

Code Compliance Certificate

208630/1

Section 95, Building Act 2004

The Owner

Name of Owner: James Trevor Allan & Thomas Michael Allan
Mailing address: 16 Elizabeth Street
GORE 9710

Business Phone:
Home Phone:
Email address:

Mobile:
Facsimile number:

Contact Details

Contact name: James Trevor Allan
Mailing address: 16 Elizabeth Street
GORE 9710

Landline:
Daytime:
Facsimile number:
Email address:

Mobile:
After hours:

The Building

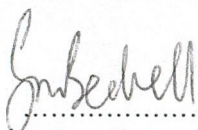
Street address of building:	16 Elizabeth Street GORE
Legal description of land where building is located:	Lot: 30 DP: 624
Valuation number:	29820/181.00
Current, lawfully established, use:	Outbuildings
Year Constructed:	2016

Building Work

Building Work: Construct a new 6m wide x 7m deep garage.
Building consent number: 208630/1
Issued by: Gore District Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that —
(a) the building work complies with the building consent.



Gillian Bedwell

Regulatory - Assets Administrator on behalf of Gore District Council

Date: 23 May 2018

General Advisory Notes relating to Code Compliance Certificates

- This Code Compliance Certificate has been issued because the Gore District Council was satisfied, on reasonable grounds, that at the date of its issue, the building work was completed in accordance with the Building Code in force at the date of issuing the Building Consent, (and where applicable, any previously approved waiver or modification of the Building Code contained in the building consent for the work).
- Since the date the Building Consent was granted, the Building Code may have been amended. This certificate is not a representation that the building work meets the requirements of any amendments to the Building Code made since the Building Consent was issued.
- This Code Compliance Certificate is not a guarantee that the whole of the work has been completed in accordance with the Building Code or Building Consent, but that the Council was reasonably satisfied.
- The Code Compliance Certificate relates only to the state of the building work at the date of issue, and is not a statement that the building will remain sound throughout its life.
- Various types of building methods and materials do have specific requirements for ongoing inspection, cleaning & maintenance. The owner needs to be familiar with these standard practices, manufacturer's instructions, and warranty conditions which must be complied with in order to maintain the integrity of the building work. All materials and components will deteriorate over time.
- Regular Inspection and maintenance by the building owner is particularly important in the harsh environment and climate experienced in the Gore District. In some cases – complete replacement of building components will be a requirement where they have deteriorated, or have passed their manufacturer's warranty period – for example – sealants, waterproofing membranes, paint coatings.
- No representation is made as to the compliance of all items of building work on the specific site to which this Code Compliance Certificate pertains. This certificate relates solely to the building work specifically described in it. It does not relate to any other work. The Gore District Council cannot be held responsible for any other subsequent, or preceding building work, including maintenance, which has been done other than in accordance with an approved building consent.
- Nobody should rely solely upon this Code Compliance Certificate as representing that the building work is weather tight or otherwise sound, fit for its purpose and of acceptable quality. It is a snapshot only, which assesses the Building's compliance with the Building Consent, and Building Code on the date of issue. The soundness of the building will depend, among other things on its subsequent use and the ongoing maintenance performed.

FIELD/INSPECTION SHEET

Building Consent No: 208630 /1

Date Applied: 27/04/2016

Contractor: James Trevor Allan

Owner: James Trevor Allan & Thomas Michael Allan

Project Description: Construct a new 6m wide x 7m deep garage.

Project Address: 16 Elizabeth Street GORE

Officer Name: Tony Osborne

Officer Signature: [Signature]

All building elements must be ticked (✓) either Y:Yes, N:No, or NA

General				Building Envelope			
Building Element	Y	N	NA	Building Interior	Y	N	NA
Have all previous inspections passed?	✓			Warning Systems / Smoke Alarms			✓
Are there any outstanding requisitions?		✓		Personal Hygiene			✓
Have all energy certificates been received?			✓	Laundrying			✓
Have all producer statements been received?			✓	Lighting			✓
Building Exterior				Seismic Restraints			✓
Gutters	✓			Waste Traps			✓
Down-pipes	✓			Wall and Ceiling Linings (braided)	✓		
Surface water disposal			✓	Joinery			✓
Protection from flooding			✓	Glazing			✓
Access routes			✓	Slip Resistance			✓
Barriers/Handrails			✓	Barriers/Handrails			✓
Gully Traps			✓	Internal Moisture			✓
Venting			✓	Food Preparation			✓
Manholes			✓	Airborne and Impact Sound			✓
Silt-Traps			✓	Solid Fuel Heater			✓
Wall Cladding	✓			Electricity (no electrical @ CCA)			✓
Wall Flashing Details	✓			Energy Efficiency			✓
Wall Junction Details			✓	Gas			✓
Roof Covering	✓			Ventilation	✓		
Roof Flashing Details	✓						
Misc Penetrations			✓				
Flat Roofing System			✓				

SITE INSPECTIONS REQUIRED					
CONSTRUCTION			PLUMBING / DRAINAGE		
Inspections	Signature	Date	Inspections	Signature	Date
☒ Siting	<i>[Signature]</i>		☐ Underfloor		
☒ Foundations/piles	<i>[Signature]</i>		☐ Prelining pipe		
☐ Pole holes (sheds)			☐ Waste and soil		
☒ Pre-floor Slab	<i>[Signature]</i>		☒ Foul water		
☐ Sub floor framing			☒ Stormwater	<i>[Signature]</i>	
☐ Blockwork			☒ Driveway sump	<i>n/a</i>	
☐ Cavity batten preline			☐ Water Heater / Wetback		
☒ Window flashings/tape	<i>[Signature]</i>		☐ Tempering valve		
☒ 1/2 height brick cavity			☐ Backflow preventor		
☒ Bracing fixings/screws	<i>[Signature]</i>		☒ Drainage plan	<i>n/a</i>	<i>Photos</i>
☒ Pre-roof fixings/screws	<i>[Signature]</i>		☐ Effluent field		
☐ Moisture content			☒ Street/Road opening	<i>[Signature]</i>	<i>23-08-18</i>
☐ Framing prelining			☒ FINAL		
☒ Insulation			OTHER DETAILS		
☒ Claddings	<i>[Signature]</i>		☐ Compliance Schedule		
☐ Disabled facilities			☐ Evacuation Scheme		
☐ Fire ratings			☐		
☐ Smoke alarms			☐		
☒ Heating appliance			☐		
☒ FINAL	<i>[Signature]</i>	<i>23-08-18</i>	☐		

[illegible]

Inspection Notes / Comments continued		(Tick P : Pass or F : Fail and initial)		
18-09-16	First inspection task completed in Authority ✓	Y	N	✓
Date:	Notes/Comments James Allan on site.	P	F	Initial
18-09-16	checked Round/slab > 1.5 off west & south boundaries, 300Ø x 250W perimeter footing to Arin bearing. 3 x Ø12 horizontal rods Ø10s @ 600 c/c to SC 62 res 500 mark, lapped 250 and tied, 0.250 ØPC lapped taped, bends, 10pt cover okay. Chairs on site, okay to continue. Photos to E.C. ✓			✓
13-09-16	Sketch inspection re wrap/cladd. SGB studs 90x45 ^{Ø12} @ 600 c/c as spec, 2 rows dwangs, M12 tra bolts + washers 50x50x3 @ 800 c/c, OPC under bottom plate. Multi-grips to trusses, 70x45 SGB RC-2 studs, 14g type 17 anchor screws. Strap brace to roof wire dogs. Top plate studs, straps gut to be put in @ ends of E.P.s, okay to wrap/cladd when done. Photos to E.C. ✓			✓
14-09-17	Met James Allan on site re S.W soakage. 600Ø x 2.8 m deep hole augered into 2.0 m clean Arin clay, then last 800 into gravel/sand layer. No ground water encountered. Hole run in hole continuously day before did not hit to above gravel sand layer. 800 litres to manage/hour. 300 l holding in hole (2.7 x 3 x 3 x 2.142) x 0.38. With easily manage discharge UOVC pipe to be placed vertically and centrally then filled with > 60 mm clean river stones. 100 uOVC SW grade to be run from down pipe to hole (< 40 m) Photos to E.C. OK ✓			✓

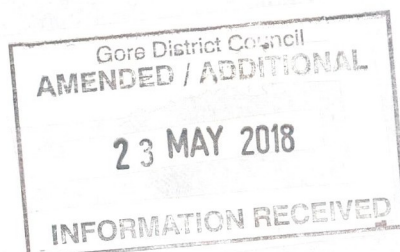
(Tick P : Pass or F : Fail and initial)

OK to Issue CCC Yes / ~~No~~

Date _____

Application for Code Compliance Certificate 208630/1

Section 92, Building Act 2004



Building Consent No: **208630/1**
 Issued by: **Gore District Council**
 Location: **16 Elizabeth Street GORE**
 Description of work: **Construct a new 6m wide x 7m deep garage.**

Owners Name: James Trevor Allan & Thomas Michael Allan
Postal Address: 16 Elizabeth Street
 GORE 9710
Landline:
Mobile:
Fax:

Contact Name: James Trevor Allan
Postal Address: 16 Elizabeth Street
 GORE 9710
Landline:
Mobile:
Fax:
Email:

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

- ☐ copy of certificate of title
☐ Lease
☐ agreement for sale and purchase
☐ other (specify)

Agent: (only complete this section if the application is being made on behalf of the owner)

Name of Agent:

Contact Person:

Mailing Address:

Street Address:

Contact Phone: Cell Phone:

After Hours: Fax Number:

Email Address: Website:

Relationship to Owner:

First point of Contact:

The first point of contact with the Building Consent Authority (Gore District Council) regarding this consent is:

- ☐ Owner
☐ Agent detailed above; or
☐ Contact Person detailed above
☐ Other (specify)

Application:

All building work to be carried out under the above building consent was completed on:

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

Name	Licensing Class	Licensed building practitioner number (or registration number if treated as being licensed under Section 291 of Building Act 2004)	Particular work carried out or supervised

The personnel who carried out building work other than restricted building work are as follows:

.....
.....
.....

.....
List names, address, phone numbers, and where relevant and if not provided above) licensed building practitioner numbers or Plumbers, Gasfitters, and Drainlayers Board registration numbers. Please continue on additional sheet if required.

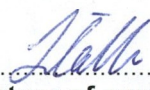
The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent: *(List specified systems)*

.....
.....
.....

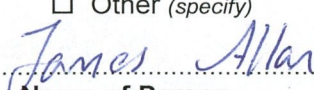
Please continue on additional sheet if required.

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

The code compliance certificate should be sent to: ☒ Owner;
☐ Agent detailed above; or
☐ Contact Person detailed above;
☐ Other *(specify)*


Signature of owner/agent

on behalf of and with the authority
of the owner (delete one)


Name of Person
Signing

23-5-18
Date

Attachments

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

- ☐ Memoranda (records of building work) from licensed building practitioner(s) stating what restricted building work they carried out or supervised.
- ☐ Other documents from the personnel who carried out the work.
- ☐ Evidence that specified systems are capable of performing to the performance standards set out in the building consent.

RURAL CITY LIVING

6 March 2018

Thomas Michael Allan & James Trevor Allan
16 Elizabeth Street
GORE 9710



29 Bowler Avenue, Gore 9710
PO Box 8, Gore 9740

Phone 03 209 0330
Email info@goredc.govt.nz
www.goredc.govt.nz

Dear Sir

Building Consent No. 208630/1
Construct a new 6m wide x 7m deep garage.
16 Elizabeth Street GORE
Expiry date: 06/05/2018

A check of our records has revealed that you have not applied to have a Code Compliance Certificate (CCC) issued for the above project.

As the owner, you have an obligation under Section 92 of the Building Act 2004 to advise ourselves as the Building Consent Authority (BCA), when the building work has been completed.

The Building Consent Authority must decide whether to issue a Code Compliance Certificate for building work to which a building consent relates.

Section 93(2)(b) states *"if no application is made, the expiry of 2 years after the date on which the building consent for the building work was granted, or any further period that may be agreed between the owner and the BCA"*.

If all the building work has been completed, you will need to arrange for a final inspection and complete an application for Code Compliance Certificate (Form 6) which was provided with your Building Consent documentation. If you are unable to locate the Form 6, please contact the Building Control Office who can arrange another copy.

If the work has not been completed you may request a further period of time to complete your building work. This must be approved by the BCA and could be conditional on the nature of work and how much of the work has been completed.

If the work has not commenced, Section 52 of the Building Act 2004 states *"a building consent lapses and is of no effect if the building work to which it relates does not commence within 12 months of the date of issue of the building consent, or any further period that the Building Consent Authority may allow"*.

I have enclosed with this letter a form which will need to be completed and returned to us within 10 days from the date of this letter.

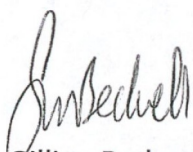
All costs associated with the granting of any extension of time will be invoiced to you when you are notified of the decision.

If the Council does not receive the completed form before that time, a decision will be made not to issue the Code Compliance Certificate at this time.

Please be advised that if a decision to refuse the Code Compliance Certificate is made and at any time in the future you wish for this matter to be rectified this will result in additional charges being incurred.

If you have any queries regarding this letter, please feel free to contact the Building Control Department.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Gillian Bedwell', written in a cursive style.

Gillian Bedwell
Regulatory Officer

Encl.

24 month CCC decision record sheet

(attach to field sheet)

Building Consent No.

208630/1

Building work:

Construct a new 6m wide x 7m deep garage.

Location of Building Work:

16 Elizabeth Street GORE

Expiry Date:

06/05/2018

Letter sent out to applicant advising of 24 months period from issue of building consent with a response sheet attached: Letter sent on 6 March 2018.

The building work:

☐ Did not proceed

Consent lapsed on: _____

☐ Is not yet completed

Extension granted, and new expiry date is: _____

Reasons for the above decision are: _____

☐ The BCA has refused to issue the CCC at this time, because:

☐ The owner has not responded to the letter within 10 working days;

☐ The work is not complete and no extension requested;

☐ Other: _____

Reasons for the above decision are: _____

Any enforcement action required: ☐ Yes ☐ No

What action was taken:

☐ Letter to owner

☐ Notice to Fix

☐ Other

Details of action taken: _____

24 month CCC decision:

☒ CCC approved for issue ☐ Decision to refuse issue of CCC at this time

Officer: _____ Date: 23-05-18

Officers name and signature

Building Consent No. 208630/1

Section 51, Building Act 2004



The Owner

Name of Applicant: James Trevor Allan & Thomas Michael Allan
Mailing address: 16 Elizabeth Street
GORE 9710

Business Phone:
Home Phone:
Email address:

Mobile:
Facsimile number:

Contact Details

Contact name: James Trevor Allan
Mailing address: 16 Elizabeth Street
GORE 9710

Landline:
Daytime:
Facsimile number:
Email address:

Mobile:
After hours:

The Building

Street address of building: 16 Elizabeth Street GORE
Legal description of land where building is located: Lot: 30 DP: 624

Building Work

The following building work is authorised by this building consent:
Construct a new 6m wide x 7m deep garage.

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

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

This building consent is subject to the following conditions:
nil

Compliance Schedule:

A compliance schedule is not required for the building.

nil

Attachments:

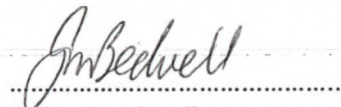
Copies of the following documents are attached to this building consent:

Project Information Memorandum number: 2016/208630/1

Development contribution notice: Not Applicable

Certificate attached to project information memorandum: Not Applicable

Site Inspection Record: 208630/1



Gillian Bedwell

Regulatory - Assets Administrator

On behalf of: Gore District Council

Date: 6 May 2016

Please ensure that the signed and stamped documents are kept onsite during the construction process.

Advice Notes:

These Advice Notes shall be read in conjunction with this building consent.

nil

Project Information

Memorandum No. 208630/1

Section 33, Building Act 2004

The Owner

Name of Applicant: James Trevor Allan & Thomas Michael Allan
Mailing address: 16 Elizabeth Street
GORE 9710

Business Phone:

Home Phone:

Email address:

Mobile:

Facsimile number:

Contact Details

Contact name: James Trevor Allan
Mailing address: 16 Elizabeth Street
GORE 9710

Landline:

Daytime:

Facsimile number:

Email address:

Mobile:

After hours:

The Building

Street address of building: 16 Elizabeth Street GORE
Legal description of land where building is located: Lot: 30 DP: 624

Building Work

The following building work is authorised by this building consent:

Construct a new 6m wide x 7m deep garage.

This Project Information Memorandum is issued under Section 33 of the Building Act 2004 and includes all information known to this authority.

- (1) Council's GIS system indicates that the wind zoning for this site is Medium. Site specific verification will be required. NZS 3604:2011 and AS/NZS 1170 are two methods available under NZ Building Code for verification of wind zones.
- (2) This site is shown to be clear of inundation according to Council records.
- (3) According to our records, this site is located in Snow Zone 5.
- (4) According to our records, the snow loading for this site is 0.5 kPA.
- (5) This property is located in the Residential Zone.

Attachments:



.....
Gillian Bedwell

Regulatory - Assets Administrator

On behalf of: **Gore District Council**

Date: **6 May 2016**

Please ensure that the signed and stamped documents are kept onsite during the construction process.

CONSENT NO. 208630/1 **Gore District Council** **Building Consent Issuing Process Sheet** *(to be filed with the Building Consent Application)*

To be used as an aid, by the Building Control Officer, when processing Building Consents at the Processing table

- It is expected that there will be a tick in every line and that this will indicate that the BC application complies with the New Zealand Building Code. If it doesn't comply leave the line blank until it does.
- The shaded areas are not to be filled in.
- This document is to be used for all Building Consent applications.

Owners Name: Thomas Michael Allan & James Trevor Allan
Project Location: 16 Elizabeth Street GORE
Proposed job: Construct a new 6m wide x 7m deep garage.
Date: 27/04/2016

PIM INFORMATION DETAILS		BUILDING CATEGORIES			
Wind Zone	B01 = Medium B02 = High B03 = Very High B04 = Extra High B05 = Specific Design		App	Ins	Date
Inundation	P11	RES	/	/	27-4-2016
Snow Loading	B06 = 5 B07 = 0/5kPa B08 = 1kPa B09 = Specific Design				Initial
Zoning	<u>Z01</u> = Residential Z02 = Industrial Z03 = Commercial Z04 = Rural Z05 = Mixed Zone	COM			[Signature]
Potential contamination	NOT KNOWN	Compliance Schedule required: Y / N			
Location to mines or quarry's	NOT KNOWN	New or amendment required Y / N			
Heritage information		Existing Compliance Schedule: Y / N			
Essential Services Information		RBW / LBP's involved? Y / N			
Vehicle access details	Roading R01 R02 R03 R04 R05 R06	Financial Contribution required: Y / N			
Planning requirements	Fire Fighting P12	Invoice generated: <u>Y</u> / N <i>tested</i> INV 512088			

Documents to be contained on Property file with this consent:	YES	N/A
Application Form	✓	
Plans & Specifications <i>(site specific, stamped and signed)</i>	✓	
Processing Check Sheet	✓	
Producer Statements	✓	
Enquiries relevant to consent	✓	
PIM <i>(once granted)</i>	✓	
Building Consent <i>(once granted)</i>	✓	
Copies of all inspection notes <i>(including any notices to fix issued)</i>	✓	
Energy Certificates		✓
Field Sheet	✓	
Application for CCC	✓	
Copy of CCC	✓	
Additional information (specify) <i>Photos E.F.</i>	✓	
As Built Plans		✓

OK TO APPROVE & GRANT CONSENT

YES / ~~NO~~

[Signature] 06-05-16
 Approving Officers Signature & Granted Date

Checked by BCM: *[Signature]* Date: *06-05-16*

Reason if no: _____

PIM ADVICE NOTES	CONSENT ADVICE NOTES:

BUILDING CONSENT CONDITIONS: ~~Sec 37~~ ~~Sec 67~~ ~~Sec 73~~ ~~Sec 75~~ ~~Sec 90~~ ~~Sec 113~~
~~SS 1 2 3 3.1 3.2 3.3 4 5 6 7 8.1 8.2 8.3 9 10 11 12.1 12.2 13.1 13.2 13.3 14.1 14.2 15.1 15.2 15.3 15.4 15.5 16 CS13 14 15 16~~

	Clause	Items	Alternative solution	N/A	Complies		Comments Including Endorsements, Conditions & Requirements NOTE:- there must be comments
					P & D	Build	
PIM	S31 - S39	Have you filled in PIM			✓	✓	Yes / No
	S71 - 74	Building on land subject to natural hazards (eg inundation)		✓			Yes / No P11, clear of inundation
	S75 - 83	Building on 2 or more allotments		✓			Yes / No AS NZS D.P., site plan, Inframaps
	S112	Alterations to existing Buildings		✓			Yes / No New build NZS 3604:2011
	S100 - 107	Is a compliance schedule required		✓			Yes / No / Needs amending NO SS specd S.H
	S114 - 116	Change of use		✓			Yes / No S.H Ancillary New
	S118	Access and Facilities - does the building need them		✓			Yes / No "
	S122	Is it an earthquake prone building			✓	✓	Yes / No / Not known New SH NZS 3604:2011
	S222	Required inspections marked on site Inspection report sheet			✓	✓	
B1	Structure	Foundations					
		Floor & Sub-Floor					
		Wall Framing					
		Roof Framing					
		Trusses require a fully developed design					
		Bracing elements, floor, wall, ceiling, roof					
		Other (please specify)		✓			
B2	Durability				✓	✓	
C2	Prevention of fire occurring	C/VM1 Solid fuel appliances		✓			None specd n/a
n/c		☐ AS/NZS 2918 ☐ AS1691 ☐ Other, state		✓			
C3	Fire affecting areas beyond fire source	C/AS1 Sleeping housing			✓		25/60 SH Ancillary
SH > 10m		C/AS2 Sleeping		✓			
C4	Movement to place of safety	C/AS3 Sleeping institutional		✓			
> 25/60 SH		C/AS4 Crowd		✓			
C5	Access for safety for fire fighting operations	C/AS5 Working business		✓			
SH n/a		C/AS6 Working storage		✓			
C6	Structural stability	C/AS7 Vehicle parking		✓			
n/a		C/VM2 Specific fire design		✓			
BA 2005	S47	Does this application need to go to the NZFS - DRU?		✓			Yes / No C/AS1
D1	Access Routes	Disabled access		✓			
		Stairs, Handrails		✓			
		Slip resistant Surfaces		✓			
		Lift required		✓			
D2	Mechanical Installations for Access	Producer Statement required		✓			
E1	Surface Water	Confirm FFL is min. 200mm above the 2% event level		✓			ancillary N/A
		Hard surface areas		✓			As per spec's SOUTAGE

	Clause	Items	Alternative solution	N/A	Complies		Comments Including Endorsements, Conditions & Requirements NOTE:- there must be comments
					P & D	Build	
		Drainage system			✓		As per Spec's SOURCE
E2	External Moisture	Risk Matrix		✓			Not used Ancillary
		Cavities		✓			vertical corrugate c/s
		Materials				✓	"
		Penetrations/openings Flashings				✓	E2/AS1, + B.C.O.S
E3	Internal Moisture	Impervious, Overflow, Thermal resistance, Ventilation		✓			
F1	Hazardous Agents on site	MWH via the PIM		✓			
F2	Hazardous Building Materials	Glazing		✓			None spec'd
F3	Substances & Processes	Hazardous Substances PIM note (9)		✓			
		Trade waste		✓			
		Gas, Solid, Liquid		✓			
F4	Safety from Falling	Barriers		✓			< 10m Ht - g.l
		Restrictors		✓			
F5	Construction & Demolition Hazards	PIM note (13) or schedule of proposed safety procedures				✓	S.H. Ancillary No spec' has F5/AS
F6	Lighting for Emergency	Possible compliance schedule		✓			
F7	Warning Systems	Possible compliance schedule		✓			
		Smoke alarm		✓			Ancillary
F8	Signs			✓			
G1	Personal Hygiene	Number of fixtures ok?		✓			
		Location of fixtures ok?		✓			
		Type of fixtures appropriate		✓			(Mens / Womens / Uni / Accessible)
G2	Laundrying	Number of facilities ok?		✓			
G3	Food preparation and prevention of contamination	Kitchen surfaces, food storage, commercial food premises - Send to EHO		✓			
G4	Ventilation	Natural, Mechanical, gas- fuel appliances				✓	Compatible with intended use
G5	Interior Environment	Heating, Space and Accessibility requirements		✓			
G6	Airborne & Impact Sound	STC, IIC		✓			
G7	Natural Light	% of glass, Visual awareness		✓			
G8	Artificial Light	Access routes, Common spaces, exit s		✓			
G9	Electricity	Is it part of this BC application - PS1		✓			None spec'd
G10	Piped Services	Fuel gas only - all others alternate solution		✓			
G11	Gas as an Energy Source	Is it part of this BC application. AS1 / NZS5261		✓			
G12	Water	Back flow prevention		✓			
		Cold Water		✓			
		Hot Water		✓			
		Non-Potable		✓			
G13	Foul Water	Drainage		✓			
		Sanitary Plumbing		✓			

	Clause	Items	Alternative solution	N/A	Complies		Comments Including Endorsements, Conditions & Requirements NOTE:- there must be comments
					P & D	Build	
		Septic tank		✓			
G14	Industrial Liquid Waste	Containment, Disposal		✓			
		Trade waste		✓			
G15	Solid Waste	Storage		✓			
		Access		✓			
		Design		✓			
H1	Energy Efficiency	R – value building		✓			Ancillary Building, unheated.
		R – value plumbing		✓			
	Have you Stamped the plans and specification				✓	✓	
	Have you signed the plans and specification				✓	✓	
	Have you signed the application form				✓	✓	
	Consent documents sorted ready for issuing				✓	✓	

Date Requested	Details Information Requested	Date Received	Info Adequate		Date Re-requested	Officers Initials
			YES	NO		
06-05-16	Phone call to James Allan, referred him to N203604:2011 S.4.6 with regards to brace line spacing, and figs 10.22 & 10.23 regarding roof bracing. James advised he would fit diagonal ties, gable end braces and 25x100 strap braces from corner to corner. Pages 8-P, 10-48, 10-49 added at James request.	06-05-16	✓			AW

Producer Statements received from: (name)	Date Author Checked	Adequate		Officers Initials
		YES	NO	
Dryda, Daniel Peterbarni, CPENG 261677 B1/Um, AS/NZS 1170	06-05-16	✓		AW

Peer Review sent to:	Date sent	Date review received	Officers Initials

CONSENT CONDITIONS:	(These can only be the 5 prescribed conditions as allowed under the Building Act)

**Form 2 Application for Building Consent
and/or Project Information Memorandum
Section 33 or 45, Building Act 2004**

1. THE BUILDING [If item is not applicable put NA in the space]

Street address of building: 16 Elizabeth Street
Gore
 [If no street address – details of nearest intersection]
 Legal description of land where building is located: Lot 30 DP 624
 Site area: 809 (m²) Sec Block
 Building name: Garage Valuation Number 29820/181.00
 Location of building within site/block number: [Include nearest street access]
 Number of levels: [Above & below ground] Level /Unit Number: 16
 Floor area: (m²) [Indicate area affected by the building work]
 Current, lawfully established, use: Home Year First Constructed: 1960
 [Add no. of occupants per level and per use if more than 1]

OFFICE USE ONLY:

Consent Number : 208630/1
 PIM Number : 208630/1
 Compliance Schedule No:
 Date received: 27-4-2016

2. APPLICATION [Tick as applicable]

I request that you issue a (for the building work described in this application)

- ☐ Project Information Memorandum (PIM)
☐ Project Information Memorandum (PIM) and Building Consent
☒ Building Consent The existing PIM No [If applicable] is :
☐ Amendment to an existing Building Consent. The existing BC No is :

State the reference number if this application involves a National Multiple Use Approval:

Name: James Allan Signature: [Signature] Date: 27-4-2016

The signature is that of the ☒ Owner OR ☐ the Agent on behalf of and with the approval of the Owner

3. THE PROJECT

DESCRIPTION OF BUILDING WORK: (Provide sufficient information below to enable scope of work to be fully understood)

Building new garage at rear of the house - size 7m x 6m

Current use of building: [E.g. Home, implement shed, office]

Will the building work result in a change of use of the building? ☐ Yes ☒ No. If Yes, provide details of the new use of the building:

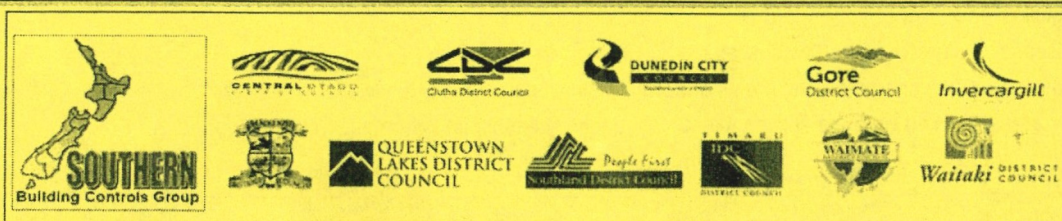
Intended life of the building if less than 50 years: [Years]

List Building Consents previously issued for this project (if any):

Estimated value of the building work on which the building levy will be calculated (including goods and services tax):

\$ 15000 [State estimated value as defined in section 7 of the Building Act 2004]

Is prescribed energy work to be part of this Building Consent (tick if applicable) Gas ☐ Electricity ☐



4. OWNER

90359/90358

Name of Owner: James Allan

Contact person: James Allan

Mailing address: 16 Elizabeth Street

Gore

Street address/registered office:

Phone No.: Landline:

Mobile: 0226990076

Daytime:

After hours:

Facsimile:

Email: Build - solutions@yahoo.com

Website:

THE FOLLOWING EVIDENCE OF OWNERSHIP IS ATTACHED:

- ☐ Certificate of Title ☐ Lease Agreement
☐ Agreement for Sale and Purchase ☐ Other document

5. AGENT [Only required if application is being made on behalf of the owner]

Name of Agent:

Contact person:

Mail address:

Street address/registered office:

Phone No.: Landline:

Mobile:

Daytime:

After hours:

Facsimile:

Email:

Website:

Relationship to owner: [State details of the authorisation from the owner to make the application on the owner's behalf]

FIRST POINT OF CONTACT for communications with the Council / Building Consent Authority:☒ Owner☐ Agent

Or: (if different to above details) Name: Email:

Mailing Address: Phone: Facsimile:

6. RESTRICTED BUILDING WORKWill the building work include any restricted building work? ☐ Yes ☒ No

If Yes, provide the following details of all licensed building practitioners who will be involved in carrying out or supervising the restricted building work (if these details are un-known at the time of the application, they must be supplied before the building work begins.):

Name	Licensing Class	Licensed Building Practitioner Number (or registration number if treated as being licensed under section 291 of the Building Act 2004)

Note: Continue on another page if necessary

7. PROJECT INFORMATION MEMORANDUM [Do not fill in this section if the application is for a building consent only]

The following matters are involved in the project: [Tick the matters relevant to the project]

- ☐ Subdivision
☐ Alterations to land contours [e.g. digging out the site for a building platform]
☐ New or altered connections to public utilities [e.g. Council sewer, storm water or water mains]
☐ New or altered locations and/or external dimensions of buildings
☐ New or altered access for vehicles
☐ Building work over or adjacent to any road or public place
☒ Disposal of stormwater and wastewater
☐ Building work over any existing drains or sewers or in close proximity to wells or water mains
☐ Other matters known to the applicant that may require authorisations from the Territorial Authority: [Specify]

8. BUILDING CONSENT

The following plans and specifications are attached to this application: (please enter these in section 10 below)

THE BUILDING WORK WILL COMPLY WITH THE BUILDING CODE AS FOLLOWS:

Building Code Clause <i>Tick relevant clauses</i>	Means of Compliance <i>Tick relevant compliance path(s) for each clause selected.</i>				
	Acceptable Solution	NZS 4121 Accessible Design	Verification Method	Alternative Solution <i>Please complete Form SBCG 34.1</i>	Waiver/Modification <i>Please complete Form SBCG 23.1</i>
☒ B1 Structure	☒ B1/AS1 ☐ B1/AS3 <i>NZS3604</i>		☐ B1/VM1 ☐ B1/VM4	☐	☐
☒ B2 Durability	☒ B2/AS1		☐ B2/VM1	☐	☐
☐ C1-6 Fire Safety Clauses	☒ C/AS1 ☐ C/AS2 ☐ C/AS3 ☐ C/AS4 ☐ C/AS5 ☐ C/AS6 ☐ C/AS7		☐ C/VM2	☐	☐
☐ D1 Access routes	☐ D1/AS1	☐	☐ D1/VM1	☐	☐
☐ D2 Mechanical installation for access	☐ D2/AS1 ☐ D2/AS2 ☐ D2/AS3	☐		☐	☐
☒ E1 Surface water	☒ E1/AS1		☐ E1/VM1	☐	☐
☒ E2 External moisture	☐ E2/AS1 ☐ E2/AS2 ☐ E2/AS3		☐ E2/VM1	☐	☐
☐ E3 Internal moisture	☐ E3/AS1			☐	☐
☐ F1 Hazardous agents on site			☐ F1/VM1	☐	☐
☐ F2 Hazardous building materials	☐ F2/AS1			☐	☐
☐ F3 Hazardous substances and processes			☐ F3/VM1	☐	☐
☐ F4 Safety from falling	☐ F4/AS1			☐	☐
☐ F5 Construction and demolition hazards	☐ F5/AS1			☐	☐
☐ F6 Visibility in escape routes	☐ F6/AS1			☐	☐
☐ F7 Warning systems	☐ F7/AS1			☐	☐
☐ F8 Signs	☐ F8/AS1	☐		☐	☐
☐ G1 Personal Hygiene	☐ G1/AS1	☐		☐	☐
☐ G2 Laundering	☐ G2/AS1	☐		☐	☐
☐ G3 Food preparation and prevention of contamination	☐ G3/AS1	☐		☐	☐
☐ G4 Ventilation	☐ G4/AS1		☐ G4/VM1	☐	☐
☐ G5 Interior environment	☐ G5/AS1	☐		☐	☐
☐ G6 Airborne impact sound	☐ G6/AS1		☐ G6/VM1	☐	☐
☐ G7 Natural light	☐ G7/AS1		☐ G7/VM1	☐	☐
☐ G8 Artificial light	☐ G8/AS1		☐ G8/VM1	☐	☐
☐ G9 Electricity	☐ G9/AS1		☐ G9/VM1	☐	☐
☐ G10 Piped services	☐ G10/AS1		☐ G10/VM1	☐	☐
☐ G11 Gas as an energy source	☐ G11/AS1			☐	☐
☐ G12 Water supplies	☐ G12/AS1 ☐ G12/AS2		☐ G12/VM1	☐	☐
☐ G13 Foul water	☐ G13/AS1 ☐ G13/AS2 ☐ G13/AS3		☐ G13/VM1 ☐ G13/VM4	☐	☐
☐ G14 Industrial liquid waste	☐ G14/AS1		☐ G14/VM1	☐	☐
☐ G15 Solid waste	☐ G15/AS1			☐	☐
☐ H1 Energy efficiency	☐ H1/AS1		☐ H1/VM1	☐	☐
☐ B1-H1 Simple House Solution	☐ SH/AS1				
☐ B1-H1 Back Country Hut	☐ BCH/AS1				

9. COMPLIANCE SCHEDULE (specified systems are defined in regulations)

- ☐ The specified systems for the building are as follows:
- ☐ The following specified systems are being altered, added to, or removed in the course of the building work:
- or
- ☐ There are no specified systems in the building

Please provide the details required by completing either form :

- SBCG27 Compliance Schedule Specified Systems (or)
- SBCG11 Application for amendment to Compliance Schedule

10. ATTACHMENTS

The following documents are attached to this application: [Tick as applicable]

- ☒ Plans and specifications (list) (or attach a list)..... *Supplied with documents*
- ☐ Memoranda from licensed building practitioner(s) who carried out or supervised any design work that is restricted building work
- ☐ Project Information Memorandum ☐ Development contribution notice ☐ Certificate attached to Project Information Memorandum
- ☒ Other information relevant to this application: [Please specify]:
- ☐ Current Certificate of title provided - or do you request Council to obtain at your expense ☐

11. CONTACTS (involved in this project)

Designer

Name(s):

Postal Address:

Cellphone: Daytime:

Reg No: Email:

Engineer

Name(s):

Postal Address:

Cellphone: Daytime:

Reg No: Email:

Builder

Name(s): *James Allan*

Postal Address: *16 Elizabeth Street*
Core, Southland

Cellphone: *0226990076* Daytime:

Reg No: *BPI30054* Email: *build-solutions@*
yahoo.com

Gasfitter

Name(s):

Postal Address:

Cellphone: Daytime:

Reg No: Email:

Drainlayer

Name(s):

Postal Address:

Cellphone: Daytime:

Reg No: Email:

Plumber

Name(s):

Postal Address:

Cellphone: Daytime:

Reg No: Email:

Electrician

Name(s):

Postal Address:

Cellphone: Daytime:

Reg No: Email:

Other

Name(s):

Postal Address:

Cellphone: Daytime:

Reg No: Email:

13. Applicant / Agent's Check

Tick if provided or note as N/A where not applicable

Landowners information

This information should match information found on the rates assessment or Certificate of Title

Certificate of Title provided

A Certificate of Title is mandatory for ALL new buildings, extension to buildings, building envelope change, change of use of building and some drainage works

Owners Agent information

This is only relevant when agent is working on behalf of the owner

Building Location

This information can be found on the rates assessment, Certificate of Title, or a Sales and Purchase Agreement

Description of Work

What is the building consent application for? Does the description of work accurately represent the work being undertaken?

Intended Use

This is the buildings use eg. dwelling

Building Code Clauses

Method of compliance with the Building Code

Value of Work

What is the value of work that is covered by the consent application

Application Form Signed

The application cannot be accepted if not signed

Memorandum - Certificate of Design Work

Has the designer provided the Form 2A for RBW

Licensed Building Practitioners identified (Form 2A)

Yes ☐ Some known ☐ Not yet identified ☐

Are the Designer and LBP's specified licensed for the RBW being undertaken

Registered Architect and CP-Engineer are deemed to be licensed Designers

14. Miscellaneous

Vehicle Access

Street Crossing New ☐ Existing ☐
Rural Access New ☐ Existing ☐
Rapid No. Required Yes ☐ No ☐
Street No. Required Yes ☐ No ☐

Note: All new or altered vehicle access require approval from the Roadway Department prior to installation. Street numbers and RAPID numbers must be issued by Council's GIS Department - please **do not** allocate or assume numbers yourself.

Utilities

New Water Connection Yes ☐ No ☐
New Sewage Connection Yes ☐ No ☐
New Stormwater Connection Yes ☐ No ☐

Note: If a new water connection is required, there is a separate application form and fee payable. Please enquire at the reception area in the Regulatory Department.

Trade Waste

The Trade Waste Bylaw 2008 regulates the discharge of Trade Waste to Gore District Council's Sewerage Systems operated by or on behalf of the Council as Wastewater Authority.

Does this consent require:

Trade Waste to be considered? Yes ☐ No ☐
Has an application been lodged? Yes ☐ No ☐

Council Use Only

	Y	N/A
Application Form 2 Complete	☒	☐
Form 2A - Certificate of Design - RBW	☐	☐
Site Plan	☒	☐
Elevations	☒	☐
Floor Plan (existing, proposed, new)	☒	☐
Truss Details	☒	☐
Producer Statement	☐	☐
Specification (job specific)	☒	☐
Heater Installation & Flue Details	☐	☒
Plumbing & Drainage Plans	☒	☐
2 Complete Sets of Documents (x 2)	☒	☐
PIM (transportable)	☐	☒
Certificate of Title provided	☒	☒
The above is satisfactory for this application to be accepted for processing: ☒ Y ☐ N Date: 29/4/2016		

First Point of Contact

☒ Owner ☐ Agent

Consent posted to

☒ Owner ☐ Agent

Consent Fees

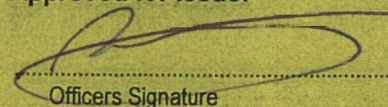
Building Consent \$ 1,000.00
Accreditation Levy \$ 15.00
BRANZ Levy \$
DBH Levy \$
Street Asset Deposit \$
Resource Consent \$
Other (GS, CT etc) \$ 30.00
Total Fee Payable \$ 1,045.00
Paid on application ☒ Yes ☐ No
Receipt Number
Cash/Chq/Eftpos/EB
Consent paid for by: ☐ Owner ☐ Agent ☐ Other

Approvals

	Checked	Date	NA
Building	☒	06/05/16	
Plumbing	☒	05/05/16	
Drainage	☒	05/05/16	
Planning	☒	29/4/16	
Roadway	☒	4/5/16	
Utilities	☒	29/4/16	
Reserves			
Licensing			
Parking			
External Engineer			
NZ Fire Service			

	Yes	No
Compliance Schedule Required	☐	☒
Section 37 Notice Required	☐	☒
Section 72 - 75 Notice Required	☐	☒

Approved for Issue:

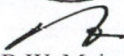
Officers Signature  Date 06-05-16



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



Historical Search Copy


R.W. Muir
Registrar-General
of Land

Identifier SL76/255
Land Registration District Southland
Date Issued 17 January 1906

Prior References

SL72/173

Estate Fee Simple
Area 809 square metres more or less
Legal Description Allotment 30 Deposited Plan 624

Original Proprietors

Eric Joseph Bruce Smith and June Denise Smith

Interests

241644.3 Mortgage to Southland Building Society - 5.6.1996 at 9.22 am
5754396.1 Discharge of Mortgage 241644.3 - 7.10.2003 at 9:00 am
5754396.2 Transfer to Colin Francis Pasco - 7.10.2003 at 9:00 am
5754396.3 Mortgage to The National Bank of New Zealand Limited - 7.10.2003 at 9:00 am
6082706.1 Discharge of Mortgage 5754396.3 - 19.7.2004 at 9:00 am
6082706.3 Transfer to Bisceglie Property's Limited - 19.7.2004 at 9:00 am
6082706.5 Mortgage to The National Bank of New Zealand Limited - 19.7.2004 at 9:00 am
9053185.1 Discharge of Mortgage 6082706.5 - 3.5.2012 at 9:31 am
9053185.2 Transfer to Thomas Michael Allan and James Trevor Allan - 3.5.2012 at 9:31 am
53185.3 Mortgage to ASB Bank Limited - 3.5.2012 at 9:31 am

NEW ZEALAND.



REGISTER

Register book,

Vol. 76, folio 255

 Reference: Vol. 72, folio 173
 Transfer No. 7, 64-5

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT.

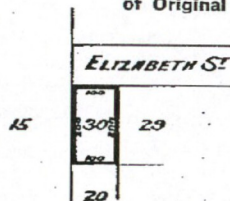
This Certificate, dated the twentieth day of January, one thousand nine hundred and one, under the hand and seal of the District Land Registrar of the Land Registration District of Southland, Witnesseth that George Whittingham of Free Power

is seized of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or indorsed hereon; subject also to any existing right of the Crown to take and lay off roads under the provisions of any Act of the General Assembly of New Zealand) in the land hereinafter described, as the same is delineated by the plan hereon, bordered red, to the several admeasurements a little more or less, that is to say: All that parcel of land containing thirty-two poles more or less situated in the Hokonui District being allurement thirty (30) in plan deposited in the Land Registry Office at Invercargill as to 624 and being also thirty sections 137 and 133 in the public map of the said District deposited in the Office of the Chief Surveyor at Invercargill

EQUIVALENT METRIC
AREA IS 209m²

PARTS OF SECTIONS 137 & 133 HOKONUI DIST.
On On 32nd

Image Quality due
to Condition
of Original



SCALE 2 CHAINS TO AN INCH.

Transfer 27237 George Whittingham
to William Ephraim Woods agent 10000
31st January 1900

Transmission 62309 to Helen Woods of Woods
Hobson Entered 31st March 1904 at 1000

Transmission No 6221 to John Colley
MacPherson of River side Stirling
Entered 15th January 1906 at 200

Transfer No 56165 John Colley MacPherson
to William Pearson of Sore Veterinary Surgeon
Entered 25th April 1906 at 1000

Transfer No 56165 William Pearson to the Bank
of New Zealand Entered 14th September 1906 at 1000

Transfer No 87239 William Pearson to John
Thompson wife of Martin Samuel Thompson
of Gore Watchmaker Entered 14th October
1906 at 2550

Transfer No 91225 John Thompson to Ronald
James Thompson of Gore Shop Assistant
Entered 21st April 1908 at 1000

DISCHARGED
 161241.4 *161241.4* *161241.4* *161241.4*
 161241.4 *161241.4* *161241.4* *161241.4*
 161241.4 *161241.4* *161241.4* *161241.4*

Settled under the joint families
 Jones Act 1964 on Ronald James
 Thompson of Gore Jeweller and
 Freda Joan Thompson his wife
 6-4-1967 at 12:09 p.m.
 Application No. 4672 *David*
ack

Mortgage 21922 to Southland Building
 and Investment Society 6/4/1967 *David*
ack

REPRODUCTION (ON A REDUCED SCALE)
 CERTIFIED TO BE A TRUE COPY OF THE
 ORIGINAL REGISTER FOR THE PURPOSES OF
 SECTION 215A LAND TRANSFER ACT 1952.
David
 D.L.R.

039562.2 Transfer to Robert John
 Thorpe of Gore Meat Inspector and
 Janice Madge Thorpe his wife
 29.9.1978 at 1.54 p.m. *David*
ack

039562.3 Mortgage to Southland
 Building and Investment Society
 29.9.1978 at 1.54 p.m. *David*
ack

039562.4 Mortgage to Bank of
 New Zealand 29.9.1978 at 1.54 p.m. *David*
ack

056884.3 Transfer to Robert Alexander
 Scott of Gore Freezing Worker and
 Joyce Scott his wife 22.4.1980 at
 10.27 a.m. *David*
ack

056884.4 Mortgage to The National
 Bank of New Zealand Limited
 22.4.1980 at 10.27 a.m. *David*
ack

161241.2 Transfer to Mildred Isobel
 Roche of Gore widow - 10.4.1989 at:
 11.33 a.m. *David*
ack

161241.3 Mortgage to Westpac Banking
 Corporation 3-01-1989 at 11.33
 a.m. *David*
ack

161241.4 *161241.4* *161241.4* *161241.4*
 161241.4 *161241.4* *161241.4* *161241.4*
 161241.4 *161241.4* *161241.4* *161241.4*

A.L.R.
 228052.3 Transfer to Steven Allan
 Collett of Gore farm manager and
 Vicki Patricia Collett of Gore
 teacher - 30.1.1995 at 9.58 a.m.
David
ack

228052.4 Mortgage to Bank of New
 Zealand - 30.1.1995 at 9.58 a.m.
David
ack

A.L.R.
 241644.2 Transfer to Eric Joseph
 Bruce Smith of Gore mechanic and
 June Denise Smith his wife -
 5.6.1996 at 9.22 a.m. *David*
ack

A.L.R.
 241644.3 Mortgage to Southland
 Building Society - 5.6.1996 at 9.22
 a.m. *David*
ack

CERTIFICATE OF TITLE,
 Vol. , folio

Double Garage



GORE DISTRICT COUNCIL		
Consent No.	20 8630 / 1	
Building	06-05-16	EW
Plumbing	05-05-16	JP
Drainage	05-05-16	JP
Planning	29-4-16	EW
Roading	4/5/16	EW
Utilities	29/4/16	DW N/A
Reserves		
Licensing		
Parking		
	Date	Initials



**16 Elizabeth Street
Gore**

Created By: Counter Upstairs 1
 Print Date: 27/04/2016
 Print Time: 10:01 AM
 Scale: 1:200
 Projection: NZGD2000 / New Zealand
 Transverse Mercator 2000
 Original Sheet Size A4



GO RURAL
DISTRICT COUNCIL
RE CITY LIVING

Sourced from LINZ data. Crown Copyright reserved. Not to be reproduced without permission of Gore District Council. The information shown on this plan may not be accurate and is indicative only. The Gore District Council accepts no responsibility for incomplete or inaccurate information.

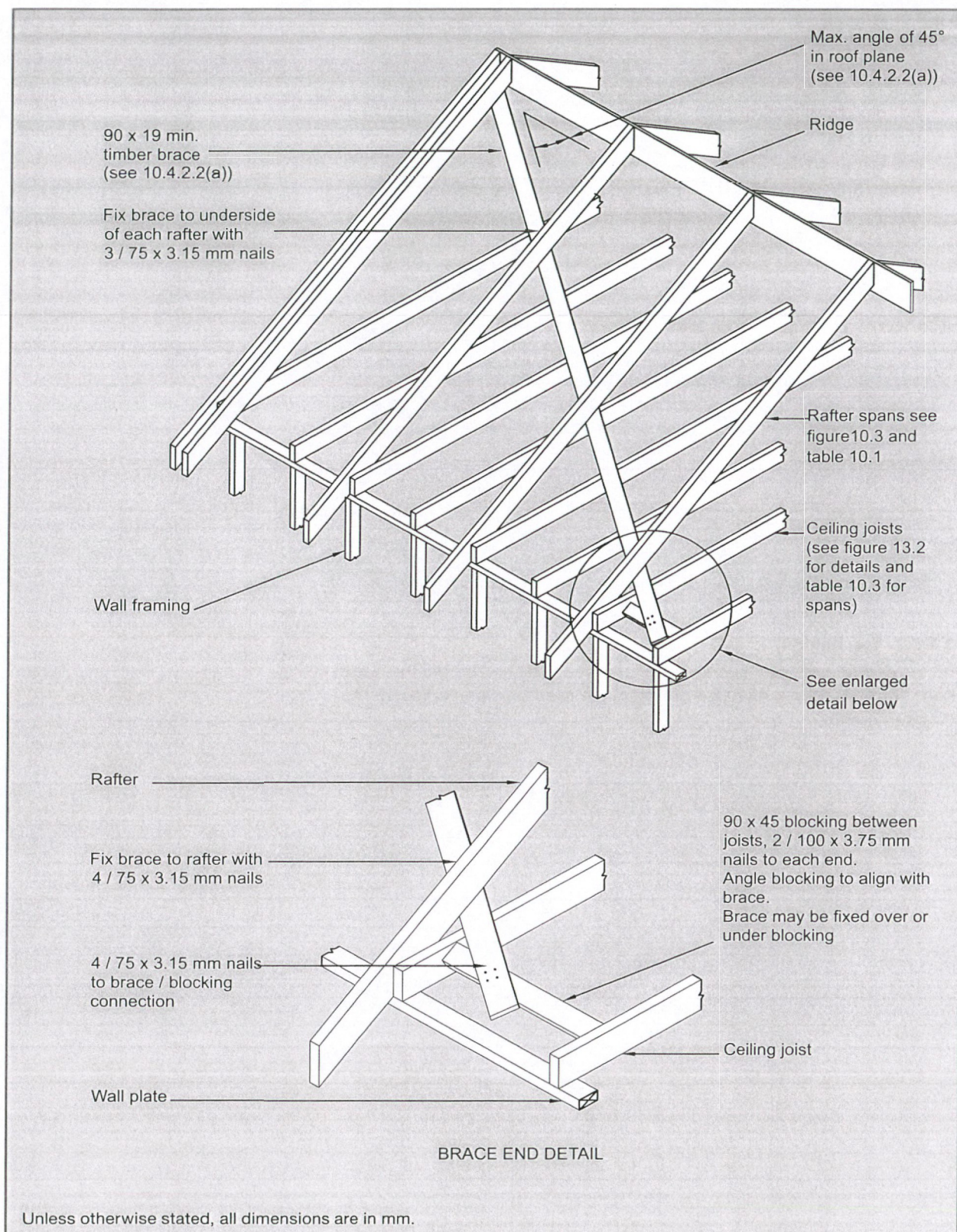
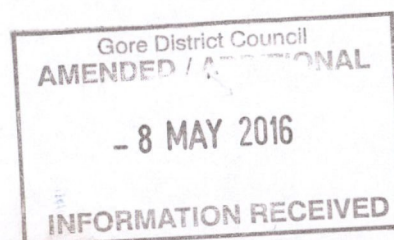


Figure 10.22 – Roof plane diagonal brace – Timber (see 10.4.2)



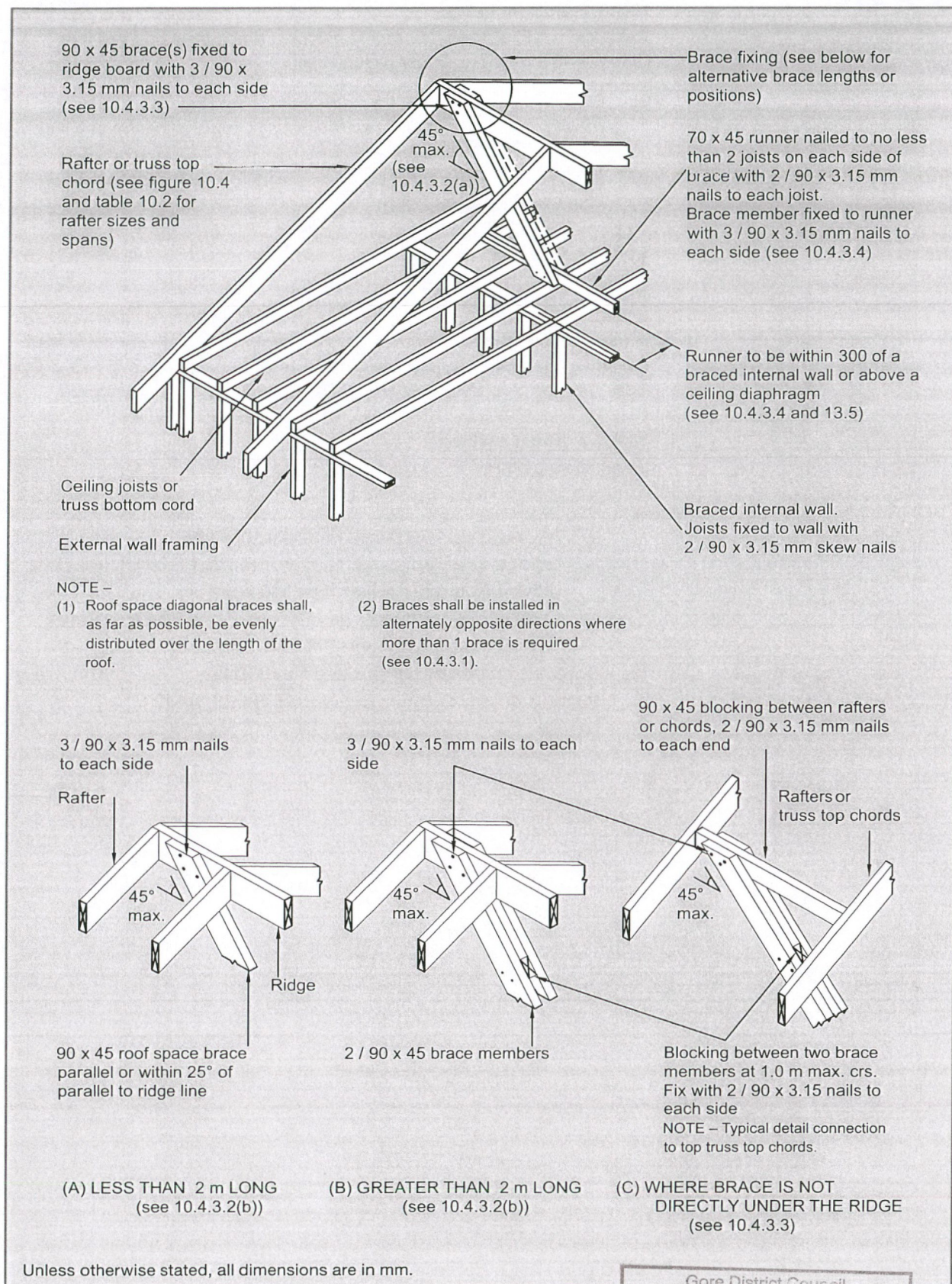
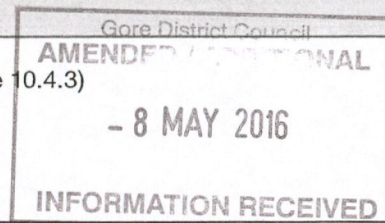


Figure 10.23 – Roof space diagonal brace – Alternative fixings (see 10.4.3)



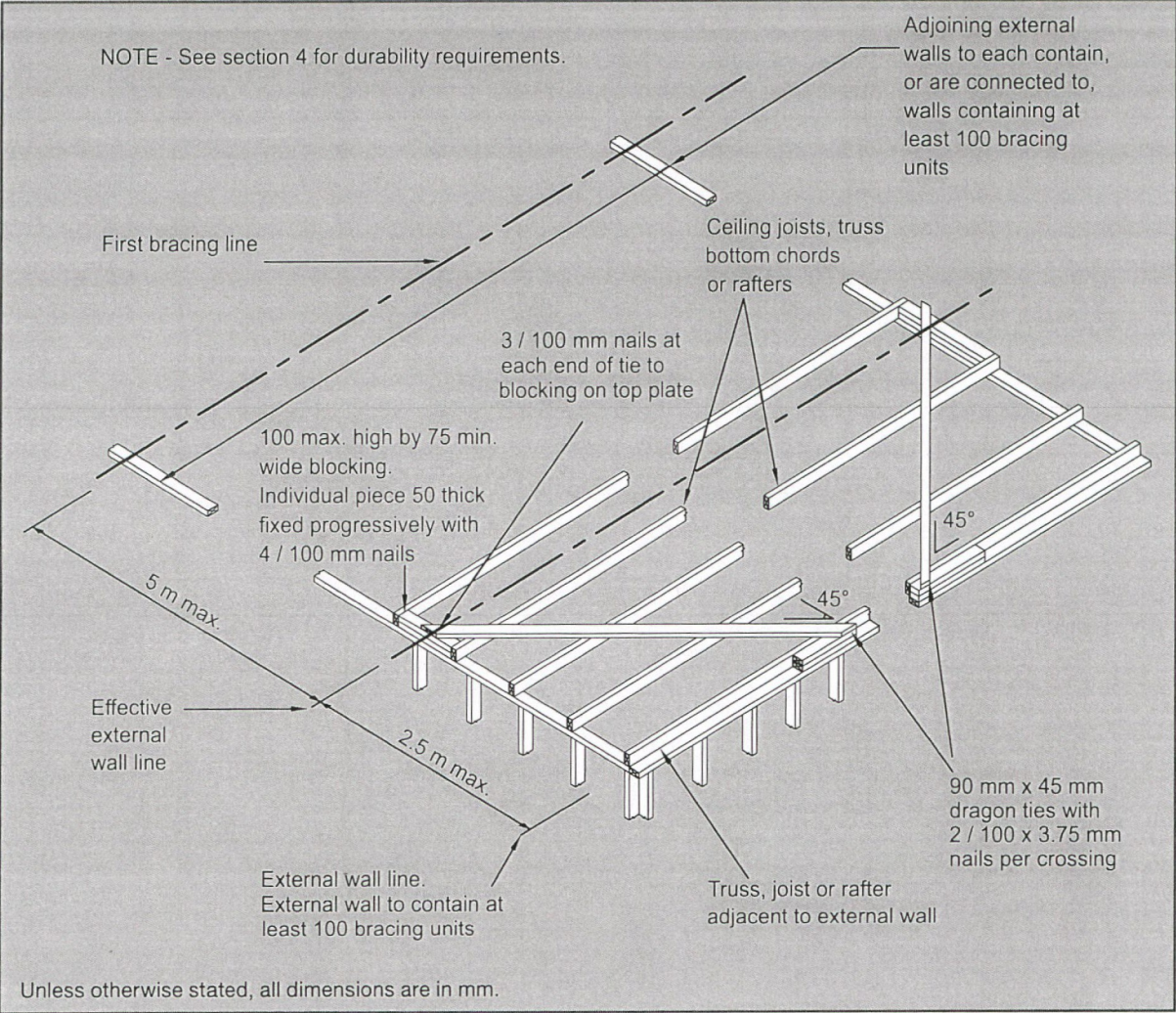


Figure 8.1 – Dragon ties (see 8.3.3.1)

8.4 WALL FRAMING – GENERAL REQUIREMENTS

8.4.1

Wall framing timbers shall be set plumb and square, except as permitted by 8.4.2.

8.4.2

Wall frames may be inclined not more than 20° from the vertical, for the purpose of forming mansard roofs only.

8.4.3

The loaded dimension shall be determined in accordance with 1.3, for the purpose of determining the dimensions of wall framing members.

C8.4.3

The span determined in accordance with figure 1.3 in section 1 relates to the roof mass carried by the walls. It does not correspond to the span and must not be used for determining the sizes of roof members.



New shed,

Built in accordance with NZS 3604

6m across the front by 7m deep, with P.A door and a 4.8m wide sectional door at the gable end facing the road with a stud height of 2400mm

Location will be 1.5m off the boundary lines, at the back right of the section.

Foundation will be concrete with a minimum of 100mm off the highest adjacent ground - 20mpa concrete with two D12 rods in the footing and one at the top held in place with D10 stirrups at 600mm centres. Mesh on top will be 500 E. Footing will go below ground by at least 200mm, with a base width of 200mm wide and a minimum slab thickness on top of 100mm.

Framing shall be constructed out of sg8 h1.2 90mm x45mm timber.

Nzs3604

-studs are to be at 600mm centres with two rows of dwangs evenly spaced.

-studs nailed to bottom and top plates with three 90X3.15mm gun nails.

-top plate to stud shall have one wire dog to get the 2.7kn fixing.

-bottom plate will have dpc stapled to bottom and fixed to the concrete with 135 mm m12 through bolts @ 900mm centres and within 150mm of each corner.

-hold downs will be used where bracing panels are required.

Truss's shall be fixed to the top plate according to manufacturing specifications.

Purlins will be h1.2 sg8 45X75mm at 900mm centres fixed with two

90x3.15mm gun nails. And 1 14g purlin screw to the truss's.

Cladding on this shed will be 0.4 gauge corrugated iron for both the walls and the roof with specified fixing patterns.

Flashings will be as detailed.

- spouting to both sides with brackets at 900mm centres and 65mm pvc down pipes leading to a soak whole of a minimum 3m away from building.

· Building is located in Gore, Southland.

As given in 3604 according to the classifications it is in earthquake zone 2 and a low wind zone.

Contents..

☐ Foundation

☐ Framing

☒ Trusses

☐ Bracing

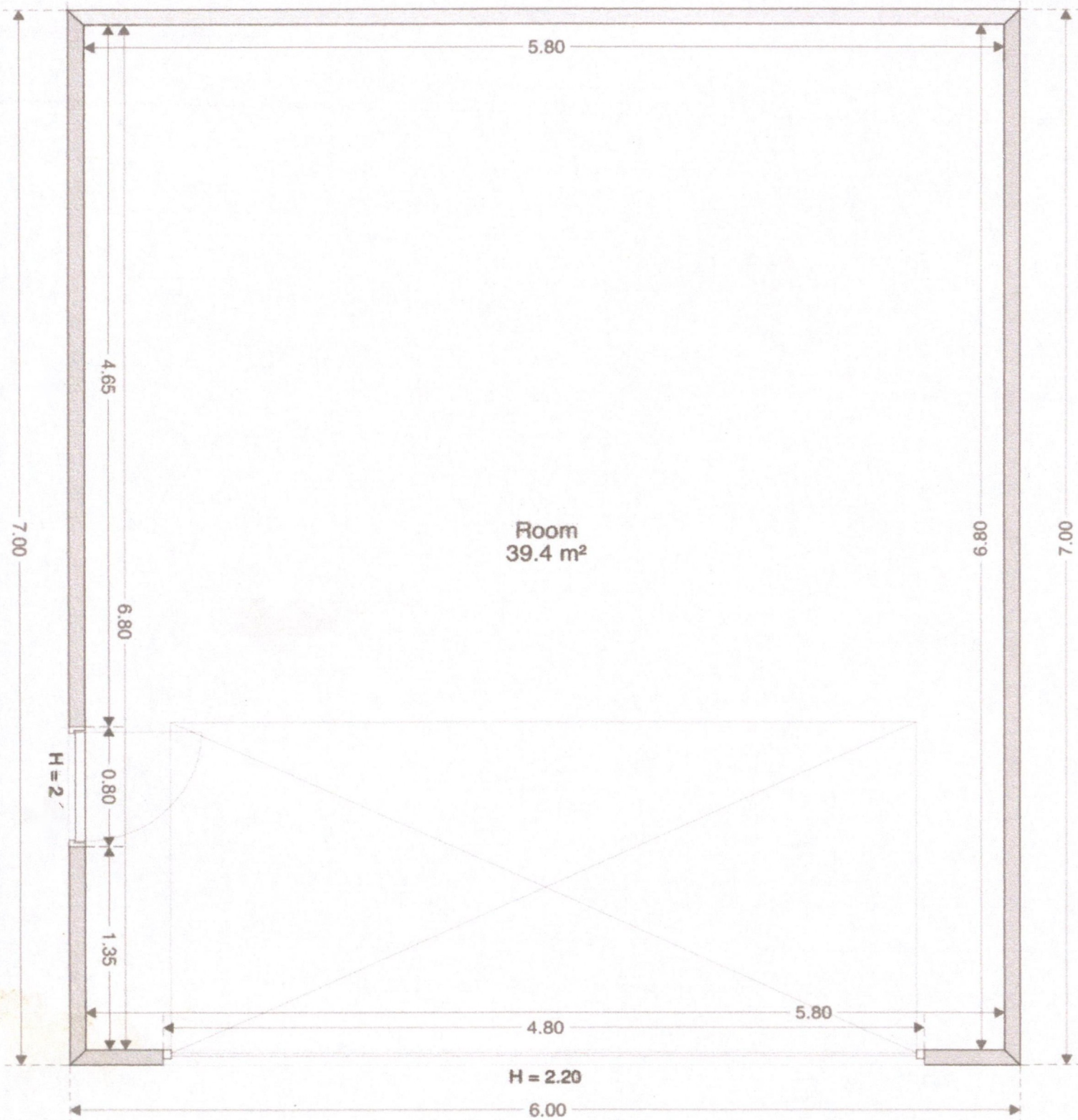
☐ Cladding

☒ Flashings

Foundation

The concrete foundation on this garage floor will be comprised of a single pour for the whole floor and footing as one piece.

- Floor slab dimensions are 7m X 6m
- Fill shall be compacted in layers of 150mm minimum
- 100mm minimum floor thickness of concrete with a strength of 20 MPA poured on top of polythene (DPM) to resist moisture coming up through the floor
- Footing as detailed
- Reinforcing as detailed (500e mesh)



2.6 FLOOR DESIGN LOADS

2.6.1 Concrete floor slabs designed to the requirements of NZS 3604 section 7.5 as modified by B1/AS1 Amendment 11 (see 3.2) are suitable for garages accommodating vehicles of up to 2500 kg tare.

3.0 FLOOR CONSTRUCTION

3.0.1 For garages designed to NZS 3604, section 7.5 of the standard (as modified by Amendment 11 to B1/AS1) sets out the construction requirements.

3.1 FLOOR SLABS

3.1.1 Concrete slabs on ground must meet the following requirements:

- Be reinforced and have the slab reinforcing tied in to the foundation wall reinforcing.
- Incorporate a damp-proof membrane (DPM) under the concrete slab. Damp proofing of new concrete slabs is best carried out as for a standard house slab, with the polyethylene DPM or proprietary concrete underlay laid over sand blinding (nominal minimum thickness of 5 mm or a maximum thickness of 25 mm) before the slab is laid. Joints should be taped and the DPM protected from damage during the placing of reinforcing and concreting.
- Have the finished floor level at least 100 mm above the highest adjacent ground level. This should be high enough to prevent groundwater flowing into the garage. BRANZ believes that 100 mm is sufficient for garages, but it will not comply with the NZBC should the garage be converted to a habitable space, and it is less than the minimum clearances to ground required for certain cladding materials. (Check with the manufacturer to ensure that their product can be used where the clearance is less than that given in E2/AS1.) While E2/AS1 does not include detached garages within its scope, it does allow a minimum level change between the interior and the exterior paving of attached garages of 50 mm at the vehicle access doorway.
- Have a minimum specified concrete strength for the in-use environment in accordance with NZS 3604.
- Have concrete well vibrated and free of voids and cavities, as these are potential weak spots when the floor is loaded.
- Have a minimum slab thickness of 100 mm.
- Be specifically designed where vehicles heavier than 2.5 tonnes are to be housed.
- Be laid over a minimum of 75 mm thick (maximum permitted 600 mm) well compacted hardfill. When over 150 mm thick, compact in 150 mm maximum layers using a vibrating plate compactor.

- be taken down to a depth of 200 mm minimum or to good ground, whichever is greater
- have provision made for fixing down the bottom plate (cast-in bolts or proprietary post-fixed anchors in accordance with NZS 3604 clause 7.5.12)
- for thickened edge slabs, have the damp proofing terminated as shown in Figure 1.

		Timber frame	Masonry veneer
Foundation wall		1 or 2 storeys	1 or 2 storeys
In situ concrete	Reinforcing	3 x D12	3 x D12
	Width	200 mm	240 mm
Concrete masonry (70 series)	Reinforcing	3 x D12	3 x D12
	Width	240 mm	240 mm

3.2.2 The detail in Table 2 is based on section 7.5 of NZS 3604 as modified by Amendment 11 to B1/AS1. For further information, consult NZS 3604 and apply the modifications published in B1/AS1 section 3.

3.2.3 Important changes to concrete slab-on-ground detailing that apply to this bulletin include:

- all slabs are now required to be reinforced with higher ductility grade 500E steel including welded steel mesh
- slab reinforcing must be tied to reinforcing in the perimeter foundation with R10 starter bars at 600 mm centres (Figure 1).

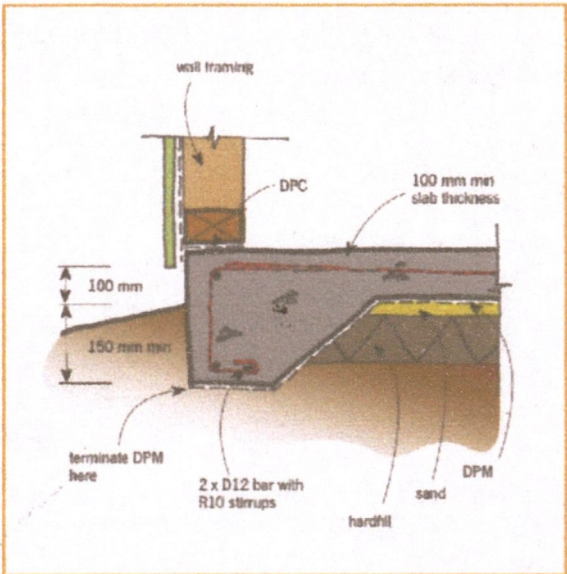


Figure 1. Thickened edge slab

3.2 FOUNDATIONS

3.2.1 The most common garage floor option is a concrete slab on ground incorporating a thickened edge to the slab, but in situ concrete or concrete masonry foundation walls can be used. Reinforcing and minimum widths for perimeter foundation walls are given in Table 2. Foundations must also:

4.0 WALL CONSTRUCTION

4.1 FRAMED WALLS

4.1.1 Wall framing sizes and spacing must be selected from NZS 3604 to suit the wall height and wind zone.


**SUPER
DUCTILE 500E™**

Seismic Grade Reinforcing Mesh

SE62

Mesh Specification

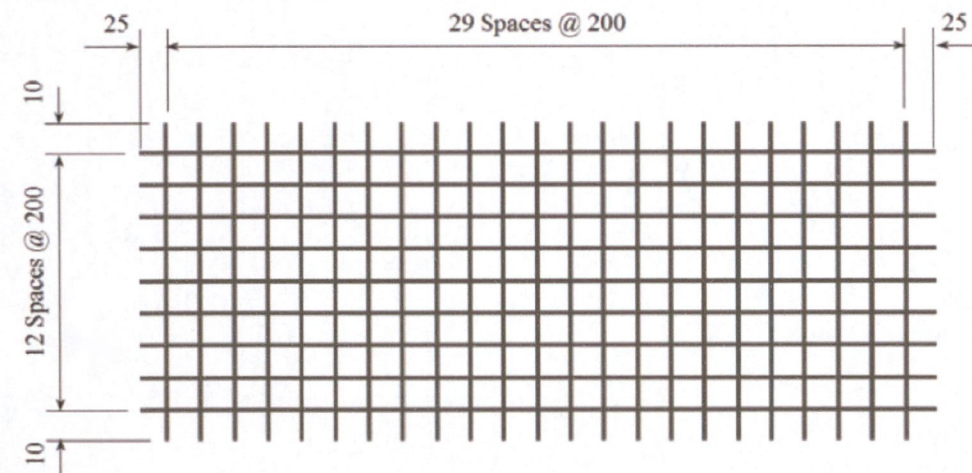
Product Description: 5.85m x 2.42m — 200 x 200 Grid R6.1 Line Wire, R6.1 Cross Wire

	Wire Dia. (mm)	Spacing (mm)	Length (mm)	No. of Wires	Overhangs (mm)	mm ² /m	Wire kg/m	Weight (kg)
Longitudinal Wire	6.1 R	200	5850	13	25 25	146.1	0.2294	17.45
Cross Wire	6.1 R	200	2420	30	10 10	146.1	0.2294	16.65

GROSS SHEET WEIGHT (Kg): 34.10

MASS PER SQ METER (Kg/m²): 2.294

MESH SKETCH (not to scale)

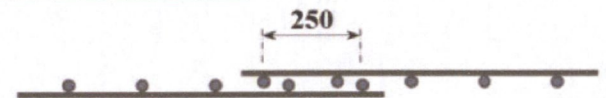


GROSS SHEET AREA (m ²):	14.157
NETT COVER (m ²):	11.932
Ratio STACK & TURNED (Y/N):	Y
No. OF SHEETS / BUNDLE:	25
ESTIMATED CUBIC (m ³):	2.2453
BUNDLE WEIGHT (Tonnes):	0.8525

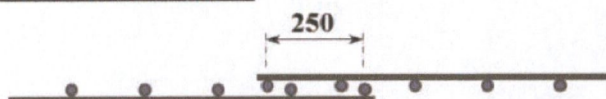
MECHANICAL PROPERTIES

Uniform Elongation %	Yield Strength		Tensile Ratio		Weld Shear Strength
	Min	Max	Min	Max	
≥ 10%	500MPa	600MPa	1.15	1.4	> 7.3

LAPPING ON ENDS



LAPPING ON SIDES

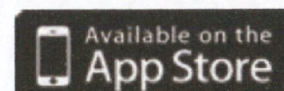

**SUPER
DUCTILE 500E™**

Product is fully tested for Grade 500E compliance as per AS/NZS 4671:2001. All Super Ductile 500E product is individually tagged. The tag contains the product code and the unique batch number relevant to the sheet. It is important that this tag is kept in position to allow easy identification until covered with concrete.

* All measurements/weights approximate



Mesh App:
Download our free smart-phone app by visiting the Apple or Google stores. Alternatively



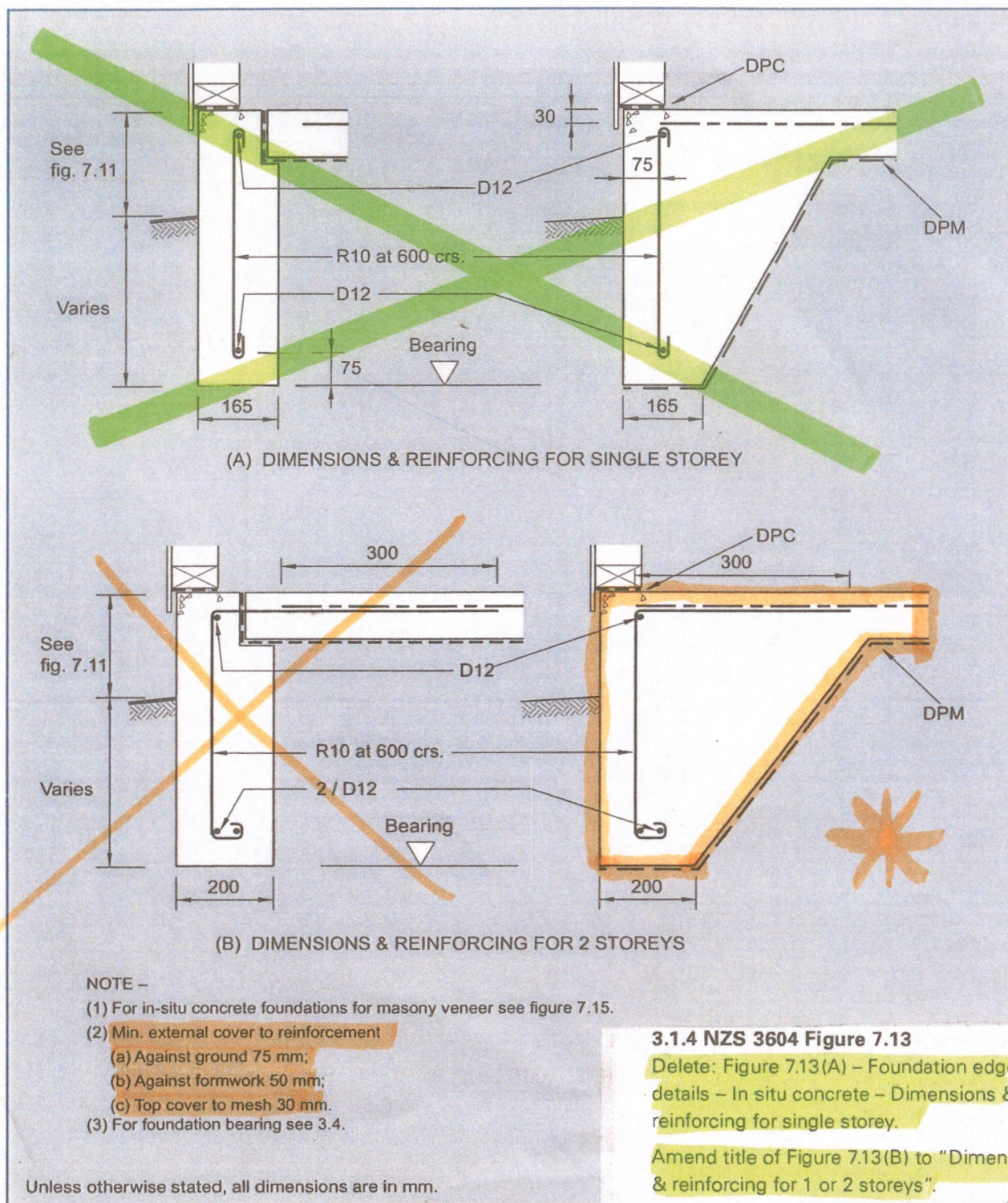


Figure 7.13 – Foundation edge details – In-situ concrete (see 7.5.2.3)

Framing

- All framing members will be constructed out of h1.2 sg8 90x45mm kiln dried timber
- Stud height of 2400mm
- Stud spacing of a maximum 600mm centre to centre
- Top plate fixed with three power driven nails (90x3.15) and one wire dog to each stud
- Bottom plate to stud fixed with three power driven nails (90x3.15)
- Two rows of dwangs spaced equally in the wall nailed at each end with 3 skewed power driven nails (90x3.15)
- DPC is to be stapled to the under side of the bottom plate
- Bottom plate of wall frames shall be bolted to the foundation using 1500mm m12 through bolts at a maximum of 900mm centres and within 150 mm of each corner

Table 8.17 – Bottom plates of loadbearing walls (see 8.7.2.1) – VSG 8 and MSG 8

1.5 kPa and 2 kPa floor loads

Plate size (mm x mm)	Maximum loaded dimension of wall supporting floor (m)	Maximum spacing of floor joists (m)	Light roof			Heavy roof		
			Stud spacing (m)					
			400	480	600	400	480	600
			Maximum loaded dimension* of wall supporting roof (m)					
A Single or top storey								
70 x 35	NA	400	5.3	4.2	2.9	2.6	1.9	1.3
		450	4.5	3.5	2.4	2.2	1.6	–
		600	1.6	–	–	–	–	–
70 x 45	NA	400	6.0	6.0	6.0	5.2	4.1	3.0
		450	6.0	6.0	5.1	4.5	3.5	2.5
		600	4.9	3.8	2.7	2.8	2.1	1.4
70 x 70	NA	400	6.0	6.0	6.0	6.0	6.0	6.0
		450	6.0	6.0	6.0	6.0	6.0	6.0
		600	6.0	6.0	6.0	6.0	6.0	5.7
90 x 35	NA	400	6.0	5.8	4.3	3.7	2.9	2.0
		450	6.0	5.0	3.6	3.2	2.4	1.6
		600	2.5	1.8	–	1.3	–	–
90 x 45	NA	400	6.0	6.0	6.0	6.0	5.7	4.3
		450	6.0	6.0	6.0	6.0	4.9	3.6
		600	6.0	5.4	4.0	3.9	3.0	2.2
90 x 70	NA	400	6.0	6.0	6.0	6.0	6.0	6.0
		450	6.0	6.0	6.0	6.0	6.0	6.0
		600	6.0	6.0	6.0	6.0	6.0	6.0

* For definition of loaded dimension see 1.3.

NOTE – Substitution with built-up members is not allowed.

Amd 2
May '06

Table 8.2 – Studs in loadbearing walls (see 8.5.1.1) – **VSG 8 and MSG 8****1.5 kPa and 2 kPa floor loads****A Single or top storey – Light roof**

Wind Zone	Loaded dimension* of wall	Stud sizes for maximum length (height) of:								
		(m)								
		2.4			2.7			3		
		At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:		
		400	480	600	400	480	600	400	480	600
	(m)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)
Very high	3.0	90 x 35	90 x 45	90 x 70	90 x 45	90 x 70	90 x 70	90 x 70	90 x 90	90 x 90
	4.5	90 x 35	90 x 45	90 x 70	90 x 45	90 x 70	90 x 70	90 x 70	90 x 90	90 x 90
	6.0	90 x 35	90 x 45	90 x 70	90 x 45	90 x 70	90 x 70	90 x 70	90 x 90	90 x 90
High	3.0	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70	90 x 70	90 x 70	90 x 70
	4.5	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70	90 x 70	90 x 70	90 x 70
	6.0	90 x 35	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70	90 x 70	90 x 70	90 x 70
Medium	3.0	70 x 35	70 x 45	90 x 35	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 45
	4.5	70 x 35	70 x 45	90 x 35	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70
	6.0	70 x 35	70 x 45	90 x 35	70 x 45	70 x 45	90 x 45	90 x 35	90 x 45	90 x 70
Low	3.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 35
	4.5	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
	6.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
Internal walls	3.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 35
	4.5	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
	6.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
		3.6			4.2			4.8		
		At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:		
		400	480	600	400	480	600	400	480	600
		(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)
Very high	3.0	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70	190 x 70
	4.5	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70	190 x 70
	6.0	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70	190 x 70
High	3.0	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70
	4.5	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70
	6.0	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70
Medium	3.0	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	140 x 70	190 x 45
	4.5	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	140 x 70	190 x 45
	6.0	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	140 x 70	190 x 45
Low	3.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	4.5	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	6.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
Internal walls	3.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	4.5	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	6.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70

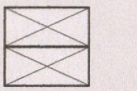
* For definition of loaded dimension see 1.3.

NOTE –

- (1) Studs 70 mm and 90 mm thick may be replaced with studs of 35 mm and 45 mm thickness respectively, provided they are placed at no more than one half the spacing required for the 70 mm and 90 mm stud they are replacing.
- (2) 140 x 45 may be substituted for 90 x 90. 90 x 35 may be substituted for 70 x 45.
- (3) Studs 70 mm and 90 mm thick may be substituted with built-up members sized in accordance with 8.5.1.2 and nailed together in accordance with 2.4.4.7.

Amd 2
May '06

Table 8.16 – Top plates of loadbearing walls (see 8.7.1.1) – VSG 8 and MSG 8

1.5 kPa and 2 kPa floor loads									
Plate size (mm x mm)		Position of truss or rafter centre line relative to centre line of nearest stud	Maximum spacing of trusses or rafters (mm)	Light roof			Heavy roof		
				Stud spacing (mm x mm)					
				400	480	600	400	480	600
				Maximum loaded dimension* of wall (mm x mm)					
A Single or top storey (Applies for any spacing of trusses or rafters)									
70 x 45		Anywhere	600	6.0	6.0	4.9	4.8	3.7	2.6
			900	5.5	4.2	3.0	3.0	2.3	1.6
			1200	4.0	3.0	2.1	–	–	–
		Within 150 mm	600	6.0	6.0	6.0	5.4	4.6	4.1
			900	6.0	5.3	4.7	3.4	2.9	2.5
			1200	4.4	3.8	3.3	–	–	–
90 x 45		Anywhere	600	6.0	6.0	6.0	6.0	4.9	3.6
			900	6.0	5.6	4.1	4.1	3.1	2.2
			1200	5.3	4.0	2.9	–	–	–
		Within 150 mm	600	6.0	6.0	6.0	6.0	6.0	5.4
			900	6.0	6.0	6.0	4.5	3.9	3.4
			1200	5.9	5.1	4.5	–	–	–
90 x 45 plus 140 x 35 or 2/90 x 45		Anywhere	600	6.0	6.0	6.0	6.0	6.0	6.0
			900	6.0	6.0	6.0	6.0	6.0	5.1
			1200	6.0	6.0	6.0	–	–	–
		Anywhere	600	6.0	6.0	6.0	6.0	6.0	6.0
			900	6.0	6.0	6.0	6.0	6.0	6.0
			1200	6.0	6.0	6.0	–	–	–
90 x 45 plus 90 x 45 dwang		Anywhere	600	6.0	6.0	6.0	6.0	6.0	6.0
			900	6.0	6.0	6.0	6.0	6.0	6.0
			1200	6.0	6.0	6.0	–	–	–
		Anywhere	600	6.0	6.0	6.0	6.0	6.0	6.0
			900	6.0	6.0	6.0	6.0	6.0	6.0
			1200	6.0	6.0	6.0	–	–	–

* For definition of loaded dimension see 1.3.

NOTE – Substitution with built-up members is not allowed.

Amd 2
May '06

Table 8.18 – Fixing of top plate of wall to supporting members such as studs and lintels at 600 mm centres (see 8.7.6)

Loaded dimension of wall (m)	Light roof								Heavy roof			
	Roof member spacing (mm)											
	900				1200				900			
	Wind zone				Wind zone				Wind zone			
	L	M	H	VH	L	M	H	VH	L	M	H	VH
3.0 3.5 4.0 4.5 5.0 5.5 6.0	Fixing type (see below)											
	B	B	B	C	B	B	B	C	A	A	B	B
	B	B	B	C	B	B	B	C	A	A	B	B
	B	B	C	C	B	B	C	C	A	A	B	C
	B	B	C	C	B	B	C	C	A	A	B	C
	B	B	C	D	B	B	C	D	A	A	B	C
	B	B	C	D	B	B	C	D	A	A	B	C

Amd 1
Dec '00

Fixing type	Fixing to resist uplift	Capacity of alternative fixing (kN)
A	2/100 x 3.75 skewed nails	0.7
B	2/100 x 3.75 skewed nails + 1 wire dog	2.7
C	2/100 x 3.75 skewed nails + 2 wire dogs	4.7
D	2/100 x 3.75 skewed nails + 3 wire dogs	6.7

8.7.6 Connection of plates to studsAmd 1
Dec '00

The fixing of *top plates* supporting roof members to wall *studs* or *lintels* shall be in accordance with table 8.18.

8.8 Dwangs and walings**8.8.1**

Dwangs, *walings*, and *metal angle walings*, where required by 8.5.4, shall be spaced at not more than 1350 mm centre-to-centre and shall be of not less than the following dimensions:

- (a) *Dwangs*: 45 mm x 45 mm or 70 mm x 35 mm;
- (b) *Walings*: 70 mm x 19 mm;
- (c) *Metal angle walings*: 22 mm x 22 mm x 1.2 mm angle.

8.8.2

Dwangs for the support of *cladding* or *lining* shall be flush with the face of *studs*.

8.8.3

Walings may be butt jointed on a *stud* anywhere along their length with the fixings required by table 8.19 on both sides of the butt joint.

C8.7.6

Each additional fixing required should be as close as possible to a truss.

C8.8.1

Dwangs may be staggered either side of a horizontal straight line by a centre-to-centre distance not exceeding 300 mm.

Table 8.19 – Nailing schedule for hand driven and power driven nails (see 8.8.6)

Joint	Hand driven nails		Power driven nails	
	Length (mm) x diameter (mm) and type	Number and location	Length (mm) x diameter (mm) and type	Number and location
Bottom plate to floor framing at:				
(a) External walls and internal wall bracing elements	100 x 3.75	2 at 600 mm centres	90 x 3.15	3 at 600 mm centres
(b) Internal walls (may be nailed to floor decking)	100 x 3.75	1 at 600 mm centres	90 x 3.15	1 at 600 mm centres
(c) Trimmer not exceeding 4.2 m long	100 x 3.75	4 (end nailed)	90 x 3.15	6 (end nailed)
Dwang to stud	75 x 3.15 or 100 x 3.75	2 (skewed) 2 (end nailed)	75 x 3.06 90 x 3.15	2 (skewed) 2 (end nailed)
Fishplate to straightened stud	60 x 2.8	4 each side of cut	60 x 2.8	4 (each side of cut)
Half joint in top plate	75 x 3.15	3	75 x 3.06	4
Lintel to trimming stud	75 x 3.15 or 100 x 3.75	4 (skewed) 2 (end nailed)	90 x 3.15	3 (end nailed)
Ribbon board to stud	100 x 3.75	2	90 x 3.15	3
Sill or header trimmer to trimming stud for:				
(a) Trimmer not exceeding 2.4 m long	100 x 3.75	2 (end nailed)	90 x 3.15	3 (end nailed)
(b) Trimmer not exceeding 3.6 m long	100 x 3.75	3 (end nailed)	90 x 3.15	5 (end nailed)
(c) Trimmers not exceeding 4.2 m long	100 x 3.75	4 (end nailed)	90 x 3.15	6 (end nailed)
Solid plaster batten to stud	60 x 2.8 (galv.)	500 mm centres	60 x 2.8 (galv.)	500 mm centres
Stud to plate	100 x 3.75 or 75 x 3.15	2 (end nailed) 4 (skewed)	75 x 3.06 90 x 3.15	4 (skew nailed) 3 (end nailed)
Top plate 140 mm x 35 mm to 90 mm x 45 mm and top plate to lintel	100 x 3.75	2 at 500 mm centres	90 x 3.3 90 x 3.15	3 at 500 mm 3 at 500 mm centres
Trimming studs at openings, blocking and studs at wall intersections	100 x 3.75	600 mm centres	90 x 3.3 90 x 3.15	600 mm centres
Trimming stud to doubled stud immediately under lintel	100 x 3.75	2	90 x 3.15	2
Waling to stud	60 x 2.8	2	60 x 2.8	2

NOTE –

- (1) Nail lengths and diameters are the minimum required.
- (2) Refer to 4.4 for required protective coatings for metal fasteners.

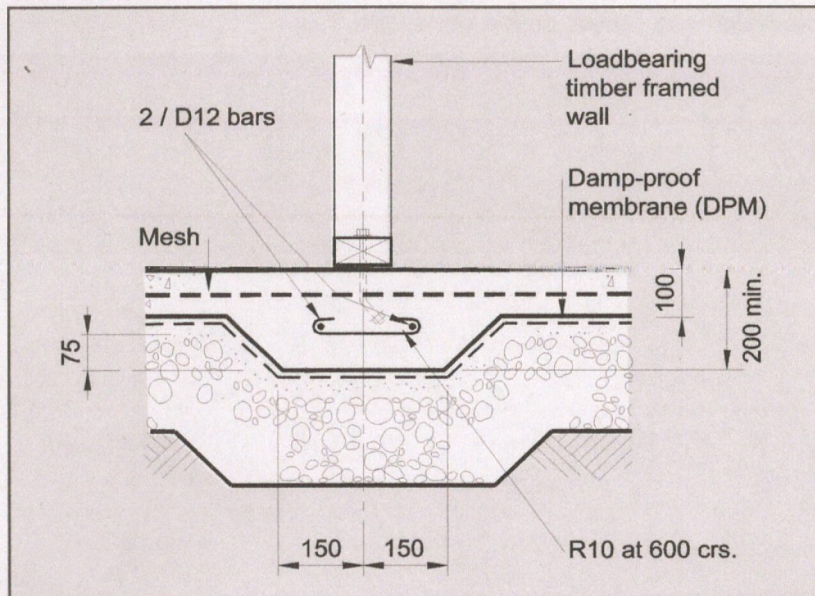


Figure 7.19 – Ground slabs beneath internal loadbearing walls
(see 7.5.11.2)

7.5.12 Fixing of timber

7.5.12.1

Framing timbers shall be fixed to slab-on-ground floors as required by 6.11.9 or proprietary fasteners may be used in accordance with 7.5.12.2.

7.5.12.2

Proprietary fasteners complying with 7.5.12.3 or 7.5.12.4 may be used to fix *bottom plates* of walls to slab-on-ground floors, other than *wall bracing elements*, provided they are within 150 mm of each end of the *plate* and at not more than 900 mm centres elsewhere.

7.5.12.3

For *internal walls*, proprietary fasteners securing *bottom plates* to concrete floors shall have a minimum horizontal *capacity* when tested in accordance with 2.4.7 as follows:

- (a) In the plane of the wall 4 kN;
- (b) Out of the plane of the wall 3 kN.

7.5.12.4

For *external walls*, proprietary fasteners securing *bottom plates* to concrete floors shall have a minimum *capacity* when tested in accordance with 2.4.7 as follows:

- (a) Horizontal *loads* in the plane of the wall 5 kN;
- (b) Horizontal *loads* out of plane of the wall 4 kN;
- (c) Vertical *loads* in axial tension of the fastener 8 kN.

7.6 Nailing schedule for timber floor framing

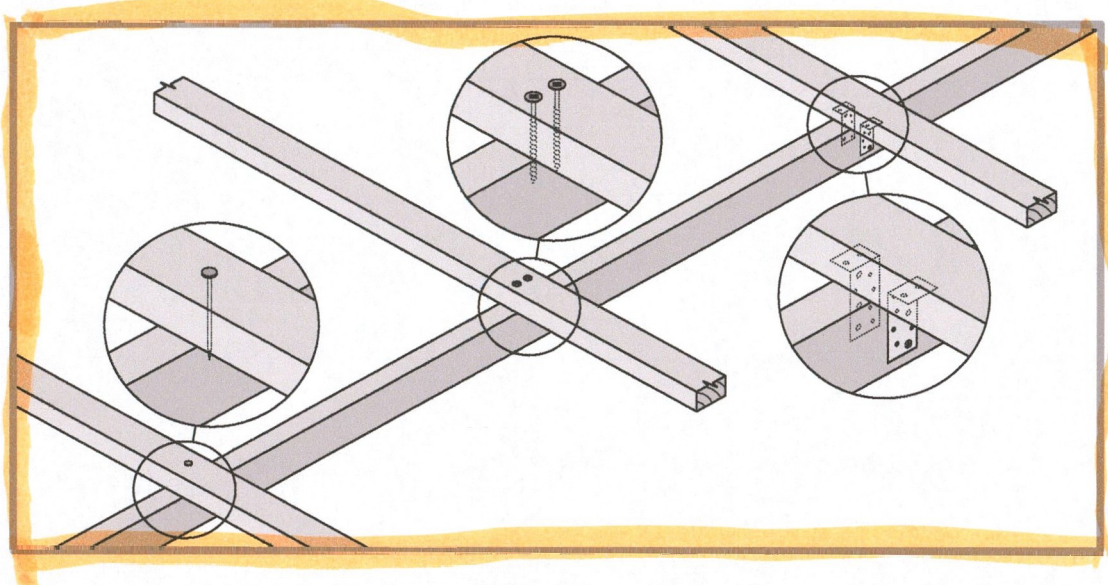
Table 7.5 lists the size, number and location of nails to be used in floor framing. See 2.4.4 for other requirements for nails.



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

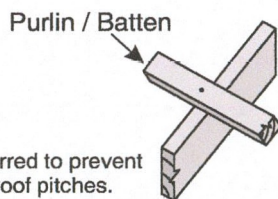
L = Low Wind
M = Medium Wind
H = High Wind
VH = Very High Wind
EH = Extra High Wind

STANDARD FIXING OPTIONS

FIXING TYPE A 0.55kN

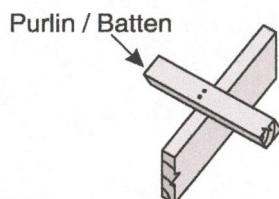
1 NAIL

Note: Two nails may be preferred to prevent batten rolling over with high roof pitches.



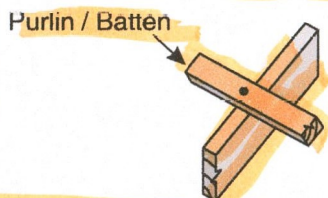
FIXING TYPE B 0.8kN

2 NAILS



FIXING TYPE C 2.4kN

1 BLUE SCREW

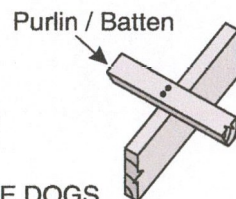


FIXING TYPE D 3.45kN

2 BLUE SCREWS

OR

2 SKEW NAILS plus 2 WIRE DOGS
(for purlin on edge)

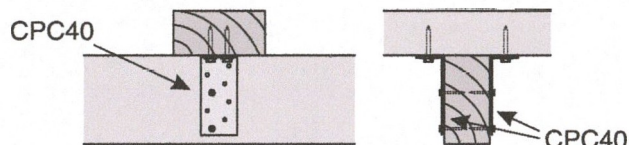


FIXING TYPE E 5.5kN

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

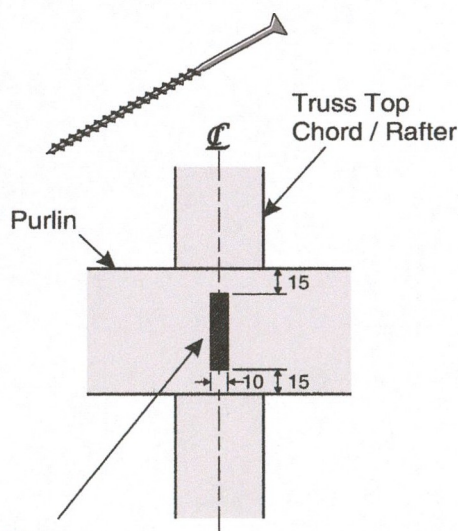
BLUE SCREW = 80mm x 10 gauge LUMBERLOK BLUE SCREW

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

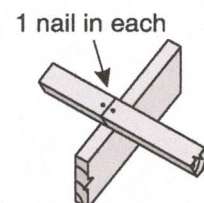


NOTE:

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

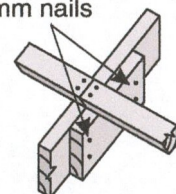


NOTE:

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

Table 10.9 – Purlins (see 10.2.1.16.1) – **VSG 8 and MSG 8****(a) Light roof cladding** (see figures 10.16 and 10.17)

Purlin size	Maximum span	Maximum spacing and fixing loads in the following wind zones											
		Low			Medium			High			Very high		
		Spacing	Fixing capacity		Spacing	Fixing capacity		Spacing	Fixing capacity		Spacing	Fixing capacity	
			M ⁽¹⁾	P ⁽¹⁾		M ⁽¹⁾	P ⁽¹⁾		M ⁽¹⁾	P ⁽¹⁾		M ⁽¹⁾	P ⁽¹⁾
(mm x mm)	(mm)	(mm)	(kN)	(kN)	(mm)	(kN)	(kN)	(mm)	(kN)	(kN)	(mm)	(kN)	(kN)
70 x 45	900	900	0.5	0.8	900	0.7	1.1	900	1.0	1.5	900	1.3	2.0
70 x 45	900	1200	0.7	1.0	1200	1.0	1.4	1200	1.4	2.0	1200	1.8	2.6
70 x 45	900	1800	1.0	1.5	1800	1.4	2.1	1400	1.6	2.3	1400	2.0	3.1
70 x 45	1200	1200	0.9	1.4	1100	1.2	1.7	800	1.2	1.8	800	1.6	2.3
70 x 45	1200	1300	1.0	1.5	1100	1.2	1.7	800	1.2	1.8	800	1.6	2.3
90 x 45	1200	1700	1.3	1.9	1500	1.6	2.3	1000	1.5	2.2	1000	2.0	2.9

NOTE –

(1) M = Main roof; P = Periphery (see figures 10.16 and 10.17).

(2) Fixings with the capacity required by the table shall be selected from table 10.10.

(3) Purlin sizes are on the flat.

Table 10.9 – Purlins (see 10.2.1.16.1) – **VSG 10 and MSG 10****(a) Light roof cladding** (see figures 10.16 and 10.17)

Purlin size	Maximum span	Maximum spacing and fixing loads in the following wind zones											
		Low			Medium			High			Very high		
		Spacing	Fixing capacity		Spacing	Fixing capacity		Spacing	Fixing capacity		Spacing	Fixing capacity	
			M ⁽¹⁾	P ⁽¹⁾		M ⁽¹⁾	P ⁽¹⁾		M ⁽¹⁾	P ⁽¹⁾		M ⁽¹⁾	P ⁽¹⁾
(mm x mm)	(mm)	(mm)	(kN)	(kN)	(mm)	(kN)	(kN)	(mm)	(kN)	(kN)	(mm)	(kN)	(kN)
70 x 45	900	900	0.5	0.8	900	0.7	1.1	900	1.0	1.5	900	1.3	2.0
70 x 45	900	1200	0.7	1.0	1200	1.0	1.4	1200	1.4	2.0	1200	1.8	2.6
70 x 45	900	1800	1.0	1.5	1800	1.4	2.1	1800	2.0	2.9	1400	2.0	3.1
70 x 45	1200	1200	0.9	1.4	1200	1.3	1.9	1100	1.7	2.5	900	1.8	2.6
70 x 45	1200	1400	1.1	1.6	1400	1.5	2.2	1100	1.7	2.5	900	1.8	2.6
90 x 45	1200	1800	1.4	2.0	1800	1.9	2.8	1400	2.1	3.1	1100	2.1	3.2

NOTE –

(1) M = Main roof; P = Periphery (see figures 10.16 and 10.17).

(2) Fixings with the capacity required by the table shall be selected from table 10.10.

(3) Purlin sizes are on the flat.

Amd 2
May '06

Producer Statement - PS1 - Design

Job Ref:

6788

This producer statement applies to the structural engineering design software "Pryda Build" supplied by Pryda NZ to

NIAGARA TRUSS & FRAME

These truss designs are in accordance with sound and widely accepted engineering principles. I believe on reasonable grounds that if constructed in accordance with the design, the trusses will comply with relevant requirements of the New Zealand Building Code, Clause B1 and Verification Method B1/VM1. The durability shall comply with the New Zealand Building Code, Clause B2, for building importance level 2 and a design working life of 50 years.

In addition to the above, this software also complies in part with:

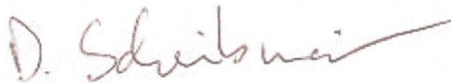
ANSI / TPI 1 - 2002 National Design Standard for metal plate connected wood truss construction.

AS 1649 - 2001 Timber - Methods of test for mechanical fasteners and connectors - Basic working loads and characteristic strengths.

The truss designs require that the supporting structure is stable in its own right, and that the trusses will be braced in accordance with the New Zealand Building Code Standard NZS 3604:2011, and any supplementary details provided, including but not limited to Pryda Installation Guides.

Pryda NZ holds a current policy of Professional Indemnity Insurance with cover no less than NZ\$2 million. The policy includes the engineering design processes used in the software.

On behalf of Pryda NZ (a division of ITW New Zealand)

**Daniel Scheibmair**

NZ Engineering Manager

BE, ME (Hons), CPEng, IntPE, MIPENZ (261677)

Pryda New Zealand

Fabricator / Designer Statement

Job Ref:

6788

This statement may be used by the Building Consent Authority for compliance purposes and is issued by a licensed truss fabricator using the Pryda Build software.

CLIENT Name: *Build Solutions***SITE Details:**

Address : *Shed Trusses*
16 Elizabeth Streey, Gore

City:

Post Code:

Nominal Design Criteria:

Design working life: 50 years

Building importance: Residential

Roofing: Longrun (6.0 kg/sq.m)

Ceiling: 13mm Gib-board (8.5 kg/sq.m)

Top chord purlins: 900 mm

BC restraints: Battens at 1800 mm crs

Standard truss spacing: 900 mm

Standard roof pitch: 15.00 deg.

Ult. design wind speed: 44 m/s (wind classification = High)

Design roof snow load: 570 Pa
(incl. probability factor)

Ground snow load: 900 Pa

Location: Region N5 - Otago/Southland

Altitude above sea level: 150 m

Max. eaves height: 3 m

Max. ridge height: 8 m

Int pressure coeff. up: 0.2

Overhang Condition: Metal fascia

The correctness of the Design Criteria used by the Pryda Build truss design software is the responsibility of the fabricator.

Note : Where relevant, a structural fascia beam is required at all hip and dutch hip corners to support the short creeper/rafter overhangs, as shown in AS4440-2004

Note: This statement must be read in conjunction with the truss layout and detail sheets.

All truss designs and their connections have been designed using Pryda design software. Additional items such as roof/ceiling plane bracing, special notes, supplementary timber, etc., which may be shown on the plan drawings are the responsibility of others.

All trusses shall be manufactured in accordance with the fabrication specifications provided by Pryda, and installed, connected and braced in accordance with the recommendations given in - : AS4440:2004 "Installation of nailplated timber roof trusses" and any other supplementary details that may be provided, such as the Pryda Installation Guides.

Timber verification and grading values are in accordance with clause B1 and timber treatment in accordance with clause B2 of the New Zealand Building Code.

I/we confirm that the trusses for this project have been manufactured in accordance with the fabrication specifications provided by Pryda New Zealand

Name: Simon BuddPosition: DetailerSigned: Date: 21-01-2016

Fabricator / Designer Statement

Job Ref:

6788

Note 1: All timber framing nails are machine-driven, glue coated, or annular/helical deformed shank.
Use specified fixings with Pryda connectors as noted.

Tie-downs to walls/beams:

All trusses need to be fixed at each timber support with 2 / 90x3.15 dia Skew Nail

T1	1	-	2/ZU	JD5	90	JD5	-0.66
	11	6000	2/ZU	JD5	90	JD5	-0.66
	3	1200	2/ZU	JD5	70	JD5	-1.69
	4	1800	2/ZU	JD5	70	JD5	-0.68
	5	2400	2/ZU	JD5	70	JD5	-0.90
	6	3000	2/ZU	JD5	70	JD5	-0.36
	7	3600	2/ZU	JD5	70	JD5	-0.90
	8	4200	2/ZU	JD5	70	JD5	-0.68
	9	4800	2/ZU	JD5	70	JD5	-1.69
T1-1	1	-	2/ZU	JD5	90	JD5	-0.68
	11	6000	2/ZU	JD5	90	JD5	-0.68
	3	1200	2/ZU	JD5	70	JD5	-1.68
	4	1800	2/ZU	JD5	70	JD5	-0.54
	5	2400	2/ZU	JD5	70	JD5	-0.90
	6	3000	2/ZU	JD5	70	JD5	-0.59
	7	3600	2/ZU	JD5	70	JD5	-0.90
	8	4200	2/ZU	JD5	70	JD5	-0.54
	9	4800	2/ZU	JD5	70	JD5	-1.68
T2	1	-	1/MGL	JD5	90	JD5	-2.51
	7	6000	1/MGL	JD5	90	JD5	-2.51

Secondary fixings (hip & gable ends, valleys):

All trusses are to be fixed at each support with the following:

Hip truss to truncated girder	3 face nails, bottom chords
Jack truss to truncated girder	3 skew nails or back face nails, bottom chords
Creep truss to hip truss	3 face nails, top and bottom chords
Top chord extensions	2 skew nails
Valley trusses	1 skew nail
Outriggers	2 skew nails

All additional connections are as follows:

Supporting Truss	Supported Truss	Top Chord	Bottom Chord
------------------	-----------------	-----------	--------------

Fixing Summary:

Connector	Description	Total	Fixing Method (per connector)	
Tiedown			Support	Truss
MGL	Multigrip (long)	14	6/30x3.15d nails	4/30x3.15d nails
ZU	U nail	36	1/30x3.15d nails	1/30x3.15d nails

Truss Reference : T1 (Single Truss)

Truss type: Standard

No. plies : 1x45mm

Design spacing : 847mm

No. of : 1

Building type: Residential

D/Gable Station : 0mm



L1: 13mm Gib-board (8.5 kg/sq.m).

Battens @ 1800mm.

L2: Longrun (6.0 kg/sq.m).

Battens @ 900mm.

Timber

Top Chords 1 / 90x45 MSG8 H1-2 uno

Bottom Chords 1 / 90x45 MSG8 H1-2 uno

Webbs 1 / 70x45 MSG6 H1-2 uno

Notes

1. Deflection = permanent load deflection including creep if timber truss.
2. Overhang condition: Metal fascia.
3. Safety plank on BC : Required if head height exceeds 1.2m.
4. Refer to Pryda Installation Guide for full bracing details.
5. Refer to layout for overall truss bracing.
6. Truss close to gable end: YES

Major supports and factored reactions

Joint	Type	Width	Perm.	Max. down (LC)	Uplift	Tie-down	Connector
1	Wall Ext	90	0.2 kN	1.8 kN (Gc+Qj)	-0.7 kN	2/ZU	-
11	Wall Ext	90	0.2 kN	1.8 kN (Gc+Qj)	-0.7 kN	2/ZU	-
3	Wall Int	70	0.4 kN	1.8 kN (Gc+Qj)	-1.7 kN	2/ZU	-
4	Wall Int	70	0.1 kN	1.4 kN (Gc+Qj)	-0.7 kN	2/ZU	-
5	Wall Int	70	0.2 kN	1.5 kN (Gc+Qj)	-0.9 kN	2/ZU	-
6	Wall Int	70	0.2 kN	1.4 kN (Gc+Qj)	-0.4 kN	2/ZU	-
7	Wall Int	70	0.2 kN	1.5 kN (Gc+Qj)	-0.9 kN	2/ZU	-
8	Wall Int	70	0.1 kN	1.4 kN (Gc+Qj)	-0.7 kN	2/ZU	-
9	Wall Int	70	0.4 kN	1.8 kN (Gc+Qj)	-1.7 kN	2/ZU	-

TRUSS DETAILS (DESIGN)

Job Ref: 6788

Truss Reference : T1-1 (Single Truss)

Truss type: Standard

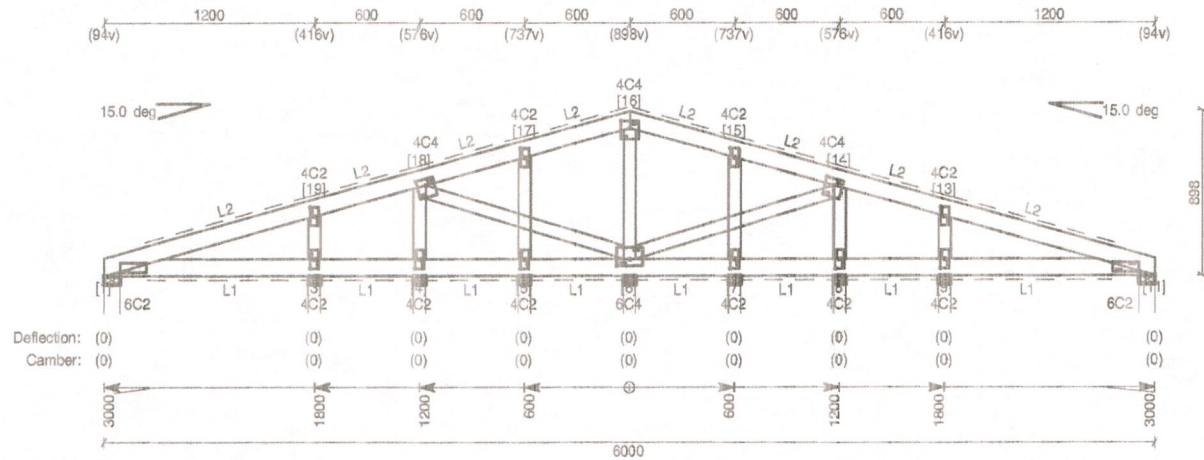
No. plies : 1x45mm

Design spacing : 847mm

No. of : 1

Building type: Residential

D/Gable Station : 0mm



Linings

L1: 13mm Glib-board (8.5 kg/sq.m).

Battens @ 1800mm.

L2: Longrun (6.0 kg/sq.m).

Battens @ 900mm.

Timber

Top Chords 1 / 90x45 MSG8 H1-2 uno

Bottom Chords 1 / 90x45 MSG8 H1-2 uno

Webs 1 / 70x45 MSG6 H1-2 uno

Notes

1. Deflection = permanent load deflection including creep if timber truss.
2. Overhang condition: Metal fascia.
3. Safety plank on BC : Required if head height exceeds 1.2m.
4. Refer to Pryda Installation Guide for full bracing details.
5. Refer to layout for overall truss bracing.
6. Truss close to gable end: YES

Major supports and factored reactions

Joint	Type	Width	Perm.	Max. down (LC)	Uplift	Tie-down	Connector
1	Wall Ext	90	0.2 kN	1.7 kN (Gc+Qj)	-0.7 kN	2/ZU	-
11	Wall Ext	90	0.2 kN	1.7 kN (Gc+Qj)	-0.7 kN	2/ZU	-
3	Wall Int	70	0.4 kN	1.8 kN (Gc+Qj)	-1.7 kN	2/ZU	-
4	Wall Int	70	0.1 kN	1.2 kN (Gc+Qj)	-0.5 kN	2/ZU	-
5	Wall Int	70	0.2 kN	1.5 kN (Gc+Qj)	-0.9 kN	2/ZU	-
6	Wall Int	70	0.2 kN	1.0 kN (Gc+Qj)	-0.6 kN	2/ZU	-
7	Wall Int	70	0.2 kN	1.5 kN (Gc+Qj)	-0.9 kN	2/ZU	-
8	Wall Int	70	0.1 kN	1.2 kN (Gc+Qj)	-0.5 kN	2/ZU	-
9	Wall Int	70	0.4 kN	1.8 kN (Gc+Qj)	-1.7 kN	2/ZU	-

TRUSS DETAILS (DESIGN)

Job Ref: 6788

Truss Reference : T2 (Single Truss)

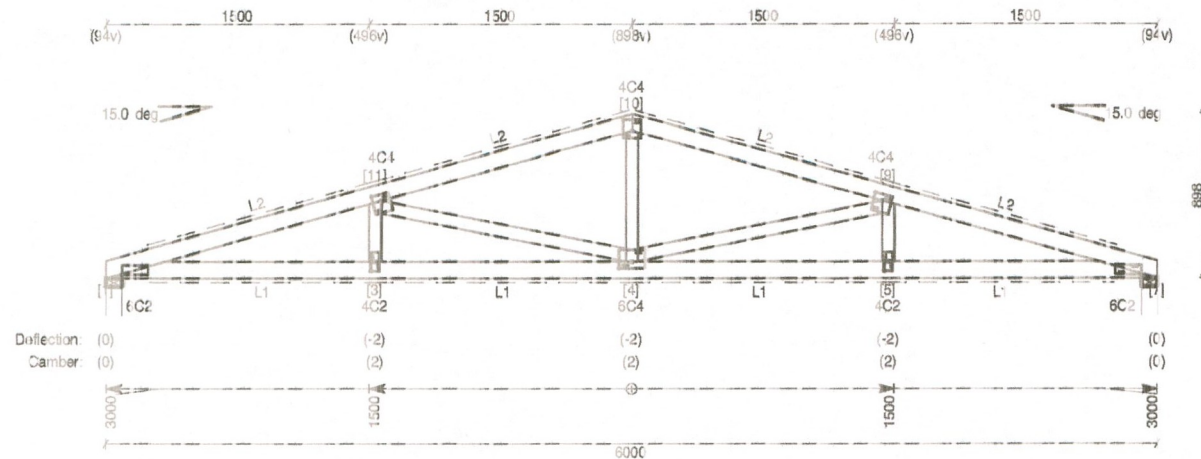
Truss type: Standard

No. plies : 1x45mm

Design spacing : 869mm

No. of : 7

Building type: Residential



Lining

L1: 13mm GIB-board (8.5 kg/sq.m).

Battens @ 1800mm.

L2: Longrun (6.0 kg/sq.m).

Battens @ 900mm.

Timber

Top Chords 1 / 90x45 MSG8 H1-2 uno

Bottom Chords 1 / 90x45 MSG8 H1-2 uno

Webs 1 / 70x45 MSG6 H1-2 uno

Notes

1. Deflection = permanent load deflection including creep if timber truss.
2. Overhang condition: Metal fascia.
3. Safety plank on BC : Required if head height exceeds 1.2m.
4. Refer to Pryda Installation Guide for full bracing details.
5. Refer to layout for overall truss bracing.
6. Truss close to gable end: YES.

Major supports and factored reactions

Joint	Type	Width	Perm.	Max. down (LC)	Uplift	Tie-down	Connector
1	Wall Ext	90	0.9 kN	2.4 kN (Gc+Qj)	-2.5 kN	1/MGL	-
7	Wall Ext	90	0.9 kN	2.4 kN (Gc+Qj)	-2.5 kN	1/MGL	-

Fixing Layout

Bottom Cord Restraint required at 1800mm centres max.

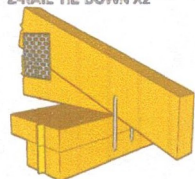
Truss Connections

* All tie-downs use 2/90x3.15 dia Skew Nails unless otherwise noted.

U 18 x 2/ZU U nail

Δ 14 x 1/MGL Multigrip (long)

2-NAIL TIE DOWN X2



Consent Doc. Ref. Z2

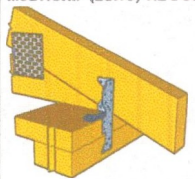
Product Code: ZR & ZL (left & right hand) Also sold as WP20 & WP25

Durability: Suitable for all roof spaces that are closed. Stainless required in open soffits. Compliant with Table 4.1 of NZS3604:2011.

Applications: Used in pairs when employed as a truss tie down. The Z-nail should be anchored to the lower wall plate, and must not terminate in the ceiling plate.

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MULTIGRIP (LONG) TIE DOWN



Consent Doc. Ref. X

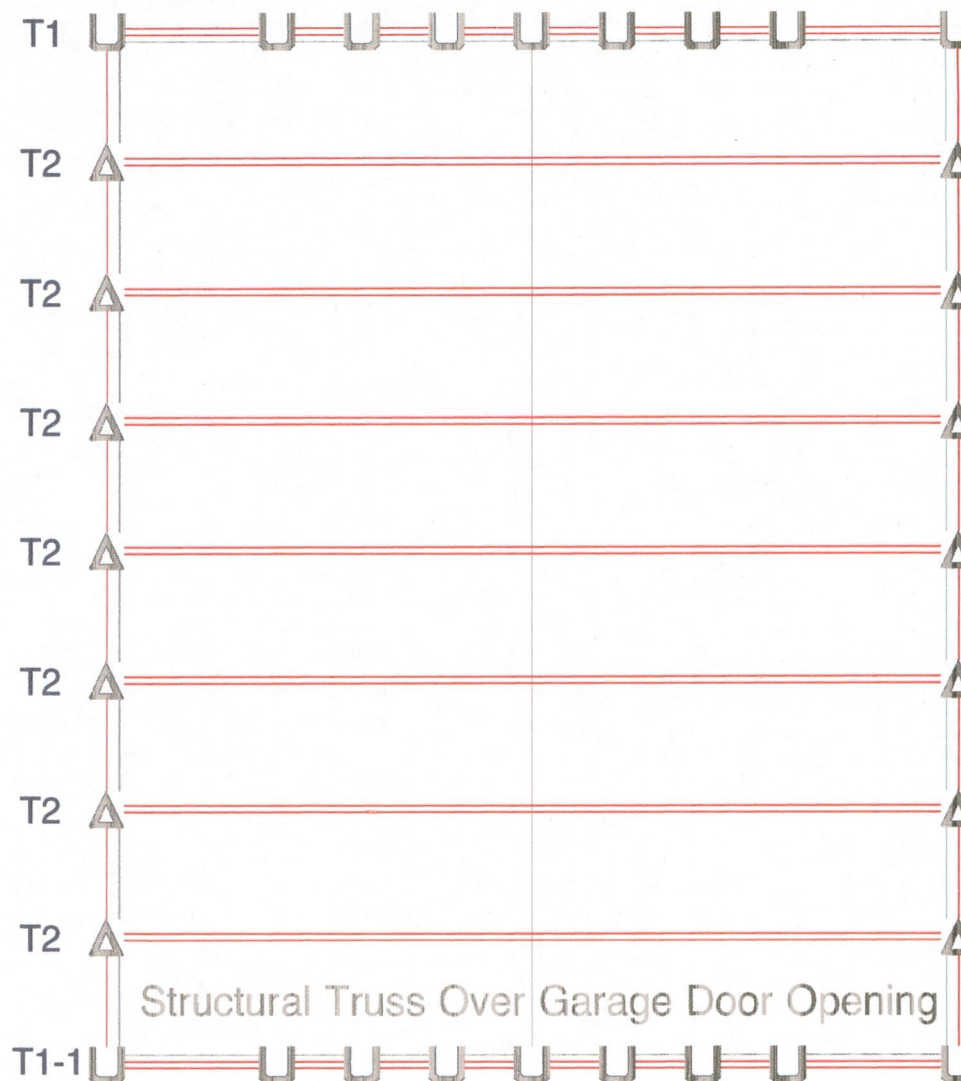
Product Code: MGL

Durability: Suitable for all roof spaces that are closed. Stainless required in open soffits. MGL with single top plate. Compliant with Table 4.1 of NZS3604:2011.

Applications: Use 30d.15mm Pryda product nails. Min. 4 nails required per range.

Note: Multigrip (Short)-MG or MGS-cannot be used in a double top plate situation.

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Structural Truss Over Garage Door Opening



Customer: Build Solutions
Site Address: Shed Trusses
16 Elizabeth Streey, Gore

Roofing: Longrun
Pitch: 15.00 Deg.
Spacing: 900
Design Wind Speed: 44.00 m/s (Ult.)

Job Ref: 6788
Drawn By: <None>
Scale:



SHEET A

Name of Applicant:

James Allan

Site Address:

City/Town or District:

Gore

Street and Number

16 Elizabeth Street

Or Lot and D.P. Number:



Box 1

LOCATION OF STOREY / BLOCK BEING ASSESSED

FOUNDATION	SINGLE STOREY or UPPER STOREY	LOWER STOREY	LOCATION IN BUILDING
Use one sheet for each and circle the appropriate location			

Box 2 Wind Bracing Demand (Table 5.5, 5.6 or 5.7)

Wind zone (Table 5.1) L / M / H / VH / EH

Building height to apex (H) *3.5* m

Roof height above eaves (H) *.9* m

Note: Tables 5.5, 5.6, 5.7 relate to High wind zone.

In other wind zones, multiply the value by the appropriate factor.

$$\begin{aligned}
 W_{\text{across}} &= \text{(value from tables)} \times \text{(multiplication factor)} \\
 &= 56 \times \begin{Bmatrix} L & 0.5 \\ M & 0.7 \\ VH & 1.3 \\ EH & 1.6 \end{Bmatrix} = 28 \text{ Bu/m} \\
 W_{\text{along}} &= 71 \times \begin{Bmatrix} L & 0.5 \\ M & 0.7 \\ VH & 1.3 \\ EH & 1.6 \end{Bmatrix} = 35.5 \text{ Bu/m}
 \end{aligned}$$

Transfer to Box 5

Box 3 Earthquake Bracing Demand (Table 5.8, 5.9, 5.10)

Earthquake zone (Figure 5.4)	<i>1/2/3/4</i>	Concrete slab	(Table 5.10)	<i>YES</i> / NO
Weight of roof cladding	<i>Light</i> / Heavy	Part storey in roof space	(Cl. 5.3.4.3)	YES / <i>NO</i>
Roof pitch (degrees)	<i>0-25</i> / 26-45 / 46-60	/ Part storey basement	(Cl. 5.3.4.4)	YES / <i>NO</i>
Weight of upper (or single) storey cladding	<i>Light</i> / medium / heavy	Chimney	(Cl. 5.3.4.5)	YES / <i>NO</i>
Weight of lower storey cladding <i>N/A</i>	Light / medium / heavy	Wings / blocks	(Cl. 5.1.5)	YES / <i>NO</i>
Weight of subfloor cladding <i>N/A</i>	Light / medium / heavy	Deck projecting more than 2 m	(Cl. 7.4.2.2)	YES / <i>NO</i>

$$E = \text{(value from tables 5.8, 5.9, 5.10)} \times \text{(multiplication factor below)} = 7.7 \times .8 = 6.16 \text{ BU /m}^2$$

Transfer to Box 5

NOTE: Tables 5.8, 5.9, 5.10 relate to soil type D/E in Earthquake zone 3, for multiplication factors for other soil types see below

Soil Class	Earthquake Zone			
	1	2	3	4
A & B Rock	0.3	0.5	0.6	0.9
C Shallow	0.4	0.6	0.7	1.1
D/E Deep / Soft	0.5	0.8	1.0	1.5

Box 4 Building plan dimensions (Figure 5.3)

Roof or building length for wind across ridge (L)	=	<i>6</i>	m	Transfer to Box 5
Roof or building length for wind along ridge (W)	=	<i>7</i>	m	
Gross Floor Area (GFA)	=	<i>42</i>	sq m	

Box 5 Calculation of demand

	(Value)	(Box 4 Dimension)		
Wind Load Across (from box 2)	= <i>28</i>	x <i>6</i>	= <i>150</i>	BU
Wind Load Along (from box 2)	= <i>35.5</i>	x <i>7</i>	= <i>248.5</i>	BU
Earthquake Load (both directions) (from Box 3)	= <i>6.16</i>	x <i>42</i>	= <i>258.7</i>	BU

Transfer to Sheet B

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LOCATION OF STOREY / BLOCK BEING ASSESSED

FOUNDATION	SINGLE STOREY or UPPER STOREY	LOWER STOREY	LOCATION IN BUILDING
------------	-------------------------------	--------------	----------------------

Use one sheet for each storey / block and circle the appropriate location

ACROSS

1	2	3	4	5	6	7	8	9	10	11
Wall or Bracing Line	Bracing Element Identification	Bracing Type	Length of Element (m)	Wind			Minimum Bracing Demand	Earthquake		
				BU's/m (Wind)	BU's Achieved	Total for Bracing Line		BU's/m (Earthquake)	BU's Achieved	Total for Bracing Line
A	EPI-0.6	Ecoply	0.6	75	95	190	75	129	105	210
B	EPI-0.6	Ecoply	0.6	75	95	190	75	129	105	210
C										
D										
E										
				Total Bracing Achieved				Total Bracing Achieved		
								Total Bracing Demand for Earthquake		

ALONG

1	2	3	4	5	6	7	8	9	10	11
Wall or Bracing Line	Bracing Element Identification	Bracing Type	Length of Element (m)	Wind			Minimum Bracing Demand	Earthquake		
				BU's/m (Wind)	BU's Achieved	Total for Bracing Line		BU's/m (Earthquake)	BU's Achieved	Total for Bracing Line
M	EPI-0.6	Ecoply	0.6		95	190	125	129	105	210
N	EPI-0.6	Ecoply	0.6		95	190	125	129	105	210
O										
P										
Q										
				Total Bracing Achieved				Total Bracing Achieved		
								Total Bracing Demand for Earthquake		

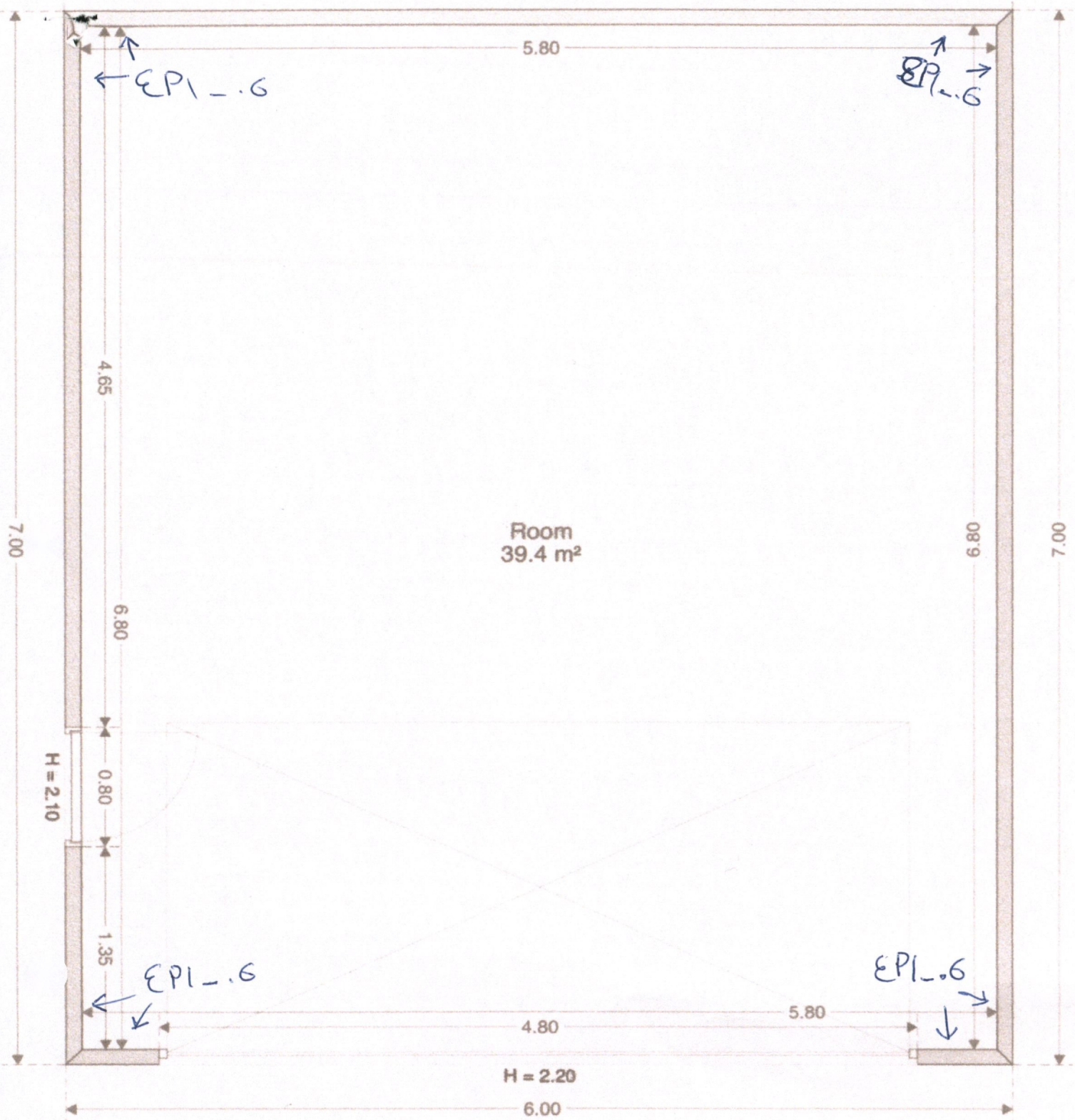


Table 5.5 – Bracing demand for wind – Foundation structures (see 5.2.7 and figure 5.3)

Height to apex, H	Roof height, h	Building wind zone							
		Low		Medium		High		Very high	
		Direction of wind and braced walls							
		Across ridge	Along ridge	Across ridge	Along ridge	Across ridge	Along ridge	Across ridge	Along ridge
		Bracing demand (BUs/m) of building or roof length, L, perpendicular to wind direction							
(m) 4	(m) 1	38	45	50	61	73	86	93	111
5	1	53	60	70	81	102	114	130	147
	2	48	53	63	71	92	100	117	129
6	1	68	75	90	101	131	143	167	184
	2	63	68	83	91	121	128	154	166
	3	60	60	80	81	116	114	148	147
7	1	83	91	110	121	160	171	204	221
	2	78	83	103	111	150	157	191	203
	3	75	75	100	101	145	143	185	184
	4	80	68	107	91	155	128	197	166
8	1	98	106	130	141	189	200	241	258
	2	93	98	123	131	179	185	228	239
	3	90	91	120	121	174	171	222	221
	4	95	83	127	111	184	157	234	203
	5	113	75	150	101	218	143	278	184
9	1	113	121	150	161	218	228	278	295
	2	108	113	143	151	208	214	265	276
	3	105	106	140	141	203	200	259	258
	4	110	98	147	131	213	185	271	239
	5	128	91	170	121	247	171	315	221
	6	128	83	170	111	247	157	315	203
10	1	128	136	170	182	247	257	315	332
	2	123	128	163	171	237	242	302	313
	3	120	121	160	161	232	228	296	295
	4	125	113	167	151	242	214	308	276
	5	143	106	190	141	276	200	352	258
	6	143	98	190	131	276	185	352	239
	7	143	91	190	121	276	171	352	221

Table 5.6 – Bracing demand for wind – Walls above subfloor structure for single storey or upper storey (see 5.2.7 and figure 5.3)

Height to apex, H	Roof height, h	Stud height	Building wind zone							
			Low		Medium		High		Very high	
			Direction of wind and braced walls							
			Across ridge	Along ridge	Across ridge	Along ridge	Across ridge	Along ridge	Across ridge	Along ridge
			Bracing demand (BUs/m) of building or roof length, L, perpendicular to wind direction							
All heights	(m)	(m)								
	1	2.4	18	26	24	34	35	49	44	63
	2		28	33	37	44	54	64	69	81
	3		41	41	54	54	78	78	100	100
	4		60	48	81	64	117	93	149	118
	5		93	56	124	74	180	107	229	137
	6		108	63	144	84	209	122	266	155
	7		123	71	164	94	238	136	303	174
	8		138	78	184	104	267	151	340	192
All heights	1	3.0	23	30	30	40	44	58	56	74
	2		33	38	43	50	63	73	80	93
	3		45	45	60	60	87	87	111	111
	4		65	53	87	70	121	102	160	130
	5		98	60	130	80	189	116	241	148
	6		113	68	150	90	218	131	278	167
	7		128	75	170	100	248	145	315	185
	8		143	83	190	110	276	160	352	204

NOTE – For roofs with hip ends the “Across ridge” values shall be used for both directions.

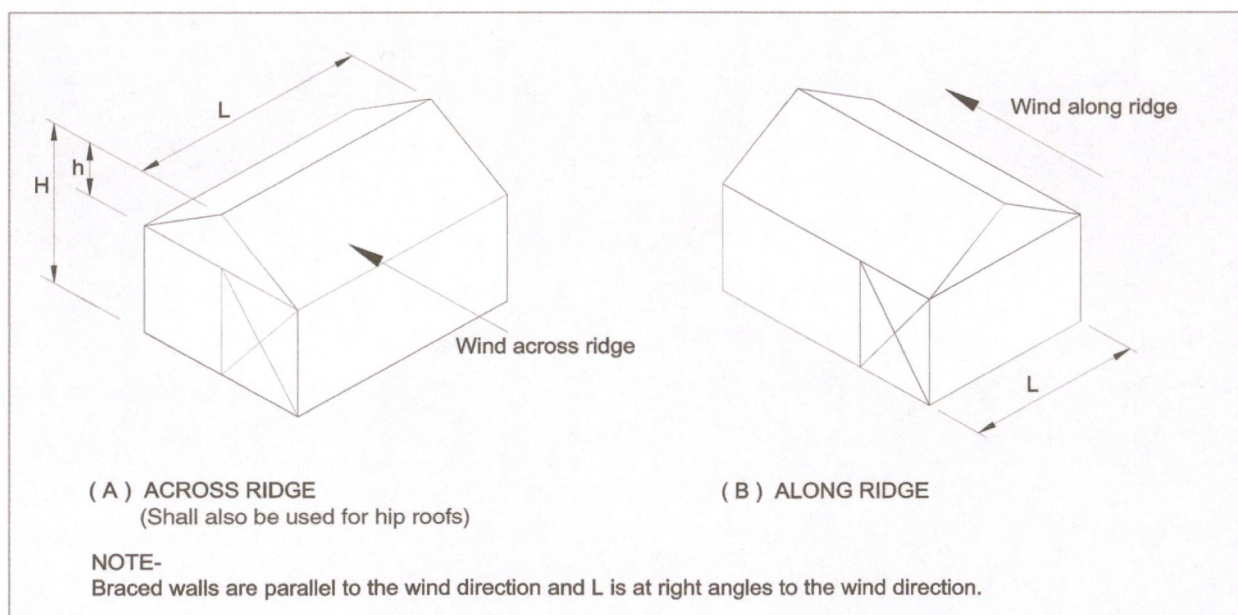
**Figure 5.3 – Direction of wind and braced walls**

Table 5.8 – Bracing demand for earthquake for various combinations of claddings for single storey buildings on subfloor framing and/or foundation walls (see 5.3.3)**2 kPa floor loads**

Subfloor cladding	Single storey cladding	Roof cladding	Roof pitch degrees	Subfloor structure			Single storey walls		
				Earthquake zone					
				A	B	C	A	B	C
				Bracing demand in BUs/m ² of floor area					
Light	Light	Light	0 - 25	9.4	7.1	4.7	6.7	5.0	3.3
			26 - 45	9.8	7.4	4.9	7.1	5.3	3.6
			46 - 60	10.5	7.9	5.3	8.0	6.0	4.0
Medium	Light	Light	0 - 25	9.9	7.4	5.0	6.8	5.1	3.4
			26 - 45	10.3	7.7	5.1	7.3	5.5	3.7
			46 - 60	11.0	8.3	5.5	8.2	6.1	4.1
Heavy	Light	Light	0 - 25	11.2	8.4	5.6	7.3	5.5	3.7
			26 - 45	11.6	8.7	5.8	7.8	5.9	3.9
			46 - 60	12.3	9.2	6.2	8.7	6.5	4.3
Light	Light	Heavy	0 - 25	12.1	9.1	6.1	9.8	7.3	4.9
			26 - 45	13.3	10.0	6.6	11.0	8.3	5.5
			46 - 60	15.4	11.6	7.7	13.3	10.0	6.6
Medium	Light	Heavy	0 - 25	12.6	9.5	6.3	10.0	7.5	5.0
			26 - 45	13.8	10.3	6.9	11.3	8.4	5.6
			46 - 60	15.9	11.9	8.0	13.6	10.2	6.8
Heavy	Light	Heavy	0 - 25	13.9	10.5	7.0	10.6	7.9	5.3
			26 - 45	15.1	11.3	7.5	11.9	8.9	5.9
			46 - 60	17.2	12.9	8.6	14.2	10.7	7.1
Medium and Heavy	Medium	Heavy	0 - 25	14.3	10.7	7.2	11.2	8.4	5.6
			26 - 45	15.5	11.6	7.7	12.4	9.3	6.2
			46 - 60	17.6	13.2	8.8	14.8	11.1	7.4
Medium	Medium	Light	0 - 25	11.6	8.7	5.8	8.0	6.0	4.0
			26 - 45	12.0	9.0	6.0	8.4	6.3	4.2
			46 - 60	12.7	9.5	6.4	9.3	7.0	4.7
Heavy	Medium	Light	0 - 25	12.9	9.7	6.5	8.4	6.3	4.2
			26 - 45	13.3	10.0	6.7	8.9	6.7	4.5
			46 - 60	14.0	10.5	7.0	9.8	7.4	4.9
Heavy	Heavy	Light	0 - 25	17.7	13.3	8.9	11.6	8.7	5.8
			26 - 45	18.1	13.6	9.0	12.1	9.0	6.0
			46 - 60	18.8	14.1	9.4	13.0	9.7	6.5
Heavy	Heavy	Heavy	0 - 25	20.4	15.3	10.2	14.9	11.2	7.5
			26 - 45	21.5	16.2	10.8	16.3	12.2	8.1
			46 - 60	23.7	17.8	11.8	18.7	14.0	9.4

NOTE – See 5.3.3.3 regarding additional part storeys in the roof space.

Table 5.10 – Bracing demand for earthquake for various combinations of claddings for 1 and 2 storey buildings on concrete slab-on-ground (see 5.3.3)

2 kPa floor loads

Lower storey cladding	Single or top storey cladding	Roof cladding	Roof pitch degrees	Two storey buildings						Single storey		
				Lower storey			Top storey walls			Single storey walls		
				Earthquake zones								
				A	B	C	A	B	C	A	B	C
				Bracing demand in BUs/m ² of floor area								
Light	Light	Light	0 - 25	9.9	7.4	5.0	5.6	4.2	2.8	3.6	2.7	1.8
			26 - 45	10.3	7.7	5.1	6.0	4.5	3.0	4.0	3.0	2.0
			46 - 60	11.0	8.3	5.5	6.8	5.1	3.4	4.7	3.6	2.4
Medium	Light	Light	0 - 25	11.2	8.4	5.6	5.8	4.4	2.9	—	—	—
			26 - 45	11.6	8.7	5.8	6.3	4.7	3.1	—	—	—
			46 - 60	12.3	9.2	6.1	7.1	5.3	3.6	—	—	—
Heavy	Light	Light	0 - 25	13.5	10.1	6.7	6.2	4.6	3.1	—	—	—
			26 - 45	13.9	10.4	6.9	6.7	5.0	3.3	—	—	—
			46 - 60	14.6	10.9	7.3	7.6	5.7	3.8	—	—	—
Light	Light	Heavy	0 - 25	12.6	9.5	6.3	8.6	6.5	4.3	6.3	4.8	3.2
			26 - 45	13.8	10.3	6.9	9.9	7.4	4.9	7.5	5.6	3.7
			46 - 60	15.9	11.9	8.0	12.2	9.1	6.1	9.6	7.2	4.8
Medium	Light	Heavy	0 - 25	13.9	10.4	6.9	9.0	6.7	4.5	—	—	—
			26 - 45	15.0	11.3	7.5	10.2	7.7	5.1	—	—	—
			46 - 60	17.2	12.9	8.6	12.6	9.4	6.3	—	—	—
Heavy	Light	Heavy	0 - 25	16.2	12.1	8.1	9.5	7.1	4.7	—	—	—
			26 - 45	17.3	13.0	8.7	10.8	8.1	5.4	—	—	—
			46 - 60	19.5	14.6	9.7	13.2	9.9	6.6	—	—	—
Medium and Heavy	Medium	Heavy	0 - 25	15.6	11.7	7.8	9.9	7.4	4.9	6.9	5.2	3.5
			26 - 45	16.7	12.6	8.4	11.1	8.4	5.6	8.1	6.0	4.0
			46 - 60	18.9	14.2	9.4	13.5	10.1	6.7	10.2	7.7	5.1
Medium	Medium	Light	0 - 25	12.9	9.7	6.4	6.7	5.0	3.4	4.2	3.2	2.1
			26 - 45	13.3	10.0	6.6	7.2	5.4	3.6	4.6	3.4	2.3
			46 - 60	14.0	10.5	7.0	8.0	6.0	4.0	5.3	4.0	2.7
Heavy	Medium	Light	0 - 25	15.2	11.4	7.6	7.1	5.3	3.5	—	—	—
			26 - 45	15.6	11.7	7.8	7.6	5.7	3.8	—	—	—
			46 - 60	16.3	12.2	8.1	8.5	6.3	4.2	—	—	—
Heavy	Heavy	Light	0 - 25	18.3	13.7	9.1	8.7	6.5	4.4	5.2	3.9	2.6
			26 - 45	18.6	14.0	9.3	9.2	6.9	4.6	5.6	4.2	2.8
			46 - 60	19.4	14.5	9.7	10.1	7.6	5.0	6.3	4.7	3.2
Heavy	Heavy	Heavy	0 - 25	21.0	15.7	10.5	12.0	9.0	6.0	7.9	5.9	4.0
			26 - 45	22.1	16.6	11.1	13.3	10.0	6.7	9.1	6.8	4.5
			46 - 60	24.3	18.2	12.1	15.8	11.8	7.9	11.2	8.4	5.6

NOTE – See 5.3.3.3 regarding additional half storeys in the roof space.



ECOPLY® BRACING SPECIFICATIONS: EPI



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 or visit www.chhwoodproducts.co.nz

0800 326 759

www.chhwoodproducts.co.nz



SINGLE SIDED STRUCTURAL PLYWOOD BRACE

Specification No.	Minimum Wall Length	Lining Requirements	BU's/m Wind	BU's/m Earthquake
EPI_0.4	0.4 m	Ecoply® one side	80	95
EPI_0.6	0.6 m		95	105
EPI_1.2	1.2 m		120	135

FRAMING

Wall framing must comply with:

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

Framing dimensions and height are as determined by the NZS 3604 stud and top plate tables for load bearing and non load bearing walls. Kiln dried verified structural grade timber must be used. Machine stress graded timber, such as Laserframe® of SG8 stress grade minimum, is recommended.

BOTTOM PLATE FIXING

Use GIB Handibrac® hold-down connections at each end of the bracing element. Refer to manufacturer installation instructions supplied with the connectors for correct installation instructions and bolt types to be used for either concrete or timber floors. Within the length of the bracing element, bottom plates are fixed in accordance with the requirements of NZS 3604.

LINING

One layer of 7 mm, 9 mm or 12 mm Ecoply® plywood fixed directly to framing or over cavity battens. If part sheets are used, ensure nailing at required centres is carried out around the perimeter of each sheet or part sheet. A 2-3 mm expansion gap should be left between sheets.

FASTENING THE ECOPLY®

Fasteners

Fasten with 50 x 2.8 mm galvanised or stainless steel flat head nails for direct fix, or 60 x 2.8 mm over cavity battens. Place fasteners no less than 7 mm from sheet edges. Screws cannot be used. Power driven nails are suitable. Do not overdrive, nails must be full round head.

Fasteners for H3.2 CCA treated Ecoply

Where fasteners are in contact with H3.2 CCA treated timber or plywood, fasteners shall be a minimum of hot dip galvanised.

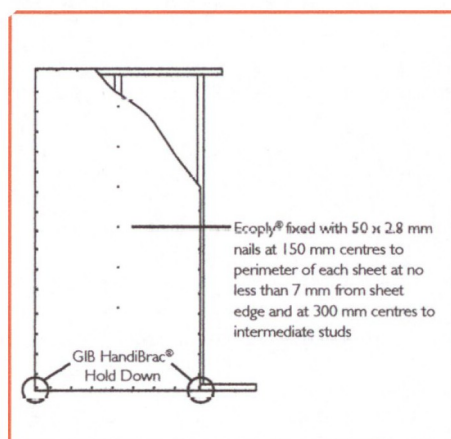
In certain circumstances stainless steel fasteners may be required. Refer to table 8 of the Ecoply Specification and Installation Guide for these circumstances and further fastener selection advice. Where stainless steel nails are required, annular grooved nails must be used.

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

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 ¹ 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 ¹ 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 ¹ 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 ¹ 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 ¹ D	Ecoply H3.1 LOSP/H3.2 CCA treated	Stainless steel
Bracing in wet process buildings in all exposure zones ¹ (including sea spray)	Ecoply H3.1 LOSP/H3.2 CCA treated	Stainless steel

¹ 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 P2.1 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 trade marks of Fletcher Building Holdings Ltd.

MARCH 2014

Cladding

Cladding for the walls and roof on this shed is .4gauge corrugated iron.

- Roof and wall underlay to to be stapled to framing before cladding
- Fixing pattern is hit1 miss1 hit 1 miss2 (c2)
- For the ridge fixing, and end of sheet fixing it will be every second one
- Cladding to hang down below framing by a minimum of 50mm
- Roof cladding to hang over wall cladding by approximately 60mm

Strength that
has withstood
the test of time.



PAGE
3
K
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for architects
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for homeowners

PRODUCT RANGE

 **IMAGE GALLERY**

TECHNICAL DOCUMENTS

CASE STUDIES

INSTALLATION

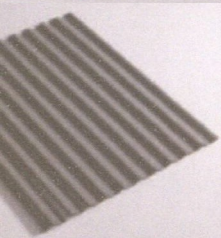
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Roofing

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Corrugate

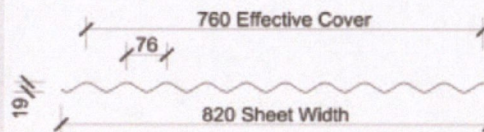


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From traditional to contemporary, Calder Stewart Roofing's corrugate profile can complement most designs. Versatile as both a roofing and cladding profile – Corrugate has been used by architects and builders in any number of ways – including roofing, external & interior cladding and ceilings applications. Available in a wide range of materials and material finishes – including Colorcote and Precious Metal options.

Audio-Perf® - a member of Calder Stewart's corrugate family - is well suited for interior design settings where unique acoustic benefits are required or wanted. [Click here to learn more](#)



Specifications: Corrugate

BBT	Min Pitch	Max Span (Internal)	Max Span (End)	Weight / Metre
0.40mm	8°	1.10	0.70	3.10
0.55mm	8°	1.60	1.00	4.27
0.70mm Alu	8°	0.80	0.50	1.84
0.90mm Alu	8°	1.20	0.80	2.37
0.70mm Cu	8°	0.90	0.60	5.93
0.70mm Zu	8°	0.90	0.60	4.73

 = click image to enlarge

FULL PRODUCT RANGE

● ROOFING & CLADDING

● **Corrugate**

● Hi Five

● Six Rib

● V8 / V6

● Mega 5

● Solar-Rib®

● EURO-TRAY

● Euro-Tray® Lite

● Double Standing Seam

● Angle Seam

● Roll Cap

● Roll Seam

● Heritage Tray™

● Easi-Clad

● Mini-Dek

● Audio-Perf®

● FASCIA

● Paltec Fascia

● F180 Fascia

● FLASHINGS

● SPOUTING

● Quad Spouting

● Klassic Spouting

● Hi Line Spouting

● 1/2 Round Spouting

● RAINWATER HEADS

● PROFILE OPTIONS

● Crimp Curving

● Bull Nosing

● Euro-Tray® Convex Curving

Additional Profile Information

Available in the following Materials:

Plain - Galvanised / Zn/AL

Colorcote - ZinaCore, ZinaCore X, MagnaFlow, MagnaFlow X, AlumiGard, AlumiGard X

Precious - Aluminium / Copper / VM Zinc

Some materials such as precious metals, non standard Colorcote paint systems and heavier gauges, along with the required fixings are not held in stock. Please consult with a Calder Stewart Sales Representative before ordering.

er Specifications:

Table 11: Steel corrugate profiled roofing – 0.4 mm BMT and minimum profile height 16.5 mm
Maximum spans and fixing patterns. Refer to Paragraph 8.4.6

Purlin spacings (metres)		Wind zones		
End span	Intermediate span	Low and Medium	High and Very High	Extra High
0.4	0.6	C2	C2	C2
0.6	0.9	C2	C2	C1
0.8	1.2	C2	C1	C1

NOTE: C1 fixing pattern is – Hit 1, miss 1...

C2 fixing pattern is – Hit 1, miss 1, hit 1, miss 2...

Amend 5
Aug 2011

Table 12: Steel corrugate profiled roofing – 0.55 mm BMT with minimum profile height 16.5 mm
Maximum spans and fixing patterns. Refer to Paragraph 8.4.6

Purlin spacings (metres)		Wind zones		
End span	Intermediate span	Low and Medium	High and Very High	Extra High
0.4	0.6	C3	C3	C3
0.6	0.9	C3	C3	C3
0.8	1.2	C3	C3	C3
1.15	1.6	C3	C3	C2

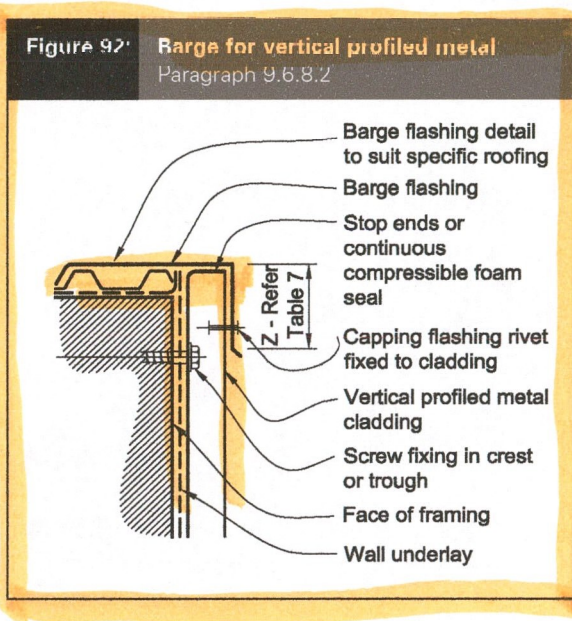
NOTE: C2 fixing pattern is – Hit 1, miss 1, hit 1, miss 2...

C3 fixing pattern is – Hit 1, miss 2, hit 1, miss 3...

Amend 5
Aug 2011

9.6.8.2 Barges

Barge flashings shall be as shown in Figure 92.



9.6.8.4 Corners

Direct fixed vertical profiled metal wall cladding shall be over-flashed at external and internal corners as shown in Figure 94. The cover of the flashings shall:

- Be dimensioned to suit the metal wall cladding profile,
- Cover at least two crests for corrugated and single crests for other profiles, and
- Terminate as shown in Figure 93.

Amend 5 Aug 2011

Amend 2 Jul 2005

9.6.8.3 Bottom of cladding

The bottom edge of the cladding shall overlap the foundation wall as described in Paragraph 9.1.3 and as shown in Figure 93.

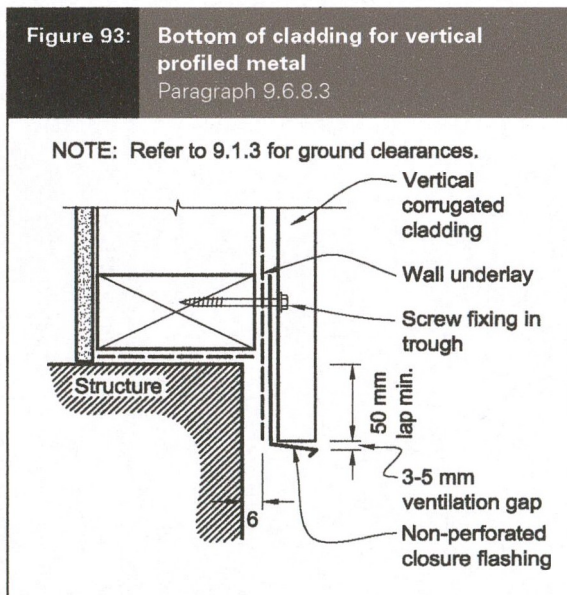
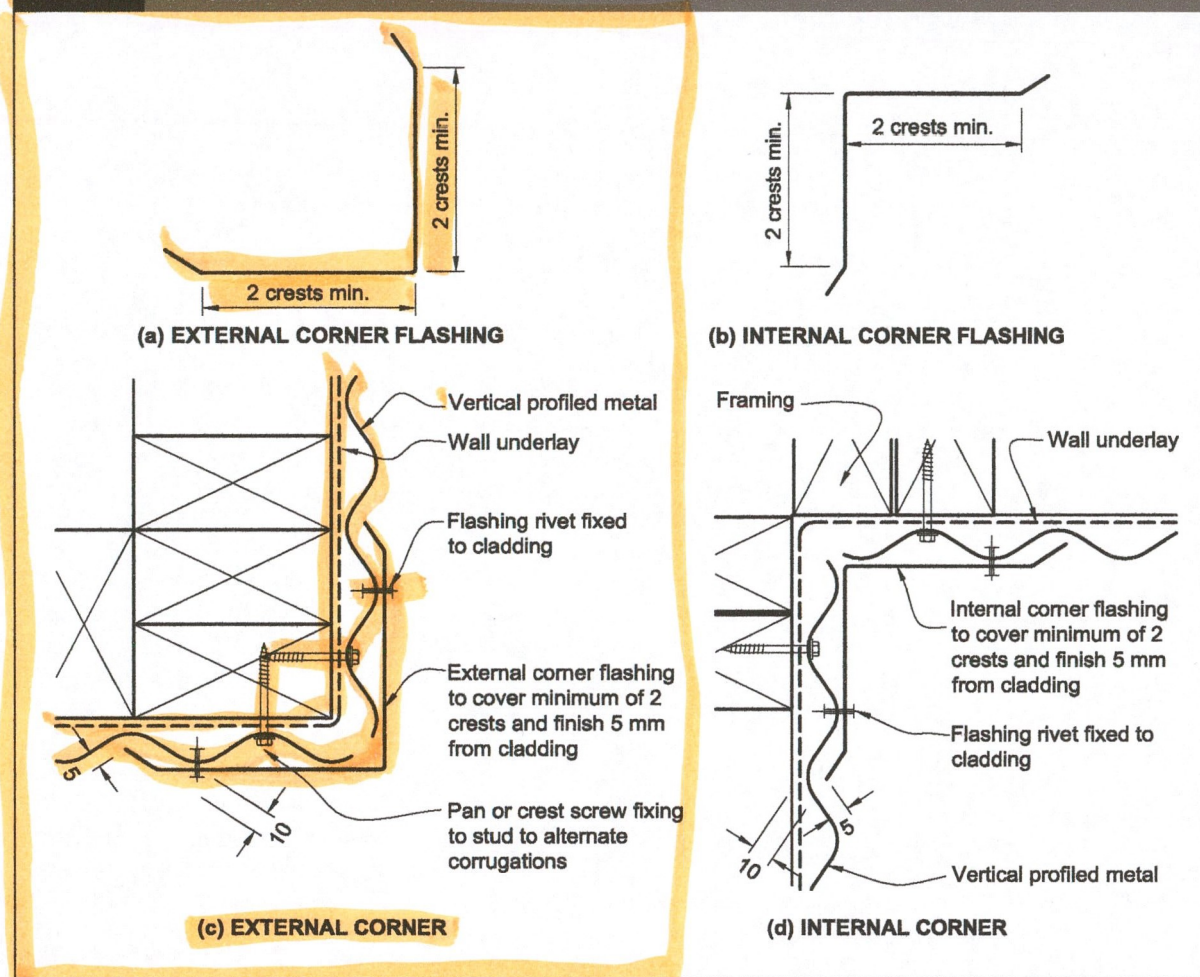


Figure 94: Corners for vertical profiled metal
Paragraph 9.6.8.4



Amend 5
Aug 2011

9.6.8.5 Vertical profile: penetrations

Pipe penetrations shall be as per Figure 53.

The heads of larger penetrations shall be flashed in similar fashion to Figure 69, with head *flashings* adjusted to suit the profile and other *flashings* as per window and door details in relevant paragraphs.

Amend 5
Aug 2011

9.6.8.6 Vertical profile: windows and doors

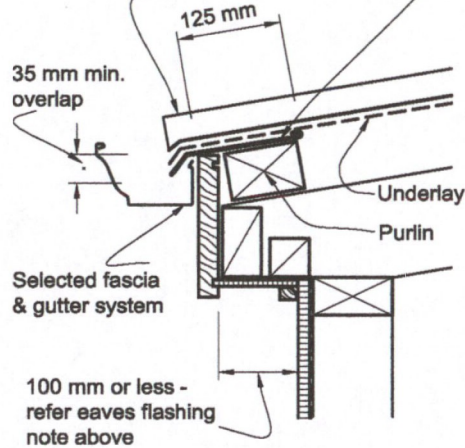
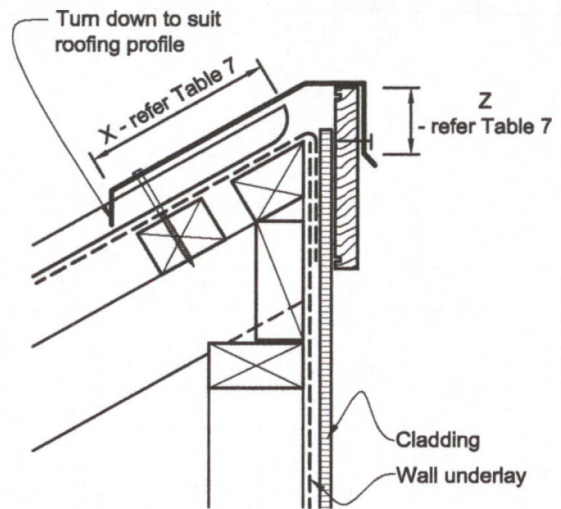
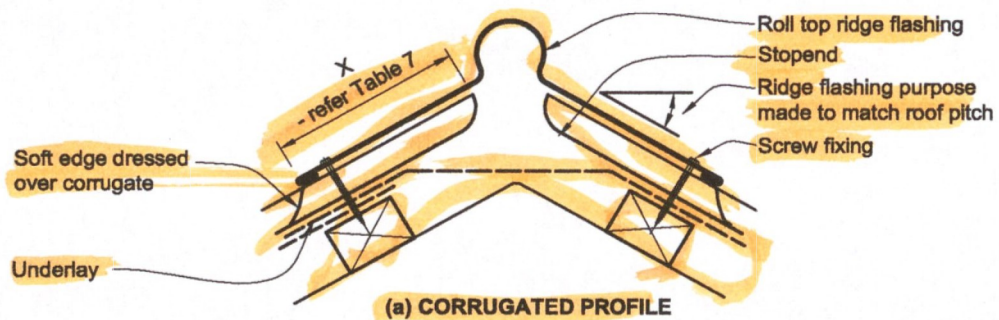
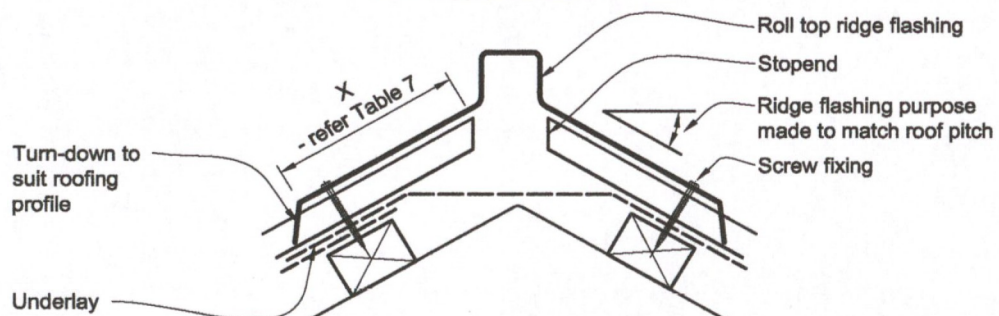
Windows and doors in vertical profiled metal *claddings* shall be flashed as shown in Figure 95 and Figure 100.

Amend 5
Aug 2011

Amend 2
Jul 2005**Figure 45: Eaves and roof/wall ridge for profiled metal**
Paragraphs 4.5, 8.4.11, 8.4.12, Table 7Errata 2
Dec 2011Eave flashing required where all of the following conditions are met:

- Roof slope less than or equal to 10°, and
- soffit width less than or equal to 100 mm, and
- wind zones are Very High or Extra High

Profiled metal roofing

**(a) EAVE****(b) ROOF / WALL RIDGE**Amend 2
Jul 2005Amend 5
Aug 2011Amend 2
Jul 2005**Figure 46: Ridge and hip flashings for profiled metal**
Paragraphs 4.4, 4.5, 8.4.11, 8.4.12, Table 7**(a) CORRUGATED PROFILE****(b) TRAPEZOIDAL PROFILE**Amend 2
Jul 2005Amend 2
Jul 2005Amend 5
Aug 2011

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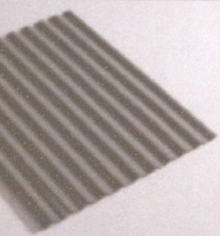
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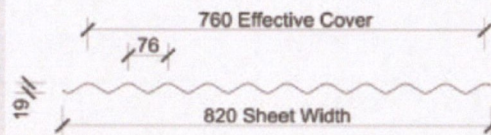
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From traditional to contemporary, Calder Stewart Roofing's corrugate profile can complement most designs. Versatile as both a roofing and cladding profile – Corrugate has been used by architects and builders in any number of ways – including roofing, external & interior cladding and ceilings applications. Available in a wide range of materials and material finishes – including Colorcote and Precious Metal options.

Audio-Perf® - a member of Calder Stewart's corrugate family - is well suited for interior design settings where unique acoustic benefits are required or wanted. Click here to learn more



Specifications: Corrugate

DMT	Min Pitch	Max Span (Internal)	Max Span (End)	Weight / Metre
0.40mm	8°	1.10	0.70	3.10
0.55mm	8°	1.60	1.00	4.27
0.70mm Alu	8°	0.80	0.50	1.84
0.90mm Alu	8°	1.20	0.80	2.37
0.70mm Cu	8°	0.90	0.60	5.93
0.70mm Zu	8°	0.90	0.60	4.73

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FULL PRODUCT RANGE

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● Corrugate

● Hi Five

● Six Rib

● V8 / V6

● Mega 5

● Solar-Rib®

● EURO-TRAY

● Euro-Tray® Lite

● Double Standing Seam

● Angle Seam

● Roll Cap

● Roll Seam

● Heritage Tray™

● Easi-Clad

● Mini-Dek

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● FLASHINGS

● SPOUTING

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● Hi Line Spouting

● 1/2 Round Spouting

● RAINWATER HEADS

● PROFILE OPTIONS

● Crimp Curving

● Bull Nosing

● Euro-Tray® Convex Curving

Additional Profile Information

Available in the following Materials:

Plain - Galvanised / Zn/AL

Colorcote - ZinaCore, ZinaCore X, MagnaFlow, MagnaFlow X, AlumiGard, AlumiGard X

Precious - Aluminium / Copper / VM Zinc

Some materials such as precious metals, non standard Colorcote paint systems and heavier gauges, along with the required fixings are not held in stock. Please consult with a Calder Stewart Sales Representative before ordering.

er Specifications:

Surface water..

- Spouting on the garage will be quad spouting from Calder Stewart.
- Down pipe size will be a minimum of 63mm internal dimensions
- Water from the roof will be disposed into a soak hole to the given requirements, the soak hole shall be located a minimum of 3m away from the building

4.0 Downpipes

4.1 Materials

4.1.1 Materials for downpipes shall comply with Table 4.

Table 4: Acceptable Material Standards for Downpipes
Paragraph 4.1.1

PVC-U	AS/NZS 1260 or AS/NZS 1254
Galvanised steel	AS 1397
Copper	BS EN 1172
Aluminium	AS/NZS 1734
Stainless steel	NZS/BS 970
Zinc aluminium	AS 1397

Amend 1
Sep 1993
Amend 2
Aug 1994
Amend 8
Oct 2011

Amend 7
Sep 2010

4.1.2 Downpipes, gutters, roofing, fastenings and all adjoining components shall be of the same or a compatible material to eliminate the risk of galvanic corrosion.

4.2 Sizing of downpipes

4.2.1 Downpipes sized using Table 5 are acceptable. Other downpipes are acceptable provided their cross-sectional area is no less than that required by Table 5, and they permit passage of a 50 mm diameter sphere.

4.3 Installation of downpipes

4.3.1 Where thermal movement of downpipes cannot be accommodated by movement of the guttering, expansion joints shall be incorporated.

4.3.2 All internal downpipes shall withstand without leakage, a water test with an applied head of 1.5 m of water, or a high pressure air test as described in E1/VM1 Paragraph 8.3.

Amend 5
Jul 2001

5.0 Roof Gutters

5.1 Size of roof gutters

5.1.1 Roof gutters shall discharge to downpipes that are sized as given in Paragraph 4.2.

5.1.2 Any gutter under consideration shall be divided into sections and each section shall be sized. A section shall comprise the length of gutter between a downpipe and the adjacent high point on one side only of that downpipe. Each section of gutter shall have a cross-sectional area of no less than that determined from Figure 15 or Figure 16 (depending on whether the gutter is external or internal), and increased where required in accordance with Paragraph 5.1.3.

5.1.3 Figures 15 and 16 are based on a rainfall intensity "I" of 100 mm/hr. Where "I" exceeds 100 mm/hr the required gutter size shall be increased by taking the value read from the figures and multiplying it by the ratio of "I"/100. Paragraph 3.2.2 describes how to determine the value of "I".

Amend 2
Aug 1994

Amend 2
Aug 1994

Amend 1
Sep 1993

Table 5: Downpipe Sizes for Given Roof Pitch and Area
Paragraph 4.2.1

Downpipe size (mm) (minimum internal sizes)	Roof pitch			
	0-25°	25-35°	35-45°	45-55°
Plan area of roof served by the downpipe (m ²)				
63 mm diameter	60	50	40	35
74 mm diameter	85	70	60	50
100 mm diameter	155	130	110	90
150 mm diameter	350	290	250	200
65 x 50 rectangular	60	50	40	35
100 x 50 rectangular	100	80	70	60
75 x 75 rectangular	110	90	80	65
100 x 75 rectangular	150	120	105	90

Amend 1
Sep 1993

Amend 2
Aug 1994

COMMENT:

1. The low pressure air test is highly susceptible to temperature fluctuations during the test period. A 1°C change during the 5 minute test period will cause a pressure change of 30 mm water gauge or 60% of the permitted change.
2. Failure to soak ceramic and concrete pipes can cause highly variable results.

8.3 High pressure air test

- a) Pressurise pipeline to 25 kPa.
- b) Wait at least 2 minutes to ensure temperature stabilisation.
- c) Disconnect air supply.
- d) Measure the time taken (minutes) for the pressure to drop to 17 kPa.
- e) The pipeline is acceptable if the time taken exceeds that given for the appropriate pipe size in Table 6.

Table 6: Time For Pressure Drop Versus Internal Pipe Diameter
Paragraph 8.3 e)

Internal pipe diameter (mm)	Time for permissible pressure drop (minutes)
90	3
100	3
150	4
225	6

9.0 Disposal to Soak Pit

9.0.1 Where the collected *surface water* is to be discharged to a soak pit, the suitability of the natural ground to receive and dispose of the water without causing damage or nuisance to neighbouring property, shall be demonstrated to the satisfaction of the *territorial authority*.

COMMENT:

Means of demonstrating the suitability of the ground are outside of the scope of this Verification Method. Disposal of *surface water* to a soak pit may also require a resource management consent.

9.0.2 Field testing of soakage shall be carried out as follows:

- a) Bore test holes of 100 mm to 150 mm diameter to the depth of the proposed soak pit. If groundwater is encountered in the bore test hole then this depth shall be taken as the depth of the soak pit.
- b) Fill the hole with water and maintain full for at least 4 hours, (unless the soakage is so great that the hole completely *drains* in a short time).
- c) Fill the hole with water to within 750 mm of ground level, and record the drop in water level against time, at intervals of no greater than 30 minutes, until the hole is almost empty, or over 4 hours, whichever is the shortest.
- d) Plot the drop in water level against time on a graph, and the soakage rate in mm/hr is determined from the minimum slope of the curve. If there is a marked decrease in soakage rate as the hole becomes nearly empty, the lower rates may be discarded and the value closer to the average can be adopted.

9.0.3 The soak pit shall be designed utilising soakage and storage in accordance with 9.0.5 and 9.0.6 to ensure that *surface water* is discharged without overflowing. The rainfall intensity used in the design of the soak pit shall be that of an event having a duration of 1 hour and a 10% probability of occurring annually. Either local rainfall intensity curves produced by the *territorial authority* or rainfall frequency duration information produced by NIWA shall be used to determine the rainfall intensity.

COMMENT:

This Verification Method does not cover the design of soak pits with overflows discharging to *outfalls*. Such soak pits are often provided to retain water until peak flows in the *outfall* have passed and it is normally considered sufficient to design them for an event having a 10 minute duration and a 10% probability of occurring annually.

9.0.4 The soak pit shall comprise either a rock filled hole (see Figure 13 (a)) or a lined chamber (see Figure 13 (b)). Both of these options shall be enclosed in filter cloth

complying with AS 3706.1. The filter cloth shall have a mass per unit area of 140 grams/m² and a minimum thickness of 0.45 mm.

9.0.5 The volume of storage required in the soak pit, V_{stor} (m³), shall be calculated by:

$$V_{stor} = R_c - V_{soak}$$

where

R_c = run-off discharged from catchment to soak pit in 1 hour (m³).

V_{soak} = volume disposed of by soakage in 1 hour (m³).

and

$$R_c = 10CIA$$

where

C = run-off coefficient (see Table 1).

I = rainfall intensity (mm/hr) based on 1 hour duration of an event having a 10% probability of occurring annually.

A = area (hectares) of the catchment discharging to the soak pit.

and

$$V_{soak} = A_{sp}S_r/1000$$

where

A_{sp} = area of the base of the soak pit (m²).

S_r = soakage rate (mm/hr) determined from 9.0.2.

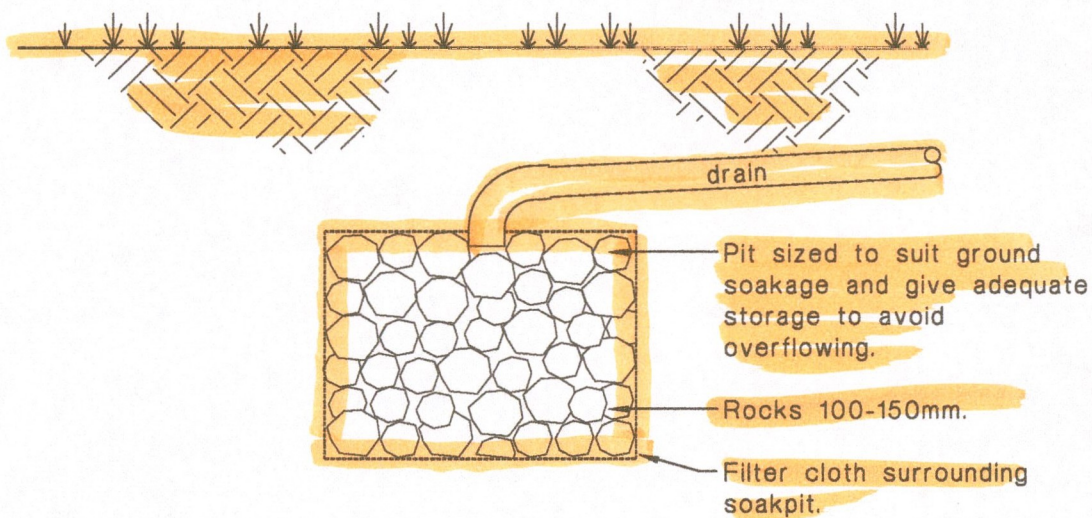
COMMENT:

Generally where the test results show a soakage rate of greater than 500 mm/hour, soakage rather than storage will be the main mechanism to remove the water. Where the soakage rate is significantly less than 500 mm/hour, storage will become the dominant factor. Intermediate soakage rates will require a design utilising both in the proportions necessary to ensure the water will dissipate before it overflows from the pit.

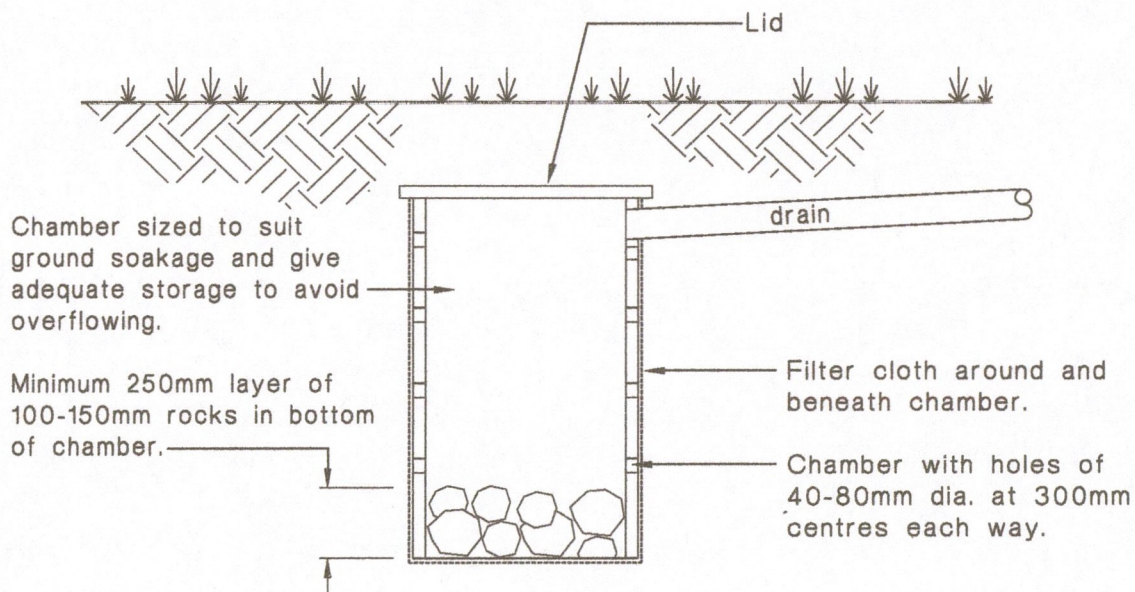
9.0.6 Where the soak pit comprises a rock filled hole (see Figure 13 (a)) then the volume available for storage, V_{stor} , shall be taken as 0.38 times the volume of the hole.

Amend 5
Jul 2001

Figure 13: Soak Pit for Surface Water Disposal
Paragraph 9.0.4



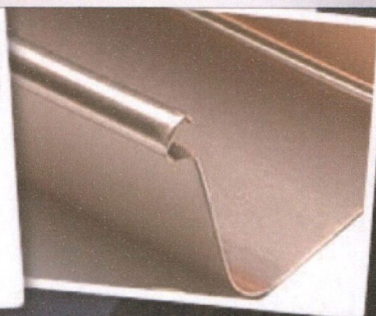
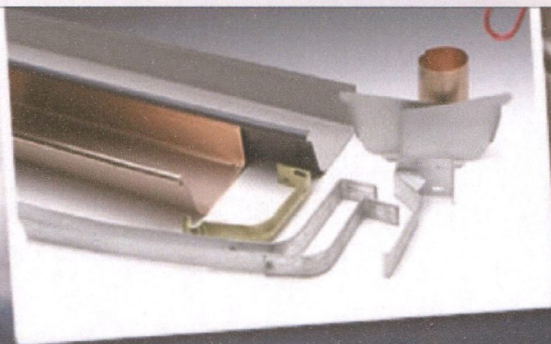
(a) Rock soak pit



(b) Chamber soak pit

ad Spouting

A traditional
D-Shape
design.



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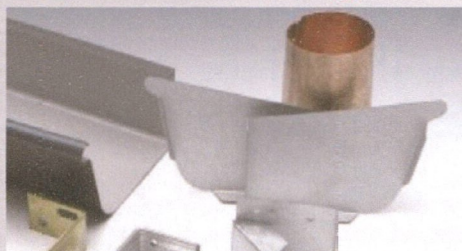
Quad Spouting



Additional Look

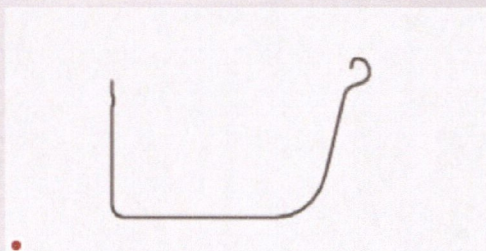
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Exhibiting a traditional D shape design, Quad Spouting is also known as $\frac{1}{4}$ round. Available in two sizes, 125mm and 150mm, it comes with several unique bracket options as well.

NOTE: 150mm is only available in maximum lengths of 4.2 metres regardless of material selection.



Specifications: Quad Spouting

Spouting Profile	Max. Down Pipe Size (mm)	Metal Options								Cross Sect. Area Of Spouting (mm ²)	Maximum area of roof discharging into a down-pipe* for 150mm maximum intensity rainfall (m ²)
		Galvanised	Stainless	ZincAlu	ZincAlu X	Alumicore	Alumicore X	Alumigard	Alumigard X		
125mm Quad	75	✓	✓	✓	✓	✓	✓	✓	✓	6830	58 48 39 30
150mm Quad	100	✓	✓	✓	✓	✓	✓	✓	✓	8080	79 66 54 41

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FULL PRODUCT RANGE

● ROOFING & CLADDING

- Corrugate
- Hi Five
- Six Rib
- V8 / V6
- Mega 5
- Solar-Rib®
- EURO-TRAY
 - Euro-Tray® Lite
 - Double Standing Seam
 - Angle Seam
 - Roll Cap
 - Roll Seam
 - Heritage Tray™
 - Easi-Clad
 - Mini-Dek
 - Audio-Perf®

● FASCIA

- Paltec Fascia
- F180 Fascia

● FLASHINGS

● SPOUTING

- Quad Spouting
- Klassic Spouting
- Hi Line Spouting
- 1/2 Round Spouting

● RAINWATER HEADS

● PROFILE OPTIONS

- Crimp Curving
- Bull Nosing
- Euro-Tray® Convex Curving

Additional Profile Information

Available in the following Materials:

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- Colorcote - ZinaCore, ZinaCore X, MagnaFlow, MagnaFlow X, AlumiGard, AlumiGard X
- Precious - Aluminium / Copper / VM Zinc / Stainless Steel

* Some materials such as precious metals, non standard Colorcote paint systems and heavier gauges, along with the required fixings are not held in stock. Please consult with a Calder Stewart Sales Representative before ordering.

Order Specifications:

Please ensure the following are shown on all orders for this product.

- Size
- Material
- Quantities & Lengths
- Colour where applicable
- Bracket Preference (options for Q4 to be specified upon order)@

Please be aware the following restrictions may apply when ordering this product.

- Minimum quantity required upon order is 6 lineal metres, due to our run to length manufacture.
- This product can be run to any length, however there may be restrictions due to transport capabilities (please see maximum lengths chart)

Rainfall Intensities (mm/hr)

For a storm with a 10% probability of occurring annually and a 10 minute duration

SOUTH ISLAND