	10.0 mm	5.6 mm	1.8

\*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 <sup>2,3</sup>
		End kN <sup>4</sup>
1.35G	0.60	-1.4
1.2G + 1.5Q	0.80	-2.1
1.2G + $S_u$ + $\Psi_c Q$	0.80	-2.8
1.2G + $W_u$ + $\Psi_c Q$	1.00	-2.9
0.9G + $W_u$	1.00	1.6

**8) Installation requirements**

- Provide at least 30 mm bearing at end supports

**Member 3**

- 1) Member code and description** L3 - Lintels - In single or upper storey load bearing walls
- 2) Date prepared** 19 September 2017
- 3) Serviceability criteria** AS 1720.1: 2010 and AS 1720.3: 2016
- 4) Design inputs**
- Span 1.0 m
  - Roof load width 'RLW' 1.0 m
  - Roof type and mass Light roof and ceiling - 40 kg/m<sup>2</sup>
  - Nominal wall thickness 90 mm
  - Roof snow load 0.6 kPa, snow overhang 0.1 kN/m ( $\mu_i=0.7$ ,  $C_e=1.0$ ,  $k=0.5$ )

**5) Member specification**

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

**6) Serviceability**

Load case	Limit <sup>3</sup> on average deflection <sup>2</sup>	Estimated average deflection <sup>2</sup>	Rigidity ratio <sup>4</sup>
Long term load - G + $\Psi_L Q^*$	3.3 mm	0.1 mm (long term)	37.9
Live load - $\Psi_S Q$	4.0 mm	0.0 mm	160.7
Wind load - $W_s$	5.0 mm	0.1 mm	66.5
Snow load - $S_s$	3.3 mm	0.1 mm	61.1

\*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 <sup>2,3</sup>
		End kN <sup>4</sup>
1.35G	0.60	-0.6
1.2G + 1.5Q	0.80	-0.8
1.2G + S <sub>u</sub> + $\Psi_c$ Q	0.80	-1.1
1.2G + W <sub>u</sub> + $\Psi_c$ Q	1.00	-1.2
0.9G + W <sub>u</sub>	1.00	0.7

**8) Installation requirements**

- Provide at least 30 mm bearing at end supports

**Member 4**

<b>1) Member code and description</b>	L4 - Lintels - In single or upper storey load bearing walls
<b>2) Date prepared</b>	19 September 2017
<b>3) Serviceability criteria</b>	AS 1720.1: 2010 and AS 1720.3: 2016
<b>4) Design inputs</b>	
Span	3.8 m
Roof load width 'RLW'	0.8 m
Roof type and mass	Heavy roof and ceiling - 90 kg/m <sup>2</sup>
Nominal wall thickness	90 mm
Roof snow load	0.6 kPa, snow overhang 0.1 kN/m ( $\mu_i=0.7$ , $C_e=1.0$ , $k=0.5$ )
<b>5) Member specification</b>	
Size, stress grade/product	Use 200 x 90 hy90
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

**6) Serviceability**

Load case	Limit <sup>3</sup> on average deflection <sup>2</sup>	Estimated average deflection <sup>2</sup>	Rigidity ratio <sup>4</sup>
Long term load - G + $\Psi_L$ Q*	10.0 mm	7.8 mm (long term)	1.3
Live load - $\Psi_s$ Q	15.0 mm	0.9 mm	15.9
Wind load - W <sub>s</sub>	19.0 mm	2.8 mm	6.7
Snow load - S <sub>s</sub>	10.0 mm	2.1 mm	4.8

\*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 <sup>2,3</sup>
		End kN <sup>4</sup>
1.35G	0.60	-2.1
1.2G + 1.5Q	0.80	-2.4
1.2G + S <sub>u</sub> + $\Psi_c$ Q	0.80	-3.0
1.2G + W <sub>u</sub> + $\Psi_c$ Q	1.00	-3.0
0.9G + W <sub>u</sub>	1.00	0.4

**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 1170 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 1328	Average + 33%
LVL to AS/NZS 4357 (includes hySPAN and hyJOIST)	Average +18%

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

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

4. 'Rigidity ratio' expresses the rigidity of the specified beam relative to the rigidity of a notional beam just meeting the serviceability requirements of AS 1720.3

#### Notes for interpretation of reaction data

1. Duration of load factor 'k<sub>1</sub>' 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
-

# INSTALLATION



## General

The roof trusses you are about to install have been manufactured to precise engineering standards. To ensure that the trusses perform as designed, it is essential that they be handled, erected and braced correctly. The following recommendations apply to roof trusses on standard domestic buildings with roof truss details given by the MiTek 20/20<sup>®</sup> truss design program. Details for commercial, industrial and non-standard domestic buildings are to be provided by the Engineer responsible for overall building design.

## Design

1. Trusses are designed for normal residential roof, ceiling, snow and wind loads to suit specific jobs and conditions. Additional loading such as Solar Units, Hot Water Tanks and Air Conditioning requires special consideration. Advice should be sought from the truss fabricator prior to commencing construction.
2. Wall frames and beams supporting trusses must be designed for the correct roof loads. Refer NZS 3604 Timber Framed Buildings or the MiTek<sup>®</sup> range of beams and lintels.
3. Wind load is an important loading condition in the design and performance of roof trusses. Ensure that you have correctly advised the truss fabricator with regard to wind load requirements and that adequate provision has been made to fix trusses to the supporting structure to withstand wind uplift forces.
4. Trusses are usually designed to be supported on the outer wall with internal walls being non-load bearing. Internal walls may be used to control deflections and reduce the camber required. Where it is necessary to use internal walls for load bearing, these will be clearly shown on the layout.
5. Before ordering trusses, ensure that your particular requirements have been provided for and that all relevant information has been supplied to the truss manufacturer. If non-standard trusses are being used, ensure that erection and bracing details are known before erection commences.
6. For environments where the atmosphere may be conducive to corrosion, such as some types of industrial and agricultural buildings, or buildings near the ocean and subject to salt spray, consideration should be given to the use of stainless steel connector plates.

### Important Note

1. It is the Builder's responsibility to ensure that all relevant information required for the design is provided to the fabricator at time of ordering trusses, including spans, pitches, profiles, quantities and loading. Final confirmation of dimensions and details between the fabricator and builder is recommended prior to manufacture.
2. It is the responsibility of the principal to ensure that all provisions of the Health and Safety Act are complied with during the installation of MiTek<sup>®</sup> timber trusses.
3. Trusses are designed for specific loading, geometry and support conditions. Under no circumstances should the truss timber be cut, removed or trusses modified in any way without prior approval from the truss fabricator.
4. Make sure all bracing is permanently fixed and all bolts and brackets are tightened prior to the laying of roof.

## Transport

Trusses must be fully supported when being transported in either a horizontal or vertical plane. Care must be taken when tying down not to put strain on chords or webs.

Timber or metal right angle protectors are a satisfactory method of avoiding damage. Unloading and handling as described below.

# INSTALLATION



## Job Storage and Lifting

Trusses should be inspected on arrival at site. Any damaged trusses should be reported immediately and not site repaired without approval of the truss fabricator.

Where it is anticipated that trusses will be stored on site for an extended period of time before use, adequate provision should be made to protect the trusses against the effects of weather. Protective covering should allow free air circulation around trusses.

Trusses when stored on the job site should be on timber billets clear of the ground and in flat position to avoid distortion.

When lifting, care must be taken to avoid damaging joints and timber. Spreader bars with attachment to the panel points are recommended where span exceeds 9000mm. Never lift by the apex joint only.

The trusses may also be placed on the top plates by pulling them up skids, spread at 3000mm, taking the same precaution as described above. Ensure that the trusses are not distorted or allowed to sag between supports.

The recommended method of lifting trusses will depend on a number of factors, including truss length and shape.

In general, sling the truss from top chord panel points as shown in (Fig 1). Slings should be located at equal distance from truss centreline and be approximately 1/3 to 1/2 the truss length apart.

Chains and hooks should not be used for lifting as these can damage the chords and plates. Polyester web slings are recommended.

The angle between the sling legs should be 60° or less and where truss spans are greater than 9000mm it is recommended that a spreader bar or strongback be used. Some typical examples are shown in (Fig 1).

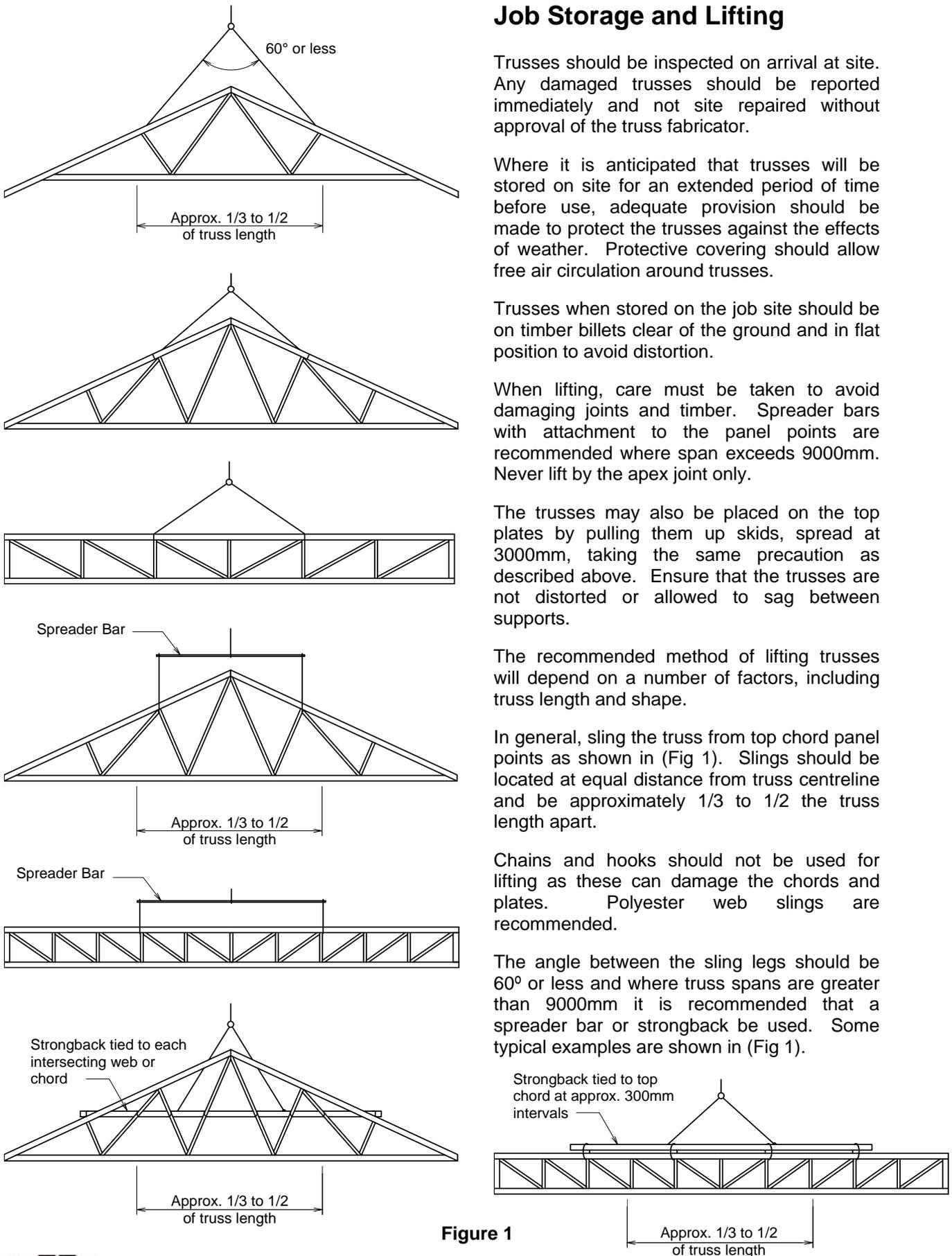


Figure 1



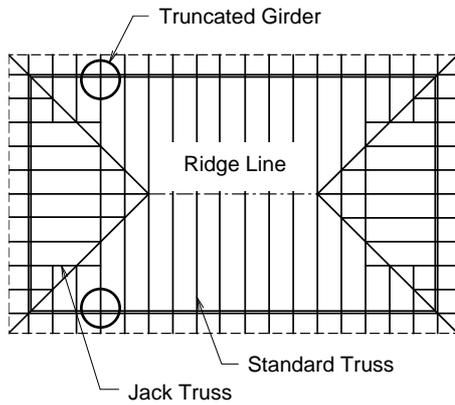
# INSTALLATION



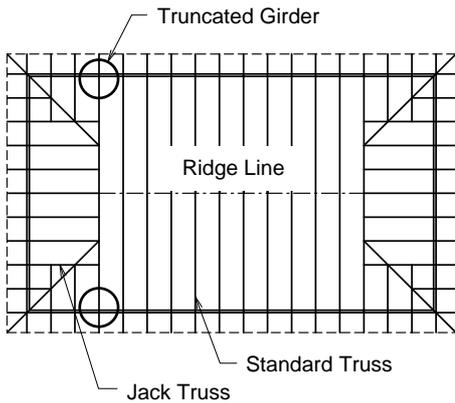
## Roof Layout

A layout for trusses must be determined before erection. If in doubt consult your truss fabricator.

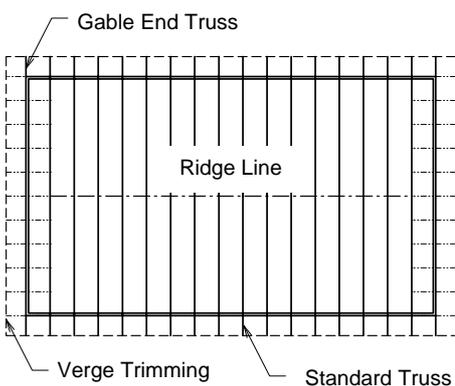
### Hip End



### Semi Gable

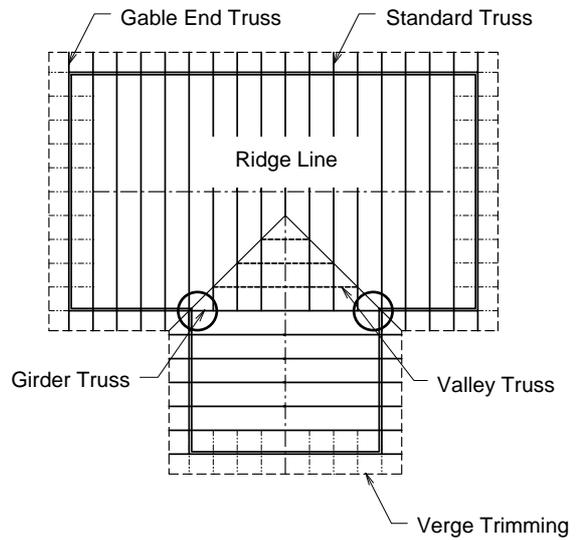


### Gable

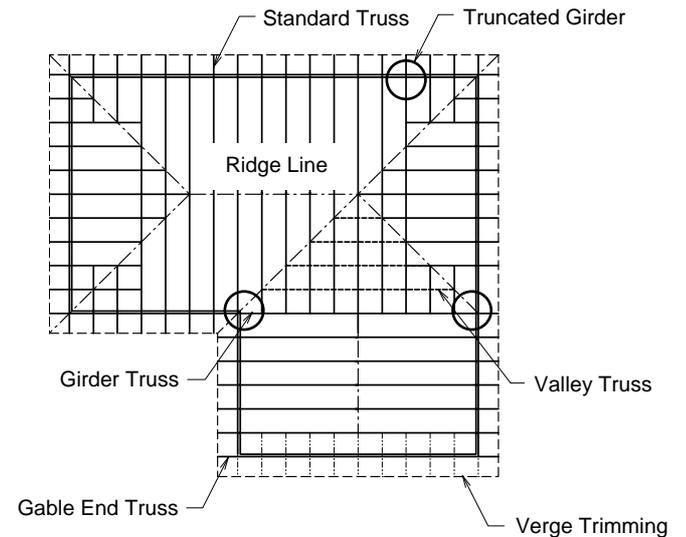


**Note:** Gable End Truss to be located over end wall unless otherwise advised by supplier.

### T Shaped



### L Shape



**Figure 2**

Points circled on these layouts may be critical. Refer to the Wall Frame Construction Notes.



# INSTALLATION



## Wall Frame Construction

The load bearing frames should be checked for:

1. Lintel sizes suitable for truss loading. Consult NZS 3604, the GANGLAM Beam Manual, the MiTek® FLITCH BEAM Manual or your truss fabricator.
2. If trusses are not located directly over the studs the top plate size must be in accordance with NZS 3604 or be reinforced in accordance with NZS 3604.
3. Girder trusses may require the strengthening of studs at the points of support. Check the loading with your truss fabricator. Points circled on the layout notes are critical.
4. The supporting structure construction must be adequate to resist wind uplift forces and must be fully braced, plumb and nailed home before the erection of trusses is commenced.

## Erection and Fixing

It is convenient to mark the truss position on the wall plates before lifting the trusses. Use the layout drawing as your guide and note that the truss design spacing must not be exceeded.

**Gable Roofs** – start with a gable truss at each end, fixing it to the top plate at the position marked. These trusses must be temporarily braced back to the ground or frame at the panel points.

**Hip or Semi Gable** – start with the semi gable girder truss or the truncated girder, placing it on the top plate at the position marked and temporarily bracing it back to the frame. Locate hip and jack trusses and adjust girder truss position before fixing.

**Line** – Using a stringline along the apex (Fig 3), place each intermediate truss and fix it to the top plate at the position marked, spacing it with gauging rods and ties (Fig 6).

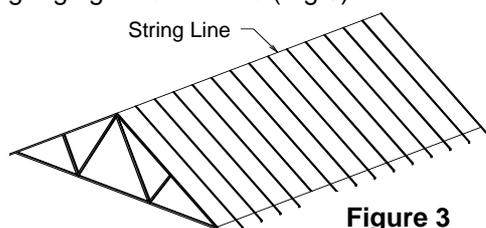


Figure 3

All trusses should be fixed to top plates and girder trusses in accordance with NZS 3604 or the specific roof truss design.

## Camber

Trusses are usually manufactured with a camber built in. The camber is designed to give a flat ceiling and even roofline under long term loading. The camber is progressively taken up as the load from the roof covering and ceiling is applied. Under no circumstances should trusses be supported along the span (unless designed for) by blocking or propping.

If a truss has been designed to be supported internally a “**SUPPORT HERE**” label is affixed at the appropriate point.

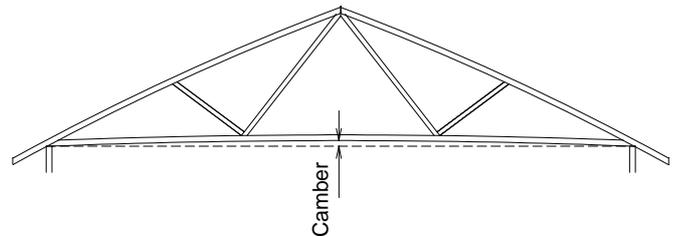


Figure 4

## Erection Tolerances

Tolerance is critical for both a good roofline and effective bracing. A string line, plumb line or level should be used.

1. Trusses should be erected with overall bow or bow in any chord not to exceed the lesser of  $L/200$  or 50mm (L is the chord length).
2. Trusses should be erected with the apex not more than the lesser of the span/200mm or 50mm from a vertical plane through the supports.
3. No section of the truss should not be out of plumb by the truss height/50 or max. 50mm.

Generally if a bow or tilt is evident to the eye, the truss has been erected outside the tolerances. See (Fig 5).

# INSTALLATION



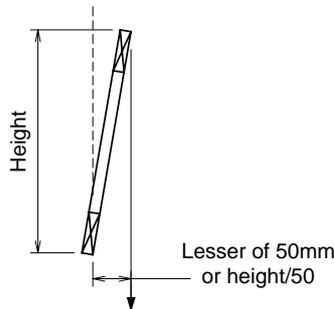
## Erection Bracing

The trusses must be braced during erection. If this is not done, then two problems can occur.

1. Collapse during erection.
2. Erection tolerance will be exceeded, causing overloading, buckling and possible permanent damage.

The exact details of erection bracing will, for practical purposes, differ from job to job. The following recommendations are for guidance only as the details employed are the responsibility of the erector.

### Plumb



### Bow

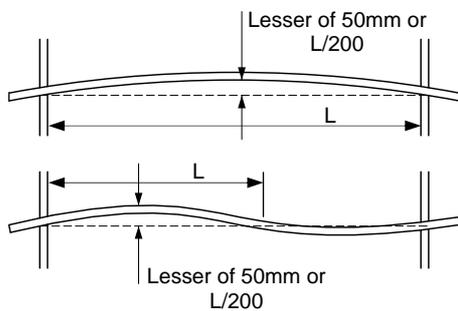


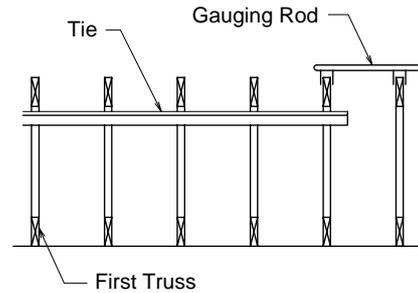
Figure 5

The first truss should be erected straight and plumb to erection tolerances given previously and temporarily braced to a rigid element, e.g. wall or ground as shown on (Fig 6).

Each successive truss should be spaced using a gauging rod, then fixed back to the first truss with temporary ties at each top chord panel point and at maximum spacing of 3000mm, and to bottom chord at 4000mm max. spacing.

Use 50 x 25 ties for trusses up to and including 900mm centres and 70 x 35 ties for trusses up to 1800mm centres. Fix ties to each truss with one 3.75 diameter nail. Splice by lapping over 2 adjacent trusses.

The purpose of installing temporary bracing is to hold trusses straight and plumb prior to fixing permanent bracing. Temporary bracing is particularly important when the roof cladding is shingles on ply without purlins. All permanent bracing, ties, hold downs, etc. must be fixed prior to laying of roof.



Locate and space each truss using Gauging Rod

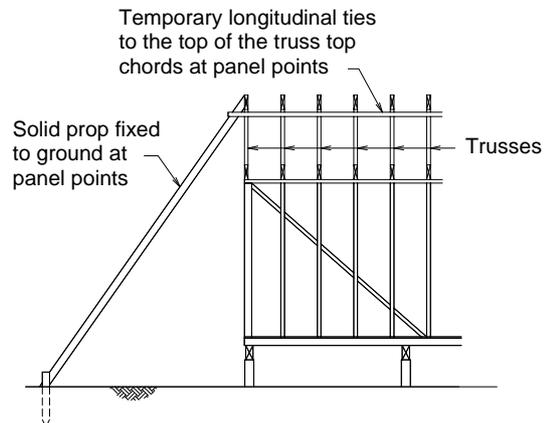
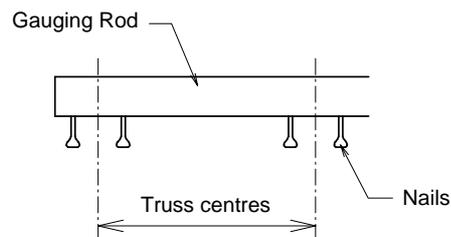


Figure 6

### Important Note

These recommendations are a guide only for the erection of residential roof trusses up to 13000mm span and spaced at centres not exceeding 1200mm. For trusses beyond these conditions, consult your truss fabricator.



## GABLE END BRACING OVER ROOF SECTION OF END WALLS



- ★ Covers bracing of the roof section on gable end construction.
- ★ Includes bracing on extra high gables.
- ★ All timber to be minimum grade SG8 as defined in NZS 3604:2011 apart from gable end webs which are either SG6 or SG8 (see Tables 1A & 1B).
- ★ Tables cover gable end truss installed as single component 45mm thick, double component 90mm thick, 45x70mm or 45x90mm webs on flat.
- ★ Design assumes restraints are provided at the ceiling and roof lines.
- ★ Bracing covers loading conditions as per NZS 3604:2011 up to Extra High wind and includes full height brick veneer gables.

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

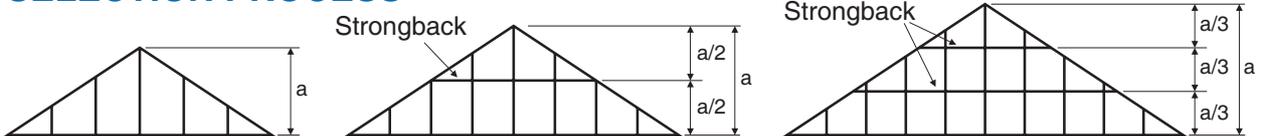
WIND ZONE	MAXIMUM STRONGBACK HEIGHT (h)											
	70x45 Web		90x45 Web		Double Component Gable End Webs				45x70 on flat		45x90 on flat	
	SG6	SG8	SG6	SG8	2/ 70x45		2/ 90x45		SG6	SG8	SG6	SG8
LOW	1800	2000	2000	2200	2300	2550	2500	2750	2450	2700	3150	3450
MEDIUM	1650	1800	1800	2000	2100	2300	2250	2500	2150	2450	2800	3150
HIGH	1450	1600	1600	1750	1850	2050	2000	2200	1800	2150	2350	2800
VERY HIGH	1300	1500	1450	1600	1700	1850	1850	2050	1600	1900	2050	2450
EXTRA HIGH	1150	1350	1300	1500	1600*	1750*	1750*	1900*	1450	1700	1850*	2200*

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

WIND ZONE	MAXIMUM STRONGBACK HEIGHT (h)											
	70x45 Web		90x45 Web		Double Component Gable End Webs				45x70 on flat		45x90 on flat	
	SG6	SG8	SG6	SG8	2/ 70x45		2/ 90x45		SG6	SG8	SG6	SG8
LOW	2100	2300	2250	2500	2650	2900	2850	3150	2800	3100	3600	3900
MEDIUM	1900	2100	2050	2250	2400	2650	2600	2850	2550	2800	3300	3600
HIGH	1700	1850	1850	2000	2100	2350	2300	2550	2250	2500	2850	3200
VERY HIGH	1550	1700	1700	1850	1950	2150	2100	2350	1950	2300	2550	2950
EXTRA HIGH	1400	1600	1550	1750	1850*	2000*	2000*	2200*	1800	2100	2300*	2700*

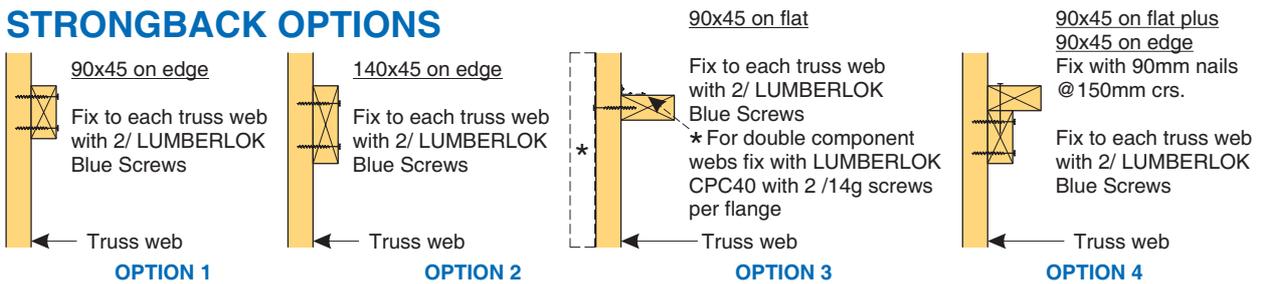
\*Use these values for full height brick veneer attached to gable end.  
Please note that the maximum height of brick veneer on a gable end wall is 5.5m.

**SELECTION PROCESS**



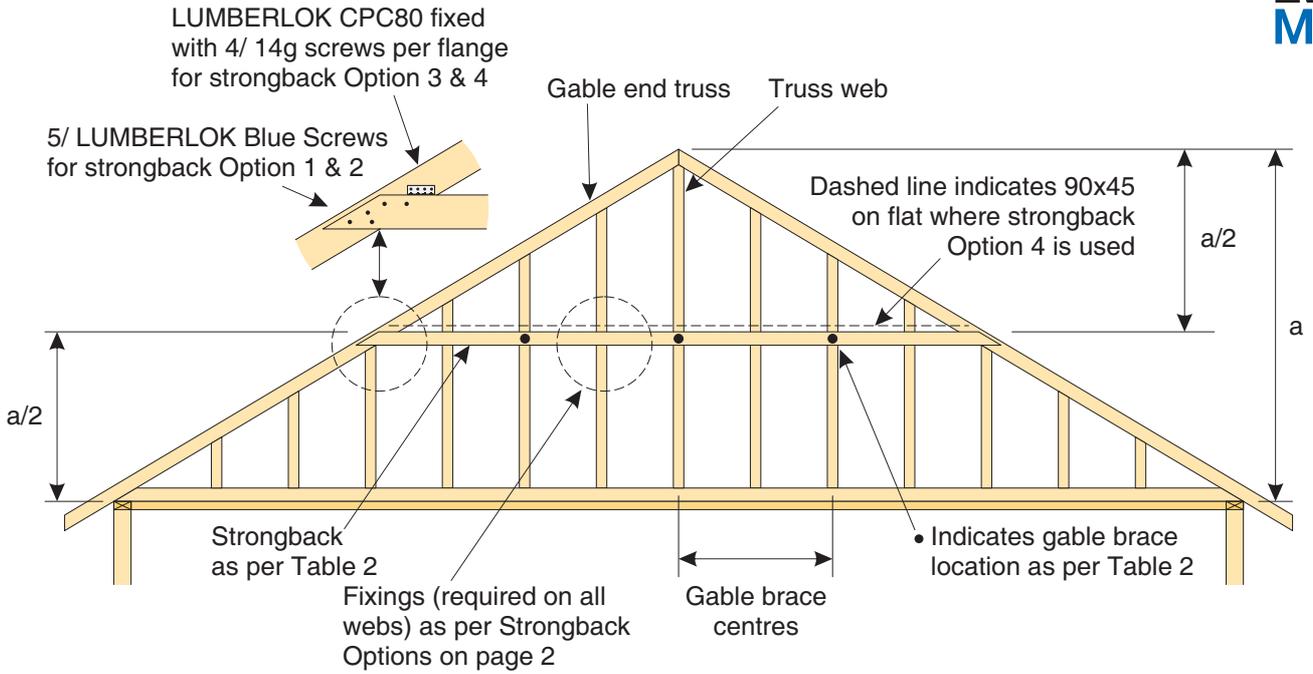
- Where (a) is less than or equal to (h) - no strongback required.
- Where (a) is greater than (h) but less than 2(h) - lower strongback is required.  
• Locate the strongback at height of (a/2).
- Where (a) is greater than 2(h) but less than 3(h) - lower and upper strongbacks are required.  
• Locate strongbacks at height increments of (a/3).

**STRONGBACK OPTIONS**

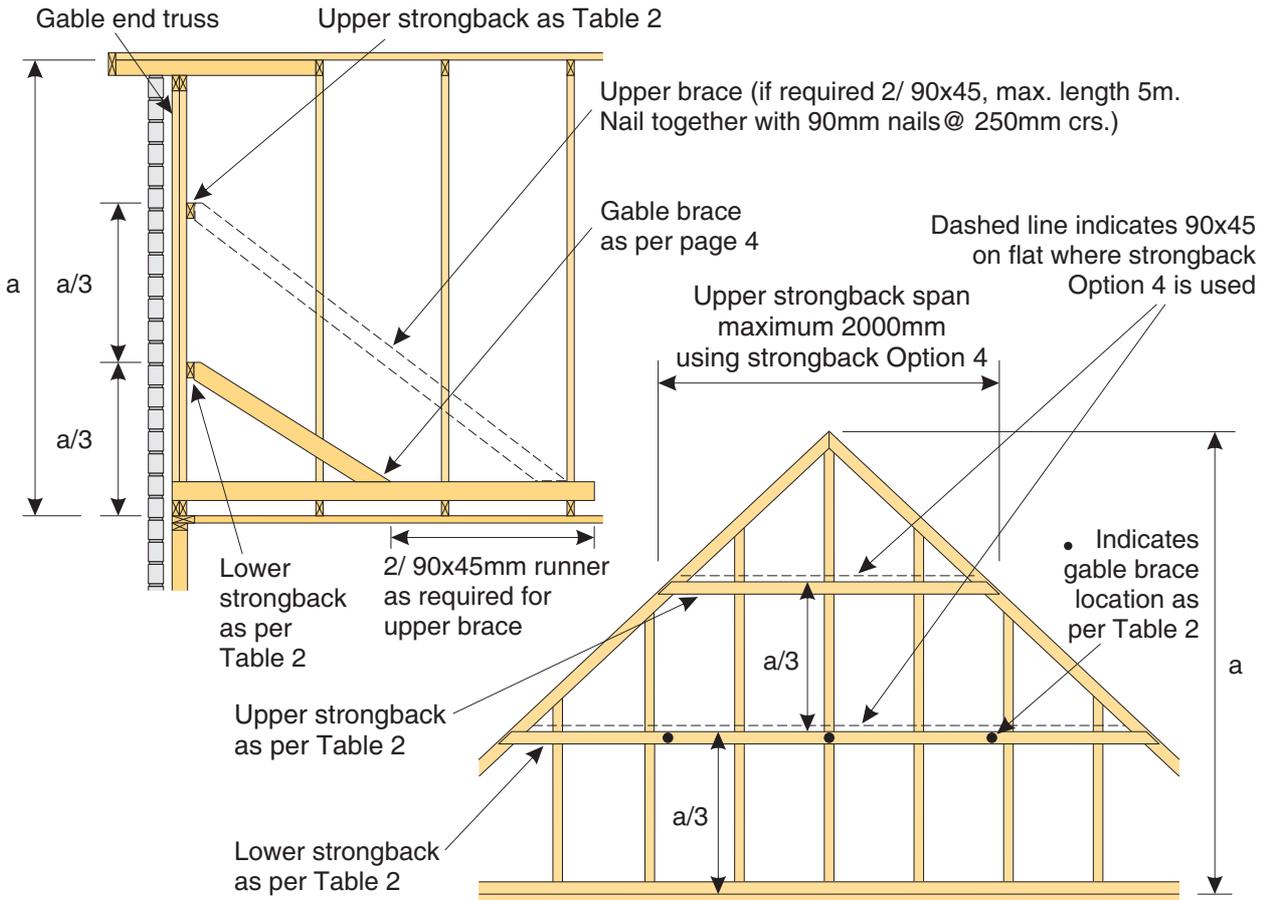


**TABLE 2 - STRONGBACK SPAN AND GABLE BRACE LOCATION**

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

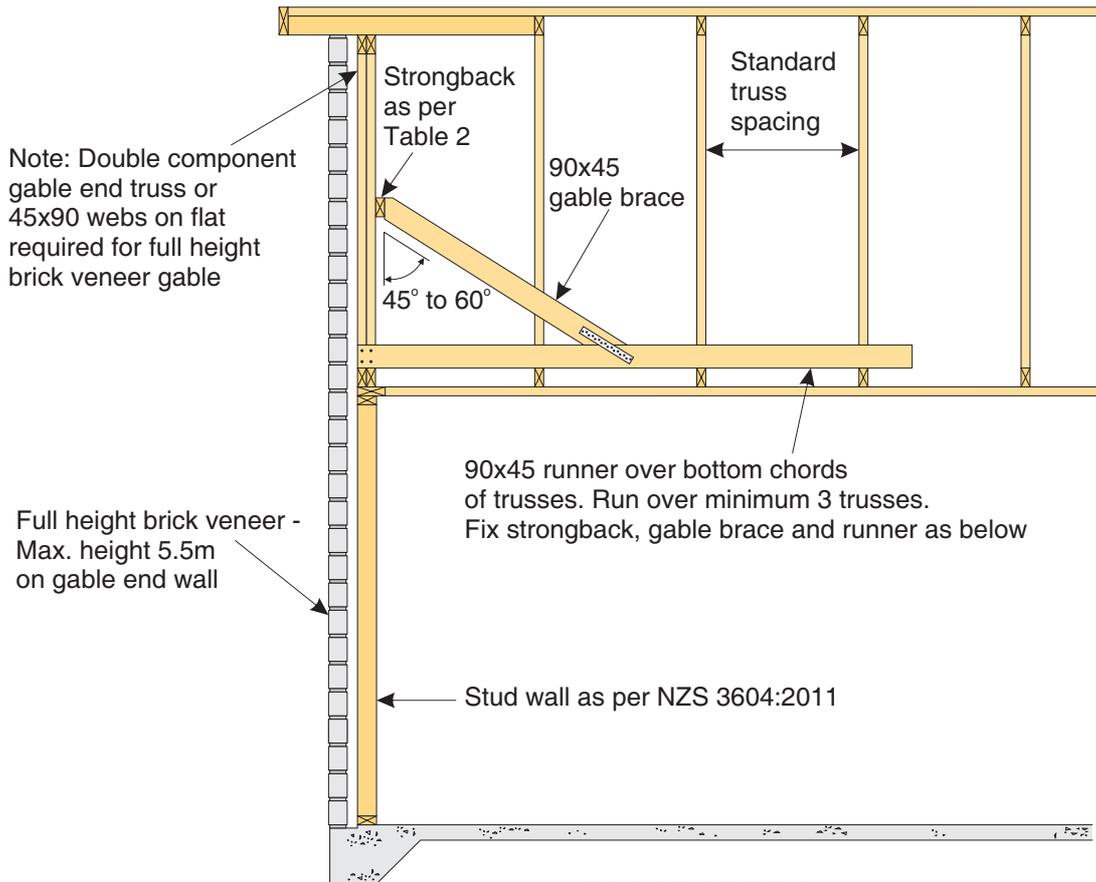


**SINGLE STRONGBACK DETAILS**

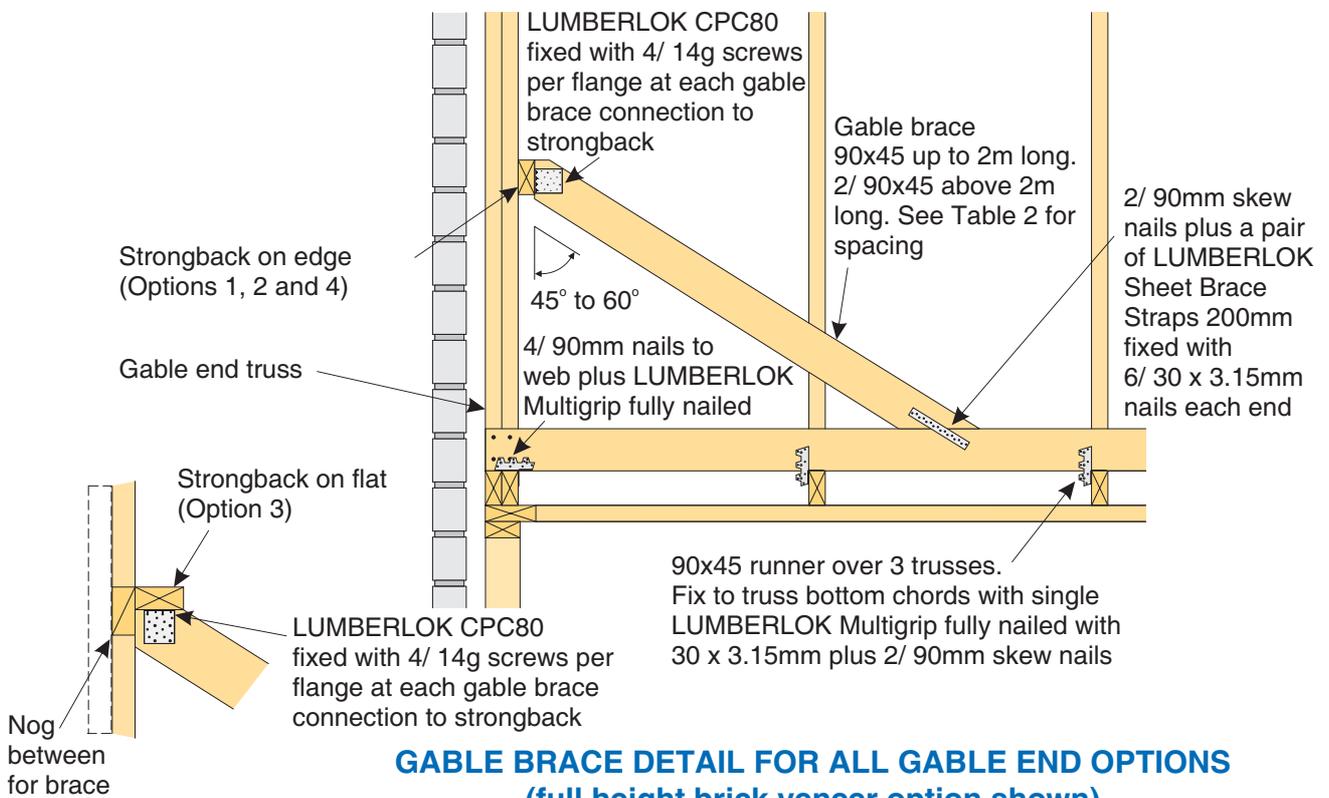


**DOUBLE STRONGBACK DETAILS FOR ALL GABLE END OPTIONS  
(full height brick veneer option shown)**





**CROSS SECTION**  
(full height brick veneer option shown)



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

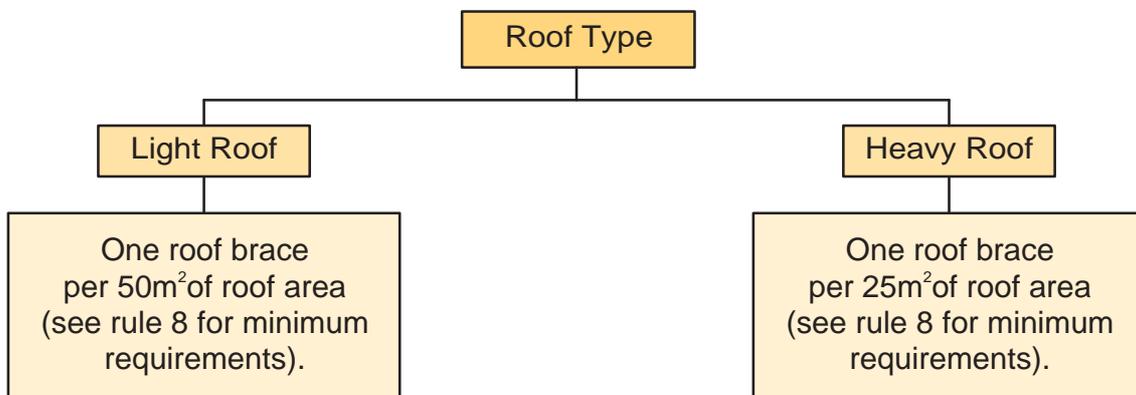


# LUMBERLOK®

## ROOF BRACING SPECIFICATION AS PER NZS 3604:2011

- ★ Covers roof bracing requirements to resist horizontal loads as set out in NZS 3604:2011 Section 10.
- ★ A definitive guide to the description and installation of Roof Plane Braces and Roof Space Braces.

### Roof Bracing Requirements



### Roof Bracing - Rules & Definitions

1. The bracing described in this brochure covers both framed roofs and fully trussed roofs.
2. Roof planes less than 6m<sup>2</sup> (e.g. dormers & porches) do not require bracing.
3. Roof braces can consist of either i) Roof Plane Brace or ii) Roof Space Brace or combination of the two.
4. Roof braces are not required on roofs where sarking is installed as per NZS 3604:2011 Clause 10.4.4 or where a ceiling diaphragm is installed and is attached to the rafters.
5. Roof area is the actual plan area of the roof and includes overhangs.
6. A hip or valley rafter running continuously from ridge to top plate can be classed as one roof plane brace.
7. A pair of crossed LUMBERLOK Strip Brace (preferred for ease of installation) can be classed as one roof plane brace and shall be installed as detailed in this brochure.
8. There must be at least one roof plane brace in each roof plane. Each ridge line shall have a minimum of two roof braces.
9. Every design effort should be made to distribute the roof braces as evenly as possible over the entire roof area and run alternately in opposite directions.



# Roof Bracing Options

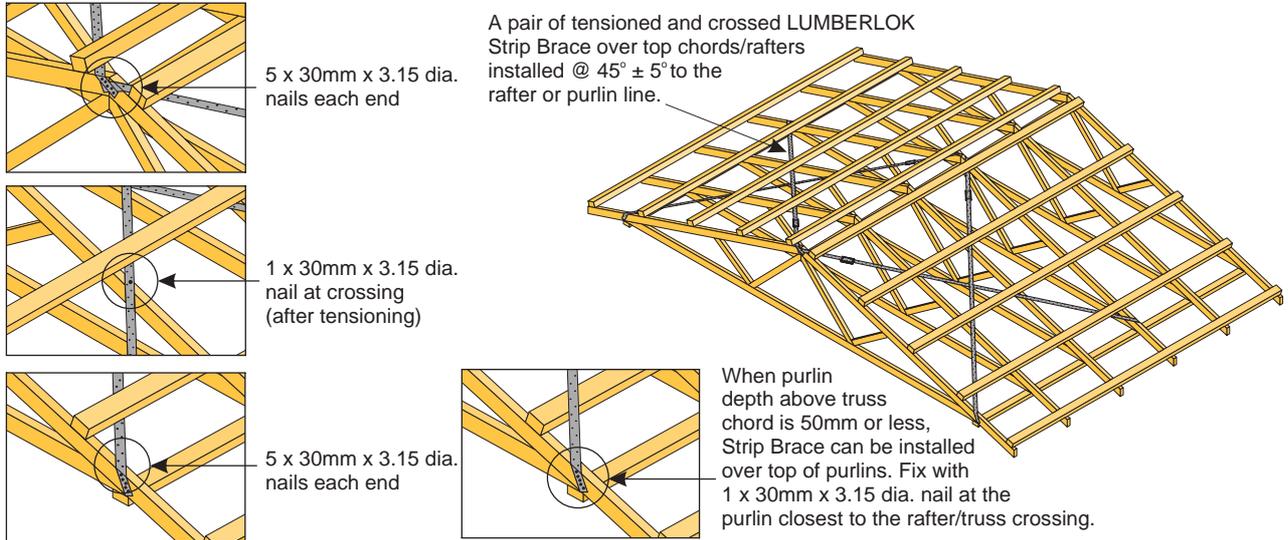
## i) ROOF PLANE BRACE

Each roof plane brace can be:

- A hip or valley rafter running continuously from ridge to the top plate in accordance with NZS 3604:2011 Clauses 10.2.1.3.2 or 10.2.1.3.3

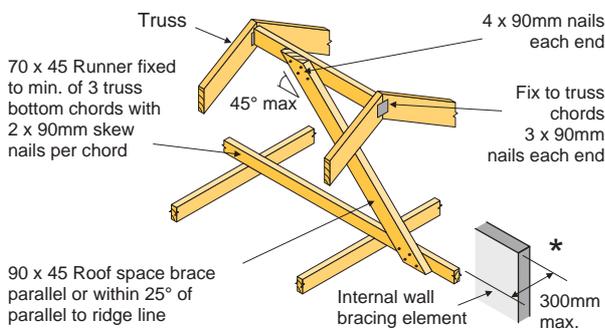
OR

- A pair of tensioned and crossed LUMBERLOK Strip Brace running continuously from ridge to top plate installed as detailed below.

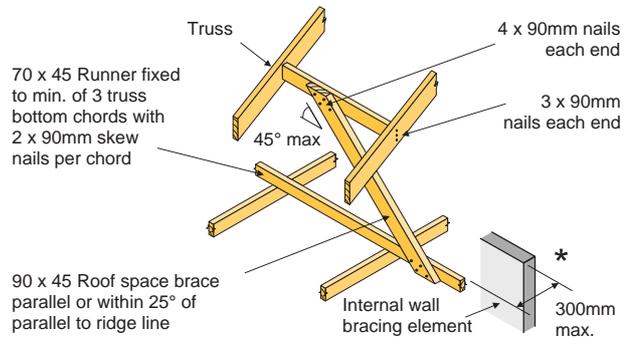


## ii) ROOF SPACE BRACE

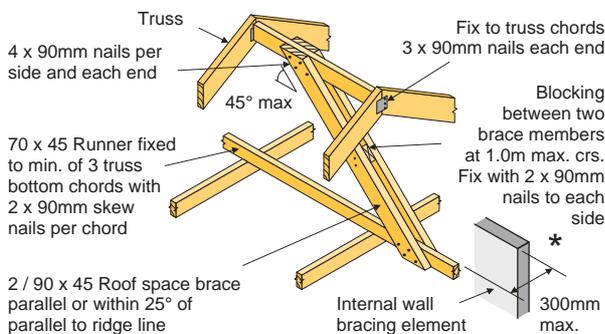
### (A) Less than 2m long.



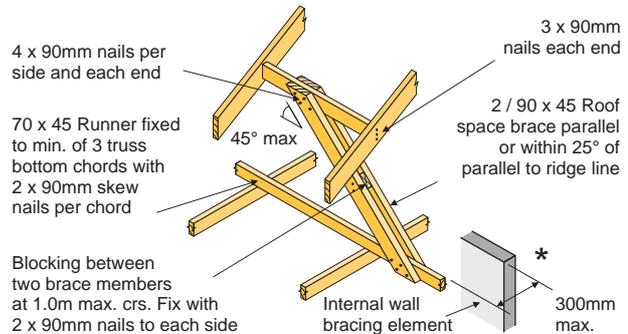
### (C) Not directly under the ridge - less than 2m long.



### (B) More than 2m long (Max. 4.8m).



### (D) Not directly under the ridge - more than 2m long.



\* Not required when a ceiling diaphragm complying with Clause 13.5 of NZS 3604:2011 is used.



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GANG-NAIL® LUMBERLOK® BOWMAC®

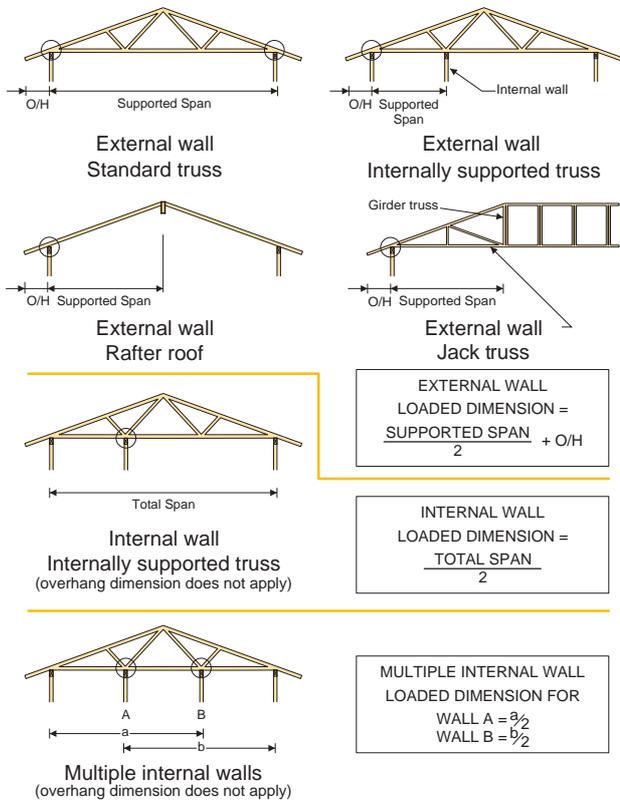


# STUD TO TOP PLATE FIXING SCHEDULE ALTERNATIVE TO TABLE 8.18 NZS 3604:2011

## NOTE:

- ★ All fixings are designed to resist vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ Gable end wall top plate/stud connections where the adjacent rafter/truss is located within 1200mm of gable end wall with a maximum verge overhang of 750mm, requires fixing type A as shown below.
- ★ All fixings assume top plate thickness of 45mm maximum.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011.

## LOADED DIMENSION DEFINITION



## FIXING SELECTION CHART

(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)

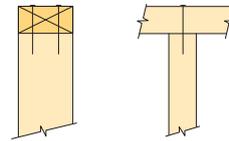
Wind Zones L, M, H, VH, EH, as per NZS 3604:2011

Loaded Dimension (m) Stud Centres			Light Roof Wind Zone					Heavy Roof Wind Zone				
300mm	400mm	600mm	L	M	H	VH	EH	L	M	H	VH	EH
3.0	2.3	1.5	A	A	B	B	B	A	A	B	B	B
4.0	3.0	2.0	A	A	B	B	B	A	A	B	B	B
5.0	3.8	2.5	A	B	B	B	B	A	A	B	B	B
6.0	4.5	3.0	A	B	B	B	B	A	A	B	B	B
7.0	5.3	3.5	A	B	B	B	B	A	A	B	B	B
8.0	6.0	4.0	A	B	B	B	B	A	A	B	B	B
9.0	6.8	4.5	B	B	B	B	B	A	A	B	B	B
10.0	7.5	5.0	B	B	B	B	B	A	A	B	B	B
11.0	8.3	5.5	B	B	B	B	B	A	A	B	B	B
12.0	9.0	6.0	B	B	B	B	B	A	A	B	B	B

## FIXING OPTIONS

### FIXING TYPE A 0.7 kN

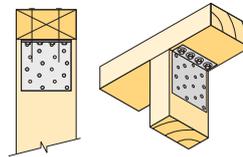
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



### FIXING TYPE B 4.7 kN

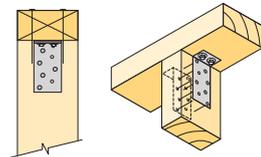
CHOOSE ANY OF THE 3 OPTIONS BELOW

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



Plus  
LUMBERLOK  
6kN Stud Anchor  
(CPC80)

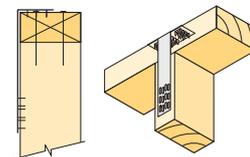
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus  
2 x LUMBERLOK  
CPC40

Recommended for internal wall options to avoid lining issues

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



Plus  
LUMBERLOK  
Stud Strap  
(one face only)

### Note:

To calculate the number of B type fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this number of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.



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GANG-NAIL® LUMBERLOK® BOWMAC®

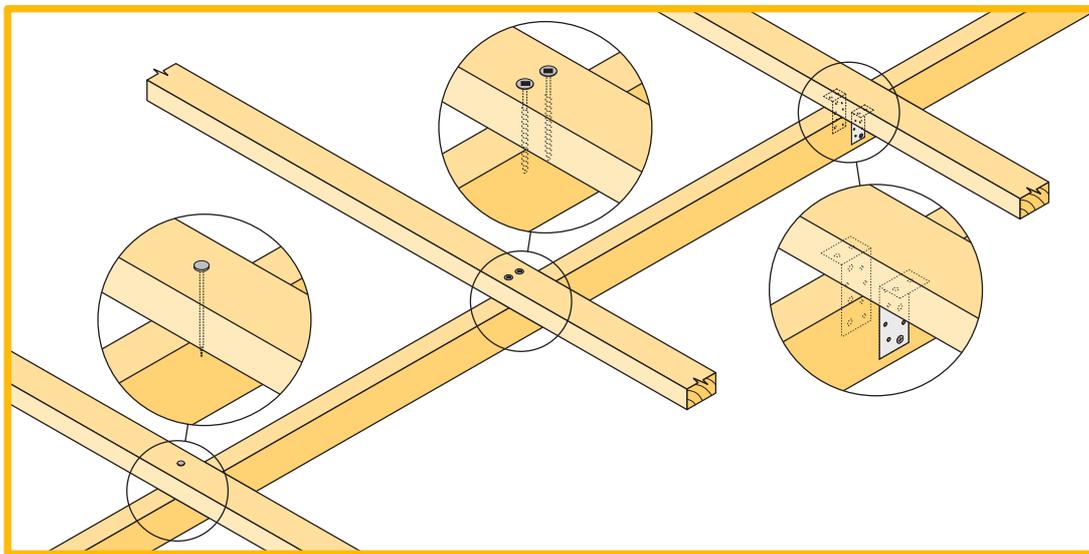


# LUMBERLOK®

## PURLIN & BATTEN FIXING CHART ALTERNATIVE SOLUTION TO NZS 3604:2011 TABLES 10.10 & 10.12

### NOTE:

- ★ All purlin and batten sizes are as per NZS 3604:2011.
- ★ All fixings assume that the purlin and battens are installed on their flat over the top of the rafter or truss.
- ★ The minimum fixing requirements apply to all purlin locations within the roof area.
- ★ The LUMBERLOK BLUE SCREW where specified requires a minimum of 30mm penetration into rafter or truss i.e. it is suitable for rough sawn timber up to 50mm thick at 18% moisture content.



### SELECTION CHART FIXING OPTIONS (minimum fixing requirements)

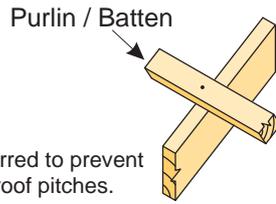
ROOF WEIGHT	MAX. PURLIN SPAN (mm)	MAX. PURLIN CRS. (mm)	WIND ZONE				
			L	M	H	VH	EH
HEAVY ROOF Tile Battens	900	370	A	A	A	A	A
LIGHT ROOF Tile Battens	900	370	A	A	B	C	C
	1200	370	A	B	C	C	C
LIGHT ROOF Purlins	900	900	C	C	C	C	D
	1200	900	C	C	C	D	D
	1200	1200	C	C	D	E	E

Wind Zone: As per NZS 3604:2011	L = Low Wind M = Medium Wind H = High Wind VH = Very High Wind EH = Extra High Wind
------------------------------------	---



## STANDARD FIXING OPTIONS

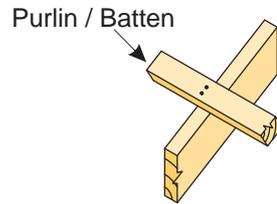
**FIXING TYPE A**  
0.55kN



1 NAIL

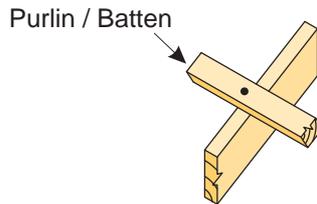
Note: Two nails maybe preferred to prevent batten rolling over with high roof pitches.

**FIXING TYPE B**  
0.8kN



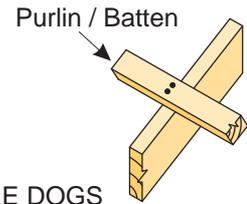
2 NAILS

**FIXING TYPE C**  
2.4kN



1 BLUE SCREW

**FIXING TYPE D**  
3.45kN

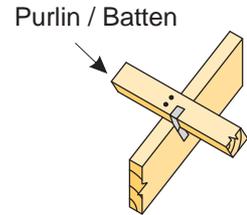


2 BLUE SCREWS

OR

2 SKEW NAILS plus 2 WIRE DOGS  
(for purlin on edge)

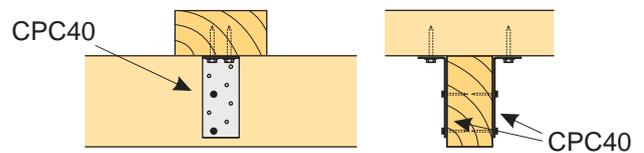
**FIXING TYPE E**  
5.5kN



2 NAILS plus 1 CT200

OR

1 PAIR of CPC40



## FIXING DEFINITIONS

**NAIL** = Either 90mm x 3.15 dia. power-driven nail or 100mm x 3.75 dia. hand-driven nail

**BLUE SCREW** = 80mm x 10 gauge LUMBERLOK BLUE SCREW

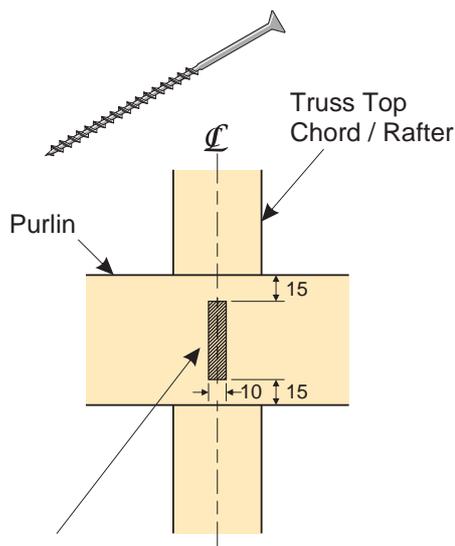
**WIRE DOG** = LUMBERLOK WIRE DOG either LH or RH

**CT200** = LUMBERLOK Ceiling Tie CT200 bend over purlin, 4 x LUMBERLOK Product Nails 30mm x 3.15 dia. each end

**CPC40** = LUMBERLOK CPC40 with 2 x Type 17-14g x 35mm Hex Head Screws per flange

## FIXING TOLERANCES

### LUMBERLOK BLUE SCREW



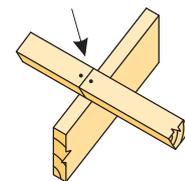
**NOTE:**

Locate fixings within the shaded area. Care to be taken to avoid over tightening of screws.

## PURLIN / BATTEN SPLICE FIXING OPTIONS

**FIXING TYPE A & B OVER PURLIN SPLICE**

1 nail in each

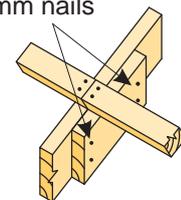


**NOTE:**

Skew nail when fixing to 35mm rafter or truss

**FIXING TYPE C, D or E OVER PURLIN SPLICE**

90 x 35mm block fixed to chord or rafter with 4 x 75mm nails



• TYPE C  
1 SCREW to each purlin

• TYPE D & E  
1 NAIL plus 1 SCREW to each purlin

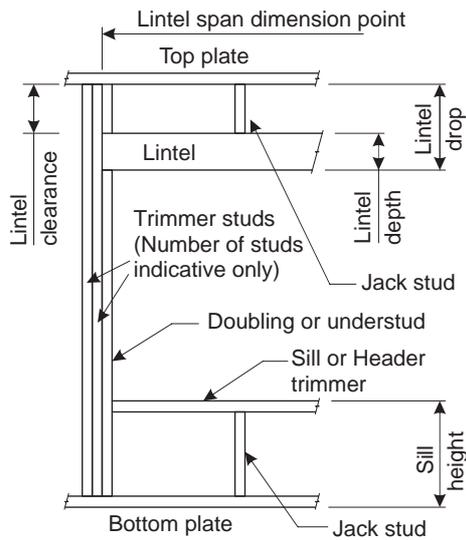


## LINTEL FIXING SCHEDULE ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

### NOTE:

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

### DEFINITIONS



### Lintel Supporting Girder Trusses:

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

### Notes:

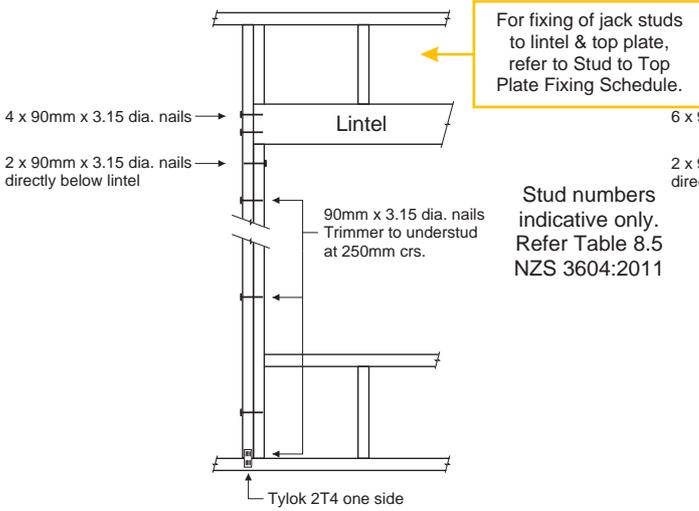
- 1) Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by lintel)
- 2) Assumed girder truss is at mid-span or middle third span of lintel
- 3) Use similar fixings for both ends of lintel
- 4) All other cases require specific engineering design

### SELECTION CHART FOR LINTEL FIXING

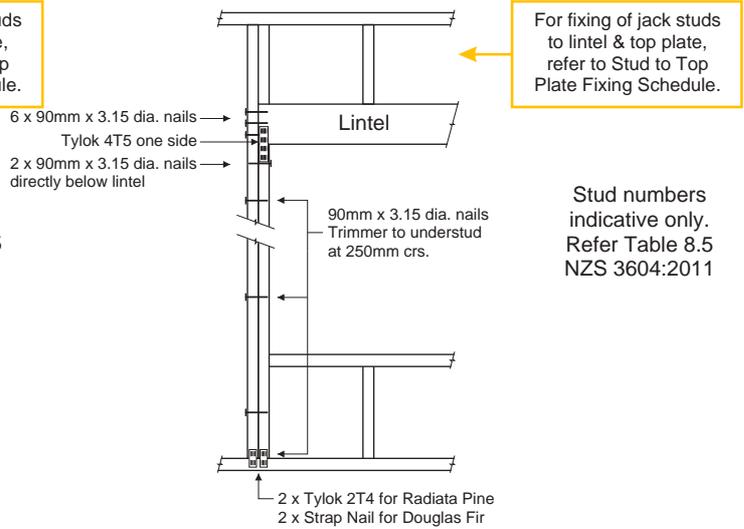
Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:2011)	Light Roof					Heavy Roof				
		Wind Zone					Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
0.7	2.0	E	E	E	E	F	E	E	E	E	E
	3.0	E	E	E	F	F	E	E	E	E	F
	4.0	E	E	F	F	F	E	E	E	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
0.9	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	E	F	F	F	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	H	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
6.0	G	H	-	-	-	E	F	H	-	-	
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
6.0	G	H	-	-	-	E	F	H	-	-	

# LINTEL FIXING OPTIONS

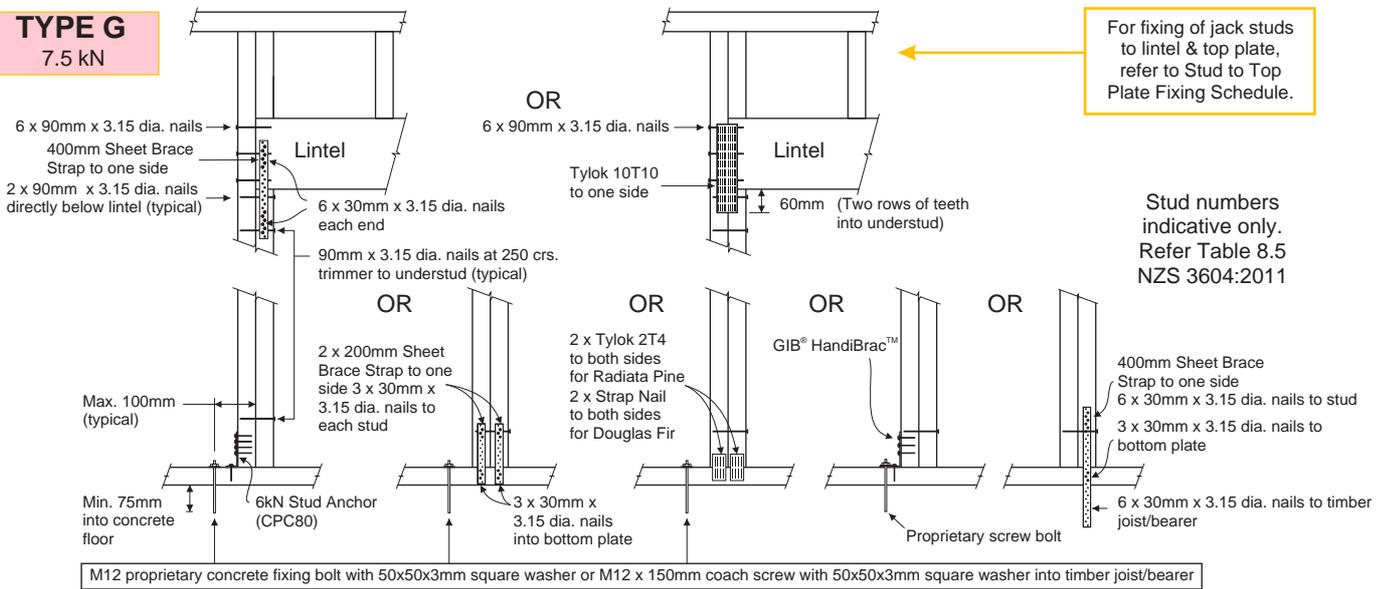
## TYPE E 1.4 kN



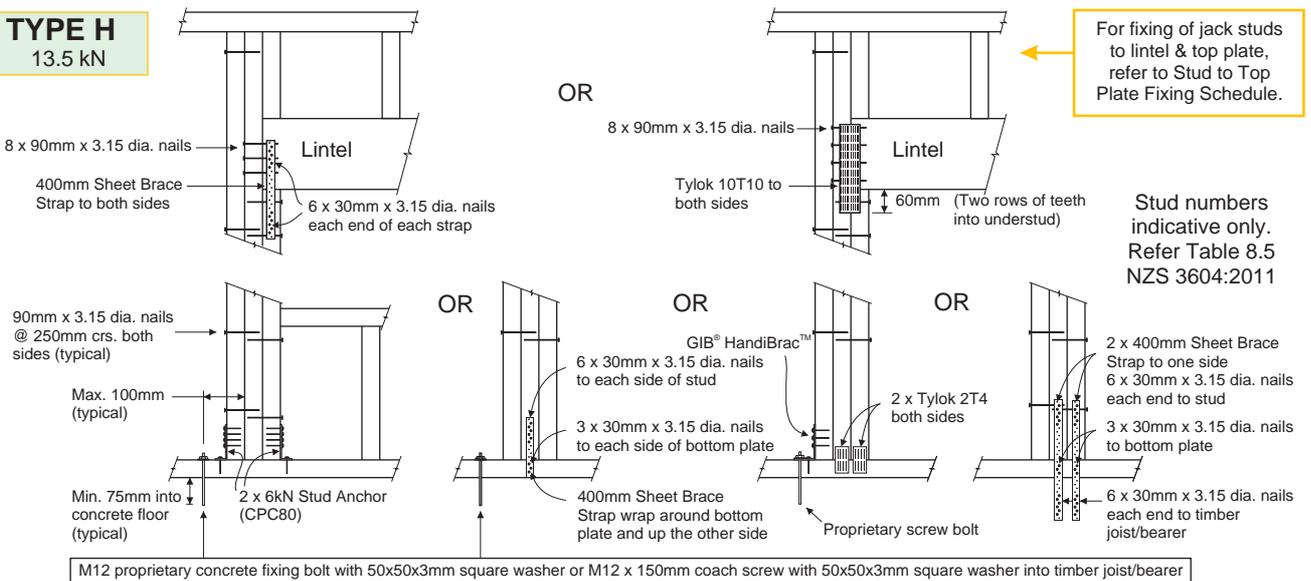
## TYPE F 4.0 kN

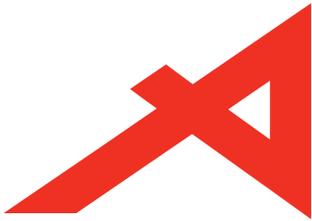


## TYPE G 7.5 kN



## TYPE H 13.5 kN





## BRANZ Appraised

Appraisal No. 329 [2005]

## SUPERCOURSE 500 DAMP-PROOF COURSE AND CONCEALED FLASHING

Appraisal No. 329 [2005]

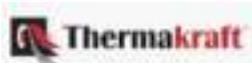
This Appraisal replaces BRANZ Appraisal No. 329 [1996] issued October 1996.

Amended 30 August 2013.



### BRANZ Appraisals

Technical Assessments of products for building and construction.



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Porirua 5240,  
New Zealand  
[branz.co.nz](http://branz.co.nz)



## 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.



**BRANZ Appraised**  
Appraisal No. 329 [2005]

**BRANZ Appraisal**  
Appraisal No. 329 [2005]  
23 September 2005

SUPERCOURSE 500  
DAMP-PROOF COURSE AND  
CONCEALED FLASHING

## 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.

## 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).



**BRANZ Appraised**  
Appraisal No. 329 [2005]

**BRANZ Appraisal**  
Appraisal No. 329 [2005]  
23 September 2005

SUPERCOURSE 500  
DAMP-PROOF COURSE AND  
CONCEALED FLASHING

### 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

- 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.



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Appraisal No. 329 [2005]

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SUPERCOURSE 500  
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### 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.

### 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.



**BRANZ Appraised**  
Appraisal No. 329 [2005]

**BRANZ Appraisal**  
Appraisal No. 329 [2005]  
23 September 2005

SUPERCOURSE 500  
DAMP-PROOF COURSE AND  
CONCEALED FLASHING



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.

### 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.

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**For BRANZ**

**P Robertson**

Chief Executive

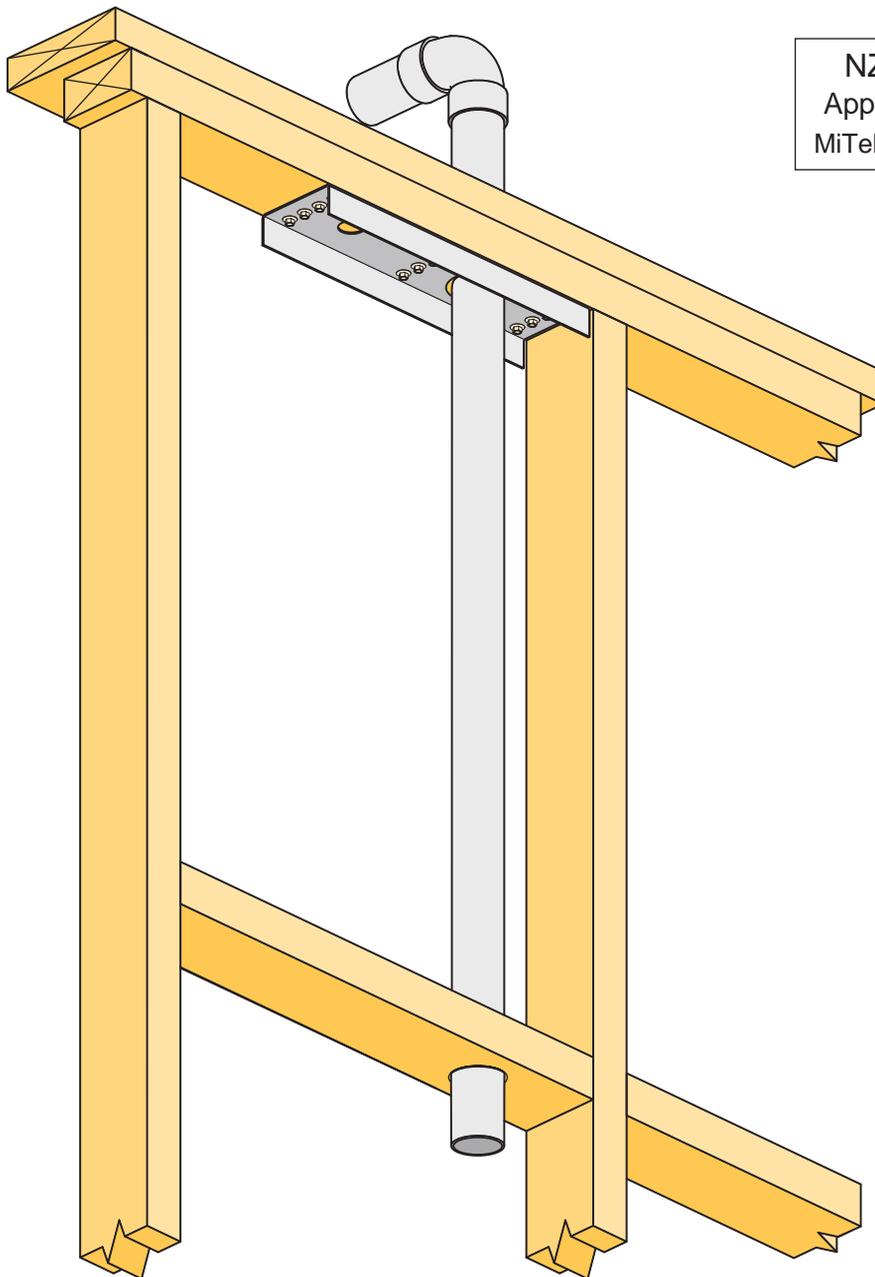
Date of Issue:

23 September 2005

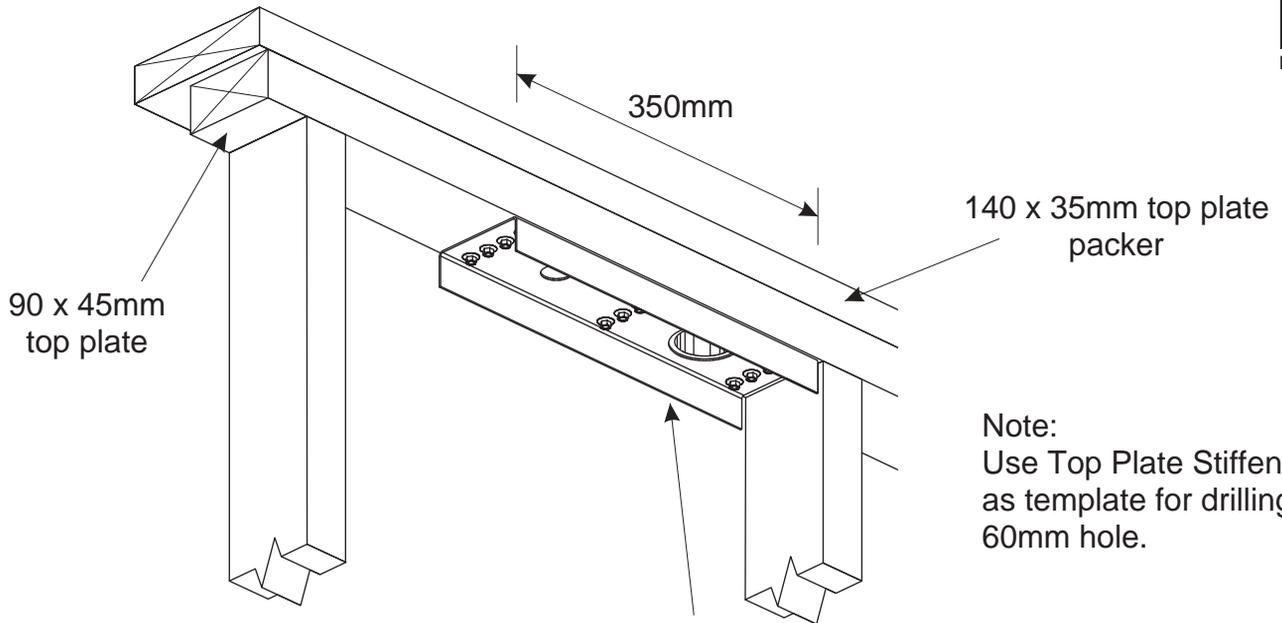


## TOP PLATE STIFFENER

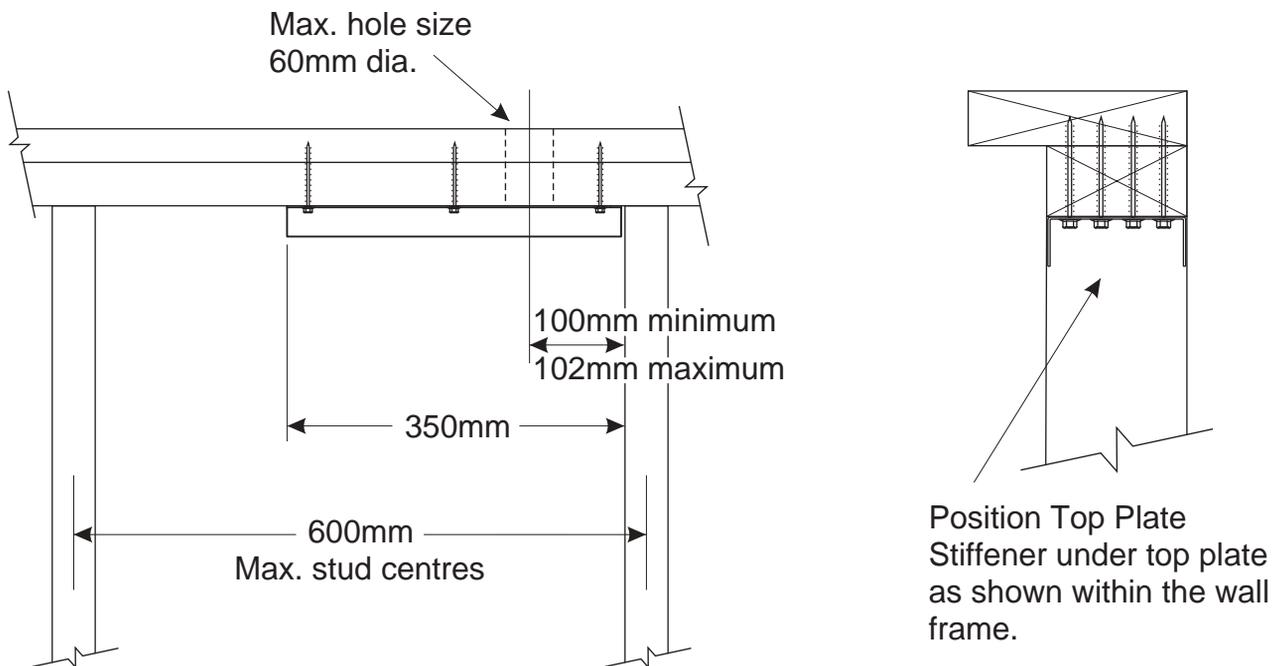
- ★ For internal vacuum systems ducting
- ★ Reinforces the top plate back to FULL STRENGTH!
- ★ Alternative solution to Figure 8.20 NZS 3604:2011



NZ Reg. Design  
App. 408133 © 2006  
MiTek New Zealand Ltd.



Fix up into top plate and into packer with 3 rows of 4 x Type 17-14g x 75mm Hex Head Screws (supplied). It may be advisable to drill pilot hole for each screw to assist installation.



**Code: TPS**  
**Material: 1.55mm G300 Z275 Galvanised Steel**  
**Packed: 8 x Top Plate Stiffeners per Carton**  
**100 x Type 17-14g x 75mm Hex Head Galvanised Screws**



**MiTek New Zealand Limited**

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GANG-NAIL® LUMBERLOK® BOWMAC®

# Sika® BlackSeal® Protection Sheet

Profiled thermoplastic protection sheet for waterproofing membranes

## Positioning

### Description

Sika® BlackSeal® Protection Sheet is a rot-proof profiled thermoplastic sheet for secure protection of construction waterproofing systems against physical damage. Additionally, when used in conjunction with waterproof tape or appropriate mastic compounds, Sika® BlackSeal® Protection Sheet provides an excellent primary water barrier.

### Use

Sika® BlackSeal® Protection Sheet has been designed to provide protection of construction waterproofing systems from physical damage during backfilling operations and subsequent settlement. Sika® BlackSeal® Protection Sheet also acts as a primary water barrier for DPC systems. It may be applied to vertical or horizontal surfaces.

### Advantages

- High impact and abrasion resistance
- Easy to install
- Overlapping profile aids location
- Lightweight
- Supplied in nesting sheets for economy of transport and storage space
- Layer of air between foundation wall and earth ventilates walls
- Continuous profile assists in foundation drainage
- Permanently strong, resistant to compression
- UV resistant
- Rot-proof

## Properties

**Material** ABS

**Colour** Black

**Sheet thickness** 0.6mm

**Sheet size** 1.1m x 2.2m

**Profile depth (stud height)** 7mm

**Stud centres** 30mm

**Weight** Approximately 2.2 kg per sheet

**Form** Thermoplastic Sheet

### Packaging /

#### Sheet dimensions

- 0.6mm x 1.1m x 2.2m
- Packed in lots of 25 sheets per pallet.

**Effective coverage per sheet**

2.3m<sup>2</sup>

## Application Conditions

### Instructions for use

#### Application

- Sika® BlackSeal® Protection Sheet can be fixed using a suitable tape or mastic compound.
- Overlap one row or profile at the sheet interface to aid location and ensure continuous protection of the waterproofing membrane.
- Where more than one sheet depth is required, ensure that top sheets overlap to the waterproofing membrane using dabs of mastic.
- Where Sika® BlackSeal® Protection Sheet's performance as a primary water barrier is critical, tape or mastic should be applied as a continuous seal at all sheet overlaps.



**Important Notes**

**Notes** All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

**Local Restrictions** Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

**Health & Safety Instructions**

- Protective Measures**
- To avoid rare allergic reactions, we recommend the use of protective gloves. Change soiled work clothes and wash hands before breaks and after finishing work.
  - Local regulations as well as health and safety advice on packaging labels must be observed.
  - For further information refer to the Sika Material Safety Data Sheet which is available on request.
  - If in doubt always follow the directions given on the pack or label.

- Important Notes**
- Residues of material must be removed according to local regulations. Fully cured material can be disposed of as household waste under agreement with the responsible local authorities.
  - Detailed health and safety information as well as detailed precautionary measures e.g. physical, toxicological and ecological data can be obtained from the safety data sheet.

**Legal Notes** The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.



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# Thermakraft

## THERMAKRAFT 215

BITUMINOUS  
SELF SUPPORTING  
ROOFING UNDERLAY

### APPLICATION AND INSTALLATION

<b>Product Description</b>	<p>Thermakraft 215 <b>BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY</b> is specifically designed for use in Domestic and Commercial type buildings.</p> <p>Thermakraft 215 is a breathable, absorbent bituminous wall and roofing underlay.</p> <p>Thermakraft 215 will provide the following functions:</p> <ul style="list-style-type: none"> <li>• Reduce wind entry into the cavity, thereby assisting the performance of thermal insulation.</li> <li>• Highly water vapour permeable, thereby allowing excess water vapour which might otherwise condense in the structure, to escape.</li> <li>• Provides a temporary protection against wind, dust, rain and other weathering elements until the external cladding is applied.</li> </ul>		
<b>Applications</b>	<p>Thermakraft 215 is suitable as a wall and roofing underlay where Fire Retardancy is <b>NOT</b> required, and with all cladding types.</p> <p>Thermakraft 215 is self-supporting to 1200mm rafter/purlin spacing.</p> <p>Thermakraft 215 can be used as an Air Barrier.</p> <p>Thermakraft 215 must not be left exposed to the elements for more than 7 days. Cladding on the same day is recommended.</p> <p>If Fire Retardancy (FI &lt;5) is required, use Thermakraft CoverTek roof underlay</p>		
<b>Installation Roofing</b>	<p>Thermakraft 215 may be run unsupported vertically over purlins with a 150mm lap if roof pitch <math>\geq 8</math> degrees. May be run vertically at pitches <math>\geq 3-8</math> degrees if supported</p> <p>Fix securely to purlins with 8mm staples or 20mm clouts.</p> <p>The membrane should be firmly laid to avoid excessive dishing between purlins.</p>		
<b>Control of Condensation</b>	<p>Thermakraft 215 may be run horizontally across rafter/trusses with a 150mm lap, for roof pitches <math>\geq 3</math> degrees. Fix securely with 8mm staples or 20mm clouts.</p> <p>In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation to prevent moisture build-up in the roof cavities. Factors which adversely affect the condensation risk in roofing systems include;</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> <li>• Humid, and/or cold climatic regions</li> <li>• Warm/Skillion roof construction</li> <li>• Low roof cavity air volume and restricted air movement</li> <li>• Omitting Vapour Control Layers</li> <li>• Ceiling penetrations and entry of warm air into roof cavities</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• Occupancy activities which have high moisture loading on conditioned spaces</li> <li>• Low pitched roof</li> <li>• Bulk insulation</li> <li>• Building structures ability to naturally dry</li> </ul> </td> </tr> </table> <p>Skillion and Warm Roof Construction are particularly sensitive to moisture accumulation and the design and installation of roof construction needs to take into account the higher condensation risks. Refer MRM Code of Practice for details.</p>	<ul style="list-style-type: none"> <li>• Humid, and/or cold climatic regions</li> <li>• Warm/Skillion roof construction</li> <li>• Low roof cavity air volume and restricted air movement</li> <li>• Omitting Vapour Control Layers</li> <li>• Ceiling penetrations and entry of warm air into roof cavities</li> </ul>	<ul style="list-style-type: none"> <li>• Occupancy activities which have high moisture loading on conditioned spaces</li> <li>• Low pitched roof</li> <li>• Bulk insulation</li> <li>• Building structures ability to naturally dry</li> </ul>
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<b>Storage</b>	<p>Thermakraft 215 should be stored on end in dry conditions.</p> <p>Protect from the weather and direct sunlight.</p>		
<b>Roll Dimensions</b>	<p>1250mm x 40.0m = 50m<sup>2</sup>    20kg</p> <p>1250mm x 20.0m = 25m<sup>2</sup>    10kg</p>		

For more information regarding **Thermakraft COVERTEK<sub>407</sub>** FIRE RETARDANT SELF SUPPORTING ABSORBENT BREATHABLE SYNTHETIC NON WOVEN ROOFING UNDERLAY refer to the "DESIGNER and USER GUIDELINES" - Direct and Cavity Fix, or contact **Thermakraft Customer Services** on 0800 806 595.

# Thermakraft

## THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

### TECHNICAL SPECIFICATIONS

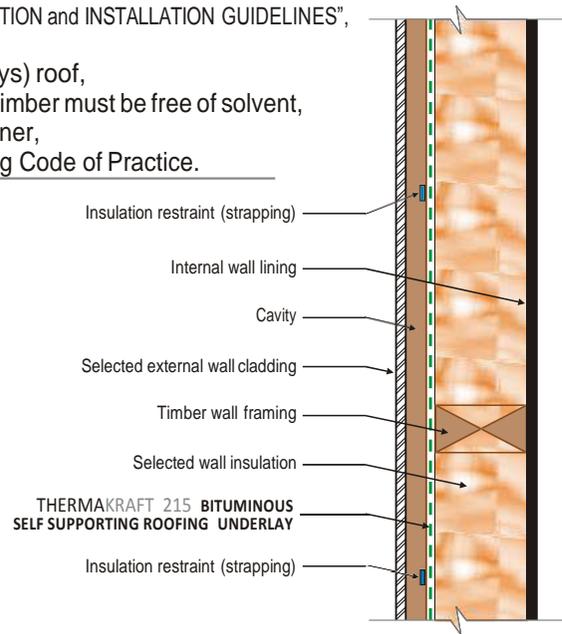
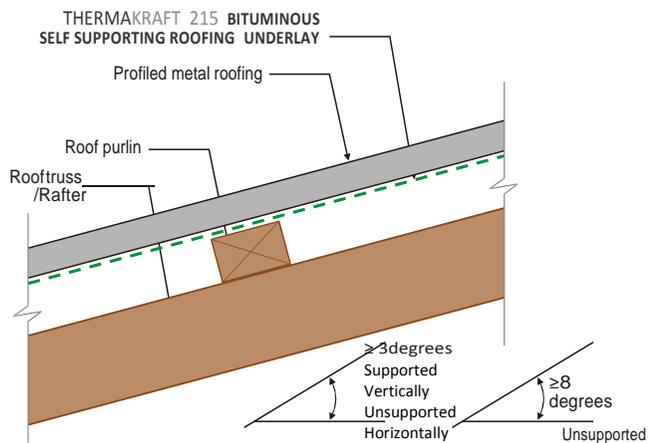
**Technical Data** THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY complies with the requirements of NZBC E2/AS1 Table 23.  
 Nominal Grammage 400g/m<sup>2</sup>

NZBC E2/AS1 TABLE 23 AS A WALL UNDERLAY REQUIREMENTS		
NZBC E2/AS1 TABLE 23 WALL UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	≥100gsm	Pass
Vapour Resistance	≤7 MN.s/g	Pass
pH of Extract	≥6 and ≤9	Pass
Shrinkage	≤0.5%	Pass
Water Resistance	≥100mm	Pass
Air Barrier	≥0.1 MN.s/m <sup>3</sup>	Pass
Duty		Heavy

NZS2295:2206 Classification		
Flammability Index		Non Fire Retardant
Wind Zone	R2	Up to Very High
NZS2295:2006 Classification	R2	Self Supporting

**Durability/Limitations** For THERMAKRAFT 215 to meet the Performance Requirements of NZBC Clause B2, Durability B2.3.1(a) 50 years and B2.3.1(b) 15 years, E2 External Moisture, THERMAKRAFT 215:

- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES",
- run length no greater than 10 metres,
- is not left exposed for more than (7 days) roof,
- when used on LOSP treated timber, the timber must be free of solvent,
- installed by a licensed building practitioner,
- Installed in accordance with the Roofing Code of Practice.



The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards.