

4.1.19.1

METER BOX HEAD/SILL (PROTECTED LOCATIONS)

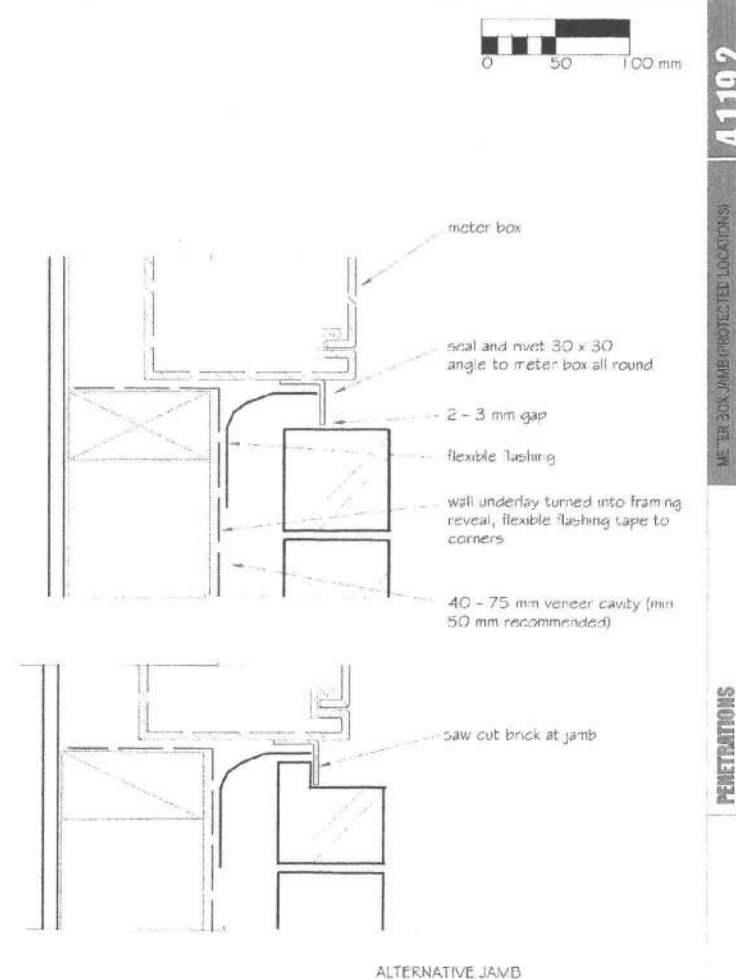
PENETRATIONS



FILENAME:
PENETRATIONS
METER BOX JAMB (PROTECTED LOCATIONS)

4.1.19.2

BRANZ WEATHERTIGHT SOLUTIONS VOLUME 4 - MASONRY 4.1.19.2



4.1.19.2

METER BOX JAMB (PROTECTED LOCATIONS)

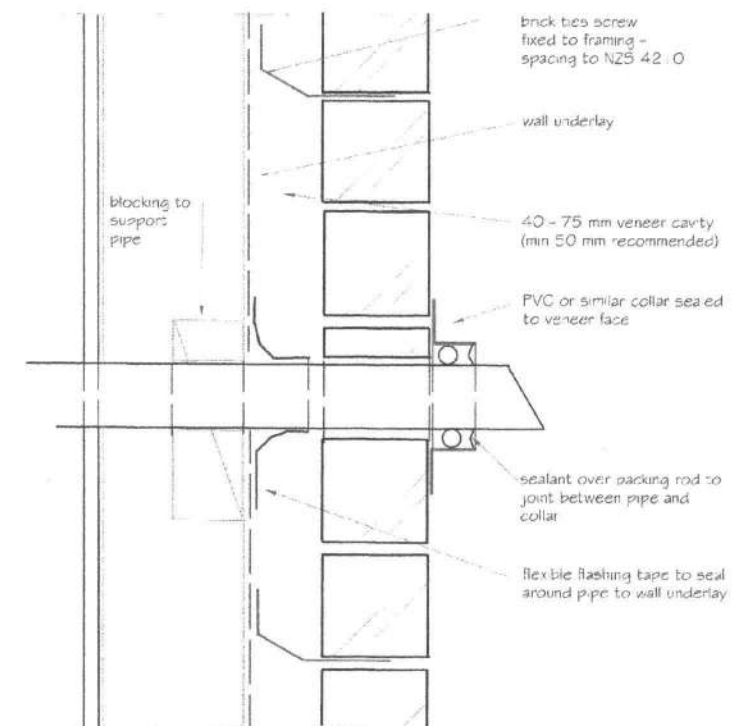
PENETRATIONS



FILENAME:
PENETRATIONS
PIPES UP TO 150 MM (PROTECTED LOCATIONS)

4.1.19.3

BRANZ WEATHERTIGHT SOLUTIONS VOLUME 4 - MASONRY 4.1.19.3



4.1.19.3

PIPES UP TO 150 MM (PROTECTED LOCATIONS)

PENETRATIONS

DETAILS - Not to Scale
Sheet 18



FILENAME:
PENETRATIONS
METER BOX HEAD/SILL (PROTECTED LOCATIONS)

4.1.19.1

BRANZ WEATHERTIGHT SOLUTIONS VOLUME 4 - MASONRY 4.1.19.1

00018

Proposed New Building for: Lot 46 Simpson Cres
RAUMATI

Prepared by: The PlanWorkz
Design Plans Ltd: 1/9 The Plan Workz
PO Box 227, Paraparaumu
340 Roseta Road, Raumati Beach
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All Original Drawings Printed
On 100% Recycled Paper

Drawn: S. Neale
Date: 13-08-13
Issue: A
Job Number
PA 046

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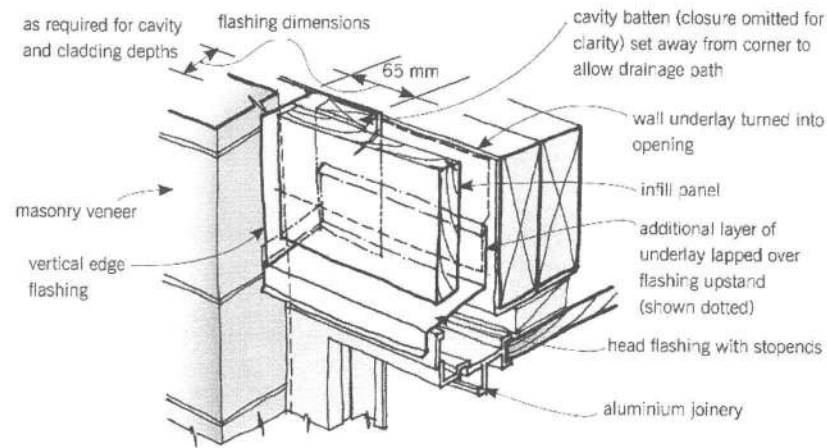


Figure 2: Brick veneer with infill panel above opening.

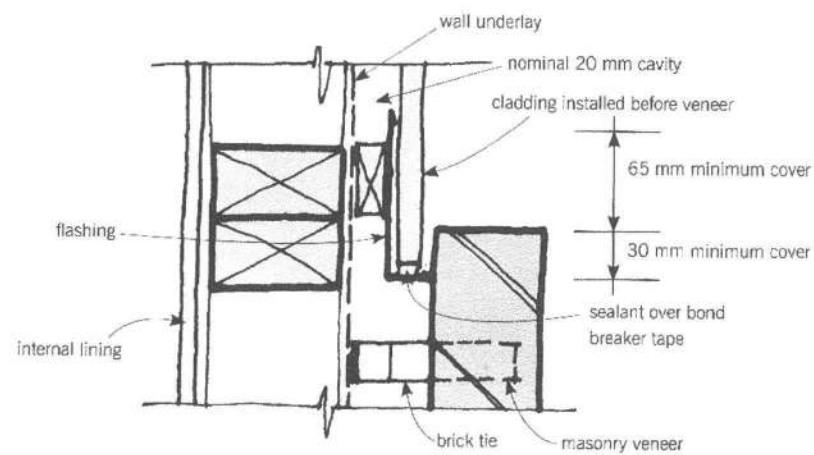


Figure 3: Plan section of typical vertical junction between masonry veneer and other cladding.

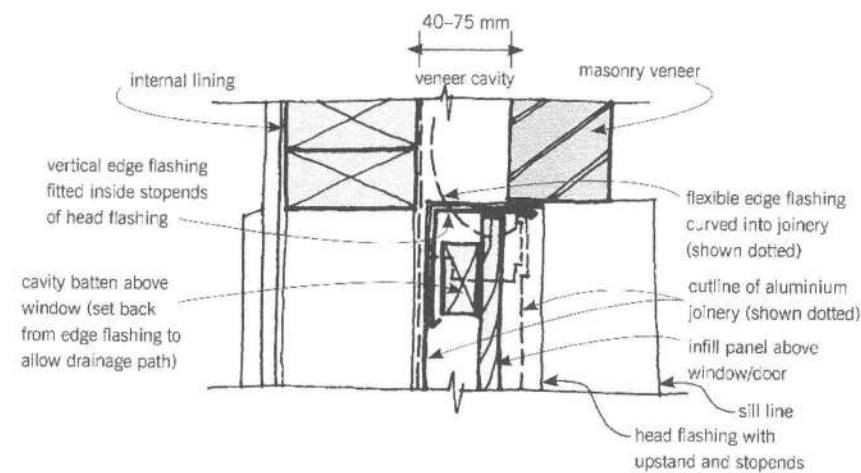
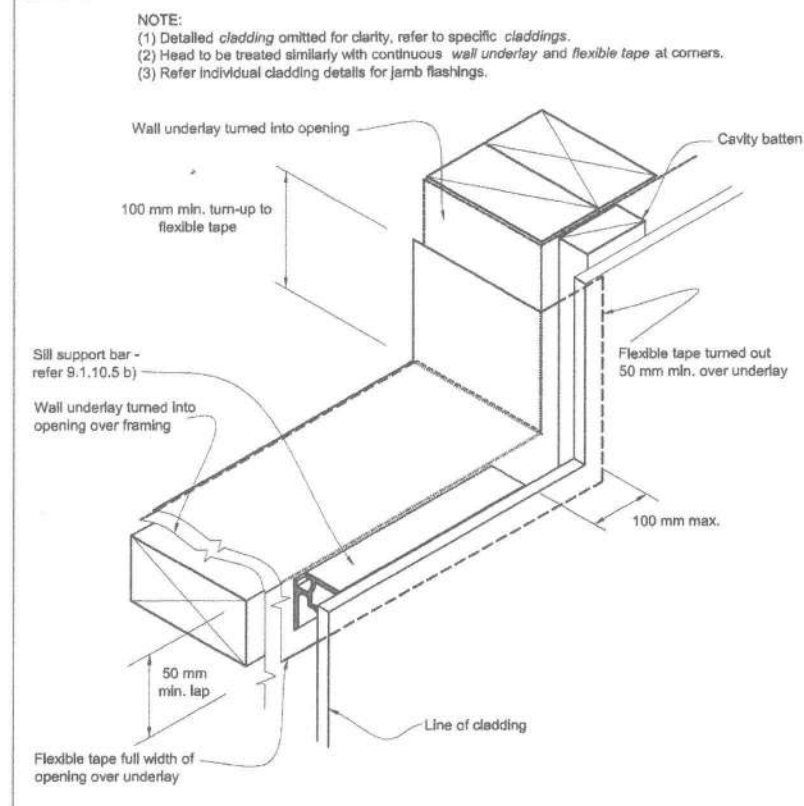


Figure 4: Detail at infill panel/masonry veneer junction above opening.

DETAILS - Not to Scale

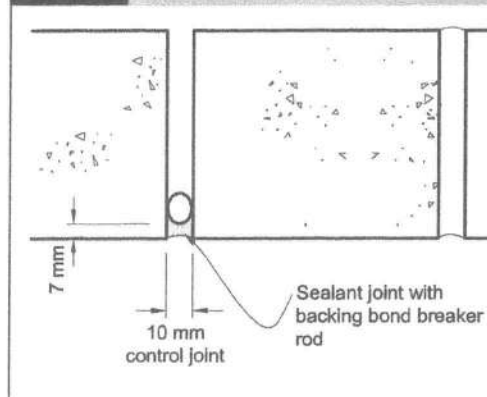
Sheet 19

Figure 72B: General window and door opening with drainage cavity
Paragraphs 9.1.6, 9.1.8.3, 9.1.10.2, Figures 73C, 76, 78, 80, 91, 99, 116 and 128



Amend 5
Aug 2011

Figure 73A: Vertical control joint
Paragraph 9.2.8



Amend 5
Aug 2011

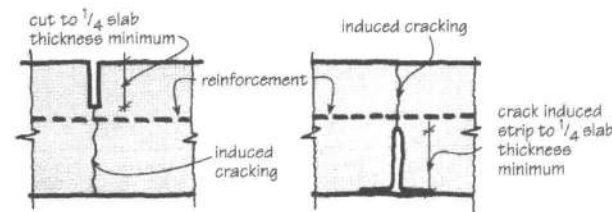


Figure 73: Types of shrinkage control joints.

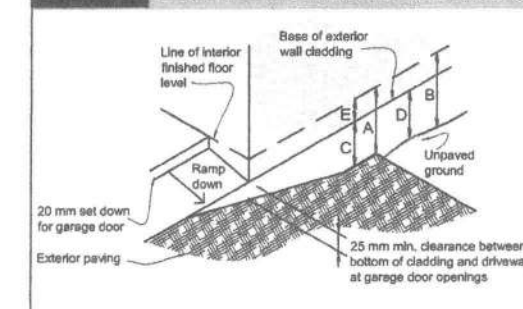
Table 3.7 - Glazing protecting a difference in level in any building

	TYPE A	TYPE B	TYPE C
Ceiling	A	Transom or crash rail B or C	C
Floor or seat level	B	B	C
	>500	>500	>500
Household units	Safety glazing material to table 3.1 or annealed glass to column 1 of table 3.2	Safety glazing material to table 3.1 or annealed glass to column 2 of table 3.2 with 5 mm minimum thickness ¹	Select glass thickness by reference to wind design charts in Part 4, Table 3.3 of this Part is the minimum requirement. ¹
All other buildings ²	Safety glazing material to table 3.1 or annealed glass to column 2 of table 3.2	Safety glazing material to table 3.1 or annealed glass to column 3 of table 3.2 with 5 mm minimum thickness	Select glass thickness by reference to wind design charts in Part 4, Table 3.3 of this Part is the minimum requirement. ¹

* Crash rails should be designed to discourage people from sitting on them.
¹ If a transom is fitted, the upper panel can be type C.
² Refer also to section 307.
³ For high-risk activity areas, refer to 303.10. For stairwells, refer to section 313.
 NOTE -
 (1) Thickness of glazing materials shall also be checked for wind loading.
 (2) Glazing materials shall be contained in accordance with 303.2.
 (3) For opening windows - refer to Clause F4/A51 of the NZBC for window opening restrictions not related to this Part.

NZS 4223:Part 3:1999

Figure 65: Levels and garage openings
Paragraphs 9.1.3, 9.1.3.4, 9.2.5, Table 18



Amend 5
Aug 2011

Table 18: Minimum clearances
Paragraphs 9.1.3, 9.1.3.1, 9.1.3.2, 9.1.3.3, 9.1.3.4, 9.1.3.5 and 9.2.7

Minimum clearances (mm)	Masonry veneer		Other claddings				
	A	B	A	B	C	D	E
Concrete slab	100	150	150	225	100	175	50
Timber floor	Refer Note 1)				100	175	50 ²

NOTE: 1) Refer to NZS 3604 for requirements.
 2) Cladding to extend minimum 50 mm below bearer or lowest part of timber floor framing.

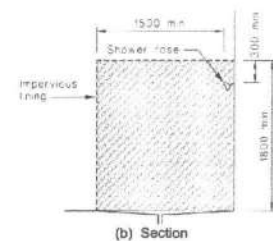
Amend 5
Aug 2011

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Aug 2011

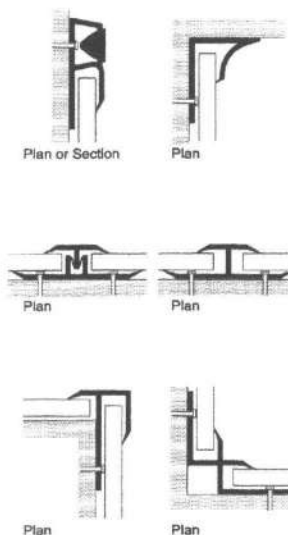
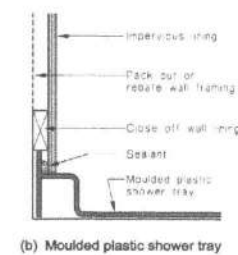
Proposed New Building for: Lot 46 Simpson Cres
 RAUMATI
 Prepared by: The PlanWorkz
 Drawn: S. Neale
 Date: 13-08-13
 Issue: A
 Job Number PA 046
 Design Plans Ltd: 18 The Plan Workz
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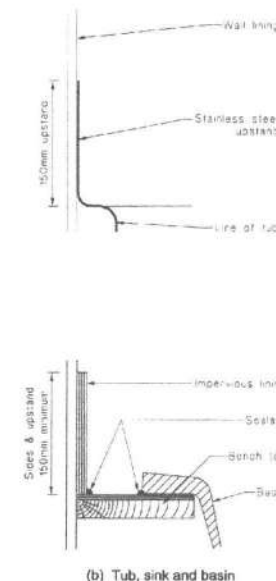
(a) Plan



A cross-sectional diagram of a wall-to-floor junction. The wall is on the left, and the floor is on the right. The wall has a vertical reinforcement bar. The floor has a horizontal reinforcement bar. The junction is sealed with a 'Sealant' and a 'Stainless steel shower tray'. The wall is finished with 'Pack out or rebate wall framing' and an 'Impervious lining'. A vertical dimension line on the left indicates a height of '50mm (20mm)'.



(a) Junctions of bath and wall



ORDER OF MERIT

1282

1.2.8.2

BASE OF WALL
CAVITY – CONCRETE FOOTING/FLOOR SLAB

BRANZ

BRANZ 221110122 - HORIZONTAL WEATHERBOARDS 1.2.8.

Flexible flashing tape (200mm cnr patches only)

Selected cladding & packer @ head

Approved tape &/or house wrap over head flashing

Head flashing requirement dependent upon site location, water load & exposure of window head, height of cladding above window head and general building design

Brick Veneer

01095

03004

35mm cover

Internal lining

5mm min

Water resistant air seal to perimeter of trim cavity

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Proposed New Building for: Lot 46 Simpson Cres
RAUMATI

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Prepared by:  **The PlanWorkz**

S. Neale
08-13

Issue: 0

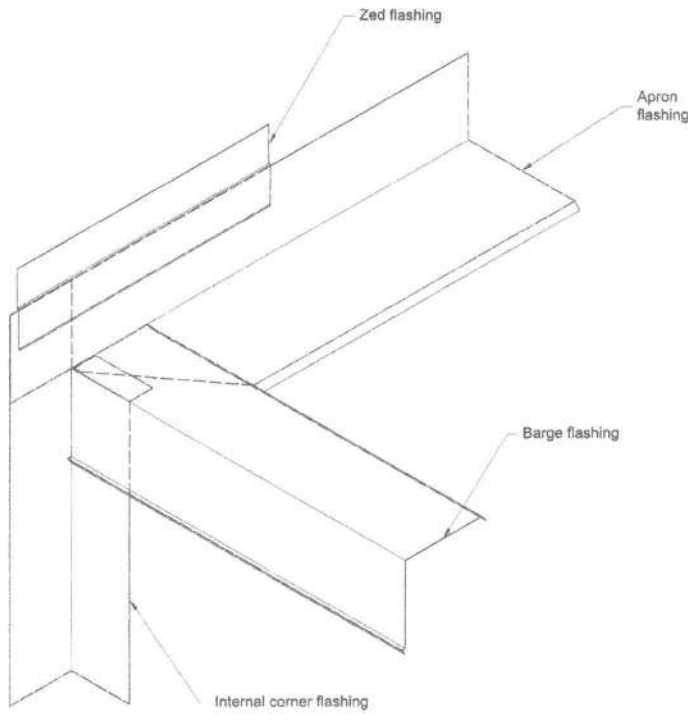
by:  **The PlanWorkz**

Drawn: S. Neale Issue: 02-09-13

Date: 13-08-13 Job Number: PA 046

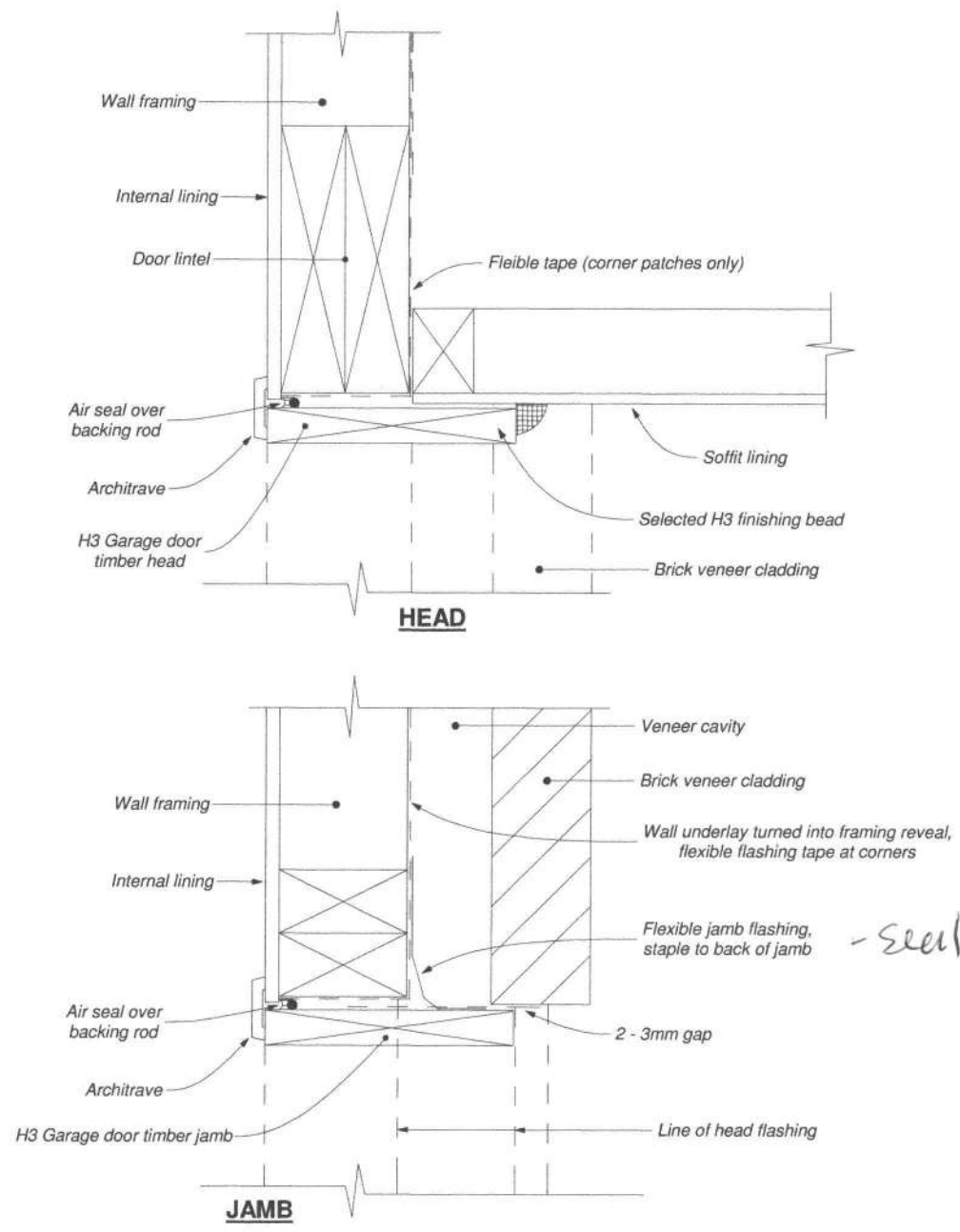
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General Detail General



Quick Code: DA01
Legacy file: genr_common-01_barge_wal_jctn
Barge / Wall Junction Detail
Scale 1:5
All dimensions in millimetres
genr_general-jctn_barge_wal
Version: 1.00
genr_general.dwg
11 November 2008

DETAILS - Not to Scale
Sheet 21



GARAGE DOOR / BRICK VENEER SHEET DETAIL
Not to Scale

0002

Proposed New Building for: Lot 46 Simpson Cres
RAUMATI

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Table 13.1 – Ceiling battens (see 13.2.1 and 13.2.2)

Maximum spacing of ceiling battens (mm)	Size of ceiling battens for a maximum span (mm) of:		
	600 (mm x mm)	900 (mm x mm)	1200 (mm x mm)
400	45 x 19	70 x 35	70 x 35
600	70 x 19	70 x 35	70 x 35

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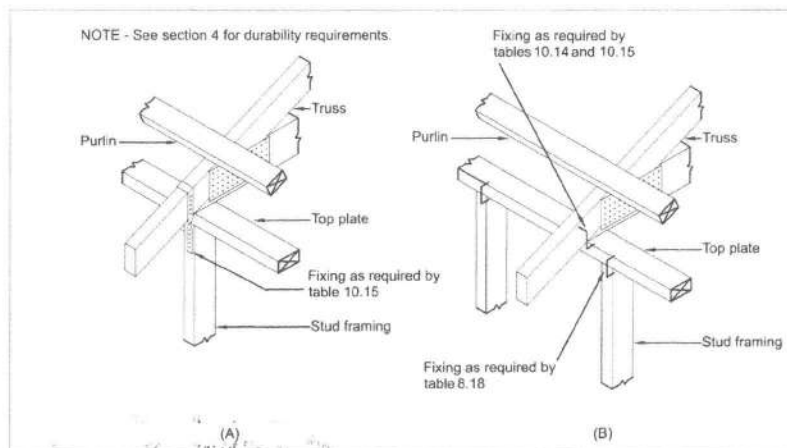


Figure 10.21 – Truss/top plate connections (see 10.2.2.6)

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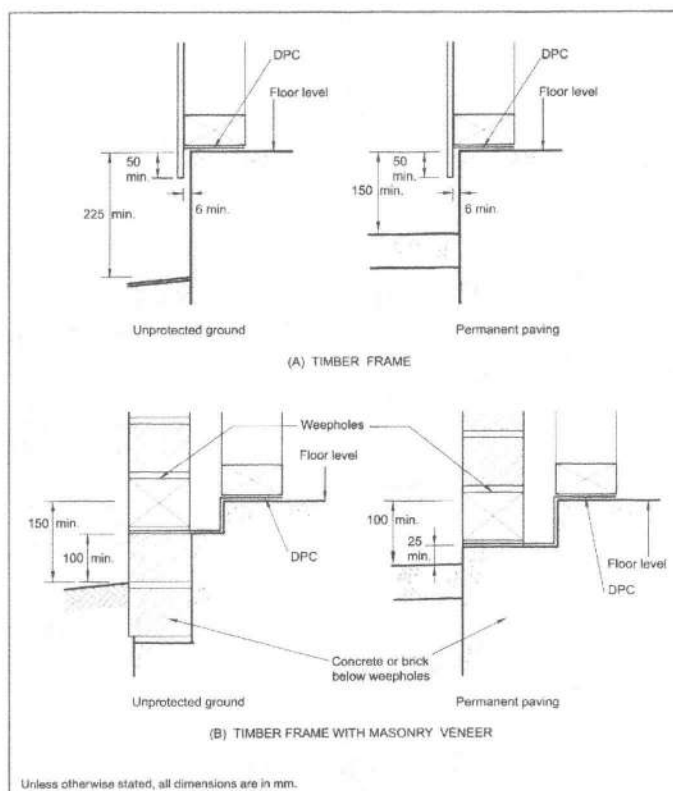


Figure 7.11 – Minimum heights of finished concrete (residential, habitable) slab-on-ground floors above adjoining finished ground level (see 7.5.2.1)

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SECTION 10 – ROOF FRAMING

NZS 3604:2011

Table 10.18 – Nailing schedule for hand-driven and power-driven nails (see 10.5.1)

Joint	Hand-driven nails		Power-driven nails	
	Length (mm) x diameter (mm) and type	Number/ Location	Length (mm) x diameter (mm) and type	Number/ Location
Roof framing				
Rafter or jack rafter to ridge board or top plate (except skillion roofs) (see 10.2.1.3.7)	See table 10.1	See table 10.1	See table 10.1	See table 10.1
Truss to top plate of external wall	See tables 10.14 and 10.15	See tables 10.14 and 10.15	See tables 10.14 and 10.15	See tables 10.14 and 10.15
Truss to top plate of internal wall	100 x 3.75	2	90 x 3.15	2
Ceiling batten to parallel top plate of internal wall bracing element	75 x 3.15	2 at 400 mm centres	90 x 3.15	2 at 400 mm centres
Collar tie or cleat to rafter	75 x 3.15	4	75 x 3.06	4
Fitches to ridge board and roof members for each side on both joints	60 x 2.8	3	60 x 2.8	3
Hip rafter to top plate	See table 10.1	See table 10.1	See table 10.1	See table 10.1
Underpurlin strut to underpurlin or top plate or strutting beam	100 x 3.75 together with fixing types as set out in table 10.5	2	90 x 3.15 together with fixing types as set out in table 10.5	3
Strutting beam to top plate	See table 10.7	See table 10.7	See table 10.7	See table 10.7
Roof braces at each connection to a framing member:				
(a) 90 mm x 19 mm brace	75 x 3.15	3	75 x 3.15	3
(b) 70 mm x 45 mm brace runner	100 x 3.75	2	90 x 3.15	3
(c) 90 mm x 45 mm brace	100 x 3.75	3	90 x 3.15	5
(d) Steel strip brace				
(i) At ends	60 x 3.15	3	–	–
(ii) Other cases	60 x 3.15	2	–	–
(iii) To ends of braces	–	–	–	–

NOTE –

- (1) Nail lengths and diameters are the minimum required.
- (2) Refer to 4.4 for required protective coatings for metal fasteners.
- (3) Proprietary fixings with the required fixing capacity indicated in the tables may be used.

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DETAILS - Not to Scale

Sheet 22

SECTION 10 – ROOF FRAMING

NZS 3604:2011

Table 10.18 – Nailing schedule for hand-driven and power-driven nails (continued) (see 10.5.1)

Joint	Hand-driven nails		Power-driven nails	
	Length (mm) x diameter (mm) and type	Number/ Location	Length (mm) x diameter (mm) and type	Number/ Location
Roof framing (continued)				
Blocking between rafters, joists or truss chords, 90 mm x 45 mm	100 x 3.75	2 (end nailed)	90 x 3.15	2 (end nailed)
Outrigger to gable top plate (as for equivalent purlins)	See table 10.10 and table 10.11	See table 10.10 and table 10.11	See table 10.10 and table 10.11	See table 10.10 and table 10.11
Outrigger to rafter	100 x 3.75 or 75 x 3.15	2 (end nailed) 4 (skewed)	90 x 3.15	3 (end nailed)
Flying rafter to outrigger	100 x 3.75	2	90 x 3.15	3
Outrigger blocking to top plate	100 x 3.75	4 (skewed)	90 x 3.15	4 (skewed)
Purlin or batten directly to rafter or top chord	See table 10.10 and table 10.11	See table 10.10 and table 10.11	See table 10.10 and table 10.11	See table 10.10 and table 10.11
Roof sarking				
Board sarking to rafters or top chords:				
(a) Boards not exceeding 75 mm wide	2½ x finished thickness	1	–	–
(b) Boards exceeding 75 mm wide		2	–	–
Sheet material for sheet sarking to:				
(a) Rafters or top chords at sheet edges	30 x 2.5 FH	150 mm centres	–	–
(b) Intermediate supports		300 mm centres	–	–
Purlins or battens through sarking to rafter or top chord	See table 10.15	See table 10.15	See table 10.15	See table 10.15

NOTE –

- (1) Nail lengths and diameters are the minimum required.
- (2) Refer to 4.4 for required protective coatings for metal fasteners.
- (3) Proprietary fixings with the required fixing capacity indicated in the tables may be used.

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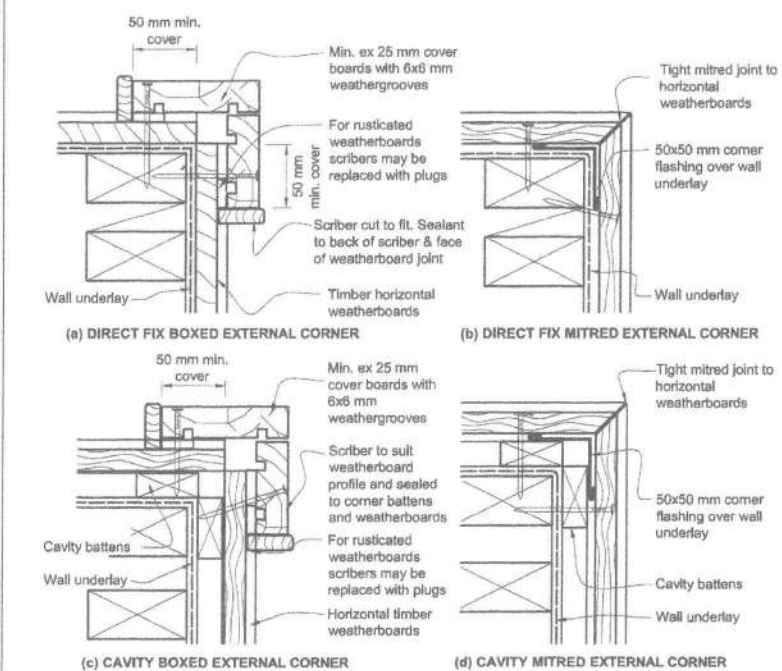
Proposed New Building for: Lot 46 Simpson Cres
RAUMATI

Prepared by: The PlanWorkz
Drawn: S. Neale
Date: 13-08-13
Issue: A
Job Number: PA 046

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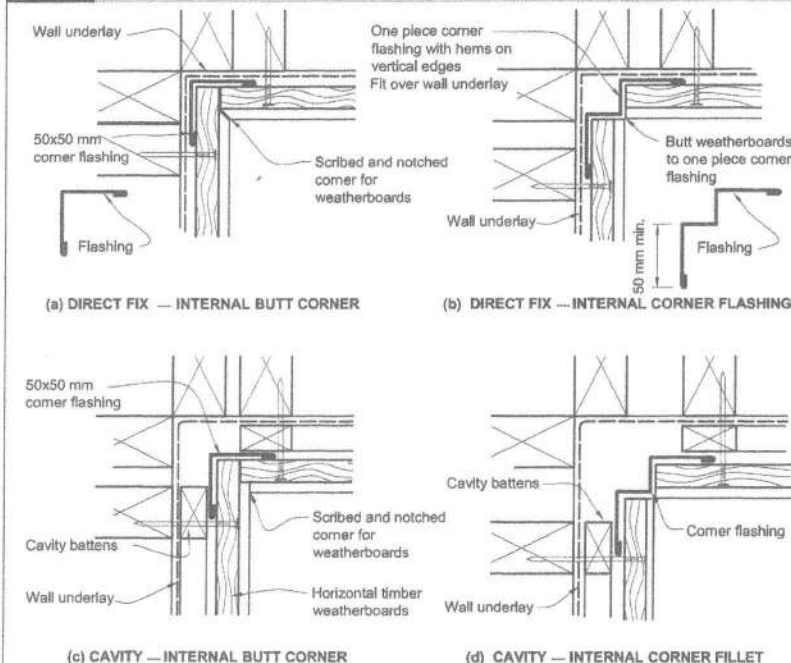
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Figure 78: External corners for horizontal weatherboards
Paragraph 9.4.4.4



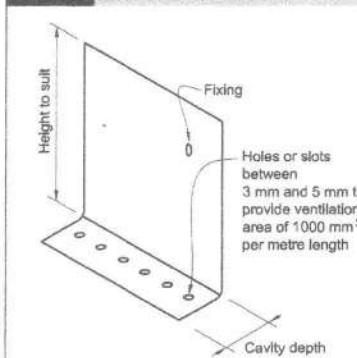
Amend 5
Aug 2011

Figure 79: Internal corners for horizontal or vertical weatherboards
Paragraph 9.4.4.5



Amend 5
Aug 2011

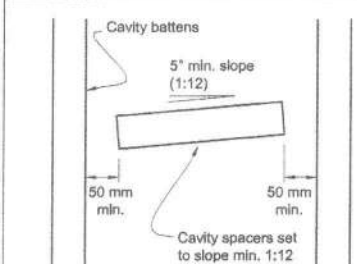
Figure 66: Cavity base flash/ventilation
Paragraph 9.1.9.2



NOTE: To be used in drained cavities at the base of walls and above window head and inter-storey flashings.

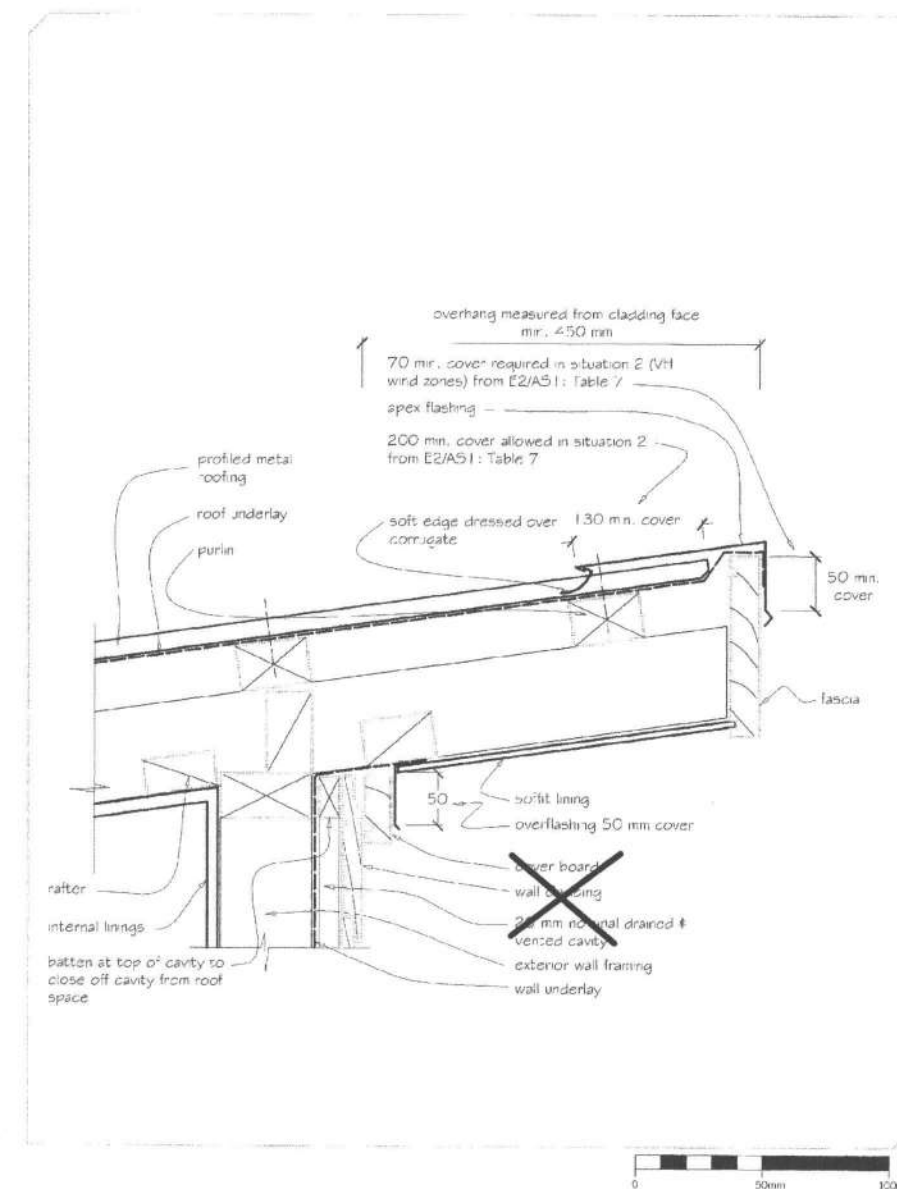
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Aug 2011

Figure 67: Cavity spacers
Paragraphs 9.1.9.2 and 9.1.9.4



NOTE: Spacing of cavity spacers will vary to suit individual cladding fixings.

Amend 5
Aug 2011



BRANZ

PROFILED METAL LONGRUN DETAILS
APEX - OVERHANG - TIMBER FASCIA

5.1.8

BRANZ WEATHERTIGHT SOLUTIONS VOLUME 5 - ROOFING

5.1.8

DETAILS - Not to Scale

Sheet 23

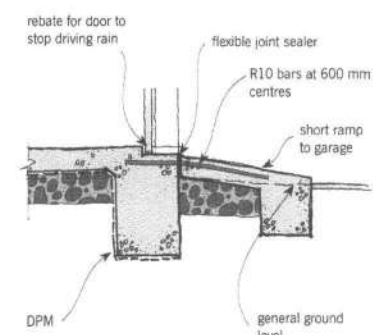


Figure 2: Garage entrance. (Reinforcing in footing not shown)

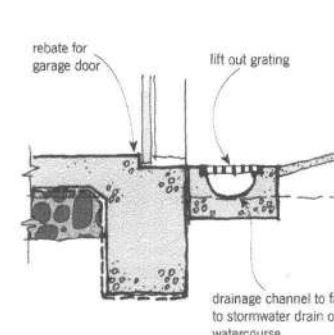
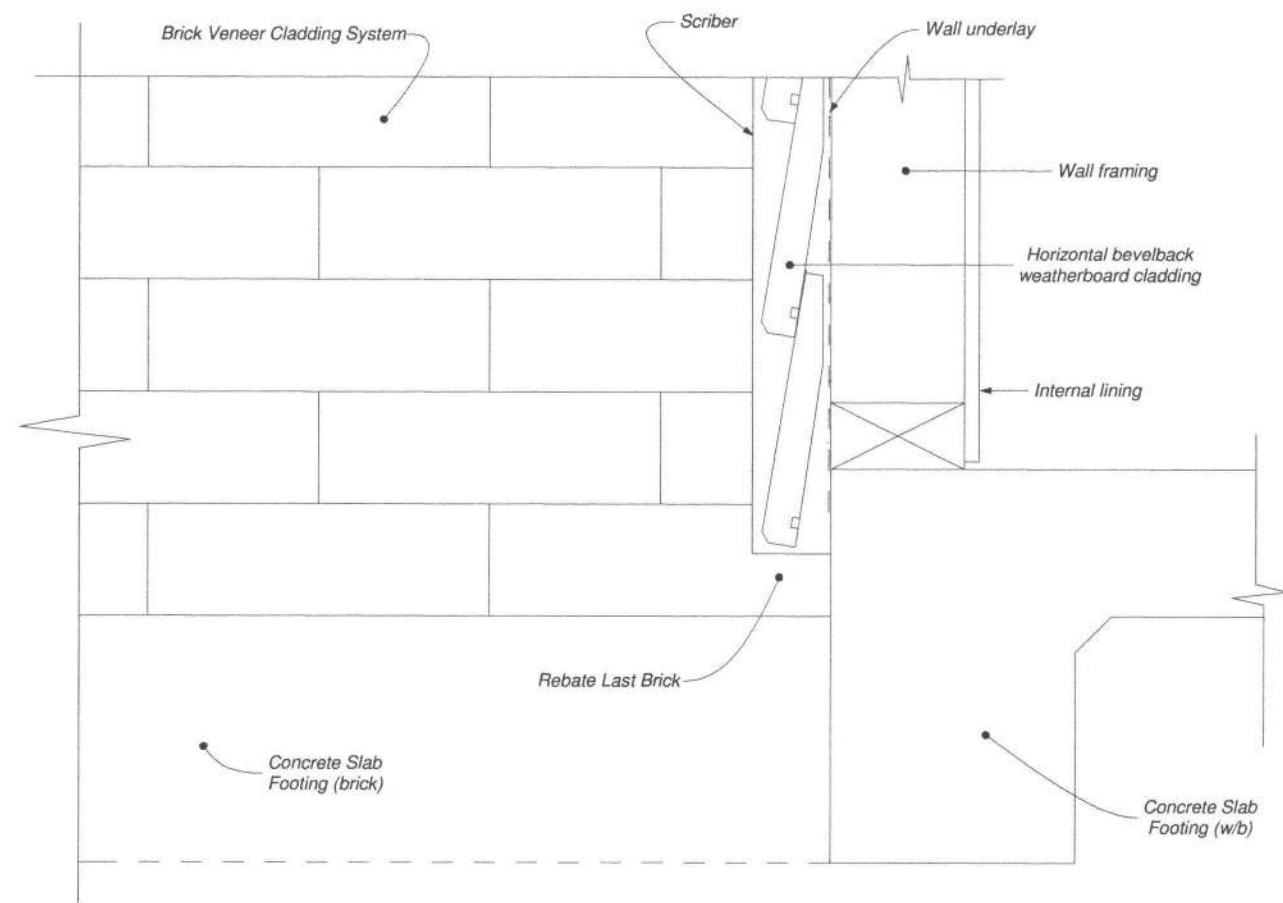


Figure 3: Garage entrance with step down approach. (Reinforcing not shown)

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RAUMATI
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WEATHERBOARD/BRICK VENEER BASE OF WALL DETAIL
Not to Scale

DETAILS - Not to Scale
Sheet 24

0002

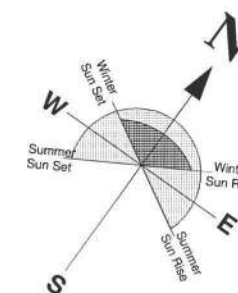
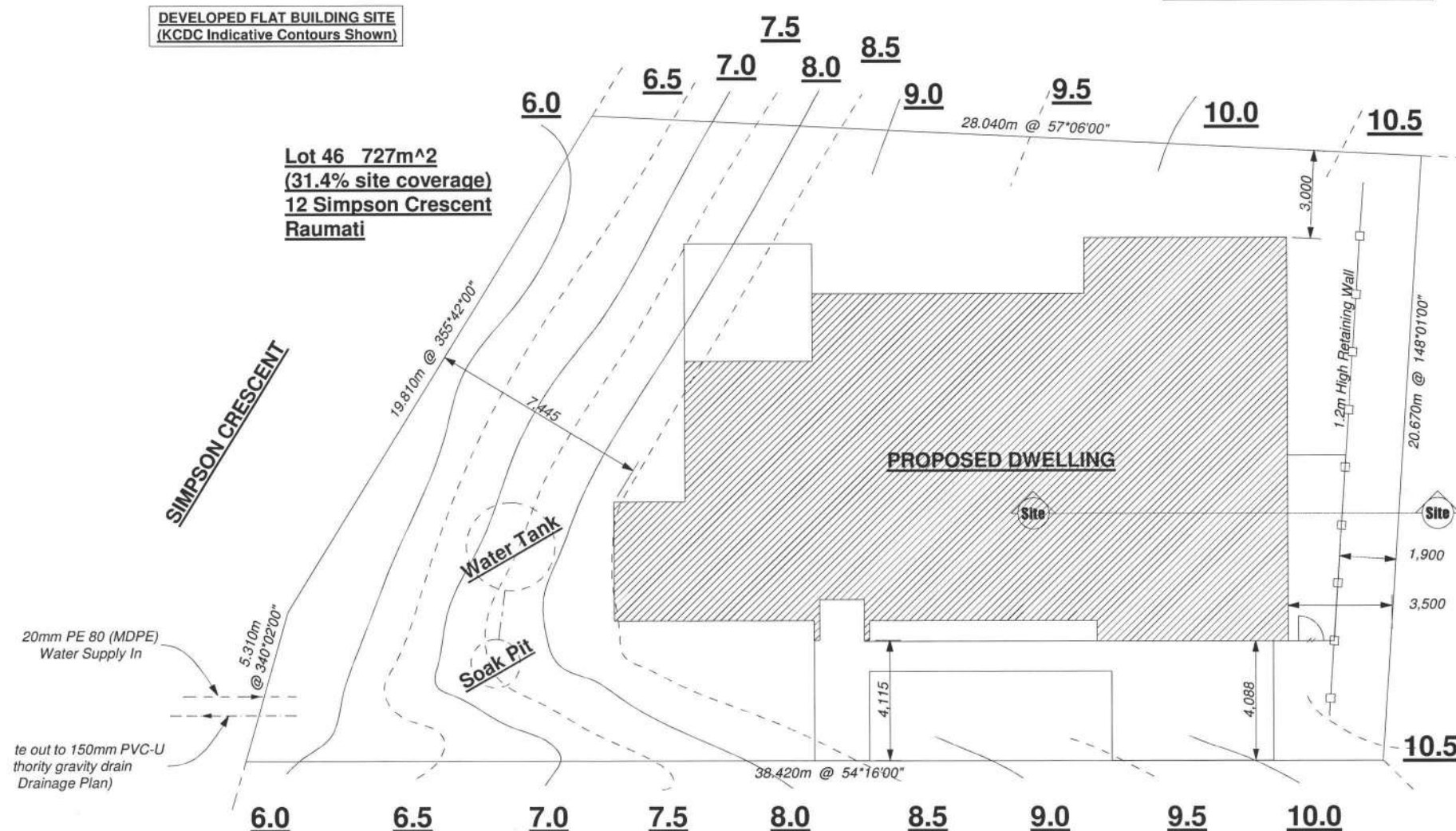
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DEVELOPED FLAT BUILDING SITE
(KCDC Indicative Contours Shown)

Lot 46 727m²
(31.4% site coverage)
12 Simpson Crescent
Raumati

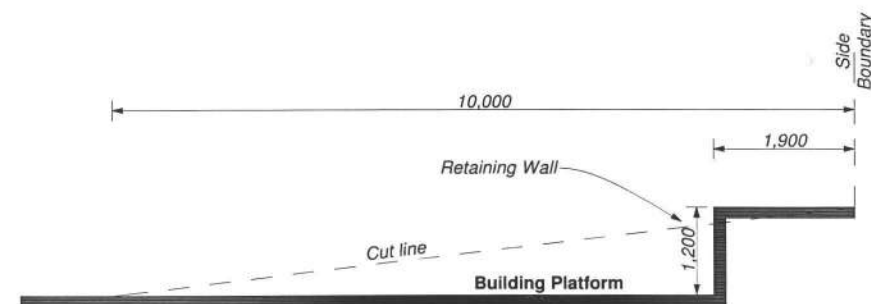
VERY HIGH WIND ZONE



SITE PLAN - Scale 1:200
Sheet 2


STANDARDS/CODES

All references to standards and codes etc shall be taken as reference to latest version including ammendments



SITE SECTION - Scale 1:100
Sheet 2

Proposed New Building for: Lot 46 Simpson Cres
RAUMATI
 Design Plans Ltd - 1/4 The Plains
 340 Rosetta Road, Paraparaumu
 PO Box 227, Paraparaumu
 T: 902 9085 M: 021 222 2222
 All Original Drawings
 On 100% Reproduction

Designed by:

 S. Neale
 00-02-13

Issue:



By: S. Neale
Date: 20-02-13

Job Number
PA 046

These plans have been prepared with all reasonable care taken to ensure dimensions and specifications are correct, and in the assumption they will be further checked on site and verified by the building manager who will have a sound knowledge of the NZBC and NZS 3604. If any discrepancy in the drawings is found it is to be immediately reported to the Drawer (Design Plans Ltd trading as The Plan Works) before any building or related work commences. The Drawer accepts no responsibility for costs resulting from discrepancies in any plans produced which are not reported to the drawer before any building or related work commences. Any works carried out by any contractor, sub contractor or authorised agent of the owner or builder, shall comply with the requirements of the local authority. Any works undertaken outside these requirements without the approval of designer, engineer & local authority hereby indemnifies the Drawer or agent against any claim or claims in respect to the said works.

Combined Certificate of Compliance and Electrical Safety Certificate



Customer Name: Paterson Homes NCE 002219

Location of Installation: Lot 46, Simpson Crescent, Raumati Beach Reference / Job / ID

Description of work: (or see attached ☐) New house, Meter board, main switch board, 1x ALC, 2x Fan, 2x light, 2x Under tile, Main Earthing, ICP Number (if known)

Validity authenticated

This work has been carried out in accordance with a Certified Design ☐

Certified Design Attached ☐ Name of Issuer of Certified Design: Signature: 27 JAN 2014

Supplier Declarations of Conformity Attached: ☒ (please attach or list Certificate serial numbers or web address below)

Manufacturers Instructions used or relied on in this work: ☒ (please attach or list web address below)

All parts of the installation are safe to connect to a power supply ☒
If not, please detail which parts are safe to connect.

This work is: This work has been done in accordance with: Supply system this work is suitable for:

Low Risk (Certificate of Compliance not required)	<input type="checkbox"/>	Part 2 of AS/NZS 3000	<input checked="" type="checkbox"/>	230/400V MEN system	<input checked="" type="checkbox"/>
General	<input checked="" type="checkbox"/>				
High Risk (Record of Inspection required)	<input checked="" type="checkbox"/>	Part 1 of AS/NZS 3000	<input type="checkbox"/>	Other (Please specify)	<input type="checkbox"/>

Other Standards this work complies with: _____

Record of Inspection (If Required)

The aspects of the work which make it high risk are:

<input checked="" type="checkbox"/> Work on Mains	<input type="checkbox"/> Mains Parallel Generation	<input type="checkbox"/> Animal Stunning
<input checked="" type="checkbox"/> Work on Main Earthing System	<input type="checkbox"/> Mines	<input type="checkbox"/> Work to Part 1 of AS/NZS 3000 *
<input type="checkbox"/> Electromedical	<input type="checkbox"/> Photovoltaic	<input type="checkbox"/> High Voltage *
<input type="checkbox"/> Hazardous Area		* Certified Design Required

Date on, or period in, which the work was done: 22/1/14

I confirm that I am satisfied that the work detailed in this Certificate of Compliance has been done lawfully and safely, and that the information contained in this certificate is correct and accurate.

This certificate is issued by: Dorian Van Peer Registration No: E251620
Signature: [Signature] Date: 22/1/14

Name and Registration Numbers of Workers Under Supervision Attached ☒ Myles Rave

Electrical Safety Certificate To be completed once all work on the CoC above is completed.

Date the connection was done: 22/1/14

I am satisfied that the work detailed in this Electrical Safety Certificate and the installation or part installation to which it relates is connected to a power supply and is safe to use.

The work described above was connected by: Dorian Van Peer Registration No: E251620
Signature: [Signature] Date: 22/1/14

PRODUCER STATEMENT - PS1 - DESIGN

(Guidance notes on the use of this form are printed on the reverse side*)

ISSUED: ISP Consulting Engineers Ltd

TO: **Paterson Homes**
(Owner / Developer)

TO BE SUPPLIED TO: Kapiti Coast District Council
(Building Consent Authority)

IN RESPECT OF: **Proposed New Dwelling**
(Description of Building Work)

AT: **Lot 46 Simpson Crescent, Raumati Beach, Paraparaumu**
(Address)
LOT 46 DP

We have been engaged by the owner/developer referred to above to provide **structural design services and construction monitoring of specifically designed elements** in respect of the requirements of Clause B1 (B2 of specifically designed elements) of the building code for

☐

All

☒**Part only as specified of building work:**

- Foundations including driven timber piles

The design carried out by us has been prepared in accordance with Compliance Documents issued by Department of Building & Housing B1, VM1 & VM4

The proposed building work covered by this producer statement is described on the drawings titled Lot 46 Simpson Crescent and numbered 25421 – SK1 to SK3.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions: Bearing capacity of driven timber piles to be confirmed on site by the Engineer.
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided will comply with the relevant provisions of the Building Code and b), the persons who have undertaken this design work have the necessary competency to do so.

I, Craig McGhie am CPEng #173345

I am a member of: IPENZ and hold the following qualifications: NZCE(Civil), BE(Hons), ME(Fire), MIPENZ, CPEng

The design firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$ 200,000*.

The Design Firm is a member of ACENZ

SIGNED BY Craig McGhie ON BEHALF OF ISP Consulting Engineers Ltd

Date 4 October 2013

(Signature).....



Note: this statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

PRODUCER STATEMENT - PS1 - DESIGN
(Guidance notes on the use of this form are printed on the reverse side*)

ISSUED: ISP Consulting Engineers Ltd

TO: **Paterson Homes**
(Owner / Developer)

TO BE SUPPLIED TO: Kapiti Coast District Council
(Building Consent Authority)

IN RESPECT OF: **Proposed New Dwelling**
(Description of Building Work)

AT: **Lot 46 Simpson Crescent, Raumati**
(Address)
LOT 46 DP

We have been engaged by the owner/developer referred to above to provide **structural design services and construction monitoring of specifically designed elements** in respect of the requirements of Clause B1 (B2 of specifically designed elements) of the building code for

☐ All☒ **Part only as specified of building work:**
- Foundations including driven timber piles

The design carried out by us has been prepared in accordance with Compliance Documents issued by Department of Building & Housing B1, VM1 & VM4

The proposed building work covered by this producer statement is described on the drawings titled Lot 50 Simpson Crescent and numbered S1. - *Other drawings covered by the engineer*

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions: Bearing capacity of driven timber piles to be confirmed on site by the Engineer.
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided will comply with the relevant provisions of the Building Code and b), the persons who have undertaken this design work have the necessary competency to do so.

I, John O'Hagan am CPEng #179947

I am a member of: IPENZ and hold the following qualifications: BE(Hons), NZCE(Civil), MIPENZ, CPEng

The design firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$ 200,000*.

The Design Firm is a member of ACENZ

SIGNED BY John O'Hagan ON BEHALF OF ISP Consulting Engineers Ltd

Date 23 August 2013

(Signature).....

Note: this statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.
This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

PRODUCER STATEMENT – PS4 – CONSTRUCTION REVIEW

(Guidance notes on the use of this form are printed on page 2)

ISSUED BY: ISP Consulting Engineers Ltd
TO: **Paterson Homes Ltd**
(Owner/Developer)
TO BE SUPPLIED TO: **Kapiti Coast District Council**
(Building Consent Authority)
IN RESPECT OF: **New Residence**
(Description of Building Work)
AT: **Lot 46 Simpson Crescent, Raumati**
Lot: 46 DP:
(Address)

Validity authenticated

27 JAN 2014

Signature: _____

ISP Consulting Engineers Ltd has been engaged by **Paterson Homes Ltd**

to provide ☐ CM1 ☒ CM2 ☐ CM3 ☐ CM4 ☐ CM5 observation services
(Engineering Categories)

in respect of clause(s) B1, VM1 of the Building Code for the building work described in documents relating to Building Consent No # **130603**. We have sighted these Building Consents and the conditions of attached to them.

Authorised instructions / Site Inspection Reports **Numbered 1-2** (copies attached) have been issued during the course of the works.

On the basis of ☒ this ☐ these review(s) and information supplied by the contractor during the course of the works,

I believe on reasonable grounds that ☐ All ☒ **Part only as specified of building work outside the scope of NZS3604:2011-**

- Foundations

Of the building works have been completed in accordance with the relevant requirements of the Building Consents and Building Consent Amendments identified above, with respect to Clause(s) B1, VM1 of the Building Regulations.

I, John O'Hagan am CPEng Registered No. 179947

I am a Member of IPENZ and hold the following qualifications: NZCE(Civil), BE (Hons), MIPENZ, CPEng

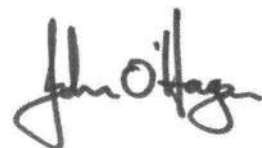
The Construction Review Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Construction Review Firm is a member of ACENZ

SIGNED BY John O'Hagan **ON BEHALF OF** ISP Consulting Engineers Ltd.

Date: 11th October 2013

Signature:.....



Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Construction Review Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.

This form to accompany **Forms 6 or 8 of the Building (Form) Regulations 2004** for the issue of a Code Compliance Certificate.

GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1992. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional Engineers New Zealand, Association of Consulting Engineers New Zealand in consultation with the Building Officials Institute of New Zealand. The original suite of producer statements has been revised as at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

PS1 Design

Intended for the use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;

PS2 Design Review

Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;

PS3 Construction

Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:20031 ; or Schedules E1/E2 of NZIA's SCC 2007 2

PS 4 Construction Review

Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate.
This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACENZ, IPENZ and NZIA to interpret the Producer Statement.

Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence-based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as the Institution of Professional Engineers New Zealand (IPENZ) or the New Zealand Institute of Architects (NZIA) provides additional assurance of the designer's standing within the profession. If the design firm is a member of the Association of Consulting Engineers New Zealand (ACENZ), this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional".

Professional Indemnity Insurance

As part of membership requirements, ACENZ requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to \$500,000.

Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-5)3 (OL1-OL4)2. The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project concerned.

Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design Firm's engagement.

Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

Refer Also:

1 Conditions of Contract for Building & Civil Engineering Construction NZS 3910: 2003

2 NZIA Standard Conditions of Contract SCC 2007 (1st edition)

3 Guideline on the Briefing & Engagement for Consulting Engineering Services (ACENZ/IPENZ 2004)

www.acenz.org.nz

www.ipenz.org.nz

www.nzia.co.nz



Building Code Clause(s)

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on the reverse side)

ISSUED BY: BUMI RESOURCES LTD
(Design Firm)
TO: LARSENS CONCRETE & DRAINAGE
(Owner/Developer)
TO BE SUPPLIED TO:
(Building Consent Authority)
IN RESPECT OF: LARSENS ELE 10000 LITRE WATER TANK
(Description of Building Work)
AT:
(Address)

LOT DP SO

We have been engaged by the owner/developer referred to above to provide STRUCTURAL DESIGN TO
REINFORCED CONCRETE TANK services in respect of the requirements of

Clause(s) 6.7 & AS/NZS 1546:1:1998 of the Building Code for

☐ All or ☐ Part only (as specified in the attachment to this statement); of the proposed building work.

The design carried out by us has been prepared in accordance with:

☐ Compliance Documents issued by Department of Building & Housing
(verification method / acceptable solution) OR

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled
and numbered

together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

I, DAVID MOLHOLLAND am: ☐ CPEng #
(Name of Design Professional) ☐ Reg Arch #

I am a Member of: ☒ IPENZ ☐ NZIA and hold the following qualifications:

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.
The Design Firm is a member of ACENZ ☐ YES ☐ NO

SIGNED BY: [Signature] ON BEHALF OF BUMI RESOURCES LTD
(Design Firm)

Date 15/2/2010 (signature) DAVID MOLHOLLAND [Signature]

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.



10,000 Litre Concrete Tank Warranty

This Warranty is offered by Walter Larsen and Sons Ltd (Larsens)
for Eletank 10,000 Litre Precast Concrete Tank

installed at 12 Simpson Crescent, Raumati

This warranty is offered to the original purchaser (other than for purposes of resale) for a period of Eight Years.

This Warranty covers manufacturing defects in materials and workmanship, which occur within the duration of the warranty period.

This Warranty does not cover-

1. Any incidental, indirect, or consequential loss, damage or expense that may result from any defect, failure or malfunction of the warranted product.
2. Any failure that results from an accident, purchaser's abuse, neglect, use in association with corrosive chemical or solvents, operation in excess of stated maximum working pressure and temperature or failure to operate and maintain the warranted product.
3. Items or service that is normally required to maintain the product (eg. Reseal inner surface)
4. Any product not actually manufactured by Larsens. Components supplied with the tank are covered by their respective manufacturers warranties. Larsens obligation shall consist only of passing on to the Customer any warranty indemnification payment actually received by Larsens from the original manufacturer so far as Larsens is permitted to do so.

Responsibilities of Larsens are to-

Repair or replace at Larsens option the affected concrete tank that has failed as a result of faulty manufacture, within the duration of the warranty period. If repair or replacement is not feasible, Larsens may at its option refund the purchase price.

Responsibilities of Purchaser are to-

1. Provide access to the concrete tank. Travel costs or any costs associated with providing access to the tank, if incurred must be borne by the purchaser.
2. Use reasonable care in the operation and maintenance of the product
3. Report any faults within 30 days of becoming aware of the defect so that it can be remedied with a minimum of fuss and costs.
4. for warranty service, send a written description of the defect with a copy of your invoice to-

Larsens Concrete
437 Heads Road
Castlecliff,
Wanganui 4501



Certificate No: 048
Date: 7-1-14

PRODUCER STATEMENT CERTIFICATE

Client: c/o Glen Paterson
Address: Lot 46 Simpson Cres,
Raumati

Site Legal Description:

Local Authority: Permit No.:

W.A.N.Z. Registration No.: 06476

Confirm that all products supplied by this company as described in our Quotation

No.: 21694 Dated: 15-8-13 Revision Dated: 14-10-13

Supplied Only ☒ Supplied & Installed ☐ Unglazed ☐ Glazed ☒

Comply with the following current New Zealand Standard Specification:

Performance of Windows NZS 4211

S.W.P.: V14

Water Leakage Grade: 330

Air Infiltration Grade: 8

Aluminium Joinery NZS 3504



Glass & Glazing NZS 4223



B.I.A. "Safety from Falling" Clause F4



W.A.N.Z. Installation Code of Practice



Other Specified Documents:

Signed: 



Certificate of Achievement

This is to certify that

Daniel Bradbury

has successfully completed the
ARDEX Undertile Waterproofing Training Course
and is registered to use the following product(s)

**Two Part Bathroom and Balcony
Premix Bathroom and Balcony**

Hendrick T. Goller
General Manager

Nik Dunlop
Course Manager

Date: 17th July 2012

Applicator No.2824

ARDEX NZ LTD

32 Lane Street, Woolston, Christchurch (03) 373 6900 www.ardex.com

This certificate confirms that the holder has successfully completed the Superflex training course but in no way authorises the holder to represent themselves as an authorised, registered or licensed installer of Ardex products nor in any other way represent that they are an agent or servant of Ardex New Zealand Limited. This certificate does not create any legal relationship between the holder and Ardex New Zealand Limited will not be liable to any person for the improper installation of its products by the holder of this certificate.



Applicator Workmanship Warranty

WARRANTY No. _____ DATE OF INSTALLATION 13/01/2014
BUILDING OWNER & ADDRESS 12 Paterson Homes,
12 Simpson Crescent Raurimu
APPLICATOR (Name, Address, Phone No.) Daniel Bradbury
Tiling Ltd, 5 Oriwa St Waikeke, 0272431055
AREA LAID m² 18m² PRODUCT, TYPE AND USE Ardek,
Superflex, 2 wet-area showers, ground bath & cradle

Subject to the conditions appearing below, the Applicator warrants its workmanship as follows:

- a) All membrane products (the "Materials") are laid and installed in compliance with the manufacturer's instructions; and
- b) For a period [] years, the Workmanship on the Materials by the Applicator shall maintain a waterproof barrier to the area treated.

This Warranty shall be subject to the conditions which follow:

1. This Warranty shall extend only to the workmanship undertaken by the applicator and shall in no way bind the manufacturer of the Materials laid and installed by the Applicator.
2. The Applicator's obligations under this Warranty shall be limited to the Applicator making good at their expense any defect in the workmanship which permits the entry/escape of water. The Applicator shall have no further liability or responsibility for any direct, indirect or consequential injury, loss or damage whatsoever and howsoever arising.
3. This Warranty shall not apply to any alleged defective workmanship that is:
 - a) Due directly or indirectly to any cause such as (without limiting the generality of this exclusion) governmental or environmental interference or any other cause beyond the reasonable control of the Applicator; or
 - b) Caused by the act, omission, default or representation of any party other than the Applicator, its servants or agents and in particular the work of any other tradesman and damage from persons not authorised by the Applicator to have access to or be employed in the repair, maintenance or alteration of the application during the warranty period; or
 - c) Caused by the Materials or any of them being disturbed by any party other than the Applicator after fixing.
4. This Warranty shall be invalid unless the Applicator receives the Customer's written claim within the warranty period and within fourteen (14) days after the date of discovery of any alleged defect.
5. Where it is necessary for the Applicator to repair any defective workmanship, the Customer shall remove and/or replace plant, equipment or any other objects that hinder the access by the Applicator to the Materials. The cost of any site visit requested under a warranty claim which does not reveal any problem relating to the warranted scope of work shall be paid for by the party requesting the inspection at the then current trade consultancy rates.
6. The Customer shall have made payment in full to the Applicator for the nominated works within the terms of the Applicator's contract with the Customer prior to the Customer making claim under this Warranty.
7. In the event that any Materials subject to this Warranty are ordinarily acquired for personal, domestic or household use or consumption, then this Warranty shall be read subject to the guarantees contained in the Consumer Guarantees Act 1993.
8. The Customer acknowledges that the Applicator is not employed by nor is an agent of the manufacturer of the Materials and that the manufacturer will not be liable to any person for the Workmanship, acts or defaults of the Applicator.

Applicator Name (Print) Daniel Bradbury Telephone No.: 0272431055
Address: 5 Oriwa St, Waikeke
Signature of Applicator DJ Bradbury Date: 21/01/2014



WARRANTY AND MAINTENANCE GUIDE FOR YOUR GERARD ROOF SATIN COATING



50 YEARS

25 YEARS FULL WEATHERPROOF WARRANTY, PLUS A DIMINISHING PRO-RATA WARRANTY FOR A FURTHER 25 YEARS

NB: FOR WARRANTY DETAILS IN GEOTHERMAL AREAS CONSULT YOUR LOCAL GERARD CERTIFIED ROOFER.



15 YEARS

5 YEARS FULL SATIN SURFACE COAT-WARRANTY, PLUS A DIMINISHING PRO-RATA WARRANTY FOR A FURTHER 10 YEARS.



5 YEARS

5 YEARS INSTALLATION WARRANTY HONoured BY YOUR GERARD CERTIFIED ROOFER.

Name of Purchaser **Patterson Homes**

Address Warranted **Lot 46 Simpson Cres**

Raumati

Type of Warranty **Tile Warranty**

Installation Contractor **Allroof Solutions Limited**

Date of Warranty **21.10.2013**

Brand **Tuffcoat Tile Satin Graphite**

WARRANTY FOR NEW ZEALAND

IMPORTANT
TO VALIDATE THIS
WARRANTY YOU
MUST COMPLETE
THE DETAILS ON
THE WARRANTY
CARD AND POST
BACK TO
GERARD ROOFS

(a) Weather Security Warranty by AHI Roofing Limited (hereinafter called the Company)

If any *Zincalume® steel roofing tile (a "tile") manufactured by the company before the date of this warranty comprised in the roof fitted to the Purchaser's property described above (the "property") does not remain weatherproof for a period of 50 years from the date of this warranty then the company will at its option, either repair or replace the tile. The Company's obligation under this weather security warranty is limited to the full cost of repair or replacement in respect of claims made during the first 25 years following the date of this warranty and thereafter is limited to its share (calculated in accordance with Schedule A overleaf) of the cost of repair or replacement.

(b) Satin Surface Coating Warranty by AHI Roofing Limited

If, during the period of 15 years from the date of this warranty, the surface coating of the tile deteriorates to the extent that, in the Company's reasonable opinion, the appearance of the roof is substantially affected, then the Company will at its option either replace the tile, apply the Company's surface coating to the affected tile or provide other reasonable compensation to the Purchaser. The Company's obligation under this surface coating warranty is limited to the full cost of remedial work in respect of claims made during the first five years following the date of this warranty and thereafter is limited to its share (calculated in accordance with Schedule B overleaf) of the cost of remedial work.

(c) Installation Warranty by the Installation Contractor

In the installation contract between the Purchaser and the installation contractor, the Company requires the installation contractor to warrant that defects in the Purchaser's roof arising within five years of the date of this warranty which are caused by faulty or defective workmanship in installation of tiles shall be made good by the installation contractor at no cost to the Purchaser.

Terms and Conditions of the Weather Security Warranty and Surface Coating Warranty (together the "warranties"):

- i. The warranties shall only apply if the Purchaser has made full payment for the supply and fitting of all tiles and thereafter will extend to subsequent owners of the property.
- ii. The warranties shall only apply in respect of claims arising as a direct result of a manufacturing defect in a tile (for example, and not in limitation, claims arising as a consequence of faulty workmanship in the fitting of tiles and damage caused by walking on tiles (whether by the owner or any other person such as a plumber, TV Repairman, electrician, painter etc) or from defects in the structure on which the tiles are fitted, are not covered by warranties.
- iii. The Company shall not be liable under these warranties, or any implied warranties arising under local laws which are not excluded pursuant to paragraph (xi) below, for any consequential, indirect or special damage or loss of any kind whatsoever, or loss of profits or anticipated savings, including any such losses arising due to any delay by the Company in complying with its obligations under the warranties.
- iv. As colour variations may exist in tiles manufactured at different times, the Company reserves the right to repair or replace a tile in a colour similar to the original tiles.
- v. The warranties shall not apply if any work, except temporary emergency work, is done to tiles other than work carried out under the supervision, or subject to the prior inspection and prior written approval, of the Company.
- vi. The Company gives no warranties if, during the installation of the tiles, skillsaws, abrasive disks or hacksaws are used to cut tiles except as directed in fixing instructions issued by the Company.
- vii. The surface coating warranty shall not apply where the growth of organic matter such as moss or lichen occurs on tiles. Organic matter, if left unchecked, may damage the surface of tiles or cladding products.
- viii. Any remedial work carried out under the warranties shall not extend the term of warranties.
- ix. All surface coating systems will fade and chalk over time, particularly on roofing surfaces where they are subjected to the extremes of continuous ultra violet radiation. Gradual fading and chalking over the period of the surface coating warranty is expected, and is not covered by the surface coating warranty.
- x. This terms and conditions shall not in any way limit the rights of the Purchaser, or the obligations of the Company, under applicable local laws except to the extent permitted by such laws.
- xi. All warranties implied by local laws are negated to the fullest extent permitted by such laws.
- xii. Each of the above limitations is a separate limitation applying even though one or more of the other limitations may be held not to apply in the circumstances.

Special Note:

If rainwater is collected from the roof for drinking, the water connection system should be disconnected from the tank for three good rainfalls, or hosed down, after the installation of tiles and before reconnection.

*Zincalume® is a registered trade mark held within the Bluescope Steel Limited Group of Companies.

Roof Care and Maintenance Instructions

Introduction

This information sheet is intended to give you the relevant details about how to care for your roof and maintenance that should be carried out.

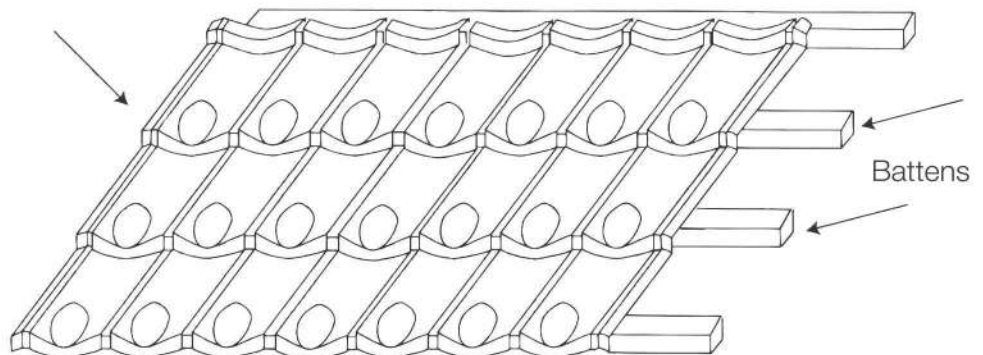
It is a condition of the material and product warranty issued by AHI Roofing Limited for Gerard Roofs' products that the following maintenance procedures are carried out. Maintenance is essential to prolong the good looks of the product and ensure that it performs as you would expect it should. Failure to carry out a regular maintenance program may result in a significantly reduced lifespan of the product and nullify any warranty.

How To Walk on Your Roof

You should not walk on your roof unless it is absolutely necessary. To avoid denting, cracking or other damage to your roof, you should, if you have occasion to walk on it, wear soft-soled shoes, such as tennis shoes or runners. Place your weight over the battens. Take your time, care is required on steep pitch roofs and you should avoid walking on the roof when it is wet. When working at height take appropriate precautions to prevent falls.

If service/trade persons need to access the roof, inform them that the roof is a steel tile roof and if need be inform them of where they should be walking on the roof. Most good trades people know how to walk over roofs, however they should be informed as to what precautions are required.

Where to stand, a 100x100mm area at the nose of the tiles, on the lowest section of the trough.



Organic Growth

In the event that organic growth occurs it should be removed to prevent damage to the roof's protective coating, using a roof cleaning material that is suitable for your type of roof. You can do this yourself or contact a commercial contractor, such as Decragard Roof Coating Systems Licensed Applicators, who specialise in this work and can do it for you very cost effectively.

The time and extent that the growth appears is very dependent on local conditions; this can be as localised as different sections on the same roof. The pitch, direction the roof is facing and locality of trees or any object positioned over the roof can all contribute to conditions that accelerate or inhibit organic growth.

Atmospheric pollutants such as dirt from building sites, fertilisers from nearby farms and pollen from trees also contaminate roofs. These are often mistaken for organic growth on new roofs. They may wash off in heavy rain - if they don't they should be washed off or they may remain and contribute nutrients for organic growth to accumulate on.

There are two commonly available materials that will clean algae and lichen from roofs. These are hypochlorite or sanitising washes. Satin finish roofs should be cleaned with sanitising washes. Hypochlorite washes should not be used for satin finish roofs.

Roof Type	Satin Finish - all aged roofs
Treatment	Sanitising wash, known variously as: Alkyl Benzyl Ammonium Chloride or Quarternary Ammonium compounds
In all circumstances the manufacturer's recommendations on application rates, strengths and compatibility should be followed.	
The manufacturer's instructions should also be followed in situations where rainwater is collected from the roof for drinking. It is likely the manufacturer will require that the water connection system is disconnected during and for a period after treatment, such as for three good rainfalls, or may require hosing down prior to reconnection.	

Some organic growths will be killed immediately, and will disappear after a few rainfalls. Other types of growths, such as black algae and lichen, may take many rainfalls and as long as 6 months to be removed from the surface. You will know if the treatment is working if the organic growth changes colour. This may take from a few days to a few weeks.

**SCHEDULE A
WEATHER SECURITY WARRANTY PRO RATA**

Year	Company Contribution	%	Purchaser Contribution (Owner)	%
1 to 25	"	100%	"	Nil
26	"	50%	"	50%
27	"	48%	"	52%
28	"	46%	"	54%
29	"	44%	"	56%
30	"	42%	"	58%
31	"	40%	"	60%
32	"	38%	"	62%
33	"	36%	"	64%
34	"	34%	"	66%
35	"	32%	"	68%
36	"	30%	"	70%
37	"	28%	"	72%
38	"	26%	"	74%
39	"	24%	"	76%
40	"	22%	"	78%
41	"	20%	"	80%
42	"	18%	"	82%
43	"	16%	"	84%
44	"	14%	"	86%
45	"	12%	"	88%
46	"	10%	"	90%
47	"	8%	"	92%
48	"	6%	"	94%
49	"	4%	"	96%
50	"	2%	"	98%
51 and thereafter	"	0%	"	100%

**SCHEDULE B
SURFACE COATING WARRANTY PRO RATA**

Year	Company Contribution	%	Purchaser Contribution (Owner)	%
1 to 5	"	100%	"	Nil
6	"	67%	"	33%
7	"	60%	"	40%
8	"	54%	"	46%
9	"	47%	"	53%
10	"	40%	"	60%
11	"	34%	"	66%
12	"	27%	"	73%
13	"	20%	"	80%
14	"	14%	"	86%
15	"	7%	"	93%
16 and thereafter	"	0%	"	100%

How to care for your roof

1. You should not walk on your roof unless absolutely necessary. To avoid denting, cracking or other damage to your roof, you should, if you have occasion to walk on it, firstly wear soft soled shoes and secondly place your feet on the lowest point of the tile at the front edge.
2. In certain locations due to humidity or the proximity of trees and shrubs, lichen and moss may grow on your roof. If left unchecked this may damage the surface coating. The manufacturers RECOMMEND this growth to be removed by spraying. Consult your local distributor to ascertain the suitability of any cleaning material you wish to apply to your roof.

Preventive Maintenance

It is best to chemically clean the roof before growths are seen as a preventive maintenance measure. Spores may be present on the roof for up to two years before any visible organic growths are noticed. Treating the roof will not only kill the organic growths, but also the spores that lead to them. We suggest treating the roof every three to five years, however if you see growth occurring treat the roof more frequently.

Long Term Durability - Re-Coating

Maximum durability will only be achieved if re-coating is carried out while the original coating is still sound and protecting the substrate, as this provides a better surface for re-coating and is more economical than waiting until corrosion shows. Re-coating will revitalise the appearance of the roof and ensure the substrate is fully covered with a coating.

Generally re-coating will be most economical if carried out 15-20 years after installation, depending on environmental exposure.

Re-coating should be carried out by trained personnel from a Decragard Roof Coating Systems Licensed Applicator.

Material Compatibility with Modern Roofing Materials

If alterations are made to your home after installation of your roof, such as fitting of chimneys, extensions, installation of skylights etc, it is important to ensure that the materials that are used are compatible with your roofing material. Gerard Roofs' steel tiles are manufactured from *Zincalume® steel and then post coated with a protective and decorative coating system.

Dissimilar Metal Corrosion

When two different metals are in contact and moisture is present, one metal is relatively protected while the other suffers accelerated corrosion. A similar effect commonly occurs with water flowing over dissimilar metals. This form of corrosion is commonly found: where water is discharged from copper or brass systems over a galvanised or Zincalume® steel roof, where unpainted lead flashings are applied directly to Zincalume® steel products or where fasteners are incompatible with the roofing material. Any electrical contact between dissimilar metals should be avoided, e.g. wet leaves making contact between copper gutters and Zincalume® steel roof tiles.

More Active Metals —————> More Noble Metals

Zinc ► Zincalume® Steel ► Aluminium ► Steel ► Lead ► Copper ► Stainless Steel

This chart lists commonly used metals in a "Galvanic series". If any two of these metals are in damp contact or a run-off situation, the metal further to the left will sacrifice itself to protect the metal further to the right. Therefore the simple rule to remember is that you can run water from left to right, but not from right to left. For example zinc to copper is alright but copper to zinc is not.

Specific advice should be sought from AHI Roofing Limited regarding use of dissimilar metals.

*Zincalume® is a registered trade mark held within the Bluescope Steel Limited Group of Companies.

This leaflet is produced in the interest of customer education and good customer relations. AHI Roofing Limited has endeavoured to provide the most technically correct and up to date advice possible but, subject to any claims a person may have under the Consumer Guarantees Act 1993, assumes no responsibility in relation to such information or advice. Alteration in the specification or instructions may occur from time to time. Please contact AHI Roofing Limited on 0800 104 868 for the most up to date technical advice available prior to using this information.



IMPORTANT

To validate this warranty you must complete the details on this card and post back to Gerard Roofs.
If you have any queries please telephone 0800 104 868.

WARRANTY REGISTRATION UPDATE FORM

NAME:	FIRST	LAST	WARRANTY NUMBER: (ENTER FROM WARRANTY)
SITE ADDRESS:	STREET NUMBER	STREET NAME	
CITY:	TELEPHONE NO: (AREA CODE)		
DISTRIBUTOR:			
COMMENTS:			

Please complete the current details for your property, including street number, address, and telephone number.
Please ensure you note the warranty number on the form.

CUSTOMER FEEDBACK

Please answer the six questions below.

1. WERE YOU SATISFIED WITH THE INSTALLATION OF YOUR GERARD ROOF?
2. WAS THE INSTALLATION OF YOUR GERARD ROOF ON TIME?
3. WAS THE INSTALLATION OF YOUR GERARD ROOF DONE IN A PROFESSIONAL MANNER?
4. WOULD YOU USE GERARD ROOFS AGAIN?
5. IS THERE ANYONE YOU WOULD RECOMMEND US TO?
6. DO YOU GIVE PERMISSION FOR GERARD ROOFS TO USE YOUR ROOF FOR ANY PROMOTIONAL PURPOSES?



FreePost 151679
Gerard Roofs
PO Box 18071
Glen Innes
Auckland 1743

ATTENTION: Customer Services

AHI Roofing Ltd
90-104 Felton Mathew Avenue
PO Box 18071, Glen Innes
Auckland 1743, New Zealand
Phone 0800 104 868
Fax 0800 766 324

Name of Purchaser **Patterson Homes**
Address Warranted **Lot 46 Simpson Cres**
Raumati
Type of Warranty **Tile Warranty**
Installation Contractor **Allroof Solutions Limited**
Date of Warranty **21.10.2013**
Brand **Tuffcoat Tile Satin Graphite**

Warranty number
122201

Purchase Order No.
lot 46 simpson

AHI Roofing is proud to provide you with the attached **Gerard Roofs® Warranty**.

Our tiles are made from Zinalume coated steel, which is pressed prior to the application of an acrylic topcoat. This manufacturing system provides long term protection in the harshest of climates, including marine environments. This is why we are able to offer you fully backed 50-year pro rata **weatherproof** and pro rata **surface coating warranties**.

Most building materials require some servicing and maintenance during their product life and roofs are no exception. It is therefore important that you take the time to **read the attached warranty and maintenance guide** for your Gerard Roof.

In addition, please undertake the following actions **to validate your Gerard Roofs Warranty**:

1. Please **complete the attached warranty card** and post back to Gerard Roofs.
2. Please **input your name and address details** (in the space provided) in the upper left-hand corner, of the first page of your warranty.
3. Please **file your warranty** in a safe place.

For more information about Gerard Roofs, suggested maintenance programs or your warranty please visit **www.gerardroofs.co.nz**.

Or alternatively you can call the Gerard Roofs Helpline on **0800 244 737** during office hours.

You can also contact us by fax, e-mail or via the internet.

Yours sincerely



Karen Buckland
Service and Logistics Manager

The worry-proof roof™



Building Code Clause(s) B1

J25421



PRODUCER STATEMENT - PS1 - DESIGN

(Guidance notes on the use of this form are printed on the reverse side*)

ISSUED: ISP Consulting Engineers Ltd

TO: Paterson Homes

(Owner / Developer)

TO BE SUPPLIED TO: Kapiti Coast District Council

(Building Consent Authority)

IN RESPECT OF: Proposed New Dwelling

(Description of Building Work)

AT: Lot 46 Simpson Crescent, Raumati Beach, Paraparaumu

(Address)

LOT 46 DP

Approved to pour slab -
11/10/2013 [Signature]

Geert van de Vorst
ISP CONSULTING ENGINEERS LTD -

We have been engaged by the owner/developer referred to above to provide **structural design services and construction monitoring of specifically designed elements** in respect of the requirements of Clause B1 (B2 of specifically designed elements) of the building code for

☐

All

☒

Part only as specified of building work:

- Foundations including driven timber piles

The design carried out by us has been prepared in accordance with Compliance Documents issued by Department of Building & Housing B1, VM1 & VM4

The proposed building work covered by this producer statement is described on the drawings titled Lot 46 Simpson Crescent and numbered 25421 - SK1 to SK3.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions: Bearing capacity of driven timber piles to be confirmed on site by the Engineer.
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided will comply with the relevant provisions of the Building Code and b), the persons who have undertaken this design work have the necessary competency to do so.

I, Craig McGhie am CPEng #173345

I am a member of: IPENZ and hold the following qualifications: NZCE(Civil), BE(Hons), ME(Fire), MIPENZ, CPEng

The design firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$ 200,000*.

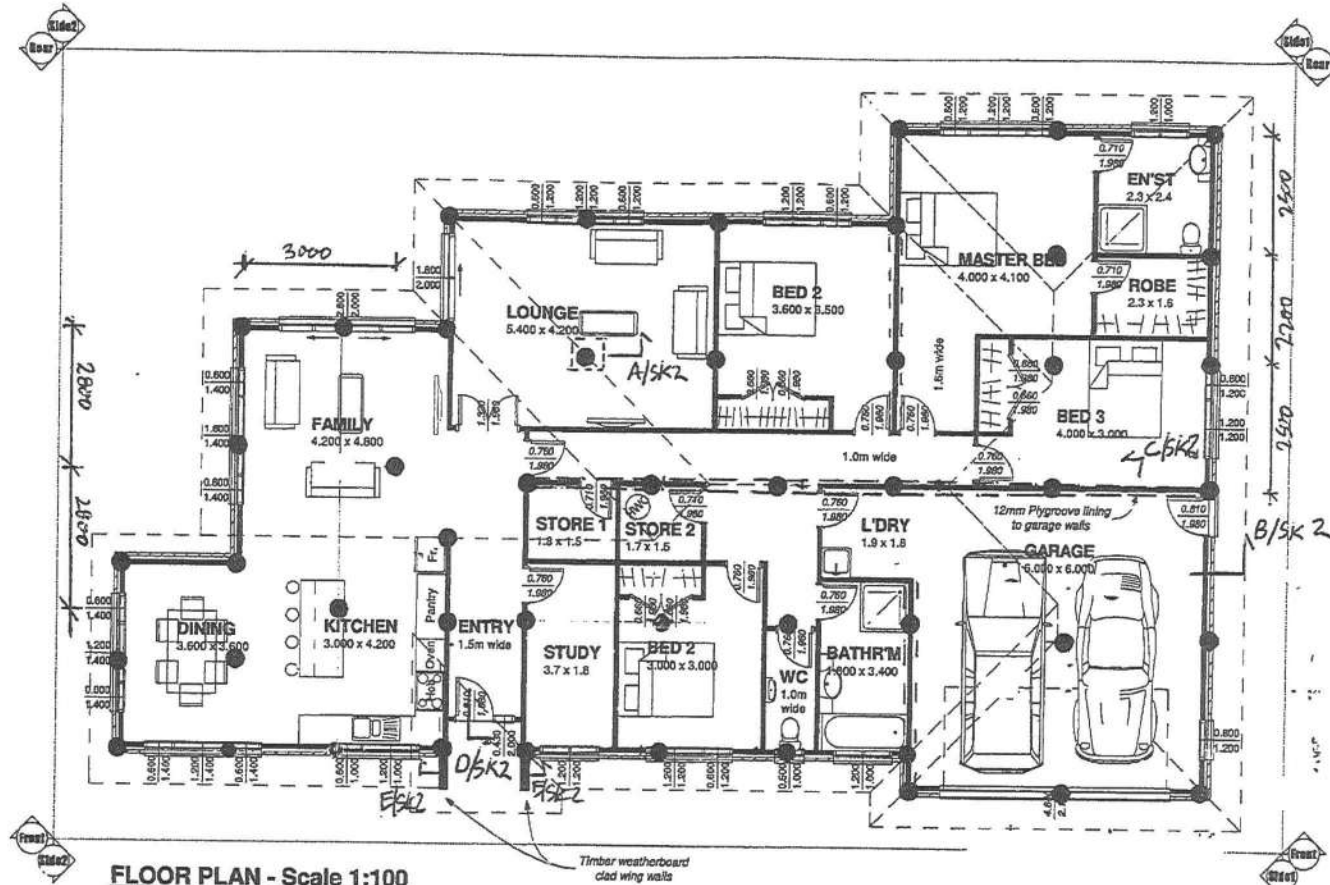
The Design Firm is a member of ACENZ

SIGNED BY Craig McGhie ON BEHALF OF ISP Consulting Engineers Ltd

Date 4 October 2013

(Signature).....

Note: this statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provide to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.
This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.



FLOOR PLAN - Scale 1:100
Area = 244m² (over brick)

- 150 SED Drivan timber pila, 3000 long
 Ultimate dependable bearing capacity - 75 kN
 === Footing under load bearing wall
 (See detail C/SK2)
 □ pila cap (typical)
 See A/SK2

Proposed New Building for: Lot 46 Simpson Cres
RAUMATI
 Prepared by: **PlanWorks**
 Drawn: S. Neale
 Date: 13-08-13
 Issue:
 Job Number
 PA 046

Design Phase Ltd - 46 The Plan Works
 340 PO Box 227 Papanui South
 7100 Dunedin, N.Z.
 All Original Drawings Printed
 on 100% Recycled Paper

This plan has been prepared with all reasonable care taken to ensure dimensions and specifications are correct, and in the recognition they will be subject to change on site and visited by the building manager who will have a sound knowledge of the site and the building. It is to be used as a guide only and not as a contract. Any works carried out by any contractor, sub-contractor or other person, without the written consent of the Designer, shall be at their own risk. The Designer shall not be responsible for any errors or omissions in this plan or for any consequences arising therefrom. The Designer shall not be responsible for any errors or omissions in this plan or for any consequences arising therefrom. The Designer shall not be responsible for any errors or omissions in this plan or for any consequences arising therefrom.

Date

23/8/13

Eng.

GL

Job No.

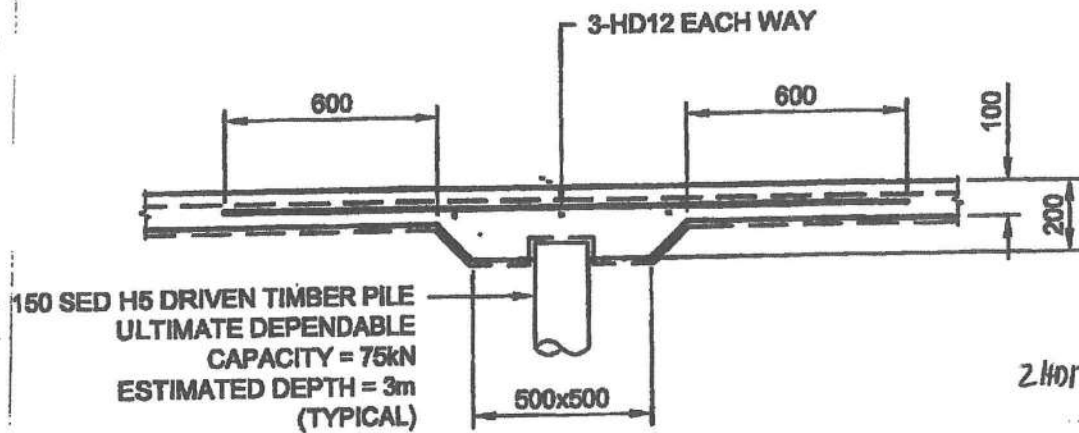
25421

Sheet No.

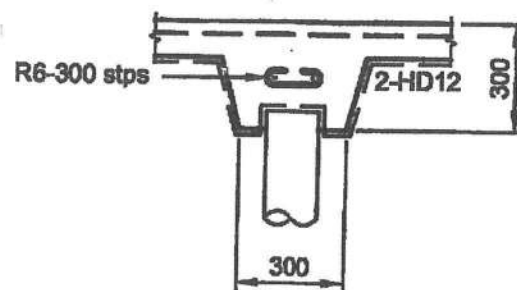
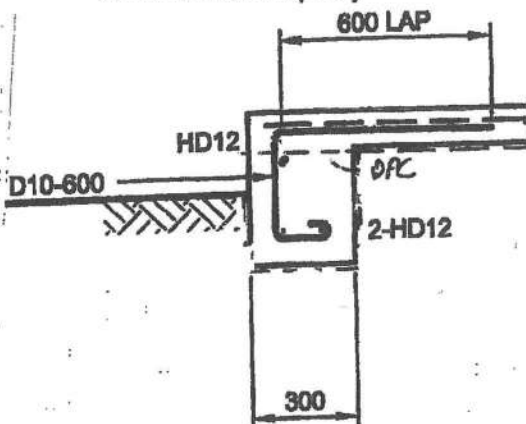
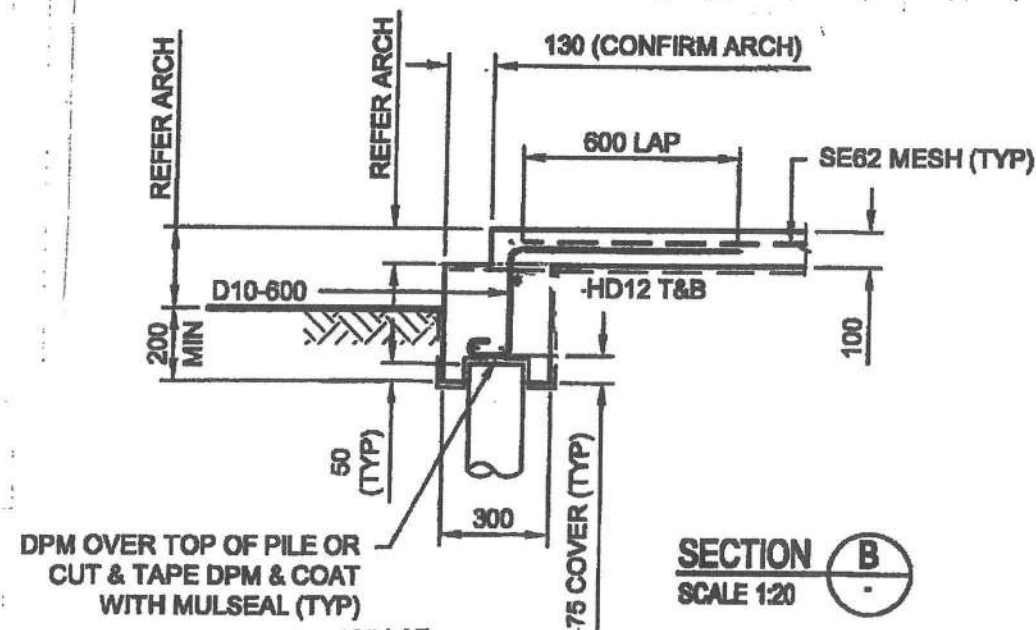
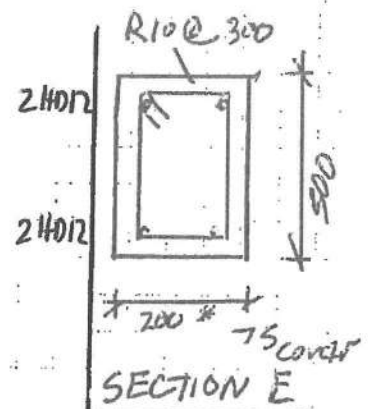
SK2

Project

Lot 46 Simpson Cr

SECTION A
SCALE 1:20



Date

23/8/13

Eng.

GL

Job No.

25421

Sheet No.

SK3

Project

LOT 46 Simpson Cr

**NOTES:**

1. REFER ARCHITECT'S DRAWINGS FOR DIMENSIONS, UNLESS NOTED OTHERWISE AND FOR DETAILS OF ALL SERVICES TO BE CAST IN SLAB. DO NOT SCALE OFF THIS DRAWING
2. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF NZS3109:1997
3. CONCRETE SHALL BE:
 - SLABS & FOOTINGS N25 (25MPa)
 - PILES N17.5 (17.5MPa)
7. MAXIMUM SLUMP TO BE 100mm UNLESS NOTED OTHERWISE
8. HD12 BARS LAP LENGTH IS 600mm
9. CONCRETE FINISHES SHALL BE:
 - SLABS U3
 - EXPOSED FOOTINGS F4
10. CONCRETE COVER
 - 25mm MIN. INTERIOR
 - 40mm MIN. EXTERIOR
 - 75mm MIN. IN CONTACT WITH GROUND
11. ALL REINFORCEMENT SHALL COMPLY WITH AS/NZS4671:2001 (HD BARS SHALL NOT BE REBENT)
12. PILING CONTRACTOR TO PROVIDE RECORD OF PILE SETS AND PILE DRIVING EQUIPMENT DETAILS. TOP OF PILES TO BE PAINTED WITH METALEX AND HAVE A GAP BETWEEN PILE AND FOOTING STEEL OR A LAYER OF DPC
13. ENGINEER TO INSPECT PRIOR TO POURING CONCRETE. ENGINEER REQUIRES 24 HOURS NOTICE BEFORE ANY VISIT

Paraparaumu Prenail Ltd.

37 Ihakara St. PARAPARAUMU Ph (04) 902 5618 Fax (04) 902 5619

Date: 03 September 2013

Producer Statement - PS1 - Design

Job Ref: 5798

Truss Design Criteria For Building Consent Application

CLIENT Name: Paterson Homes Ltd

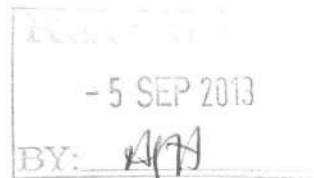
SITE Details: Lot 46 Simpson Crescent, Raumati

Address :

City:

Post Code:

State:



Nominal Design Criteria:

Building importance: Residential/	Design roof snow load: 1.5 KPA
Roofing: Metal Tile	(incl. probability factor)
Ceiling: 10mm Gibboard	Ground snow load: 0 Pa
Top chord purlins: 900mm	Location: Region N1 - lower Nth Island
BC restraints: 400mm	Altitude above sea level: 100 m
Standard truss spacing: 900mm	
Standard roof pitch: 20.00 deg.	
Ult. design wind speed: 50 m/s (wind classification = Very High)	

Max. eaves height: 3 m

Max. ridge height: 8 m

Int pressure coeff. up: 0.2

Structural Fascia: Not required except at hip corners

The truss designs for this job have been determined using computer software provided by Pryda New Zealand, using sound and widely accepted engineering principles. In particular, loadings and designs are performed in accordance with the Standards adopted by primary reference in the Compliance Document, B1 Structure, as called up in the New Zealand Building Code, NZBC 2008.

In addition, the following secondary referenced Australian Standard also applies:

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

All trusses are to 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.

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.

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

Name: Brett Giles Position: Estimator

Signed: BWGiles Date: Tuesday, 03 September 2013

PARAPARAUMU PRENAIL LTD

37 Ihakara Street, Paraparaumu 5032
Tel: 04 902 5618 Fax: 04 902 5619

Producer Statement for Manufactured Frames

Paraparaumu Prenail Ltd will at the time of supply, produce Wall Frames including all Timber Lintels and Beams, manufactured to the following criteria:

Job Name Paterson Homes Ltd
Site Address Lot 46 Simpson Crescent, Raumati

Client Paterson Homes Ltd
Architect/Draughtsman The Plan Workz
Engineer

Wind Zone Very High ✓
Snow Load Region
Earthquake Region

Roof Material Light

Wall Framing as Specified	Timber Size	Stud Spacing	Treatment	Bottom Plate Treatment	Grade
External Walls	90x45	400	H1.2	H1.2	MSG8
Internal Walls	90x45	600	H1.2	H1.2	MSG8
Beam 1	-	-	-	-	-
Beam 2	-	-	-	-	-
Beam 3	-	-	-	-	-
Beam 4	-	-	-	-	-

All timber members and components in this design have been determined to comply with The New Zealand Building Code (Section B1). They have been designed in accordance with sound and widely accepted engineering principles to comply with the following New Zealand Standards:

NZS 1170: 2002 General Structural Design and Design Loadings for Buildings.

NZS 3603: 1993 Timber Design

NZS 3604: 2011 Timber Framed Buildings

Any design that falls outside of these New Zealand Standards that requires specific design will have all Loading and Design Tables and Charts attached.

Designed by Brett Giles

Signed : Bwgiles

Date 3 September 2013

Truss Connections

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

- 2MG 30 x 2/MGL Multigrip (long)
- 2Z 90 x 2/Z Z nail
- W6 4 x 1/WS6Ewr Wind strap (wrap-around)
- W6 6 x 1/WS6E Wind strap
- 20S 2 x 2/WS6Ewr Wind strap (wrap-around)
- 49 x 1/MGL Multigrip (long)
- 2MG 8 x 2/MG Multigrips
- 2NC 1 x 2/NPPC8 Purlin cleat

MULTIGRIP (LONG) TIE DOWN x2

Consent Doc. Code X

Product Code: MGL

Durability: Suitable for all roof spaces that are closed. Stainless required in open soffits. R50C/S with single top plate. Compliant with Table 4.1 of NZS3604:1999 Amendments 1 & 2.

Application: All holes filled with 30x3 15mm Pryda product nails. **Note:** Multigrip (Short), MG or MGL/S cannot be used in a double top plate situation.

WINDSTRAP TIE DOWN x2

Consent Doc. Code W4, W6, W6*

Product Code: WS6E, WS4E

Durability: Suitable for all closed roof spaces. Stainless steel not available. Compliant with Table 4.1 of NZS3604:1999 Amendments 1 & 2.

Application: Use 30x3 15mm Pryda product nails. Min. 5 nails per sq. **Note:** *Wind strap wrapped under support member. The ceiling plate requires notching when used in a double situation.

Z-NAIL TIE DOWN x2

Consent Doc. Code Z

Product Code: Z4 & Z1 (left & right)

Durability: Suitable for all roof spaces that are closed. Stainless required in open soffits. Compliant with Table 4.1 of NZS3604:1999 Amendments 1 & 2.

Application: Usually used in purlin when employed as a brace to down. **Note:** The Z-nails should be anchored to the lower wall plate and may not terminate in the ceiling plate.

CONCEALED PURLIN CLEAT TIE DOWN x2

Consent Doc. Code NC4, NC6, NC8

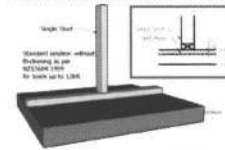
Product Code: NPPC4, NPPC6 & NPPC8

Durability: Suitable for all closed roof spaces. Compliant with Table 4.1 of NZS3604:1999 Amendments 1 & 2.

Application: All holes in large flange filled with 30x3 15mm Pryda product nails. In small flange either Type 17 12g x 35mm or 14g x 70mm hex head gen. screws. **Note:** 14g x 70 screws can be used in single top plate situations. 14g x 70 screws required in a double top plate situation.



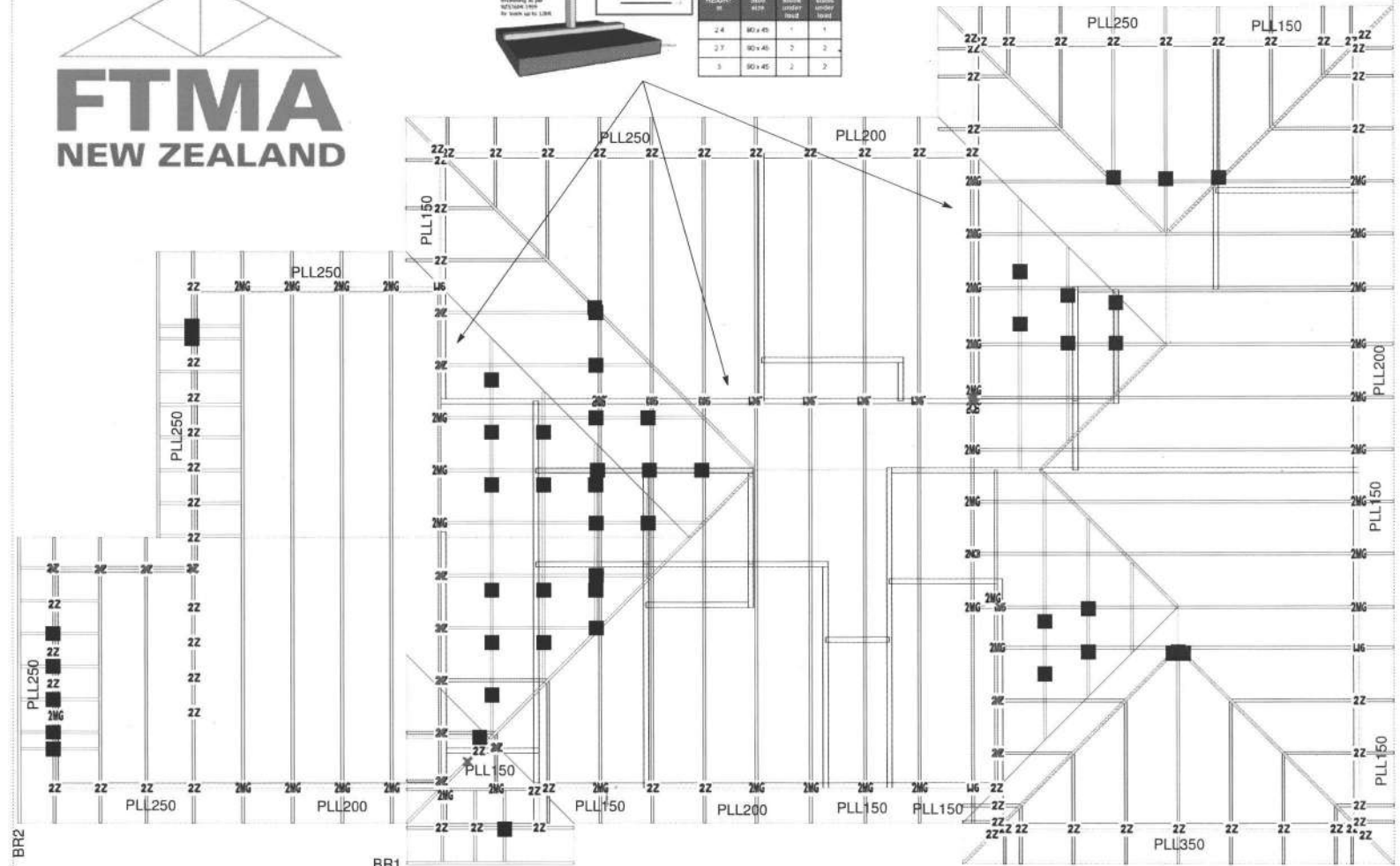
INTERNAL CONCRETE FOUNDATION SUPPORT REQUIREMENTS - 12KN



12KN load	12KN load	12KN load	12KN load
HEIGHT	Stud size	Max of studs under stud	Max of studs under stud
2.4	80 x 45	1	1
2.7	80 x 45	2	2
3	80 x 45	2	2

Consent Doc. Code LB1

All lintels supporting roof trusses have been designed using Prowood Lintel Design Manuals.



TRUSS LAYOUT & FIXINGS SCHEDULE



Customer : Paterson Homes Ltd
Site Address : Lot 46 Simpson Crescent
: Raumati

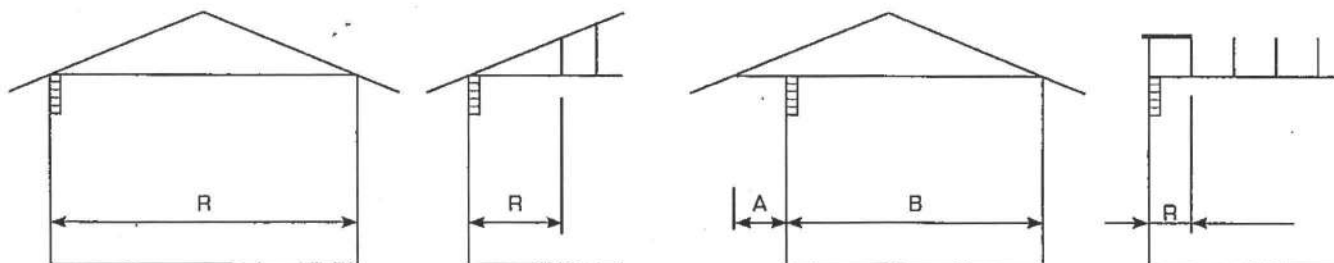
Roofing : Pressed metal tiles
Pitch : 20.00 Deg.
Spacing : 900
Design Wind Velocity : 50.00 m/s (U1)
Detailer : <None>

Job Ref 5798
Scale
Level

PROWOOD

Providing Superior Timber Solutions

SELECTION CHARTS



$$A \leq \frac{1}{4} (A + B), R = B + 2A$$

PROLAM®

TABLE 1:
PROLAM® LINTELS SUPPORTING ROOF AND CEILING ONLY

		LINTEL SIZE	MAXIMUM LINTEL SPAN (m)												
			SUPPORTED ROOF SPAN 'R' (m)												
			2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
GL8	LIGHT ROOF	PLL 150 135 x 88mm	3.25	3.00	2.80	2.60	2.40	2.25	2.15	2.05	1.95	1.85	1.80	1.75	1.70
		PLL 200 180 x 88mm	4.15	3.95	3.70	3.45	3.20	3.00	2.85	2.70	2.60	2.50	2.40	2.30	2.25
		PLL 250 225 x 88mm	4.90	4.60	4.40	4.30	4.00	3.70	3.50	3.40	3.20	3.10	3.00	2.90	2.80
		PLL 300 270 x 88mm	5.60	5.30	5.10	4.90	4.70	4.50	4.30	4.10	3.90	3.70	3.60	3.50	3.30
		PLL 350 315 x 88mm	6.30	6.00	5.70	5.50	5.30	5.10	5.00	4.70	4.50	4.30	4.20	4.00	3.90
	HEAVY ROOF	PLL 150 135 x 88mm	2.75	2.50	2.30	2.10	2.00	1.85	1.75	1.70	1.60	1.55	1.50	1.45	1.40
		PLL 200 180 x 88mm	3.65	3.35	3.05	2.80	2.65	2.50	2.35	2.25	2.15	2.05	2.00	1.90	1.85
		PLL 250 225 x 88mm	4.50	4.10	3.80	3.50	3.30	3.10	2.90	2.80	2.70	2.50	2.40	2.40	2.30
		PLL 300 270 x 88mm	5.30	4.90	4.50	4.20	3.90	3.70	3.50	3.30	3.20	3.10	2.90	2.80	2.70
		PLL 350 315 x 88mm	5.90	5.60	5.30	4.90	4.60	4.30	4.10	3.90	3.70	3.60	3.40	3.30	3.20
GL12	LIGHT ROOF	PL12 150 135 x 88mm	3.65	3.40	3.20	2.95	2.75	2.60	2.45	2.35	2.25	2.15	2.05	2.00	1.95
		PL12 200 180 x 88mm	4.55	4.30	4.10	3.95	3.70	3.45	3.30	3.15	3.00	2.85	2.75	2.65	2.60
		PL12 250 225 x 88mm	5.40	5.10	4.90	4.70	4.50	4.30	4.10	3.90	3.70	3.60	3.40	3.30	3.20
		PL12 300 270 x 88mm	6.20	5.80	5.60	5.40	5.20	5.00	4.90	4.70	4.50	4.30	4.10	4.00	3.80
		PL12 350 315 x 88mm	6.90	6.60	6.30	6.00	5.80	5.60	5.50	5.30	5.20	5.00	4.80	4.60	4.50
	HEAVY ROOF	PL12 150 135 x 88mm	3.10	2.90	2.65	2.45	2.25	2.15	2.00	1.95	1.85	1.75	1.70	1.65	1.60
		PL12 200 180 x 88mm	4.10	3.85	3.50	3.25	3.05	2.85	2.70	2.55	2.45	2.35	2.25	2.20	2.10
		PL12 250 225 x 88mm	5.10	4.70	4.30	4.00	3.80	3.50	3.30	3.20	3.00	2.90	2.80	2.70	2.60
		PL12 300 270 x 88mm	5.89	5.50	5.20	4.80	4.50	4.20	4.00	3.80	3.70	3.50	3.40	3.30	3.20
		PL12 350 315 x 88mm	6.50	6.20	5.90	5.60	5.20	4.90	4.70	4.50	4.30	4.10	3.90	3.80	3.70

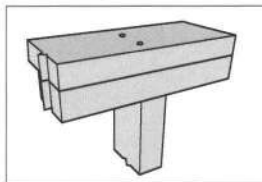
Top Plate to Stud Fixing Guide

Alternative Solution to NZS3604:2011 Table 8.18

It is proposed that PRYDA Strapnails and PRYDA Concealed Cleats be preferred as opposed to PRYDA Z and U nails for ease of fixing and to lessen interference with the cladding.

Notes:

- Refer to NZS3604:2011 Table 8.19 and 8.18
- All truss to top plates to be fixed as per truss manufacturer's fixing schedule and details
- SG8 min dry wall framing with moisture content <18%
- Studs at 600mm centres. For 400mm stud centres divide loaded dimension by 1.5
- Nails specified are 90 x 3.15mm power driven or 100 x 3.75mm hand driven
- Assumed that the top plate is 45mm



TPO

0.7kN



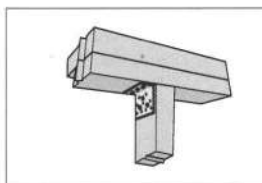
TP1

1.7kN



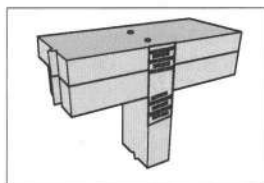
TP2

2.5kN



TP3

4.7kN



TP3

4.7kN

Minimum Top Plate to Stud Joint Fixing Table for roof member 600, 900 & 1200 Centres										
Loaded Dimension (m)	Light Weight Roof Wind Zone					Heavy Weight Roof Wind Zones				
	L	M	H	VH	EH	L	M	H	VH	EH
2.0	TPO	TPO	TP1	TP2	TP3	TPO	TPO	TPO	TP1	TP2
3.0	TPO	TP1	TP2	TP3	TP3	TPO	TPO	TP1	TP2	TP3
4.0	TPO	TP2	TP3	TP3	TP3	TPO	TPO	TP2	TP3	TP3
5.0	TP1	TP2	TP3	TP3	TP3	TPO	TPO	TP2	TP3	TP3
6.0	TP2	TP3	TP3	TP3	TP3	TPO	TPO	TP3	TP3	TP3

Consent Doc Ref.	Fixing Capacity	Fixing Detail
TPO	0.7kN	2/End Nails
TP1	1.7kN	2/End Nails + MP2R4 Knuckle Plate
TP2	2.5kN	2/End Nails + MPSN2 Strapnail
TP3	4.7kN	2/End Nails + SN50L Strapnail
TP3	4.7kN	2/End Nails + NPPC6 with 3/T17 14g x 75mm hex head screws

Lintel Fixing Schedule

Acceptable solutions in conjunction with tables 8:14 & Fig 8:12 of NZS3604:2011

Span Meters	Wind Zone	LIGHT ROOF Loaded Dimensions Meters					HEAVY ROOF Loaded Dimensions Meters				
		2	3	4	5	6	2	3	4	5	6
0.6	L	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
	M	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
	H	L1	L1	L1	L2	L2	L1	L1	L1	L1	L1
	VH	L1	L1	L2	L2	L2	L1	L1	L1	L2	L2
	EH	L1	L2	L2	L2	L3	L1	L1	L2	L2	L2
0.9	L	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
	M	L1	L1	L1	L1	L2	L1	L1	L1	L1	L1
	H	L1	L1	L2	L2	L2	L1	L1	L1	L2	L2
	VH	L1	L2	L2	L3	L3	L1	L2	L2	L2	L2
	EH	L2	L2	L3	L3	L3	L2	L2	L2	L3	L3
1.2	L	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
	M	L1	L1	L2	L2	L2	L1	L1	L1	L1	L1
	H	L1	L2	L2	L3	L3	L1	L1	L2	L2	L2
	VH	L2	L2	L3	L3	L3	L1	L2	L2	L3	L3
	EH	L2	L3	L3	L3	L3	L2	L2	L3	L3	L3
1.8	L	L1	L1	L1	L2	L2	L1	L1	L1	L1	L1
	M	L1	L2	L2	L2	L3	L1	L1	L1	L1	L2
	H	L2	L3	L3	L3	L3	L1	L2	L2	L3	L3
	VH	L3	L3	L3	L3	L4	L2	L3	L3	L3	L3
	EH	L3	L3	L3	L4	L4	L3	L3	L3	L3	L4
2.1	L	L1	L1	L2	L2	L2	L1	L1	L1	L1	L1
	M	L2	L2	L2	L3	L3	L1	L1	L1	L2	L2
	H	L2	L3	L3	L3	L3	L2	L2	L3	L3	L3
	VH	L3	L3	L3	L4	L4	L2	L3	L3	L3	L3
	EH	L3	L3	L4	L4	L4	L3	L3	L3	L4	L4
2.4	L	L1	L1	L2	L2	L2	L1	L1	L1	L1	L1
	M	L2	L2	L3	L3	L3	L1	L1	L1	L2	L2
	H	L2	L3	L3	L3	L4	L2	L2	L3	L3	L3
	VH	L3	L3	L4	L4	L4	L3	L3	L3	L3	L4
	EH	L3	L4	L4	L4	SED	L3	L3	L4	L4	L4
3	L	L1	L2	L2	L3	L3	L1	L1	L1	L1	L1
	M	L2	L3	L3	L3	L3	L1	L1	L2	L2	L2
	H	L3	L3	L3	L4	L4	L2	L3	L3	L3	L3
	VH	L3	L4	L4	L4	SED	L3	L3	L3	L4	L4
	EH	L3	L4	L4	SED	SED	L3	L4	L4	L4	SED
3.6	L	L2	L2	L2	L3	L3	L1	L1	L1	L1	L1
	M	L2	L3	L3	L3	L3	L1	L2	L2	L2	L3
	H	L3	L3	L4	L4	L4	L2	L3	L3	L3	L4
	VH	L3	L4	L4	SED	SED	L3	L3	L4	L4	L4
	EH	L4	L4	SED	SED	SED	L3	L4	L4	SED	SED
4.2	L	L2	L2	L3	L3	L3	L1	L1	L1	L1	L1
	M	L3	L3	L3	L3	L4	L1	L2	L2	L3	L3
	H	L3	L4	L4	L4	SED	L3	L3	L3	L4	L4
	VH	L4	L4	L4	SED	SED	L3	L4	L4	L4	SED
	EH	L4	L4	SED	SED	SED	L4	L4	L4	SED	SED
4.8	L	L2	L3	L3	L3	L3	L1	L1	L1	L1	L1
	M	L3	L3	L3	L4	L4	L1	L2	L2	L3	L3
	H	L3	L4	L4	L4	SED	L3	L3	L3	L4	L4
	VH	L4	L4	SED	SED	SED	L3	L4	L4	SED	SED
	EH	L4	SED	SED	SED	SED	L4	L4	SED	SED	SED

Notes:

Lintel spans and loaded dimensions measured in metres.

All frame nailing not indicated, refer to table 8.19 of NZS 3604:2011.

In all cases a 90mm thick external wall is assumed.

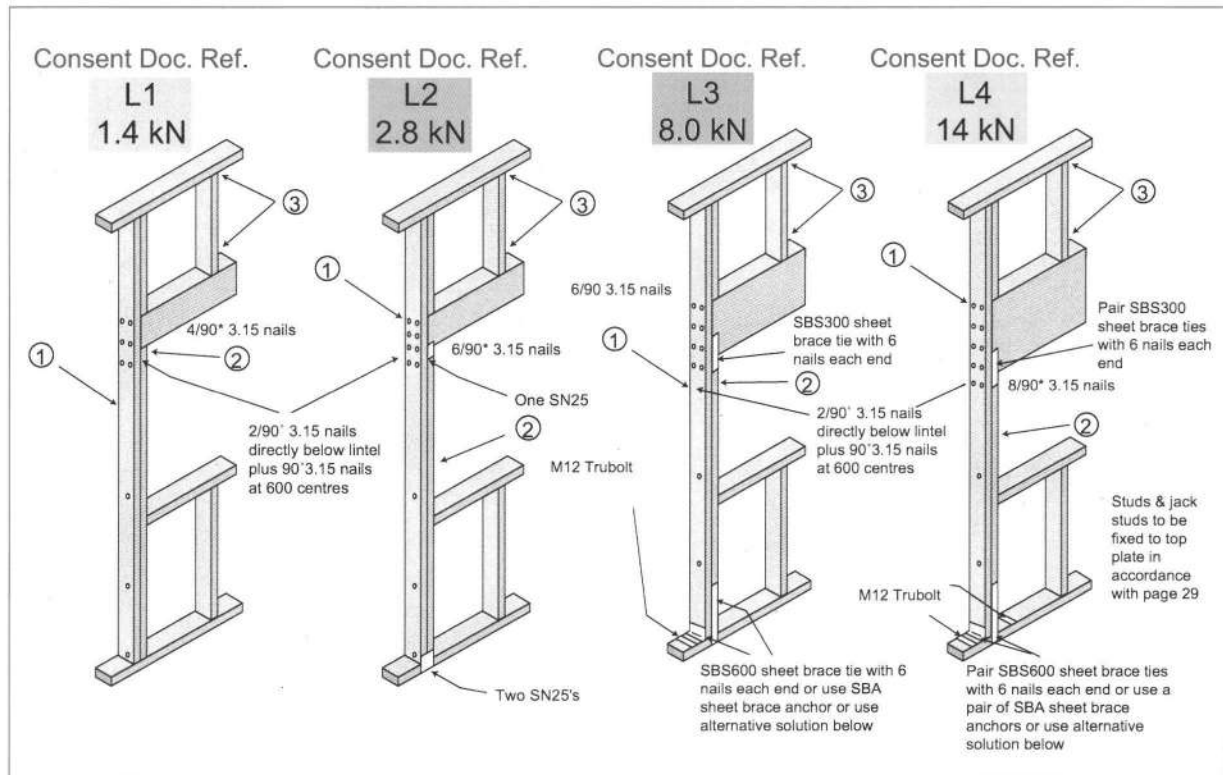
For girder truss loads use a minimum of: L3 where girder carries more than 10sq.m. of roof and L4 where girder carries more than 18sq.m. of roof.

600mm overhangs allowed for in the tables.

SED designates that a Specific Design is required.

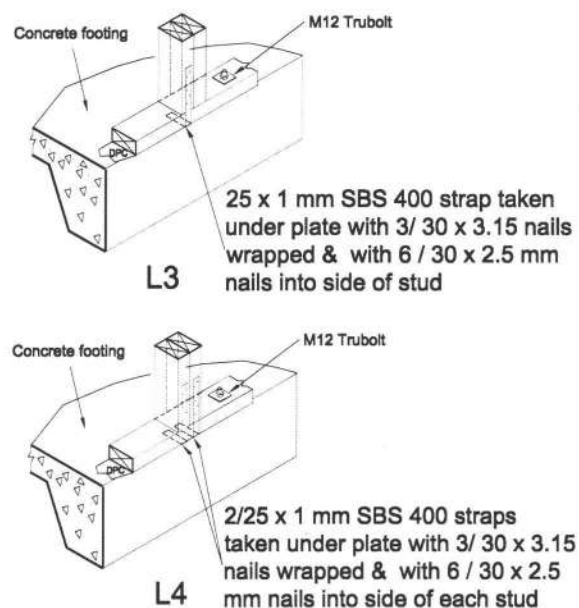
Lintel Fixing Schedule

Acceptable solutions in conjunction with tables 8:14 & Fig 8:12 of NZS3604:2011



1. For trimming stud thickness refer to Table 8.5 NZS 3604:2011. Additional studs to that shown to have a minimum stud to stud fixing of 11/90° 3.15 nails.
2. Where a double stud which provides support for a lintel is shorter by 400mm or more than the full stud height, its thickness shall not be included as contributing to the thickness of trimming studs.
3. Studs & jacks to be fixed to top plate in accordance with the Pryda Wallplate to Stud Joint Fixing Guide.

Alternative solution for L3 & L4 SBS use

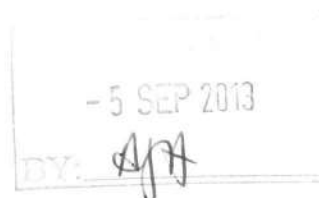


All capacities are limit state design values and not characteristic strength therefore these may be compared directly to Pryda design software output. Capacities assume a minimum timber grade of SG8.



Cuttriss

Land Surveyors, Engineers & Resource Managers



STORMWATER DISPOSAL REPORT

LOT 46 DP 401543
12 SIMPSON CRESCENT
RAUMATI

Client: Paterson Homes Ltd

Job Number: 21163

AUGUST 2013

Cuttriss Consultants Ltd



PO Box 30 429 3rd Crest House 94 Queens Drive LOWER HUTT
Telephone 0-4-939 9245 Fax 0-4-939 9245 Email hutt@cuttriss.co.nz



PO Box 386 33 Kapiti Road PARAPARAUMU
Telephone 0-4-904 5420 Fax 0-4-904 5423 Email kapiti@cuttriss.co.nz

ref: Turkington/21163

21 August 2013

Paterson Homes Ltd
PO Box 493
PARAPARAUMU

Attention: Mae Paterson

Dear Mae

STORMWATER DISPOSAL FOR PROPOSED DWELLING – LOT 46 DP 401543, 12 SIMPSON CRESCENT, RAUMATI

Following the engagement of our services for investigating and reporting on stormwater disposal options at the above site we have carried out soakage tests on site and we detail our findings and report below.

PREAMBLE

This report has been prepared to provide options for stormwater disposal for the overflow from the water tank which is proposed to collect run off from the proposed dwelling at the above site. Stormwater disposal also needs to be considered from the driveway and any impermeable yards.

A design storm event of 1 in 10 year event has been considered due to secondary overflow being available for this site. This also complies with the consent notice (attached to this report) on the title for this lot.

DOCUMENTS

Refer to the enclosed A4 plans, photo pages, test record sheets, and indicative calculations. The plan shows the positions of the soakage tests undertaken and the location of the new dwelling. The test sheets record the soakage results and a soakage rate has been interpolated from these results. It should be noted that generally the raw soakage rates have a factor of safety of 4 applied to them (i.e. soakage rates divided by 4) in accordance with KCDC Subdivision Development Principles and Requirements (Section 4 clause 4.3.7.9).

Rainfall data for determining the anticipated stormwater rainfall intensity has been sourced from the Kapiti Coast District Council Subdivision and Development Principles and Requirements, Part 4 of Appendix A. Climate affected (2090) Isoheyt rainfall depths have been used.

The basis of the soakpit design is section E1: Surface Water from the approved document prepared by the Building Industry Authority (BIA). E1 details the rainfall intensity used in the design as being an event having a 1 hour duration and a 10% probability of occurring annually (1 in 10 year event).

LOCATION

The site is located Simpson Crescent in Raumati, accessed off a right of way from Simpson Crescent and is within close proximity to the beach foreshore (approximately 500m).

TOPOGRAPHY

The site is South facing and falls toward the south.

Soil conditions generally comprise of underlying sand with a layer of topsoil present over the surface. These conditions have been confirmed by way of a hand auger during the testing process.

TESTING

A percolation test has been carried out on the site as part of the investigation for this report. The test location is shown on the appended plan.

The test carried out recorded the soakage of the underlying sand material with the test hole being hand augered, lined with a PVC sleeve and tested for soakage out of the base.

RESULTS

The results are summarised below and appended to this report in a table and graphical format.

<u>Test No.</u>	<u>Predominant Soil</u>	<u>Location</u>	<u>Raw Soakage</u> (mm/hr)	<u>Design Soakage¹</u> (mm/hr)
A	sand	as shown	3000	750

The results confirm that typical low impact urban designs (e.g. soakpits or soak trenches) could be suitable for this site.

DESIGN

The design has assumed that it will be possible for the soakpit to collect the overflow from a new water tank.

Soakage results from test A have been used for the design of the soakpit.

Filter cloth on the sides and along the top of the excavation shall have a mass per unit area of 140 g/m² and a minimum thickness of 0.45mm in accordance with E1. Note filter cloth should not be placed on the base of the excavation.

An alternative soakpit shape could be constructed within the lot providing the base area remains the same.

MAINTENANCE

Our recommendation for the monitoring and maintenance of on-site stormwater disposal soakpits is as follows:

The soakpit needs to be checked monthly by the builder during any subsequent construction works, or after intense sediment deposit in the catchment area. On completion of all construction works the likelihood of sediment build-up will be reduced. It is suggested that the soakpit be checked by the landowner every 6 months subject to the amount of sediment discovered. If checks confirm sediment build-up is within 100mm of perforation holes, the soakpit must be cleaned.

¹ Design soakage has a factor of safety of 4 applied for this particular site for the design for the Q₁₀ event.

CONCLUSION

This report has been prepared to provide options for stormwater disposal from the overflow of a proposed water tank which is proposed to collect the run off from the proposed dwelling.

An indicative design for a suitable soakpit for location A is summarised below. Refer also to the appended design drawings.

Indicative Soakpit Dimensions

Rubble Design minimum dimensions	3.5m long
	2.5m wide
	1.00m deep (allowance for 100mm topsoil)

The above dimensions are based on one 1.05m diameter perforated chamber. Other combinations of soakpit lengths, widths and chambers are available.


Soakpits should have an inspection carried out on the base of the excavation at the time of construction, to confirm underlying sand material.

Prepared by:



ST
Scott Turkington
Assistant Survey Technician
CUTTRISS CONSULTANTS LTD

Reviewed and approved by:



Neil Johnstone
Chartered Professional Engineer
CUTTRISS CONSULTANTS LTD

Consent Notice

**CONSENT NOTICE
PURSUANT TO SECTION 221 OF
THE RESOURCE MANAGEMENT ACT 1991**

**IN THE MATTER OF A PLAN LODGED FOR
DEPOSIT UNDER NUMBER 401543
AND RESOURCE CONSENT NO. RM060081**

Kapiti Coast District Council
Private Bag 601
Paraparaumu 5254
Tel. (04) 296 4700
Fax (04) 296 4830

E: kapiti.council@kapiticoast.govt.nz
W: www.kapiticoast.govt.nz



**(BEING THE SUBDIVISION OF PART LOT 1 BLOCK IV DP 2767),
AT TITOKI ROAD AND REWA ROAD, RAUMATI
FOR RAUMATI DEVELOPMENTS LTD**

CONO 7919689.1 Consen

Cpy - 01/04, Pgs - 004, 26/08/08, 14:33



DocID: 511905022

The Regional Regulatory Titles Officer at Wellington

PURSUANT to Section 221 of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that it has consented to the subdivision and that the following conditions are to be complied with on a continuing basis:

1. **With respect to Lots 1 to 33 and 35 to 51:** All lots shall have a formed drive-on access no steeper than 1 in 5 to an appropriately formed building site. Any subsequent earthworks for the formation of the drive-on access and the building platform shall be limited to minor trimming in order to construct driveways and place floor pads.
2. **With respect to Lots 1 to 33 and 35 to 51:** All lots shall contain a building site above the 1 in 100 year flood event. Any habitable buildings shall have floor levels no lower than the recommended building levels for the 1 in 100 year flood event applicable at the time.
3. **With respect to Lots 1 to 33 and 35 to 51:** Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the document titled 'Raumati Developments Limited Geotechnical Earthworks Completion Report Raumati Heights' dated 19 December 2007, submitted to Council in relation to application No. RM060081. A copy of the report is available within Volume 7 of file RM060081 in Council's Office at any time the office is open to the public.
4. **With respect to Lots 1 to 33 and 35 to 51:** There shall be no discharge of stormwater onto roads or systems owned by Council. Specific design for stormwater attenuation and disposal to cater for up to the 1 in 10 year return period flood event shall be required for each lot and shall include control and disposal of stormwater during house construction. This design shall accompany any building consent application and approval of the design by the Council is required before any site works or construction of building commences. As a minimum stormwater from roof areas, driveways and impermeable yards shall be disposed of on site.

Issued in respect of application No. RM060081 on this 4th day of July 2008.

WN46C/577

①
CONO
60-

**Dean Philip Raymond
AUTHORISED OFFICER**

**David Wayne Gair
AUTHORISED OFFICER**

... delivering on the community's plan



Me huri whakamuri, ka titiro whakamua

Soakage Test Results & Test Location Plan

CLIENT PATERSON HOMES LTD
 JOB NO. 21163
 DATE 20/08/2013
 SHEET 1 OF 2 SHEETS

LOT 46 DP 401543
 SITE ADD 12 SIMPSON CRESCENT
 LOCALITY RAUMATI
 FIELDWORK SMT

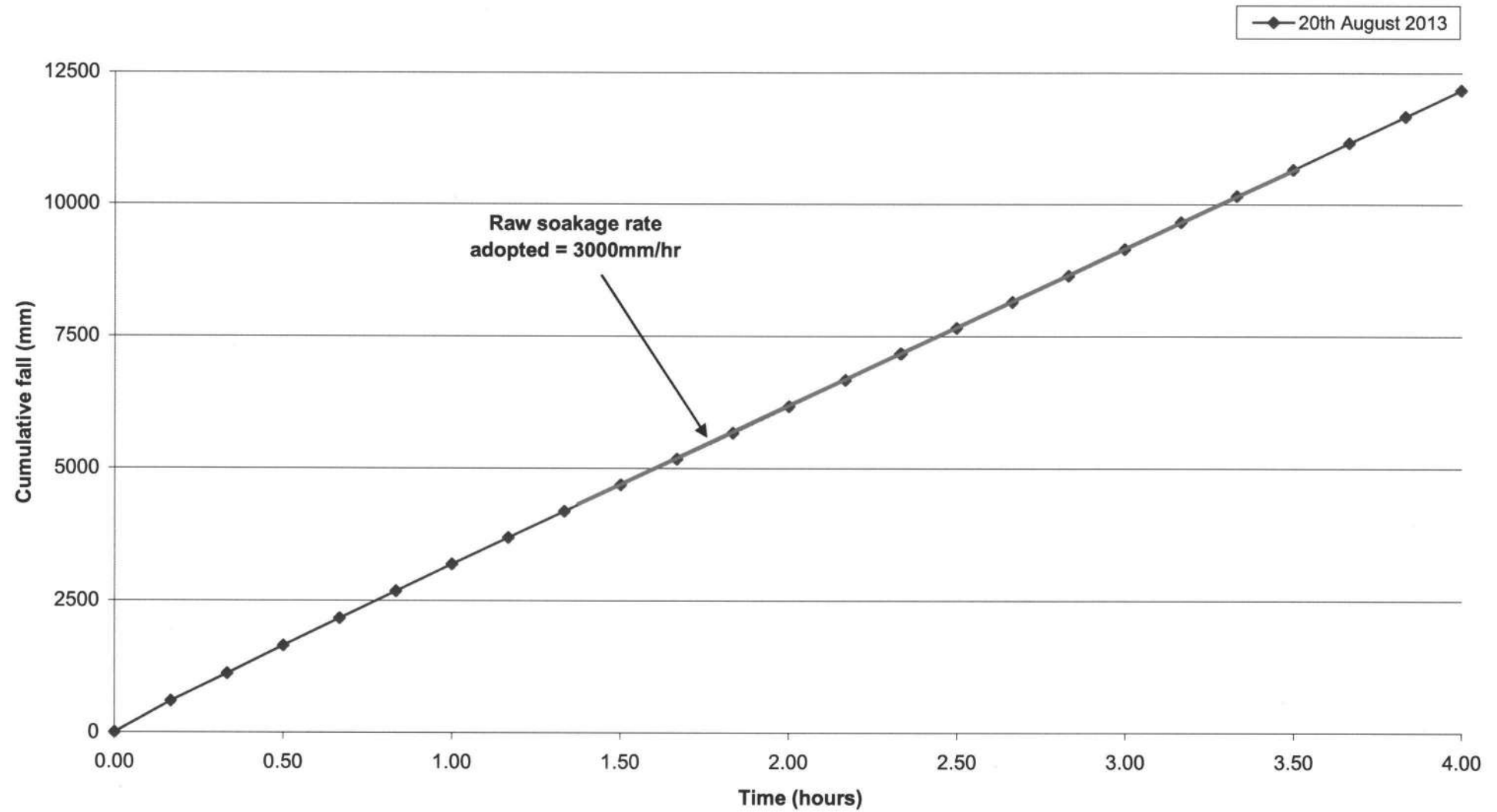
LOCATION A (see attached Plan)

DEPTH OF AUGERED HOLE 0.99m

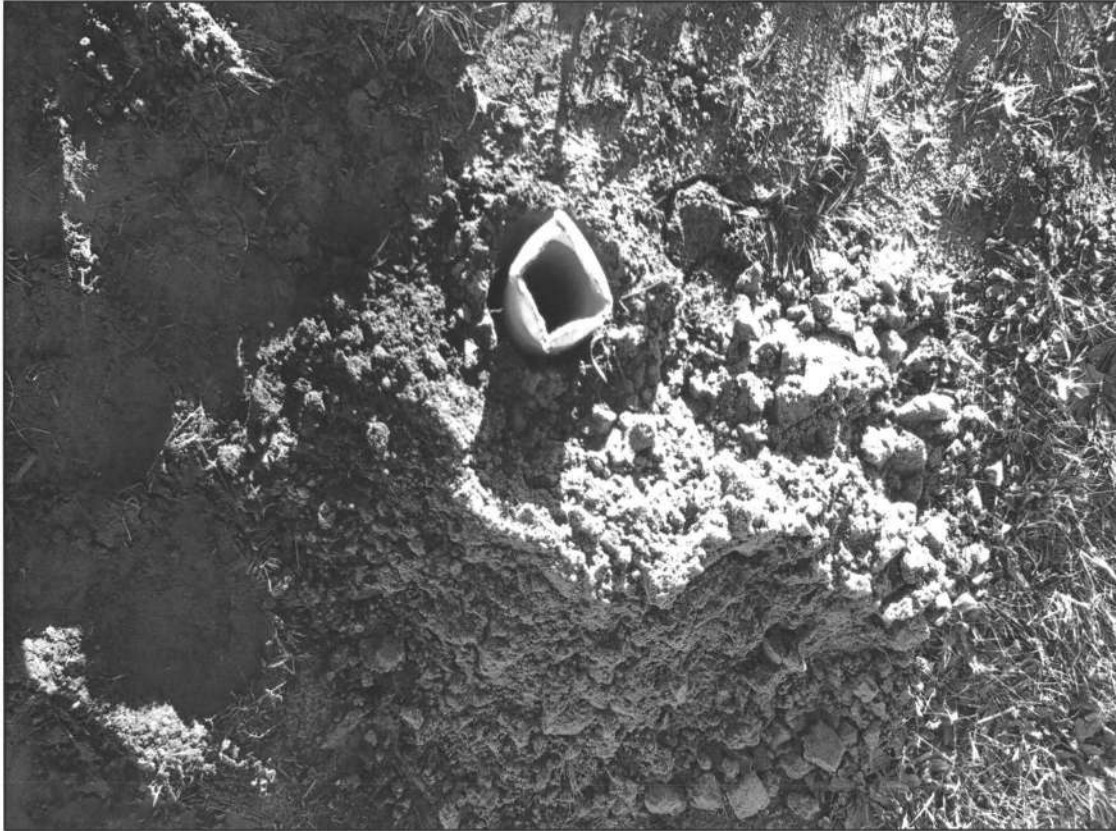
LENGTH OF PIPE 1.07 m

Time	Time Difference	Cumulative Time	Level in Pipe	Cumulative Fall in Pipe	Time	Time Difference	Cumulative Time	Level in Pipe	Cumulative Fall in Pipe
[hh:mm:ss]	[min]	[hrs]	[mm]	[mm]	[hh:mm:ss]	[min]	[hrs]	[mm]	[mm]
9:01:00	0	0.00	0	0	11:21:00	0	2.33	0	7170
9:11:00	10	0.17	590	590	11:31:00	10	2.50	490	7660
9:11:00	0	0.17	0	590	11:31:00	0	2.50	0	7660
9:21:00	10	0.33	520	1110	11:41:00	10	2.66	490	8150
9:21:00	0	0.33	0	1110	11:41:00	0	2.66	0	8150
9:31:00	10	0.50	530	1640	11:51:00	10	2.83	500	8650
9:31:00	0	0.50	0	1640	11:51:00	0	2.83	0	8650
9:41:00	10	0.67	520	2160	12:01:00	10	3.00	500	9150
9:41:00	0	0.67	0	2160	12:01:00	0	3.00	0	9150
9:51:00	10	0.83	520	2680	12:11:00	10	3.16	510	9660
9:51:00	0	0.83	0	2680	12:11:00	0	3.16	0	9660
10:01:00	10	1.00	510	3190	12:21:00	10	3.33	500	10160
10:01:00	0	1.00	0	3190	12:21:00	0	3.33	0	10160
10:11:00	10	1.17	500	3690	12:31:00	10	3.50	500	10660
10:11:00	0	1.17	0	3690	12:31:00	0	3.50	0	10660
10:21:00	10	1.33	500	4190	12:41:00	10	3.66	510	11170
10:21:00	0	1.33	0	4190	12:41:00	0	3.66	0	11170
10:31:00	10	1.50	500	4690	12:51:00	10	3.83	500	11670
10:31:00	0	1.50	0	4690	12:51:00	0	3.83	0	11670
10:41:00	10	1.67	490	5180	13:01:00	10	4.00	500	12170
10:41:00	0	1.67	0	5180					
10:51:00	10	1.83	490	5670					
10:51:00	0	1.83	0	5670					
11:01:00	10	2.00	500	6170					
11:01:00	0	2.00	0	6170					
11:11:00	10	2.17	500	6670					
11:11:00	0	2.17	0	6670					
11:21:00	10	2.33	500	7170					

Graph - Cumulative fall vs time @ Location A



Photos of General Site



Above: 20 August 2013 – percolation test 'A' underway within lot 46, sand material present.



Above: 20 August 2013 – view of Lot 46 as viewed from Simpson Crescent.

Calculations

NORMALISED RAINFALL DEPTHS - 2090 CLIMATE AFFECTED

Lot 46 DP 401543 - 12 Simpson Crescent, Raumati

Event	Rainfall Intensity I
[a]	[mm/24hrs]
2	80
5	100
10	130
20	145
50	155
100	155

Duration	Normalised Rainfall Depth	2Y Rainfall Depth	2Yr Rainfall Intensity	5Y Rainfall Depth	5Yr Rainfall Intensity	10Y Rainfall Depth	10Yr Rainfall Intensity	20Y Rainfall Depth	20Yr Rainfall Intensity
[min]	[m]	[mm]	[mm/hr]	[mm]	[mm/hr]	[mm]	[mm/hr]	[mm]	[mm/hr]
5	0.08	6	76.8	8	96.0	10	124.8	12	139.2
10	0.11	9	52.8	11	66.0	14	85.8	16	95.7
15	0.14	11	44.8	14	56.0	18	72.8	20	81.2
30	0.19	15	30.4	19	38.0	25	49.4	28	55.1
60	0.26	21	20.8	26	26.0	34	33.8	38	37.7
120	0.35	28	14.0	35	17.5	46	22.8	51	25.4
180	0.46	37	12.3	46	15.3	60	19.9	67	22.2
360	0.60	48	8.0	60	10.0	78	13.0	87	14.5
720	0.81	65	5.4	81	6.8	105	8.8	117	9.8
1440	1	80	3.3	100	4.2	130	5.4	145	6.0

Duration	Normalised Rainfall Depth	50Y Rainfall Depth	50Yr Rainfall Intensity	100Y Rainfall Depth	100Yr Rainfall Intensity
[min]	[m]	[mm]	[mm/hr]	[mm]	[mm/hr]
5	0.08	12	148.8	12.4	148.8
10	0.11	17	102.3	17.1	102.3
15	0.14	22	86.8	21.7	86.8
30	0.19	29	58.9	29.5	58.9
60	0.26	40	40.3	40.3	40.3
120	0.35	54	27.1	54.3	27.1
180	0.43	71	23.8	71.3	23.8
360	0.60	93	15.5	93.0	15.5
720	0.81	126	10.5	125.6	10.5
1440	1	155	6.5	155.0	6.5

INDICATIVE SOAKPIT DESIGN FOR STORMWATER RUNOFF DISPOSAL

DESIGN TO E1/VM1 (NZ BUILDING CODE) FOR STORMWATER INTO SOAKPIT AT LOCATION A

Estimated Dimensions of Soakpit

$$\begin{aligned}W &= 2.5 \text{ m} & L &= 3.5 \text{ m} \\A_{sp} &= 8.8 \text{ m}^2 & & \text{(area of base of soakpit)} \\C &= 0.9 & & \text{(run-off coefficient (from Table 1))} \\I_{24} &= 130 \text{ mm/24hrs} & & \text{(AEP 10\% - 1 in 10 year storm event)} \\I &= 33.8 \text{ mm/hr} & & \text{(1 hour storm event)}\end{aligned}$$

NB: 1 hour storm not necessarily worst case

Estimated Catchment Area

$$\begin{aligned}A_{Dwelling} &= 290.0 \text{ m}^2 & & \text{(impervious area of dwelling)} \\A_{Yards} &= 23.8 \text{ m}^2 & & \text{(impervious area of yard / patio)} \\A_{Driveway} &= 19.2 \text{ m}^2 & & \text{(impervious area of driveway)} \\ \hline A_{total} &= 333.0 \text{ m}^2\end{aligned}$$

$$S_r = 750.0 \text{ mm/hr} \quad \text{(factor of safety of 4 applied to raw soakage)}$$

$$R_c = 10 \times C \times I \times A = 10.13 \text{ m}^3 \quad \text{(total rainfall)}$$

$$V_{soak} = A_{sp} \times S_r / 1000 = 6.56 \text{ m}^3 \quad \text{(base soakage)}$$

$$V_{stor} = R_c - V_{soak} = 3.57 \text{ m}^3 \quad \text{(design storage)}$$


Dimensions of Chambers

$$\begin{aligned}\varnothing &= 1050 \text{ mm} & D &= 1.2 \text{ m} \quad \text{(depth of chamber)} \\A_{chamb} &= 0.87 \text{ m}^2 & & \text{(footprint of chamber)} \\V_{chamb} &= 1.04 \text{ m}^3 & & \text{(storage of chamber)} \\V_{hole} &= 6.65 \text{ m}^3 & & \text{(rubble volume of required hole - based on void ratio of 0.38)}\end{aligned}$$

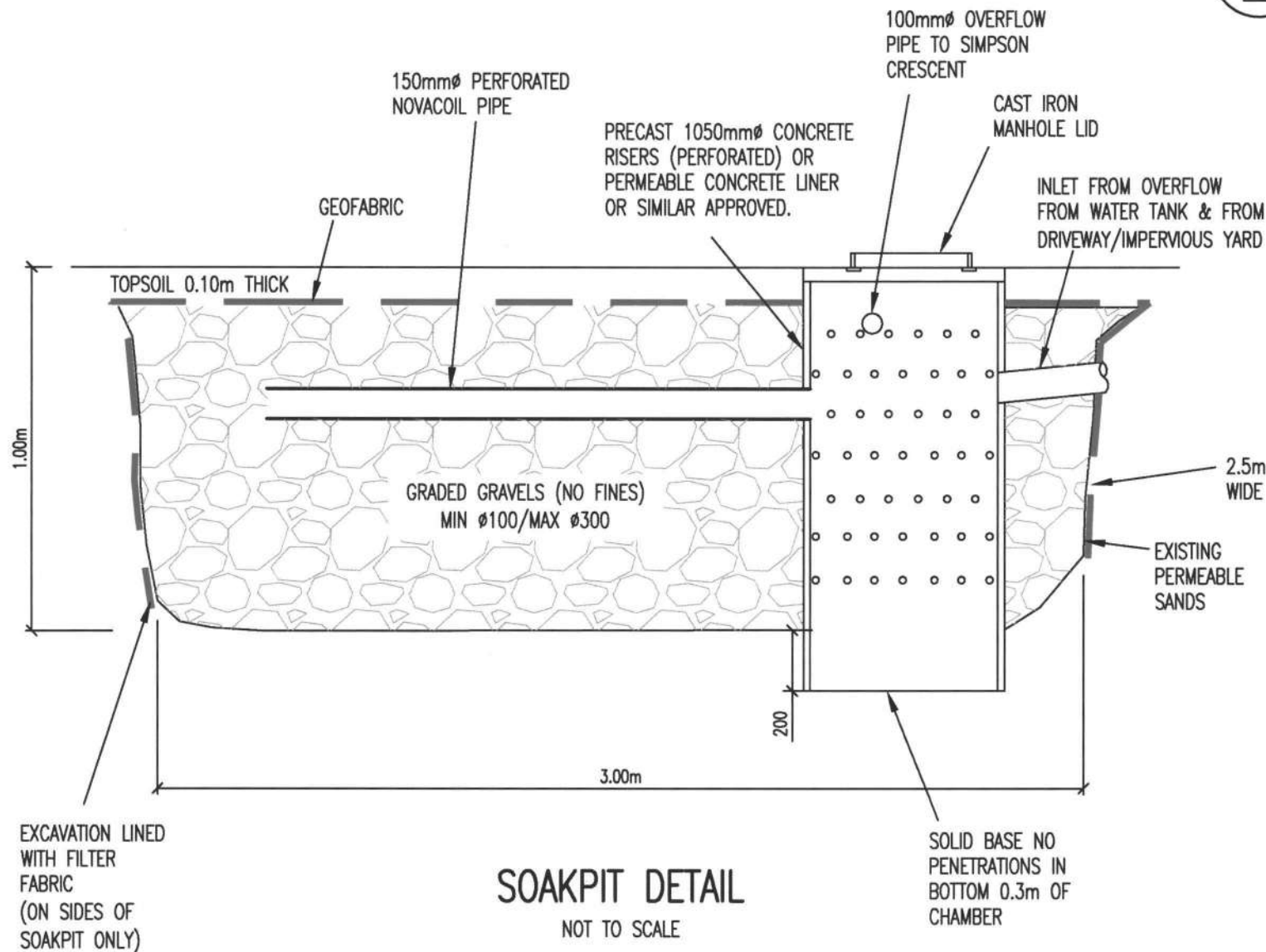
$$D_{hole} = V_{hole} / (A_{sp} - A_{chamb}) = 0.84 \text{ m} \quad \text{(required hole depth)}$$

Indicative Soakpit Dimensions

$$\begin{aligned}W &= 2.50 \text{ m} \\L &= 3.50 \text{ m} \\D \text{ (min)} &= 1.00 \text{ m} \quad \text{(assumes 100mm topsoil)}\end{aligned}$$



Soakpit Design



AMENDMENT	NAME	DATE

THIS PLAN IS TO BE USED FOR ENGINEERING PURPOSES ONLY AND NOT TO BE RELIED UPON FOR ANY OTHER PURPOSE WITHOUT THE CONSENT OF CUTTRISS CONSULTANTS LIMITED.

BASE OF EXCAVATION TO BE INSPECTED BY ENGINEER OR KCDC

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CLIENT

PATERSON HOMES LTD

JOB

SOAKPIT DESIGN
LOT 46 DP 401543
12 SIMPSON CRESCENT
RAUMATI BEACH

SCALE

NTS

SIZE

A4

	NAME	DATE	DRAWING NUMBER
FIELDWORK	SMT	08/13	21163 SP
DESIGNED	NAJ	08/13	
DRAWN	SMT	08/13	
CHECKED	NAJ	08/13	SHEET 1 OF 1 SHEETS
			REVISION

SPECIFICATION

For

- 5 SEP 2013
BY: ANA

New Dwelling:
Lot 46 727m²
Simpson Crescent, Raumati
KAPITI COAST

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ELECTRICAL

APPLICABLE BUILDING CODES

11 GENERAL REQUIREMENTS

11.1 THE WORKS

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

11.2 PERSONNEL

Owner: The person defined as "owner" in the New Zealand Building Code.

Contractor: The person contracted by the owner to carry out the contract.

11.3 THE SITE

The site of the works, the site address and the legal description are listed under PROJECT INFORMATION. Confine access and work to the area of site indicated on the drawings.

11.4 SPECIFICATION SECTIONS

Sections are for reference and convenience only and do not constitute individual trade sections or work elements. Read all sections together and read 11 GENERAL REQUIREMENTS with all other sections.

11.5 INTERPRETATIONS

Required: Required by the documents, or by a statutory authority.

Proprietary: Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.

Approval: Approval in writing.

Direction: Direction in writing.

Notified: Notified in writing.

11.6 INCONSISTENCIES

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

11.7 SUBSTITUTIONS

A substitution may be proposed where specified products are not available, or if substitute products are brought to the attention of and are considered by the owner as equivalent or superior to those specified. Except where a specified product is not available, the owner is not bound to accept any substitutions.

Notify proposed substitution of specified products. Include sufficient information to allow the owner to confirm that the substitution is equivalent or superior to that specified. Advise the owner whether an amendment will or may be required to the Building Consent and the expected costs of such amendment.

11.8 THE WORDS "PROVIDE" OR "FIX"

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

11.9 MANUFACTURERS AND SUPPLIERS

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

11.10 REFERENCED DOCUMENTS

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

11.11 PRECEDENCE OF REFERENCED DOCUMENTS

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

11.12 BUILDING CONSENT COMPLIANCE

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

11.13 STATUTORY OBLIGATIONS

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

11.14 BUILDING CONSENT

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

11.15 INSPECTIONS

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

11.16 PRODUCER STATEMENTS

When producer statements verifying construction are required, provide copies to both the Building Consent Authority and the owner. Provide producer statements in the form required by the Building Consent Authority.

11.17 TRADE GUARANTEES AND WARRANTIES

Where specific trade guarantees/warranties are offered covering materials and/or execution of proprietary products or complete installations, provide copies of all guarantees/warranties to the owner.

11.18 SITE ACCOMMODATION

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

11.19 HEALTH AND SAFETY

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

11.20 PROTECT THE WORKS

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

11.21 STORAGE AND PROTECTION

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

11.22 ANTIQUITIES AND ITEMS OF VALUE AND INTEREST

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

11.23 MEANS OF COMMUNICATION

All directions and approvals in writing.

11.24 PROGRAMME

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

11.25 WORKING HOURS

Work on site is restricted to between 8.00am to 6.00pm, Monday to Friday, excluding statutory holidays. Work outside these hours may be permitted, with prior approval in writing by the owner.

11.26 RESTRICTIONS

Do not:

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

11.27 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy. Provide all necessary materials, equipment, plant, attendances, supervision, inspections and programming to ensure required standards are met.

11.28 DAMAGE AND NUISANCE

Prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and other causes resulting from the contract works. Comply with the requirements of the territorial authority and relevant Acts and Standards.

11.29 SET-OUT AND DATUM

Set out the works to conform with the drawings. Establish a permanent site datum to confirm the existing ground floor level and its relationship to other existing and new building levels.

11.30 EXECUTION OF THE WORK

Conform to the requirements of this specification. Ensure work is level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

11.31 MATERIALS AND PRODUCTS

Use only new materials and products, unless stated otherwise, of the specified quality and complying with cited documents.

11.32 COMPATIBILITY

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

11.33 COMPLETE ALL SERVICES

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

11.34 CLEAR AWAY

Regularly clear away trade debris, unused materials and elements from the site. On completion of the work leave the building clean and ready for occupancy, with all services operating and mechanical parts in good working order. Remove temporary markings, coverings and protective wrappings.

11.35 CLEAN

Clean and wash down external surfaces to remove dirt, debris and marking. Clean interior surfaces including floors, glass, cabinetwork, joinery, sanitary and hardware items.

22 PREPARATION

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

22.1 SITE SAFETY

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

22.2 FILLING MATERIALS

As selected and to the following details:

Volcanic tuff:	Scoriaceous tuff of variable grading excluding silt or clay material, capable of being placed and compacted as specified.
Rock fill:	Hard material comprising rock, broken stone, hard brick, concrete, run of pit scoria, or other comparable inert material capable of being placed and compacted as specified.
Sand fill:	Clean sand of such grading in particle size as to allow for mechanical compaction to 90% maximum density.
Hardcore:	Scoria or crushed rock to GAP (General All Passing) 40 grading.
Granular base:	Screened crushed gravel or scoria graded in size from 20 mm to 7 mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.
Dressing course:	Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.
Free-draining aggregate:	Scoria or crushed gravel graded 50 to 14 clean.

22.3 EXCAVATION GUIDELINES

Carry out excavation to the guidelines set in OSH Approved Code of Practice for Safety in Excavation and Shafts for Foundations.

22.4 PROTECT EXISTING

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

22.5 PROTECT TREES

Protect from damage all trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained, throughout the course of the work.

22.6 SURFACE PREPARATION

Conforming with NZS 3604, 3.5 Site preparation, remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area being built on.

22.7 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove underground elements and redundant services. Report for instructions when unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to utility operator approval.

22.8 STOCKPILE TOPSOIL

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

22.9 GENERAL EXCAVATION

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

22.10 EXCAVATION FOR FOUNDATIONS

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

22.11 INADEQUATE BEARING

If bearing is inadequate then excavate further and backfill with material as follows:

Below slabs on grade:	Hardfill
Below footings:	10 MPa concrete
Service trenches:	Hardfill

If excavation exceeds the required depths, backfill and compact to the correct level with listed material.

22.12 GRANULAR BASE FOR SLABS

To NZS 3604, 7.5.3 Granular base. Consolidate with a vibrating roller. Blind the surface with coarse sand or sand/cement and roll ready to receive a dampproof membrane.

22.13 GENERAL BACKFILLING

Compact backfilling in 150 mm layers, with the last 200 mm in clean topsoil, lightly compacted and neatly finished off.

23 FOUNDATIONS

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

23.5 ACCESSORIES

- Nails: Steel, stainless steel and galvanized steel of pattern to NZS 3604, table 6.8 Nailing schedule for hand and power driven nails, and section 4, Durability.
- Bolts and screws: Steel, stainless steel and galvanized steel to NZS, section 6 Foundation and subfloor framing, and section 4 Durability.
- Nail plates: Stainless steel and galvanized steel toothed or nailed steel plates to the plate manufacturer's design for the particular locations shown on the drawings.
- Concrete: For piles, prescribed grade 17.5 MPa to NZS 3104, table 3.1.

23.6 SHEET DAMPPROOFING

Rubberised bitumen membrane specifically produced for waterproofing applications, possessing high resistance to water, water vapour and gas permeability and resistant to the attack of ground bacteria and ageing effects, joined using proprietary techniques and applied by the use of special adhesives. Thickness not less than 1.5 mm.

23.7 BRUSH ON LIQUID-APPLIED MEMBRANE

Fully stable, water-based colloidal bitumen emulsion.

23.8 EXECUTION GENERALLY

Comply with NZS 3602 and NZS 3604 except as varied by this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

23.9 EXCAVATIONS

Refer to 22 PREPARATION.

23.15 POURED CONCRETE

Refer to 31 CONCRETE for poured concrete footings, foundations, foundation walls and floor slabs.

23.16 BLOCKWORK

Refer to 32 CONCRETE MASONRY.

23.17 INSTALL SHEET DAMPPROOFING

Protect horizontal surfaces for dampproofing with a 50 mm layer of 15 MPa site concrete. Ensure surfaces for dampproofing are free from voids, spalled areas, loose particles and sharp protrusions. Masonry joints struck flush. Apply primer, then install the rubberised bitumen membrane system, strictly in accordance with the dampproofing manufacturer's requirements. Carry out work using applicators licensed by the dampproofing manufacturer. Protect vertical surfaces with polystyrene sheets glued to the membrane and taped over joints.

23.18 INSTALL BRUSH ON LIQUID-APPLIED MEMBRANE

Three coats of water-based emulsion applied in accordance with the membrane manufacturer's requirements. First coat at the rate of 0.20 litres/square metres, with the second and third coats each at the rate of 0.75/square metre. Protect vertical surfaces with polystyrene sheets before backfilling.

31 CONCRETE

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

31.1 REINFORCEMENT

Bars to AS/NZS 4671, grade 300 deformed. Welded reinforcing mesh to AS/NZS 4671. Mild drawn steel tying wire not less than 1.2 mm diameter.

31.2 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC. Use concrete spacer blocks only where the concrete surface is not exposed in the finished work.

31.3 CONCRETE

Strength as selected. Ready-mix normal grade, maximum aggregate size 19 mm to NZS 3104. Site mixed prescribed grade, using either separate batching of sand and coarse aggregate, or builder's mix, to NZS 3104.

31.4 HANDLE AND STORE REINFORCING

Handle and store reinforcing steel and accessories without damage or contamination. Ensure reinforcement is clean and remains clean and free of contamination that may reduce bonding capacity.

31.5 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality.

31.6 CUT AND BEND

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109. Do not rebend bars without written approval. Bend main reinforcing bars, stirrups and ties to the former pin diameters as given in NZS 3109, figure 3.1.

31.7 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums laid down in NZS 3109, clause 3.3.

31.8 LAPPED SPLICES

Set length of laps, where not dimensioned on the drawings, in accordance with NZS 3109: 3.7. Increase laps of plain round steel by 100%.

31.9 COVER

Minimum cover to reinforcing as shown on the drawings and to NZS 3109, clause 2.7. Fix chairs for top reinforcement in slabs at 1.0 metre centres. Cover tolerances to NZS 3109, clause 3.8.

31.10 SURFACE FINISHES

To comply with NZS 3114, section 105, or as denoted on the drawings. Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Surface tolerances to comply with NZS 3114, sections 104 and clause 105.3.2.

31.11 DAMPPROOF MEMBRANE

Apply membrane to prepared basecourse with 150 mm laps between sheets. Tape seal laps and penetrations with 50 mm wide pressure sensitive plastic tape. Refer to drawings for perimeter details.

31.12 CASTING IN

Build in grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required. Form pockets, chases and flashing grooves as required. No grounds exceeding 100 mm in length. Minimum cover on conduits 40 mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25 mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar. Wrap all pipes embedded in concrete with tape to break the bond and to allow for expansion.

31.13 CONSTRUCT FLOOR SLABS

Construct in accordance with NZS 3604, 7.5 Concrete slab-on-ground floors for timber buildings. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3 mm gradual deviation over a 3 metre straight-edge, to the requirements of NZS 3114, section 104.

31.14 SAW CUTS

Pour floor slabs cast on the ground in areas no greater than 25 square metres, with a maximum ratio of length to breadth of 1:1.5. Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring. Where saw cuts are made, cut out 100 mm of every second wire of the mesh for a length of 50 mm each side of the saw cut position. Saw cuts: $\frac{1}{3}$ rd slab depth, or 30 mm minimum.

31.15 SURFACE REPAIRS

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

31.16 CURING OF CONCRETE

Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.

31.17 STRIKE FORMWORK

Strike formwork without damaging or overloading structure.

31.18 CLEAN OUT

Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.

33 CARPENTRY

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

33.1 TIMBER FRAMING GENERALLY

Species, grade and level of treatment to NZS 3602, tables 1 to 3 Requirements for wood-based building components..., and moisture content to NZS 3602, table 4 Allowable moisture content..... Grading to NZS 3631. Mechanical stress grading acceptable as an alternative to visual grading.

33.2 TIMBER FRAMING DRY, CHEMICAL FREE, MECHANICALLY STRESS GRADED

Species and grade to NZS 3602, tables 1 to 3 Requirements for wood-based building components..., with an average moisture content at supply of 16% or less. Machine stress graded to AS/NZS 1748.

33.3 TIMBER FRAMING DRY, TREATED

Species, grade and level of treatment to NZS 3602, tables 1 to 3 Requirements for wood-based building components..., and moisture content to NZS 3602, table 4 Allowable moisture content. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.

33.5 FLOORING AND DECKING

As selected and to the following details:

Particle board:

Flooring grade high density resin bonded.

Plywood:

Structural plywood for bracing, bracketing, sarking and floors.

- Spaced decking: Selected radiata pine to NZS 3602, table 1 Requirements for wood-based building components.... Dressed four sides and with arrises removed. Provide sample for review prior to laying.
- Timber strip flooring: To NZS 3602, table 1 Requirements for wood-based building components..., and to match existing or dressing grade to NZS 3631, section 4.4.
- 33.6 FINISHING TIMBER**
As selected.
- 33.7 INSULATION**
As selected.
- 33.8 ACCESSORIES**
Building wrap: Breather type, waterproof.
Damp proof course: 2-ply/3-ply kraft felt strip saturated and coated with bitumen.
Nails, bolts and screws: Steel, stainless steel, galvanized steel of pattern to suit the location and to BRANZ Bulletin 453: Fasteners selection. To NZS 3604, section 4 Durability, for durability.
Nail plates connectors: Stainless steel and/or galvanized steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings and to NZS 3604, section 4 Durability, for durability. Galvanized steel and stainless steel connectors and brackets to the connector manufacturer's design for locations shown on drawings and to NZS 3604, section 4 Durability, for durability.
- 33.9 ATTENDANCE**
Provide and fix blocks, nogs, openings and other items as required by others.
- 33.10 MOISTURE CONTENT**
Maximum allowable moisture content to NZS 3602, table 4 Allowable moisture content..., for framing supporting interior linings:
- Framing at erection 24%
 - Framing at enclosure 20%
 - Framing at lining 16%
- 33.11 EXECUTION GENERALLY**
To NZS 3604 except as varied in this specification. To include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings.
- 33.13 INSTALL FLOOR, WALL AND ROOF FRAMING**
Floors and bottom plates framed and fastened to NZS 3604, section 7 Floors. Frame walls to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604, section 8 Walls. Frame roof to required loading and bracing complete with valley boards, ridge boards and purlins to NZS 3604, section 10 Roof framing. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604, section 9 Posts, and section 10 Roof framing.
- 33.15 INSTALL LINING BATTENS**
Fabricate and fasten battens to suit the selected linings. Fasten ceiling battens in accordance with NZS 3604, section 13 Ceilings.
- 33.17 INSTALL INSULATION**
Fit insulation as detailed, to the insulation manufacturer's requirements, and to the requirements of BRANZ Bulletin 357: Thermal insulation of houses.

42 BRICK VENEER CLADDING

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 42.1 QUALIFICATIONS**
Carry out brickwork with persons competent and experienced in the trade.
- 42.2 BRICKS**
As selected.
- 42.3 ACCESSORIES**
Lintels: To NZS 3604, table 11.4 Veneer lintels, for size and NZS 3604, 4.5 Brick veneer ties and lintels, for durability.
Vermin stop: Galvanized steel wire netting strip with reinforced edges and galvanized staples for fixing.
Dampproofing: Heavy kraft strip laminates saturated and coated with bitumen, or bituminous brush-applied liquid membrane to suit location and detail.
Ties: To NZS 3604, 4.5 Brick veneer ties and lintels. Design to conform with AS/NZS 2699.1, as modified by NZBC B1/AS1, 3.1 (NZS 3604).
Sand for mortar: To NZS 3103. Chloride levels to not exceed 0.04% by dry weight of sand.
Water: From local authority supply.

- 42.4 MORTAR**
Composed of Portland cement, sand and water with an admixture to the provisions of NZS 4210, clause 2.2. Obtain written approval if intending to use cement mortar as a damp proof course and where or if intending to use hydrated lime in the mortar.
- 42.5 MORTAR COLOUR**
Add mineral oxide pigment to the requirements of NZS 4210, clause 2.2.2.2 (f).
- 42.6 STORAGE**
Store bricks and other materials clear of the ground, under cover and well ventilated until placed in the work.
- 42.7 VENEER WORK GENERALLY**
Comply with NZS 3604, 11.7 masonry veneer wall cladding, NZS 4210, section 2.9 and BRANZ Bulletin 436: Masonry veneer construction. Where not otherwise detailed on the drawings or covered in the documents listed, carry out veneer construction to the details required by BRANZ Bulletin 436: Masonry veneer construction.
- 42.8 LAYING GENERALLY**
To NZS 4210. Ensure bricks are dry when laid. Use bricks equally off all pallets as work proceeds. Distribute facing bricks of varying colour randomly throughout so no patches or striping appears.
- 42.9 BOND**
Stretcher bond, single width unless detailed or stated otherwise.
- 42.10 INSTALLING WALL TIES**
Screw fix to face of studs without otherwise piercing or damaging the building wrap. Ties placed and spaced to NZS 4210, section 2.9, as modified by NZBC B1/AS1, 3.1. Install ties to NZS 3604, 11.7.5, Wall ties, subclause 11.7.5.3.
- 42.11 MORTARING**
To maximum practical density. Mortar fully laid, firmly placed, correctly cured and not re-tempered. Discard any mortar not used within 1½ hours of mixing. Joint thickness 10 mm plus or minus 2 mm.
- 42.12 RAKE OUT**
Rake out joints as work proceeds, for pointing as detailed. Maximum depth of rake 6 mm.
- 42.13 POINTING**
Joints tooled concave after initial stiffening.
- 42.14 WEEPHOLES**
Rake out every third perpend where weep holes are required, and vent veneer to NZS 3604, 11.7.4 Cavities, subclause 11.7.4.3 and to BRANZ Bulletin 436: Masonry veneer construction.
- 42.15 CO-ORDINATE**
Co-ordinate the building-in of exterior joinery and items required for fitting as the work proceeds. Rake out for or build in flashings as required.
- 42.16 KEEP CAVITY AND TIES CLEAR**
Keep cavity and ties clear of mortar droppings and clean the brickwork face of any marking as the work proceeds. Repair damage to building wrap immediately it occurs.
- 42.17 BASE OF CAVITY**
Flaunch base of cavity and either:
- apply bituminous brush-on liquid applied membrane as a primer and 2 coats, or
- lay bitumen laminate sheet, lapped and adhered, to drain water effectively out of the cavity.
- 42.18 CLEAN DOWN**
Clean down brickwork to remove stains. Remove efflorescence with a stiff bristle broom, blot with a damp sponge and wash walls with a plentiful supply of clean water during fine weather.

44 ROOF CLADDING

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 44.1 QUALIFICATIONS**
Use experienced competent roofers familiar with the materials and techniques specified.
- 44.2 WIND AND EARTHQUAKE LOADINGS**
Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604, section 5 Bracing design, and confirmed under COMPLIANCE INFORMATION.
- 44.4 METAL TILES**
Profile, metal and finish as selected. Accessories, cappings, flashings, and fixings to match and to the roofing manufacturer's requirements.
- 44.6 ACCESSORIES**
- | | |
|----------------------------|---|
| Tile battens: | Douglas fir or radiata pine to NZS 3602, table 1 Requirements for wood-based building components..... Size and grade to NZS 3604, section 10 Roof framing |
| Roof underlays: | As selected. |
| Nails, screws, fastenings: | Metal, size and pattern, to roofing manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4 Durability. |
| Flashings: | As selected. |

- 44.7 STORAGE**
Stack roofing and accessories on clean, level areas of the site. Cover and protect from damage and from weather until ready to fix in place.
- 44.8 SET-OUT**
Set out the planned layout before fixing commences, to ensure true lines and the correct relationship to module, grid and roof features. Overlaps to face away from prevailing wind direction.
- 44.9 LAY ROOF UNDERLAY**
Lay and fix to NZBC E2/AS1, 8.1.5 Underlays, and to NZS 3604, 11.2 Roof cladding underlays.
- 44.10 TAKE CARE**
Take care to avoid damaging pre-finished roofing both during and after fixing. Mark only with chalk or spirit-based pen. Wear only soft-soled shoes on the finished surface. Remove metal filings daily.
- 44.12 INSTALL TILE BATTENS**
Install to the roofing manufacturer's requirements, with joints fully supported and staggered.
- 44.13 INSTALL METAL TILES**
Cut with tools specified by the roofing manufacturer. Fold ends and seal cut edges of tiles and accessories without damaging their integrity or finish, all to the roofing manufacturer's requirements. Lap metal tiles and fix complete with matching accessories, flashed to roof features and penetrations; all to the roofing manufacturer's requirements.
- 44.16 FIXINGS AND SEALANTS**
Refer to the roofing manufacturer's literature for fixing details and to NZS 3604 for fixings durability requirements. Select and use sealants only as recommended by the roofing manufacturer.
- 44.17 INSTALL COVERS AND FLASHINGS**
Provide apron, verge and ridge flashings. Install and fix as detailed and to the roofing manufacturer's details and to comply with NZBC E2/AS1, 4.0 Flashings, 5.0 Roof/wall junctions, and 6.0 Parapets.
- 44.18 PENETRATIONS**
Flash and overflash penetrations through the roof. Fit proprietary boots to pipework penetrations.
- 44.19 COMPLETE**
Ensure the work is complete with flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.
- 44.20 CLEAR**
Clear trade debris and unused materials from the roof and surrounds regularly during the work and at completion. Sweep down the completed roof and flush out spoutings, gutters and rainwater pipes.

46 RAINWATER SYSTEM

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 46.1 UPVC SPOUTING**
Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.
- 46.2 UPVC DOWNPIPES**
Tubes, stand-off brackets and fittings brand matched and complete to the manufacturers specifications.
- 46.3 ALUMINIUM/ZINC ALLOY COATED SHEET STEEL**
0.55 mm sheet steel, aluminium/zinc alloy coated.
- 46.4 ALUMINIUM/ZINC ALLOY COATED STEEL SPOUTING**
Profile, jointing, brackets and fittings brand-matched and complete to the spouting manufacturer's specifications.
- 46.5 ALUMINIUM/ZINC ALLOY COATED STEEL DOWNPIPES**
Seam jointed and complete with stand-off brackets, galvanized screw fixed.
- 46.6 ALUMINIUM/ZINC ALLOY PRE-PAINTED SHEET STEEL**
0.55 mm sheet steel, aluminium/zinc alloy coated, pre-painted.
- 46.7 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING**
Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.
- 46.8 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL DOWNPIPES**
Seam jointed and complete with stand-off brackets, galvanized screw fixed.
- 46.9 COPPER SHEET**
0.60 mm copper sheet.
- 46.10 COPPER SPOUTING**
Quarter-round 125 mm.
- 46.11 COPPER DOWNPIPES**
Seam jointed and complete with stand-off copper brackets, brass screw fixed.
- 46.12 RAINWATER HEADS, DROPPERS, OVERFLOWS**
Fabricate and install as detailed.
- 46.13 FLASHINGS GENERALLY**
Aluminium/zinc coated steel, copperised pure lead, 0.5 mm copper sheet, or proprietary rubberised perforated aluminium strip, all to location, compatibility and requirements NZBC E2/AS1, 4.0 Flashings.

46.14 ACCESSORIES

Domes: Wire mesh in round form with legs to clip inside the outlet opening to the downpipe
Spouting mesh: Flexible plastic mesh.
Sealants: As selected.

46.15 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

46.16 LIAISON

Ensure liaison with associated installations to ensure material selections are compatible and required flashing work is completed.

46.17 INSTALL UPVC SPOUTING AND DOWNPIPES

Fit and screw fix brackets, set to falls to outlets. Ensure solvent welded or rubber ring jointed spouting sections are complete with all fittings to the spouting manufacturer's requirements. Screw fix stand-off brackets, set pipes plumb and clear of the wall, solvent welded. Discharge into stormwater bends.

46.18 INSTALL ALUMINIUM/ZINC ALLOY COATED STEEL SPOUTING AND DOWNPIPES

Screw fix brackets, set to falls to outlets, with spouting joints silicone sealed and pop-riveted to the spouting manufacturer's requirements. Screw fix stand off brackets, set pipes plumb and clear of the wall, with joints silicone sealed. Discharge into stormwater bends.

46.19 INSTALL ALUMINIUM/ZINC ALLOY COATED STEEL PRE-PAINTED SPOUTING AND DOWNPIPES

Screw fix brackets, set to falls to outlets, with spouting joints silicone sealed and pop-riveted to the spouting manufacturer's requirements. Screw fix stand off brackets, set pipes plumb and clear of the wall, with joints silicone sealed. Discharge into stormwater bends.

46.20 INSTALL COPPER SPOUTING AND DOWNPIPES

Set spouting brackets to fall to outlets. Spouting joints silfos brazed. Screw fix brackets, set downpipes plumb and clear of wall, with joints silfos brazed. Discharge downpipes into stormwater bends.

46.21 INSTALL FLASHINGS

Scribe fit, fold, lap, seam, or run solder as required by the metal, to flash all roof penetrations, roofing and exterior joinery to prevent weather penetration. Except at expansion joints, allow for 2 rows of rivets to overlapping sheet joints. Install and fix flashings and flashing joints to NZBC E2/AS1, 4.0 Flashings.

46.22 INSTALL DOMES

Install wire mesh domes at the top of downpipes.

46.23 INSTALL SPOUTING MESH

Install mesh into spoutings, strictly in accordance with the mesh manufacturer's requirements.

46.24 ENSURE

Ensure rainwater services are operational, flashings complete and the building weathertight.

48 ALUMINIUM WINDOWS AND DOORS

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

48.1 CERTIFICATION

Provide a certificate from a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the performance requirements of NZBC E2/VM1 and the listed project site data. Fabrication by a member of the Window Association of New Zealand.

48.2 WINDOWS AND DOORS

Brand, finish and type as selected.

48.3 WINDOW AND DOOR REVEALS

As selected with timber jamb liners to NZS 3602.

48.4 GLASS

As selected, with glass details to 47 GLAZING and complying with NZS 4223.

48.5 FLASHINGS

As selected.

48.6 ORGANIC POWDER COATING FINISH

To the Window Association of New Zealand's "Specification for powder coatings on architectural aluminium products". All finished surfaces to show uniformity of gloss and colour (to match sample) free of all coating defects.

48.7 HARDWARE

As selected.

48.8 SEALANT, GLAZING TAPE AND GASKETS

To the window manufacturer's requirements.

48.9 FIXINGS

Ensure fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

48.10 OPENING PREPARATION

Confirm framing openings on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery. Prepare and trim to WANZ WIS™ Pre Cladding Trim Preparation requirements.

48.11 EXECUTION GENERALLY

To NZBC E2/VM1, WANZ "Aluminium Window Handbook" and "Installation code for aluminium joinery products". Install to WANZ WIS™ Window installation System requirements.

48.12 HANDLING

Avoid distortion of elements during transit, handling and storage. Prevent pre-finished surfaces from rubbing together. Prevent contact with mud, plaster and cement. Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

48.13 CORROSION PROTECTION

Seal or suitably coat cut ends and holes drilled in aluminium before the frames are installed. Before fixing, apply bituminous coatings, slips or underlays between dissimilar metals in contact, or aluminium in contact with concrete.

48.14 FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturer's and the Window Association of New Zealand's "Aluminium Window Handbook" requirements, plumb, true to line and face, weathertight and with all openings operating freely.

48.15 DRAINAGE

Anti-condensation channels to sills. All sills to sashes and fixed lights to incorporate positive drainage to the exterior.

48.16 GLAZING INSTALLATION

All glass held in aluminium beads and black PVC gaskets.

48.17 SAFETY GLASS INSTALLATION

Use in doors, sidelight panels, low level windows and all other locations to comply with NZS 4223, part 3, as modified by NZBC F2/AS1, 1.0 Glazing.

48.18 INSTALL FLASHINGS

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish on head flashings to match window finish.

48.19 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight.

48.20 SAFETY

Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Permanent manifestations to comply with NZS 4223, part 3, 303.1.

48.21 CLEAN GLASS AND FRAMES

Clean off or remove glass indicators at completion of the building. Clean glass inside and out to a shining finish. Clean down both sides of window and door frames using the methods required by the window and door manufacturer.

49 GLAZING

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

49.1 GLAZING TAPE

Pressure sensitive, self-adhesive vinyl foam tapes, selected to suit the glazing detail.

49.2 GLASS THICKNESS

As selected and to NZS 4223, parts 1 and 3.

49.3 FLOAT GLASS

To NZS 4223, part 1, clause 101.2.2.2: Glazing quality (selection G). Thickness as required by NZS 4223, part 1.

49.4 PATTERNED GLASS

Translucent, annealed, rolled glass with a decorative pattern on one surface.

49.5 LAMINATED GLASS

Grade A safety glazing material with PVB or CIP resin interlayer.

49.6 TOUGHENED GLASS

Grade A safety glazing material.

49.7 SOLAR FLOAT GLASS

Float glass, body-tinted or reflective coated glazing.

49.8 PUTTY, TIMBER FRAME

Linseed oil based, knife grade putty.

49.9 SETTING BLOCKS

Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, at the base of glass panes.

49.10 SPRIGS

Diamond metal pieces to retain glass in timber sashes and frames.

49.11 MIRROR GLASS

Float plate mirror glass to NZS 4223, part 1, clause 101.2.2.2: Silvering quality (selection S), with silver and copper plating and 2 coats of protective paint.

49.12 MIRROR ADHESIVE

Use both mirror-mastic adhesive and double-sided adhesive tape.

49.13 EXECUTION GENERALLY

To NZS 4223, part 1, and for human impact safety glazing to NZS 4223, part 3.

49.14 INSTALL GLASS, EXTERIOR TIMBER WINDOWS

Prime, clear seal rebates and beads, back-putty, sprig in glass and neatly complete putty fronting. Glass thickness and perimeter clearances to NZS 4223, part 1.

49.15 INSTALL GLASS, EXTERIOR TIMBER DOORS

Remove temporarily pinned beads; prime, clear seal rebates and beads, back putty, sprig in glass, front putty and neatly replace beads.

49.16 INSTALL GLASS, INTERIOR TIMBER WINDOWS AND DOORS

Remove temporarily pinned beads; fit tape, set glass on plastic distance pieces and refit beads.

49.17 SAFETY GLASS INSTALLATION

Use in doors, sidelight panels, low level windows and all other locations to comply with NZS 4223, part 3, as modified by NZBC F2/AS1, 1.0 Glazing.

49.18 MIRRORS, SCREW FIXED

Fix with proprietary zinc-plated steel countersunk-head screws, fitted with black neoprene washers with fine-threaded upstands to receive chrome plated dome screw covers.

49.19 MIRRORS, CHANNEL MOUNTED

Fix with proprietary mounting channels, to the channel manufacturer's requirements.

49.20 MIRRORS, ADHESIVE FIXED

Fix with adhesive mirror-mastic and double-sided adhesive tape. Adhesive mastic area 0.25 square metres per 1 square metre of mirror.

49.21 INSTALL MIRROR DE-MISTER

Installed to the de-mister manufacturer's requirements.

49.22 PRIME PUTTY

Prime all exposed putty within 21 days of completing glazing.

49.23 SAFETY

Indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type. Do not apply indicators other than whiting to the glass surface. Permanent manifestations to comply with NZS 4223, part 3, 303.1.

49.24 CLEAN

Clean off or remove indicators at completion of the building. Clean glass inside and out to a shining finish.

51 INTERIOR PARTITIONS AND DOORS

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

51.1 FRAMING MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602, table 4 Allowable moisture content.....

51.2 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation. Ensure building is weatherproof before lining work commences.

51.3 PLASTERBOARD

As selected. Gypsum plaster core encased in a durable face and backing paper formed for standard use, bracing use, fire rated use and water resistance use.

51.4 GALVANIZED STEEL CEILING BATTENS

As selected.

51.5 PLASTERBOARD ACCESSORIES

External angles:	Slim type 0.5 mm galvanized steel.
Casing bead:	Slim type 0.5 mm galvanized steel or PVC.
Cornice:	Plasterboard scotia type.
Nails:	Galvanized clouts 40 mm x 2.5 mm.
Screws:	40 mm x 6 gauge zinc electro-plated bugle head gypsum drywall screws
Jointing compound & paper tape:	To the board manufacturer's requirements.
Adhesive:	Multi-purpose water based wallboard adhesive.

51.6 TIMBER BOARDING

As selected and to NZS 3602, table 3 Requirements for wood-based building components....

51.7 PLYWOOD

As selected and to AS/NZS 2269.

51.8 PARTICLE BOARD

Medium density resin bonded.

51.9 MEDIUM DENSITY FIBREBOARD

Medium density fibreboard resin bonded. Finish: as selected.

51.10 FIBRE CEMENT SHEET

Cellulose cement autoclaved sheets. Finish: as selected.

51.11 DOORS GENERALLY

As selected.

- 51.12 GLAZED DOORS**
Solid timber framed and bead glazed.
- 51.13 TIMBER LOUVRE DOORS**
Solid timber framed with louvres slotted in.
- 51.14 INTERIOR CAVITY SLIDERS**
Hollow core door within a proprietary cavity slider frame, with brand-matched sliding door gear.
- 51.15 DOOR HINGES**
Type: loose-pin zinc-plated steel
Size: 89 mm
Material: zinc-plated steel
Number: 3 hinges per door
- 51.16 INTERIOR SLIDING DOOR GEAR**
To suit door size and weight and as detailed.
- 51.17 INTERIOR SLIDING-FOLDING DOOR GEAR**
Bi-fold pattern to suit size and weight of doors and as detailed.
- 51.18 DOOR HARDWARE**
As selected.
- 51.19 NAILS**
Zinc-plated steel, stainless steel and galvanized steel of pattern to suit location and to BRANZ Bulletin 453: Fasteners selection.
- 51.20 INTERIOR FINISHING TRIM**
Timber selection to NZS 3602, table 3 Requirements for wood-based building components.... Profile as detailed, or to match existing. Jointer profiles to suit location.
- 51.21 INTERNAL JOINERY FRAMES**
Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face.
- 51.22 INTERNAL DOOR FRAMES, SOLID REBATED**
Fabricate as detailed. Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements.
- 51.23 INTERNAL DOOR LINERS**
Heads and jambs finished minimum 18 mm, with 10 mm planted door stops. Width to match width of lined walls. Hang doors on hinges, sliding, or sliding-folding gear to the door manufacturer's requirements and to operate freely.
- 51.24 INTERNAL DOOR LINERS, EXTENDED**
Heads and jambs finished 30 mm, rebated for wall linings and extended a minimum of 10 mm. 10 mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely.
- 51.25 INTERNAL CAVITY SLIDERS**
Install in accordance with the door manufacturer's requirements.
- 51.26 SUBSTRATE**
To NZS 3604, section 8 Walls, section 10 Roof framing, section 12 Interior linings, section 13 Ceilings, and the standard required by the lining manufacturer's requirements. Ensure moisture content of timber framing is at or below specified levels.
- 51.27 CONFIRM LEVELS OF FINISH**
Before commencing work, confirm the surface finish assessment procedures necessary to ensure the specified levels of finish will be obtained. Provide levels of finish as laid down in AS/NZS 2589.
- 51.28 LINE PLASTERBOARD CEILINGS AND WALLS**
Line ceilings with plasterboard sheets, fastened to the plasterboard manufacturer's requirements. Line walls that are up to 2400 mm high by the horizontal method and walls above 2400 mm high by the vertical method, with plasterboard sheets.
- 51.29 SPECIAL PLASTERBOARD LININGS**
Line wet area walls with water resistant plasterboard sheets using adhesive and nail fixing to studs at centres to suit the surface finish. Form bracing panels using high density plasterboard sheets fixed with clout-washers and clouts and to conform to NZS 3604, 5.5 Wall bracing design, and 13.5 Structural ceiling diaphragms. Form sound rated panels following the sheet manufacturer's specifications and details for the required sound rating. Form fire rated panels following the sheet manufacturer's specifications and details for the required fire rating.
- 51.30 FIX PLASTERBOARD EXTERNAL ANGLES**
Fix full length to external corners, with clouts at 100 mm each side staggered.
- 51.31 FIX PLASTERBOARD CORNICE**
Fix with adhesive and with joints scribe-fitted to the plasterboard manufacturer's requirements.
- 51.32 PLASTERBOARD JOINTING AND STOPPING**
Fill joint recess with bedding compound, centre the paper tape, apply second coat of bedding compound followed by a coat of finishing compound. Allow to dry and lightly sand off. Fill nail holes and flush up external angles with two successive coats of bedding compound followed by a coat of finishing compound. Allow to dry and lightly sand off. All to the plasterboard manufacturer's requirements.
- 51.33 LEVELS OF FINISH**
Provide levels of finish to standards laid down by AS/NZS 2589 as follows:
Level 4: surfaces receiving light texture or wall covering finishes
Level 5: surfaces receiving thin coating finishes.

- 51.34 INSTALL TIMBER BOARDING**
Selected profile timber boarding, secret nailed. Mix and match board grain before installation.
- 51.35 INSTALL WOOD PRODUCT LININGS**
Fix to timber framing to detail and to the panel manufacturer's requirements.
- 51.36 INSTALL FIBRE CEMENT SHEET LININGS**
Fix to timber framing with jointing as detailed and to the panel manufacturer's requirements.
- 51.37 INSTALL TRIM**
Scribe and fit reveal linings to exterior timber joinery, architraves to interior joinery, skirtings to walls and timber beads to wall/ceiling junctions.
- 51.38 FIT HARDWARE**
Fit hardware selected and provided, all in accordance with the hardware manufacturer's requirements.
- 51.39 CHECK**
Check and adjust operation of doors sets, hardware and furniture.

52 JOINERY FIXTURES AND FITTINGS

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 52.1 TIMBER BOARDS AND FRAMES**
As selected. Carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.
- 52.2 STAIRCASE ELEMENTS**
As selected; for exposed stairs to NZS 3602, table 1 Requirements for wood-based building components..., and protected stairs to NZS 3602, table 2 Requirements for wood-based building components....
- 52.3 PLYWOOD PANELS**
Urea formaldehyde resin hot-press bonded timber veneers, select grade interior.
- 52.4 PARTICLE BOARD**
Urea-formaldehyde resin bonded medium density particle board.
- 52.5 MEDIUM DENSITY FIBRE BOARD**
Urea-formaldehyde resin bonded wood fibre sheet. Printed finish: a dry stamping foil of polyester film with barrier and adhesive layers impregnated with a decorated photogravure print. Melamine veneer: veneered both sides with melamine sheet. Wood veneer: veneered with selected wood veneer.
- 52.6 BACKING BOARD**
Urea-formaldehyde resin bonded very fine wood fibre sheet. Maximum thickness 6 mm. Prefinished: veneered one side with melamine sheet.
- 52.7 BENCHTOPS**
Construction as detailed on the drawings. Finish as selected.
- 52.8 HARDWARE**
- | | |
|---------------------|---|
| Carcase connectors: | One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap. |
| Carcase fasteners: | Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location. |
| Hinges: | Butt, broad butt, flush butt or overlay, steel, zinc-plated steel, stainless steel, or brass, to suit the location, or as detailed. |
| Concealed hinges: | All-metal zinc alloy, automatic spring and screw-fixed. Plastic button stops. |
| Drawer runners: | Groove mounting type, precision running ball-mounted single-stage extension, bright steel finish system. |
- 52.9 GLUES AND ADHESIVES**
As approved by the manufacturer for the timber, timber product, or pre-finished timber product joint.
- 52.10 SPECIALISED WOOD COATING**
Two component amino-alkyd primer and pigmented top-coat coatings based on low formaldehyde binders and low toxicity solvents and acid catalysed.
- 52.11 EXECUTION GENERALLY**
To include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).
- 52.12 TRANSIT AND DELIVERY**
Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.
- 52.13 FABRICATION QUALITY**
Check site dimensions. Carry out machining within the practices required for the particular timber or wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Work accurate, square and true to line and face.
- 52.14 FABRICATE JOINERY FITTINGS**
Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive

connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50 mm maximum centres in solid cheeks. Hang doors on concealed hinges.

52.15 FABRICATE DRAWERS

Construct drawers as detailed, using proprietary metal section drawer runners. Fit drawers with 3 mm clearance into the drawer space.

52.16 INSTALL JOINERY FITTINGS

Scribe fit on site and install level, square, plumb and true to line and face.

52.17 FABRICATE TIMBER STAIRS

To NZBC D1/AS1, 4.0. Stairways, closed type, unless detailed otherwise. Ex 50 mm strings, with ex 50 mm treads housed into ex 25 mm risers. House and wedge treads and risers 15 mm into strings, all glued, wedged and blocked. Form nosing overhangs of 25 mm by splaying risers forward to finish flush with the front of the treads. Fabricate and install the handrails and balustrading as detailed, complete with associated metal componentry and hardware.

52.18 APPLY SPECIALISED WOOD COATING

Sand surfaces with 180-240 free cut paper to ensure the surface is free from dust and contaminants. Apply undercoat, allow to dry, sand thoroughly with 400 free cut paper, remove dust and wipe with a reducer. Catalyse, thin, strain and apply 2 coats of the coating wet on wet. Sand thoroughly and apply a further 2 coats of the coating wet on wet. All to the coating manufacturer's requirements.

61 TILING

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

61.1 QUALIFICATIONS

Use tilers experienced with the materials and techniques specified.

61.2 ADHESIVES COMPATIBILITY

On proprietary substrates or waterproof membranes use only adhesives with documented compatibility approval from the respective manufacturers.

61.3 SLIP RESISTANCE

Slip resistance to NZBC D1/AS1, 2.1 Slip resistance.

61.4 TILES

As selected.

61.5 ACCESSORIES

Underlays, waterproofing membranes:
Cement-based screed:

As selected.

Mix of 3:1 Portland cement, wash-mix sand, gauged with liquid polymer additive to the tile manufacturer's requirements.

Tile adhesive:

To the tile manufacturer's requirements.

Grout:

Cement based, compressible and to suit the particular location and use.

Control joint sealant:

To BRANZ Good practice guide: Tiling, section 5.0.

61.6 HANDLING AND STORAGE

Handle tiles with care to avoid chipping, soiling and damage. Store on hard, level standings in non-traffic, non-work areas that are enclosed, clean and dry. Reject all damaged tiles.

61.7 SUBSTRATE

Ensure all services and accessories are in place, located to suit the tile layout, with the substrate required for tiling work.

61.8 TEMPERATURE

Do not carry out tiling where the ambient temperature is below 5°C, or onto a substrate with a temperature higher than 40°C.

61.9 LAYOUT

Obtain confirmation of the proposed layout of tiles, expansion joints and other visual considerations.

61.10 EXECUTION GENERALLY

Prepare surfaces and carry out the tiling work in accordance with BRANZ Good practice guide: Tiling.

61.11 SURFACE PREPARATION

To BRANZ Good practice guide: Tiling, section 4.0.

61.12 LAY CEMENT SCREED

Apply a proprietary cement slurry bond coat over the whole of the floor. Mix and place a 40 mm thick mortar bed over the bond coat and firmly tamp, screed and compact to the required level. In waterproofed areas where the cement screed has been laid over the waterproofing membrane, prepare the screed surface by applying a further waterproof coating before laying tiles.

61.13 LAY SHEET WATERPROOFING MEMBRANE

Apply the selected sheet waterproof membrane system to the membrane manufacturer's requirements.

61.14 APPLY LIQUID WATERPROOFING MEMBRANE

Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements.

61.15 INSTALL UNDER TILE ELECTRIC HEATING

Install to the membrane manufacturer's requirements. Arrange for electrician to connect power supply.

61.16 TILE FIXING, CONCRETE, CEMENT-BASED ADHESIVE

Apply and float thin (thick) bed cement-based adhesive to a minimum 3 mm (6 mm) bed thickness to the tile manufacturer's requirements. Rib surface with a notched trowel, press the tile and beat it into place with 3 mm joints, and to obtain required coverage of adhesive on the back of each tile.

61.17 TILE FIXING, RIGID SHEET LININGS

Prime the surface after the curing of any waterproof membrane. Spread adhesive to a uniform minimum thickness of 3 mm and rib it with a notched trowel to the tile manufacturer's requirements. Press the tile and beat it into place to obtain the required coverage by adhesive on the back of each tile.

61.18 TILE FIXING, INTERIOR TIMBER FRAMED FLOORS

Install underlay to the tile manufacturer's requirements. After the curing of any waterproof membrane, prime the surface, spread adhesive to a uniform minimum thickness of 3 mm and rib it with a notched trowel to the tile manufacturer's requirements. Press the tile and beat it into place to obtain the required coverage by adhesive on the back of each tile.

61.19 GROUTING

Remove spacers. Prepare joints, mix and apply proprietary grout and finish off the grout uniform in colour, smooth and without voids, pinholes or low spots.

61.20 MOVEMENT CONTROL JOINTS

Minimum width of 6 mm, carried through tile and bedding. Where substantial movement is anticipated, carry through the rigid sheet to the structure. Ensure joints are clean, formed, filled, and the sealant inserted to the sealant manufacturer's requirements.

61.21 CLEAN

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave clean and free of blemish. Finally polish tiles with a clean, dry cloth.

62 PAINTING AND PAPERHANGING

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

62.1 QUALIFICATIONS

Carry out work using competent and experienced painters and paperhangers.

62.2 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety in Employment Act 1992 and if elimination or isolation is not possible, then minimise the hazards in this work. Refer to OSH publication, Repainting lead based paints, for the required procedures and precautions when treating or removing lead based paint, burning or sanding off paint, or using solvent based paint removers.

62.3 PAINT

As selected and to the paint manufacturer's standards for exterior and/or interior primers, undercoats, sealers, stains, clear coatings, solvent-borne and water-borne paints.

62.4 GAP FILLERS

Linseed oil, putty, plastic wood, wood filler or plastic filler, to suit and to match the surface being prepared.

62.5 INSPECT SURFACES

Inspect surfaces being painted and report to the owner any that will not, after the preparatory work laid down by the paint manufacturer, allow work of the required standard. Confirm that all areas have adequate lighting and are sufficiently free of other construction activities to enable painting and/or paperhanging work to proceed.

62.6 PROTECT

Cover up adjoining surfaces and areas liable to damage or over-painting.

62.7 REMOVE HARDWARE

Remove hardware and door/window furniture and replace on completion. Do not paint over permanently attached hinges, or any hardware items which cannot be removed.

62.8 PRIMING AND SEALING

Ensure that priming and sealing work needed before or during construction is carried out when required.

62.9 ENVIRONMENTAL CONDITIONS

Carry out work within acceptable temperature and humidity limits, with timber dry, all to the requirements of the paint manufacturer.

62.10 SELECTIONS

Confirm all selections, colours and finishes for both paint and wallpaper with the owner.

62.11 SHARP EDGES, CRACKS AND HOLES

Repair as required by the paint manufacturer.

62.12 PREPARE SURFACES

Prepare surfaces as required by the paint manufacturer. Make good all damage and defects.

62.13 PAINT APPLICATION

Apply paint by brush and/or roller to suit the location of the coating and to the paint manufacturer's requirements. Do not spray on site without express permission.

62.14 MANUFACTURER'S MANUALS

Refer to the paint manufacturers' manuals and follow their preparation, sequence and application requirements applying to each system. Ensure all paint coats in any system are supplied by the same manufacturer.

- 62.15 SCUFF BETWEEN COATS**
Scuff between all coats to remove any dust pick-up, protruding fibres and coarse particles.
- 62.16 FINISHED PAINT SURFACES**
Finished paint surfaces to show uniformity of gloss and colour, with the correct thickness for each coat, and freedom from painting defects. Ensure finished work is clean and free of any disfigurement.
- 62.17 CONFIRM WALLPAPER BATCH**
Confirm that all rolls of each pattern are from the same batch.
- 62.18 WALLPAPER INSTALLATION**
Seal or size walls. Drops full-length, completely glued, pattern matched and hung vertically without bubbles or visible butt joints. Scribe cut paper 2 mm onto surrounding trim.
- 62.19 CLEAN**
Clean adjoining surfaces, glass and fittings of any paint contamination.
- 62.20 REPLACE**
Replace hardware without damage to the hardware or the adjoining surfaces.

71 WATER SYSTEMS

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 71.1 QUALIFICATIONS**
Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.
- 71.2 COPPER WATER PIPE**
To NZS 3501.
- 71.3 POLYBUTYLENE WATER PIPE**
Polybutylene tubing complete with fittings and accessories brand-matched.
- 71.4 POLYETHYLENE WATER PIPE**
Proprietary high-density cross-linked polyethylene composite pipe and fittings.
- 71.5 INSULATION FOR HOT WATER PIPES**
As selected.
- 71.6 EXPOSED PIPES**
As selected and to the following details:
 - chrome plated copper pipe with chrome plated brass nuts and fittings
 - white polyethylene composite pipe with white nuts and accessories
 - pipework finish to include escutcheon plates and bends and elbows protruding from walls or fittings.
- 71.7 GATE VALVES**
De-zincified brass with screwed ends.
- 71.8 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE**
Ceramic-coated steel thermal storage cylinder, insulated and complete with fittings required for installation by the manufacturer.
- 71.9 ELECTRIC HOT WATER CYLINDER, LOW PRESSURE**
Copper thermal storage cylinder insulated and complete with pressure reducing valve and fittings required for installation by the manufacturer.
- 71.10 ELECTRIC HOT WATER CYLINDER, UNDER-SINK, LOW PRESSURE**
Copper thermal storage cylinder insulated and complete with fittings required for installation
- 71.11 VALVES, TAPS AND FAUCETS**
As selected.
- 71.12 ELECTROLYTIC ACTION**
Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.
- 71.13 EXECUTION GENERALLY**
Generally carry out the whole of this work and tests to NZBC G12/AS1.
- 71.14 INSTALL COPPER WATER SUPPLY**
Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes in straight runs, firmly fixed to falls, with long radius bends and jointed by brazing or with cross fittings, all to NZBC G12/AS1, 5.0 Water supply. Conceal piping, insulate hot water pipework and pressure test before the wall linings are fixed.
- 71.15 INSTALL POLYBUTYLENE/POLYETHYLENE WATER SUPPLY**
Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, and jointed to the pipe manufacturer's specifications, all to NZBC G12/AS1, 5.0 Water supply. Conceal pipework and pressure test before wall linings are fixed.
- 71.16 OUTLET LOCATIONS**
Ensure wall outlets for exposed pipes are level and centred on the fixture to ensure the neat installation of exposed pipework.
- 71.17 INSTALL HOT WATER PIPE INSULATION**
Insulate hot water pipes in accordance with the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs. Where hair felt is used, wrap around pipes in two layers in opposite directions and secure with galvanized steel wire ties.

- 71.18 INSTALL ELECTRIC HOT WATER CYLINDERS AND BOILING CYLINDERS**
Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and NZBC G12/AS1, 6.10 Water heater installation.
- 71.19 PENETRATIONS**
Provide and fit collars and escutcheon plates to match pipework at penetrations through constructions.
- 71.20 INSTALL TAPWARE**
Install tapware in accordance with the tap manufacturer's requirements. Flush out on completion. Check that washers or ceramic discs are operating correctly.
- 71.21 COMPLETION**
Pressure test to ensure no leakage and leave in proper working order. Clean tapware and fittings.

72 SANITARY PLUMBING, SANITARYWARE AND ACCESSORIES

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 72.1 QUALIFICATIONS**
Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.
- 72.2 COPPER WASTE, SOIL AND VENT PIPES**
As selected.
- 72.3 UPVC WASTE, SOIL AND VENT PIPES**
uPVC pipe, complete with fittings brand-matched to the pipe manufacturer's requirements.
- 72.4 EXPOSED PIPES AND TRAPS**
As selected and to the following details:
- chrome plate on copper pipes and associated copper and brass fittings
- white polybutylene or PVC, including all associated fittings.
- 72.5 SANITARYWARE**
As selected.
- 72.6 SANITARY ACCESSORIES**
As selected.
- 72.7 EXECUTION GENERALLY**
Carry out this work and complete all tests to AS/NZS 3500 Part 2.
- 72.8 ELECTROLYTIC ACTION**
Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.
- 72.9 INSTALL SANITARYWARE**
Fit and install sanitaryware and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths.
- 72.10 INSTALL TRAPS, WASTE AND VENT PIPES**
Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500 Part 2. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to roof vents and vermin proof mesh to untrapped waste pipes.
- 72.11 PENETRATIONS**
At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.
- 72.12 INSTALL SANITARY ACCESSORIES**
Install the selected sanitary accessories.
- 72.13 TEST**
Test soil and waste disposal systems to ensure no leakage exists and leave in working order.
- 72.14 ENSURE**
Ensure all sanitary plumbing fittings and pipework are complete and operational.

74 DRAINAGE

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 74.1 QUALIFICATIONS**
Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.
- 74.2 MATERIALS**
- | | |
|----------------|---|
| Concrete: | 17.5 MPa prescribed grade. |
| Reinforcement: | Grade 300 deformed bars. |
| Ceramic pipes: | As selected. |
| uPVC pipes: | uPVC pipes bends, junctions, fittings and joints. |
| Field drains: | Plastic pipes for field drains perforated and coiled with filter fabric over. |

- Drainage/filling materials
- Granular fill: Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm.
- Selected fill: Fine grain soil or granular material suitable for bedding, excluding topsoil.
- Ordinary fill: Top soil or other excavated materials.
- 74.3 FITTINGS**
- Gully traps: To NZBC G13/AS2, 3.3 Gully traps, complete with grating.
- Surface water sump gratings: Cast iron frame with lift-up grating.
- Strip drain channel: Proprietary, modular, variable invert, uPVC or precast concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.
- Inspection covers: Cast iron frame with screw-down cover.
- 74.4 EXCAVATE**
- Excavate for drains to a firm even base with correct gradients set in straight runs.
- 74.5 MANUFACTURER'S REQUIREMENTS**
- All drainage installations to the pipe and fitting manufacturer's requirements.
- 74.6 EXCAVATION GENERALLY**
- Carry out drainage work to AS/NZS 3500 Part 2 (sanitary plumbing and drainage) and AS/NZS 3500 Part 3 (stormwater drainage) as modified by NZBC B1/AS1, 6.0 Drains.
- 74.7 LAY WASTEWATER DRAINS**
- Lay drains in straight runs to correct gradients, to discharge into the network utility operators sewer. Set inspection fittings on a concrete base.
- 74.8 INSTALL GULLY TRAPS**
- Set on concrete 50 mm above surrounding ground or paving and brought up to protect the top of the fitting. Trowel off.
- 74.9 LAY STORMWATER DRAINS**
- Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.
- 74.10 LAY GROUNDWATER DRAINS**
- Lay perforated coil piping firmly in a granular bed in straight runs to correct gradients, discharging into a sump. Carry the granular bed up over the pipes without disturbing them, to a total depth of 300 mm and cover with geotextile fabric; all to the pipe manufacturer's requirements.
- 74.11 INSTALL STRIP DRAIN CHANNEL**
- Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.
- 74.12 INSTALL SURFACE WATER SUMP**
- To NZBC E1/AS1, 3.6 Surface water inlets to drains. Ceramic half-siphon pipe. Cast iron frame with a lift out grating.
- 74.13 INSTALL INSPECTION CHAMBERS**
- Stormwater: To NZBC E1/AS1, 3.7 Access for maintenance, with channels to form a cascade where necessary and with a 75 mm fall across the chamber.
- Wastewater: To NZBC G13/AS2, 5.0 Installation with ceramic channels with a 75 mm fall across the chamber. Form channel top 100 mm above pipe soffit. Bench from channel with 17.5 MPa concrete to form a smooth finish. Fit a cast iron cover and frame.
- 74.14 CONCRETE ENCASEMENT**
- Concrete encase shallow drains and drains under driveways, on a 100 mm deep 17.5 MPa concrete bed reinforced with three 10 mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100 mm 17.5 MPa concrete.
- 74.15 FIELD TEST**
- Field test drains for watertightness to the satisfaction of the Building Consent Authority inspector.
- 74.16 BACKFILL**
- Backfill drain lines in 150 mm layers, well tamped but without disturbing the drains. Finish off with 150 mm of topsoil, slightly mounded above the finished ground line.
- 74.17 AS-BUILT DRAWINGS**
- Supply a 1:100 as-built drawing to the Building Consent Authority and the owner on completion.

75 ELECTRICAL

Refer to SELECTIONS/drawings for specific product, material, accessories and finish selections.

- 75.1 COMPLY**
- Comply with the Electricity Regulations 1997, AS/NZS 3000 and the New Zealand Electrical Codes of Practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.
- 75.2 QUALIFICATIONS**
- Carry out work by or under the direct supervision of a holder of a practising certificate under the Electricity Regulations 1997.

75.3 CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997. Allow the network utility operator to view before the meter installation, listed work inspection, polarity check and livening of supply.

75.4 METER BOARD / DISTRIBUTION BOARD / SUB BOARD

Proprietary manufactured meter board complete with flashing kit. Proprietary manufactured distribution board, zinc plated powder coated, or heavy duty plastic, fire resistant enclosed construction, complete with neutral and earth busbars, MCB's, RCD's and main switch. All protective devices: 6kA MCB's of the appropriate rating. Fit to board manufacturer's requirements where detailed. Recess into wall and ensure fire containment properties of the enclosure are maintained.

75.5 CABLES

Tough plastic sheathed copper conductors. Minimum sizes are indicated below. Increase these as necessary due to method of installation, cable length or load.

Lighting circuits:	1.5 mm ² on 16 amp MCBs.
Power circuits:	1.5 mm ² on 16 amp MCBs for domestic construction
Power circuits:	2.5 mm ² on 16 amp MCBs for domestic insulated construction

75.6 ELECTRICAL ACCESSORIES

As selected and to the following details:

Wall boxes:	Standard size in plastic, with 2 or more gang size in metal, all screw fixed.
Switch units:	16 amp, 230 volt flush polycarbonate units. For number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2-way units refer to the electrical drawings.
Hot water system switch:	One way 20 amp switch complete with clamp for flexible PVC conduit.
Switched socket units:	10 amp, 230 volt flush polycarbonate 3 pin combined switch units.
Ceiling roses:	White plastic mounting base with screwed cover. Terminal type.
Batten holders:	Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

75.7 LIGHT FITTINGS

As selected.

75.8 ELECTRIC-POWERED FITTINGS AND EQUIPMENT

As selected.

75.9 CABLING

Install with a maximum of 10 light outlet units or 6 switched socket units on any circuit. Separate circuits for all electric heating appliances. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member.

75.10 INSTALL SWITCH AND SOCKET UNITS

Fit single and double switch units and socket units level and plumb where shown on the drawings. Install at the following heights (to the centre of the unit) unless shown otherwise on the drawings.

Switch Units:	1000 mm.
Socket Units:	150 mm above work benches. 400 mm elsewhere.

Mount switches vertically and socket units horizontally. Label switch units which control electrical equipment by engraving on the rocker switch.

75.11 INSTALL LIGHT FITTINGS

Install selected light fittings in the locations and heights shown on the drawings and in accordance with the fitting manufacturer's requirements.

75.12 ELECTRIC HOT WATER SYSTEM

Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end.

75.13 GAS HOT WATER SYSTEM

Wire for control system to continuous flow gas hot water system.

75.14 UNDERFLOOR HEATING SYSTEMS

Connect under floor heating systems complete with thermostats to manufacturer's requirements.

75.15 WIRE FOR PLUMBING FITTINGS

Wire for fittings to the Electricity Regulations 1997 and to the fitting manufacturer's requirements.

75.16 INSTALL SMOKE DETECTORS

Install detectors to NZBC F7/AS1, 3.3 Location of smoke alarms, and to manufacturer's requirements, fitted neatly and without damage to the surrounding finish.

75.17 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire selected fittings and equipment to the Electricity Regulations 1997 and the individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment.

75.18 COMPLETION

Leave all fittings, lamps and tubes operational, with equipment and diffusers clean.

APPLICABLE BUILDING CODES

B1 STRUCTURE

B1/AS2, NZS 3604, NZS 4203

B1 DURABILITY

B2/AS1, NZS 3604, E2/AS1

E1 SURFACE WATER

E1/AS1

E2 EXTERNAL MOISTURE

E2/AS1

E3 INTERNAL MOISTURE

E3/AS1

G1 PERSONAL HYGIENE

G1/AS1

G2 LAUNDERING

G2/AS1

G3 FOOD PREPERATION

G3/AS1

G4 VENTILATION

G4/AS1

G7 NATURAL LIGHT

G7/AS1

G9 ELECTRICITY

G9/AS1

G11 GAS AS AN ENERGY SOURCE

G11/AS1

G12 WATER SUPPLIES

G12/AS1, AS/NZS 3500.1

G13 FOUL WATER

G13/AS1, NZS3500.2

H1 ENERGY EFFICIENCY

H1/AS1, NZS 4218

CBI 5113.

June 2011.

GIB EzyBrace[®] Systems



Kemp House

www.gib.co.nz


GIB[®]

**Additional earthquake bracing demand**

Where a building has a concrete masonry lower storey, the bracing demand for the timber framed upper storey is calculated as a single storey building assuming a heavy sub-floor cladding.

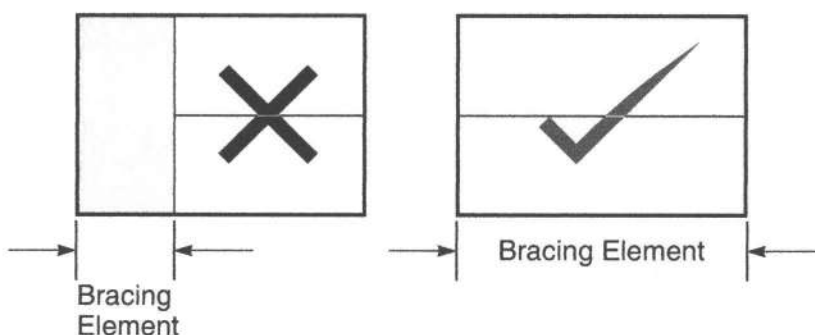
Where a part storey is contained in the roof space, up to 50% of the lower floor area, the bracing demand for that lower floor is increased by 4 BUs/m². Note that the GIB EzyBrace® software provides options for smaller roof space developments.

Where a part storey is contained in a timber framed basement, the building is split for bracing calculation purposes into a single and a two storey building.

The bracing demand is increased where a masonry or concrete chimney relies on the structure for lateral support. See NZBC B1/AS3.

**Bracing Resistance****Providing Bracing Resistance – General Guidelines**

Always use the *maximum available wall length* for bracing purposes by moving the bracing element fasteners out to the perimeter of the wall. This maximises the Bracing Units achieved from a wall section and enhances the quality of finish by having the majority of fasteners at wall ends or in corners. For example, it is inefficient to designate only 1.2 metres of a 3.6 metre wall for bracing purposes.

**GIB EzyBrace® Systems – Specification numbering system.**

The GIB EzyBrace® specification numbering system is designed to facilitate nomination of GIB EzyBrace® systems by designers and easy identification by builders and building officials on site.

The numbering system and sub-components thereof are protected by copyright.

GS1-N = GIB® Standard plasterboard one side

GS2-N = GIB® Standard plasterboard both sides

GSP-H = GIB® Standard plasterboard / plywood with panel hold-down fixings

BL1-H = GIB Braceline® one side with panel hold-down fixings

BLG-H = GIB Braceline® / GIB® Standard plasterboard with panel hold-down fixings

BLP-H = GIB Braceline® / plywood with panel hold-down fixings

Specifying GIB EzyBrace® Elements (minimum wall length 400 mm)	
Inside lining External Walls	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required. If the other side of the frame is lined with plywood consider GSP-H or BLP-H elements.
Internal Walls (only one side available for bracing)	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required.
Internal Walls (both sides available for bracing)	Nominate available lengths of wall as GS1-N elements. Change to GS2-N if higher ratings are required. Change to BLG-H for even higher ratings. Consider GSP-H or BLP-H if the opposite side is lined with plywood.



Table 1: GIB® Standard Plasterboard Bracing Unit ratings

Type	Minimum Length (m)	Lining	Other Requirements	BU/m	
				W	EQ
GS1-N	0.4	GIB® Standard Plasterboard one side	N/A	50	55
	1.2			70	60
GS2-N	0.4	GIB® Standard Plasterboard both sides	N/A	70	65
	1.2			95	85
GSP-H	0.4	GIB® Standard Plasterboard one side plywood the other	Panel hold-down fixings	100	115
	1.2			150*	150*

Table 2: GIB Braceline® Bracing Unit ratings

Type	Minimum Length (m)	Lining	Other Requirements	BU/m	
				W	EQ
BL1-H	0.4	GIB Braceline® one side	Panel hold-down fixings	90	100
	1.2			125*	105
BLG-H	0.4	GIB Braceline® one side GIB® Standard Plasterboard the other	Panel hold-down fixings	110	115
	1.2			150*	145*
BLP-H	0.4	GIB Braceline® one side plywood the other	Panel hold-down fixings	135*	135*
	1.2			150*	150*

Note: The BU/m ratings for GIB EzyBrace® systems are responsibly conservative. Using the GIB EzyBrace® software will deliver higher ratings than using the manual tables.

*** Timber Floors** – A limit of 120 BU/m for NZS 3604:2011 timber floors applies unless specific engineering ensures that uplift forces generated by elements rated higher than 120 BU/m can be resisted by floor framing.

Wall Heights other than 2.4m

The published Bracing Unit ratings are based on a 2.4 metre height. For greater heights, the ratings must be multiplied by a factor $f = 2.4$ divided by the actual wall height. The Bracing Unit ratings for walls higher than 2.4 metres will reduce.

For example:

The Bracing Unit rating of a 2.7 metre high wall is obtained by multiplying the values in Tables 1 and 2 by $f = 2.4/2.7 = 0.89$

The Bracing Unit rating of a 3.6 metre high wall is obtained by multiplying the values in Tables 1 and 2 by $f = 2.4/3.6 = 0.67$

The height of walls with a sloping top plate can be taken as the average height.

Walls lower than 2.4 metres shall be rated as if they were 2.4 metres high.



GIB® Plasterboard Linings

When fixing part sheets of GIB® Plasterboard, a minimum width of 300mm applies for bracing elements. Horizontal fixing is recommended. If fixing vertically, full height sheets shall be used where possible. Where sheet end butt joints are unavoidable they must be formed over nogs or over the studs and fastened at 200mm centres. Alternatively, and preferably, the sheet end butt joints may be back-blocked.

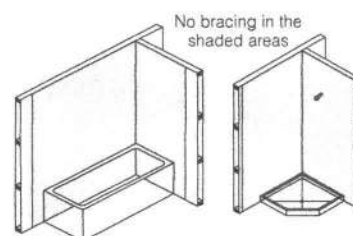
Plasterboard bracing element sheets must be fixed directly to the wall framing, eg bracing must be provided by the inner layer of a multilayer system. When a GIB® bracing element has been designated for a section of wall, BU ratings can not be increased by incorporating additional proprietary bracing elements within that same section of wall.

Limitations

GIB® Plasterboard must be stacked flat and protected from the weather. GIB® Plasterboard must be handled as a finishing material. GIB® Plasterboard in use must not be exposed to liquid water or be installed in situations where extended exposure to humidities above 90% RH can reasonably be expected. GIB EzyBrace® Systems must not be used in showers or behind baths. It is highly recommended not to install GIB® Plasterboard in any situation where external claddings are not in place or the property is not adequately protected from the elements. If GIB® Plasterboard is installed under these conditions, the risk of surface defects such as joint peaking or cracking is greatly increased.

GIB EzyBrace® Systems in Water-Splash Areas

When GIB® Plasterboard is installed in locations likely to be frequently exposed to liquid water it must have an impervious finish. Examples are adhesive fixed acrylic shower linings or ceramic tiles over an approved waterproof membrane over GIB Aqualine®. The NZBC requires 15 years durability in these situations. Bracing elements are required to have a durability of 50 years. Bracing elements are not to be located in shower cubicles or behind baths because of durability requirements, the likelihood of renovation, and practical issues associated with fixing bracing elements to perimeter framing members. Otherwise GIB EzyBrace® Systems can be used in water-splash areas as defined by NZBC Clause E3, provided these are maintained impervious for the life of the building.

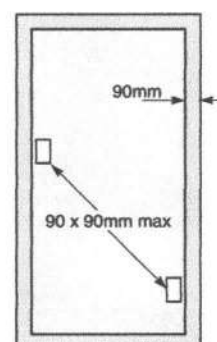
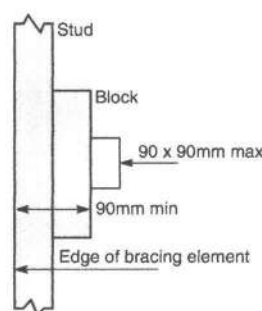
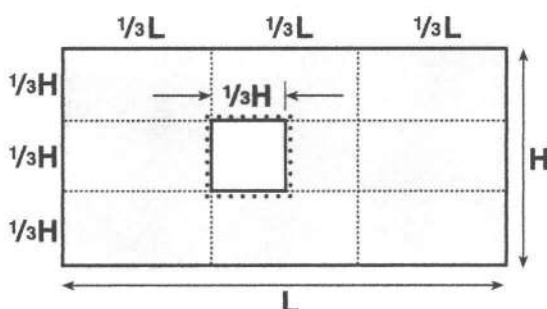


Renovation

When relining walls during the process of renovation, ensure that bracing elements are reinstated (check the building plans).

Openings in Bracing Elements

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



□ Small opening e.g. switch box



Framing

General framing requirements such as grade, spacings and installation shall comply with the New Zealand Building Code and the provisions of NZS 3604:2011. To achieve the published bracing performance the minimum actual framing dimensions are 90 x 35mm for external walls and 70 x 45mm for internal walls. Wall bracing tests on GIB EzyBrace® Systems were undertaken without nogs. Nogs are not considered to add to the bracing performance of the wall.

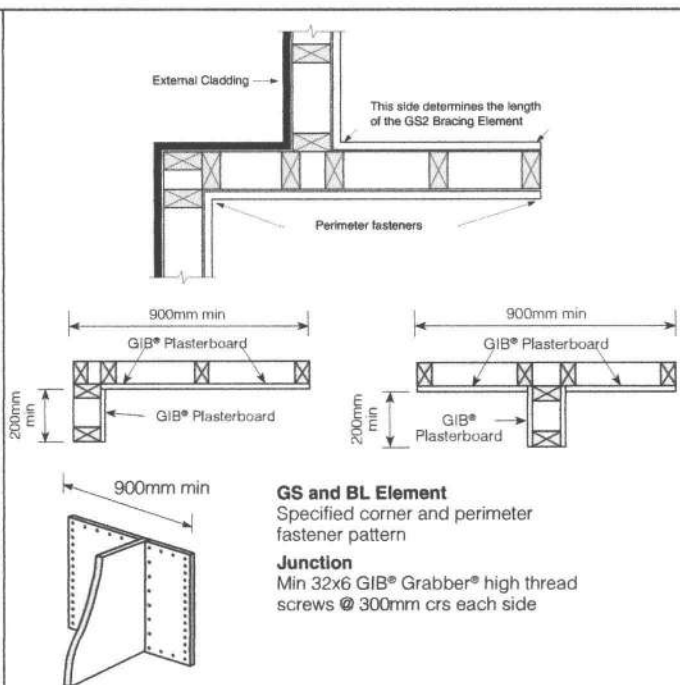
Guidelines for intersection walls

Where the lining on a double lined internal GS2 Bracing Element is shorter on one side, the length of the element is taken as the shorter wall length but bracing fasteners can still follow the wall perimeter on both sides.

GIB® Bracing Elements may have intersecting walls with a minimum length of 200mm. Fasteners are required around the perimeter of the bracing element. Vertical joints at T-junctions shall be fixed and jointed as specified for intermediate sheet joints. **The bracing element length must be no less than 900mm.**

Where a Wall Bracing Element is interrupted by a T or L junction the element is deemed to be continuous for the whole length (900mm in the example illustrated).

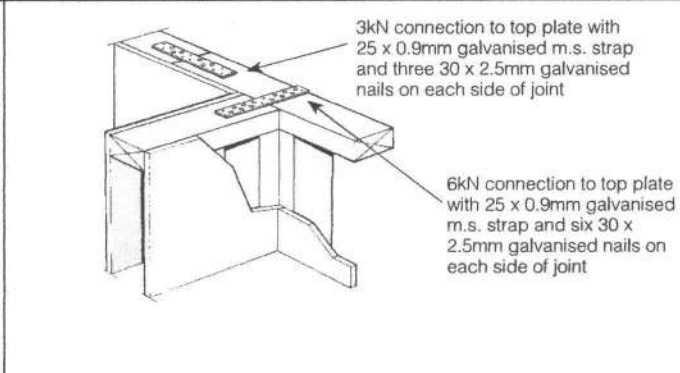
When fixing part sheets of GIB® Plasterboard, a minimum width of 300mm applies for bracing elements.



Top Plate Connections

The top plate of a wall that contains one or more wall bracing elements shall be jointed according to the rating of the highest-rated individual wall bracing element as follows:

- Rating not exceeding 100 bracing units: A 3kN connection as shown or by an alternative fixing of 3kN capacity in tension or compression along the plate;
- Rating exceeding 100 bracing units: A 6kN connection as shown or by an alternative fixing of 6kN capacity tension or compression along the plate.



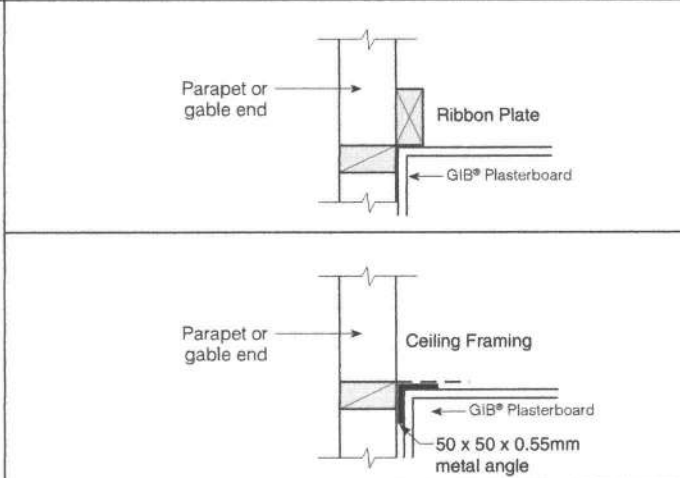
Parapets and Gable End Walls

Bracing elements must be fixed from top plate to bottom plate. Fixing to a row of nogs is not acceptable unless either:

A continuous member such as an ex 90x45mm ribbon plate is fixed across the studs just above a row of nogs at the ceiling line.

OR

A minimum 50x50x0.55mm metal angle is installed as shown. The angle is fixed to a row of nogs with 30x2.5mm galv FH nails at 300mm centres.

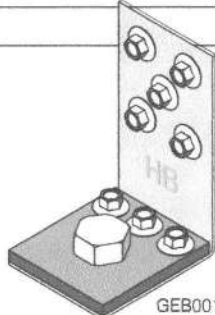
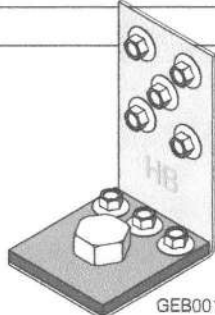
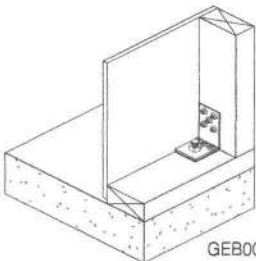
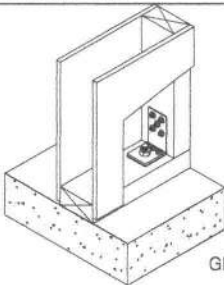
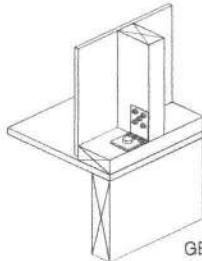
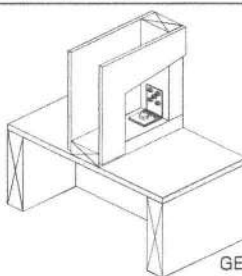




Bottom plate fixings for GIB® Bracing Elements			
Brace type	Concrete slabs		Timber floors
	External wall	Internal wall	External and Internal walls
GS1-N	As per NZS 3604:2011. No specific additional fastening required	As per NZS 3604:2011. Alternatively use 75 x 3.8mm shot-fired fasteners with 16mm washers, 150mm and 300mm from each end of the bracing element and at 600mm thereafter.	Pairs of 100 x 3.75mm flat head hand driven nails or 3 / 90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011
GS2-N	Not applicable		
GSP-H BL1-H BLP-H	Intermediate fastenings to comply with NZS 3604:2011. In addition: GIB Handibrac® fixings or metal wrap-around strap fixings and bolt as illustrated on pages 19 and 20.		Pairs of 100 x 3.75mm flat head hand driven nails or 3 / 90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011.
BLG-H	Not applicable	As for GSP-N, BL1-H, BLP-H on concrete slab above	In addition: GIB Handibrac® fixings or metal wrap-around strap fixings and bolt as illustrated below.



Panel Hold-down Details

GIB Handibrac® – RECOMMENDED METHOD			
<p>Developed in conjunction with MiTek™ NZ, the GIB Handibrac® has been designed and tested for use as a hold-down in GIB®BL and GSP bracing elements.</p> <ul style="list-style-type: none"> The GIB Handibrac® registered design provides for quick and easy installation The GIB Handibrac® provides a flush surface for the wall linings because it is fitted inside the framing. There is no need to check in the framing as recommended with conventional straps The GIB Handibrac® is suitable for both new and retrofit construction The design also allows for installation and inspection at any stage prior to fitting internal linings 			
			
Concrete Floor		Timber Floor	
External walls	Internal walls	External walls	Internal walls
			
Position GIB Handibrac® as close as practicable to the internal edge of the bottom plate	Position GIB Handibrac® at the stud / plate junction	Position GIB Handibrac® in the centre of the perimeter joist or bearer	Position GIB Handibrac® in the centre of floor joist or full depth solid block
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN.		12x150mm galvanised coach screw	

Refer to gib.co.nz/cad for CAD details.



Bracing strap Installation

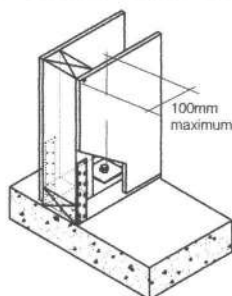
Care needs to be taken with the installation of the bracing strap. It should be checked in to be flush with the face of the stud providing a flat substrate for the plasterboard. It should be positioned in such a way that the important corner fastenings of the bracing element are not affected by it. Keeping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

Concrete Floor

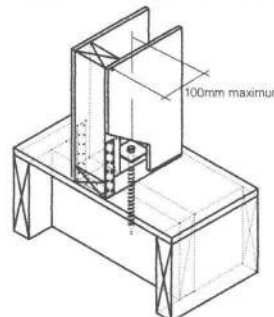
Timber Floor

400 x 25 x 0.9mm galvanised strap to pass under the plate and up the other side of the stud. Six 30x2.5mm flat head galvanised nails to each side of the stud. Three 30x2.5mm flat head galvanised nails to each side of the plate. Hold down bolt to be fitted within 100mm of the end of the element.

Internal wall

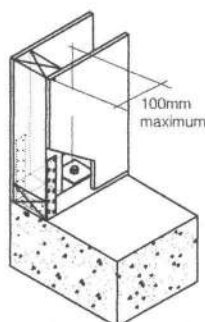


GEB006

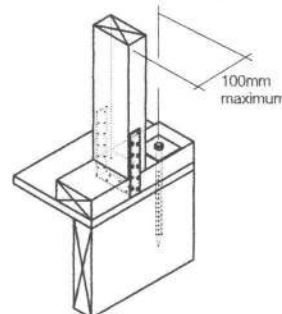


GEB007

External wall



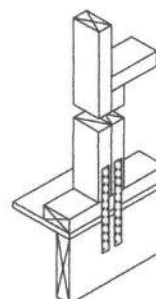
GEB008



GEB009

NB: where applicable drawings have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box that can be found at the web address gib.co.nz/cad

2/300 x 25 x 0.9mm galvanised straps with six 30 x 2.5mm flat head galvanised nails to each stud and into the floor joist and three nails to the plate. Block to nog fixed with 3/100 x 3.75mm nails to stud.



GEB010

Hold-down fastener requirements

Concrete floor

Timber floor

A mechanical fastening with a minimum characteristic uplift capacity of 15kN fitted with a 50x50x3mm square washer within 100mm of the ends of the bracing element.

12x150mm galvanised coach screw fitted with a 50x50x3mm square washer within 100mm of the ends of the bracing element

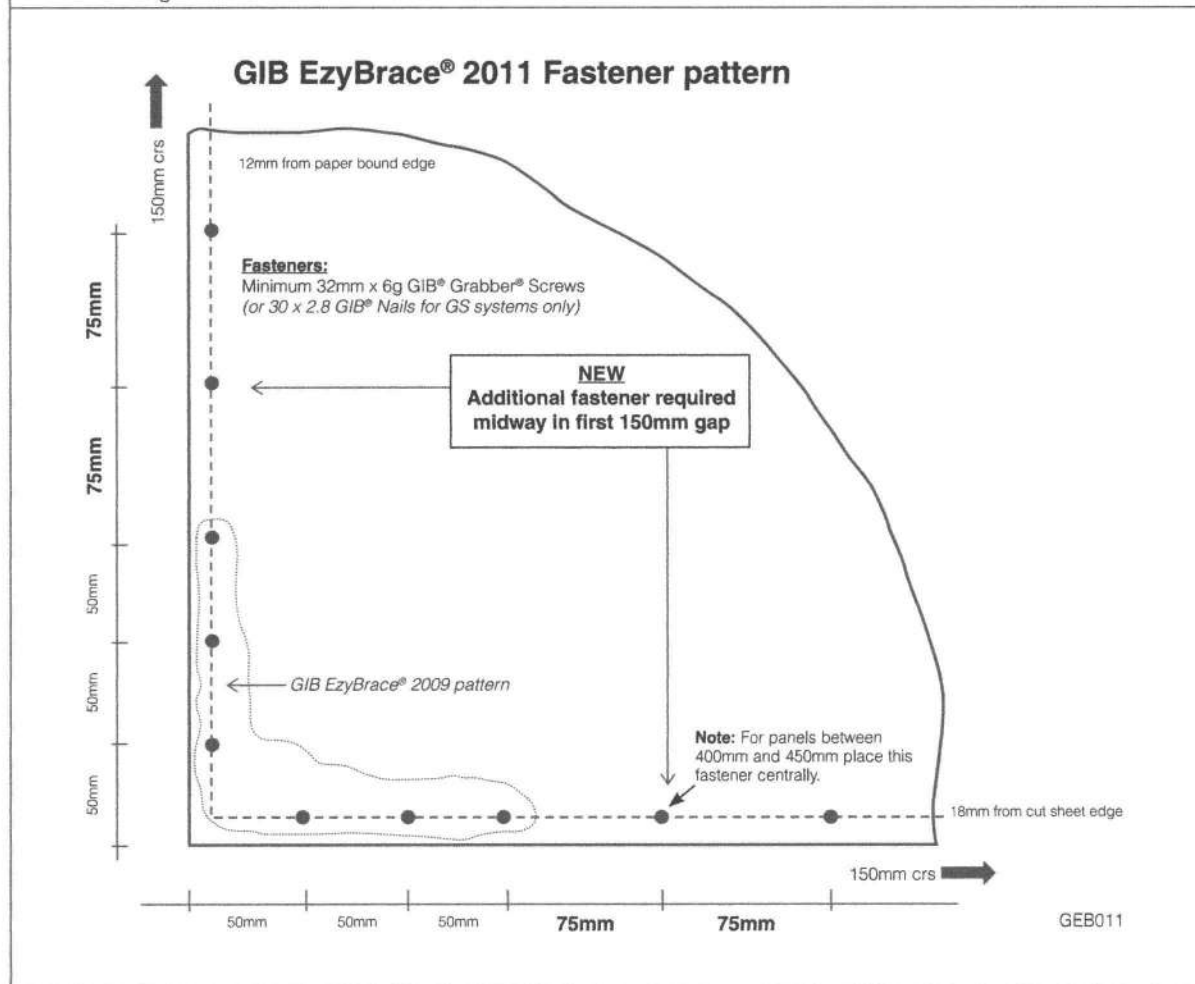
Refer to gib.co.nz/cad for CAD details.



Revised Fastener Pattern for all four corners of GIB EzyBrace® Elements

As GIB Braceline® screws are no longer required for BL bracing elements, two additional fasteners must be installed in **all four corners** of GIB EzyBrace® GS and BL elements, as shown.

Fasteners must be placed no closer than 12mm from the paper bound sheet edge and no closer than 18mm from sheet ends or cut edges.



Refer to gib.co.nz/cad for CAD details.

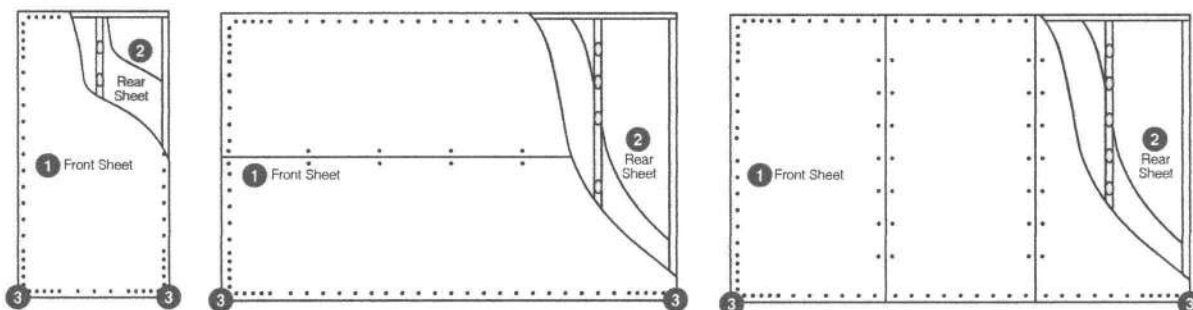
PERMITTED GIB® PLASTERBOARD SUBSTITUTIONS IN GIB EZYBRACE® SYSTEMS

GIB Ezybrace® Systems have been designed and tested using only the products specified. Occasionally additional properties may be required to be provided by a different GIB® Plasterboard product. The following table provides acceptable substitution options.

Specified	Permitted alternative GIB® Plasterboard products					GIB Fyrelite®			
	GIB® Standard	GIB Ultralite®	GIB Braceline/Noiseline®	GIB Aqualine®	GIB Toughline®	10mm	13mm	16mm	19mm
GIB® Standard		OK	OK	OK	OK	OK	NOTE 2		
GIB Braceline®	X	X		NOTE 1	OK	X	NOTES 1 and 2		

NOTE 1 The element must be 900mm or longer. Use 32mm x 6g GIB® Grabber® drywall screws at **100mm** centres to the perimeter of the bracing element. The bracing corner fastening pattern, as illustrated above, applies to all four corners of the element. Panel hold-down fixings are required.

NOTE 2 The fastener type and length must be as required for the relevant FRR system but the fixing pattern must be as shown above.



System	Lining one side ①		Lining opposite side ②		Panel Hold-Down Fixings ③	Fastener spacing
	Lining	Fasteners	Lining	Fasteners		
GS1-N	Any 10mm or 13mm GIB® Plasterboard	30mm GIB® nails, or minimum 32mm x 6g GIB® Grabber® high thread screws	Not required	Not required	Not required	<i>GIB® Plasterboard</i> Corner fastening pattern as illustrated above Fasteners at 150mm to bracing element perimeter, and: <ul style="list-style-type: none">at 300mm centres to intermediate sheet joints for vertical fixing, orat stud / sheet junction for horizontally fixed elements, andGIBFix adhesive daubs at 300mm crs to intermediate framing <i>Plywood</i> Fasteners at 150mm around the perimeter of every sheet and at 300mm centres to intermediate studs. Place fasteners no closer than 7mm from sheet edges. Plasterboard corner fastener pattern does not apply to plywood.
GS2-N			Any 10mm or 13mm GIB® Plasterboard	30mm GIB® nails, or minimum 32mm x 6g GIB® Grabber® high thread screws		
GSP-H			Minimum 7mm Ecoply manufactured to AS/NZS 2269	50mm x 2.8mm Flat head galvanised or stainless steel nails	Yes, see Pages 19 and 20	
BL1-H	10mm or 13mm GIB Braceline®	minimum 32mm x 6g GIB® Grabber® high thread screws	Not required	Not required		
BLG-H		Any 10mm or 13mm GIB® Plasterboard	30mm GIB® nails, or minimum 32mm x 6g GIB® Grabber® high thread screws			
BLP-H		GIB Braceline® Nails may be used for 10mm GIB Braceline® ONLY	Minimum 7mm Ecoply manufactured to AS/NZS 2269	50mm x 2.8mm flat head galvanised or stainless steel nails		



Specification Code	Minimum Length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard Plasterboard to one side only

WALL FRAMING

Wall framing to comply with;

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

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

BOTTOM PLATE FIXING**Timber Floor**

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or

Three power driven 90 x 3.15 nails at 600mm centres.

Concrete floor**INTERNAL WALL BRACING LINES**

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

EXTERNAL WALL BRACING LINES

In accordance with the requirements of NZS 3604 for external plate fixing.

WALL LINING

Any 10mm or 13mm GIB® Plasterboard lining.

Sheets can be fixed vertically or horizontally.

Sheet joints shall be touch fitted.

Use full length sheets where possible.

PERMITTED SUBSTITUTION

For permitted GIB® Plasterboard substitutions refer to Page 21 in GIB Ezybrace® Systems 2011.

FASTENING THE LINING**Fasteners**

32mm x 6g GIB® Grabber® high thread screws; or 30mm GIB® Nails.

Fastener centres

50, 100, 150, 225, 300mm from each corner and 150mm thereafter around the perimeter of the bracing element.

For vertically fixed sheets place fasteners at 300mm centres to intermediate sheet joints.

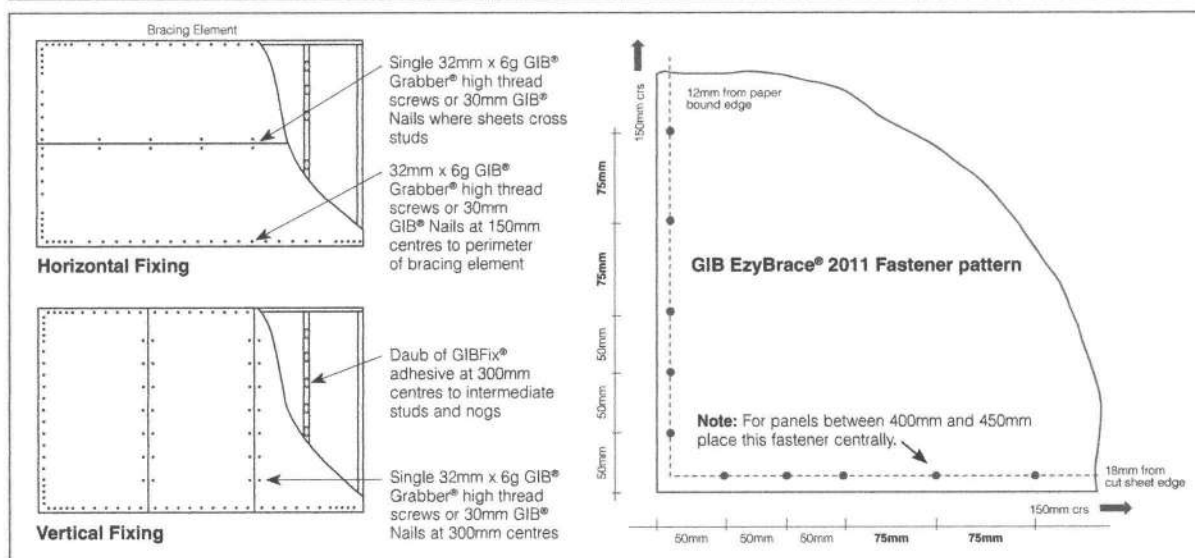
For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud.

Use daubs of GIB Fix® adhesive at 300mm centres to intermediate studs.

Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

All fastener heads stopped and all sheet joints paper tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This Specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems 2011 and has been appraised in accordance with the BRANZ Appraisal No. 294 (2011).





Specification Code	Minimum Length (m)	Lining requirement
GS2-N	0.4	Any 10mm or 13mm GIB® Standard Plasterboard fixed to each side of the wall framing.

WALL FRAMING

Wall framing to comply with;

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

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

BOTTOM PLATE FIXING**Timber Floor**

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or

Three power driven 90 x 3.15 nails at 600mm centres.

Concrete floor**INTERNAL WALL BRACING LINES**

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

WALL LINING

One layer 10mm or 13mm GIB® Plasterboard to each side of the wall.

Sheets can be fixed vertically or horizontally.

Sheet joints shall be touch fitted.

Use full length sheets where possible.

PERMITTED SUBSTITUTION

For permitted GIB® Plasterboard substitutions refer to Page 21 in GIB® Ezybrace Systems 2011.

FASTENING THE LINING**Fasteners**

32mm x 6g GIB® Grabber® high thread screws; or 30mm GIB® Nails.

Fastener centres

50,100,150, 225, 300mm from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to intermediate sheet joints.

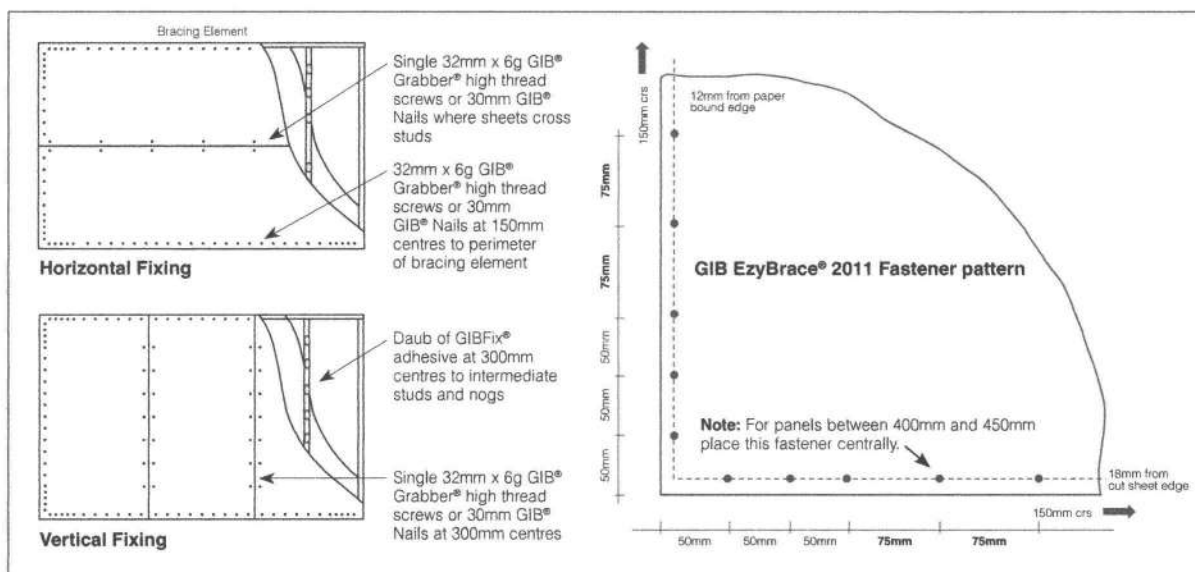
For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud.

Use daubs of GIB Fix® adhesive at 300mm centres to intermediate studs.

Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

All fastener heads stopped and all sheet joints paper tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This Specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems 2011 and has been appraised in accordance with the BRANZ Appraisal No. 294 (2011).



GIB® Products

Manufactured by Winstone Wallboards Ltd. Distributed nationwide by authorised distributors.

Trademarks

The names GIB®, GIB Ultraline®, GIB Toughline®, GIB Noiseline®, GIB Braceline®, GIB Aqualine®, GIB Wideline®, GIB Fyrelime®, GIB Soundseal®, GIB-Cove®, GIB Rail®, GIB Tradeset®, GIB HandiBrac®, the colour mauve for GIB Toughline® and the colour blue for GIB Braceline®, GIB Living Solutions®, GIB Living®, GIB Dry Zone®, GIB Tough Zone®, GIB Feature Zone®, GIB Fix®, GIB Quiet Zone® and EzyBrace® are all trademarks of Fletcher Building Holdings Ltd.

GIB® Help Line - Call Free

0800 100 442

Free Facsimile

0800 229 222

E-mail

bracing@gib.co.nz

Internet Website

www.gib.co.nz

Auckland

P.O. Box 12 256 Penrose. Telephone 0-9-633 0100.
Facsimile 09-633 0101.

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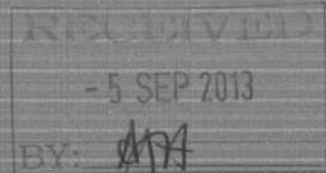
Printed in New Zealand using mineral-oil-free inks on environmentally responsible Media Satin using PEFC pulp from a mill that is EMAS accredited and ISO 14001 certified.



LARSENS

CONCRETE & DRAINAGE

Wanganui



10,000 Litre Concrete Tank Warranty

This Warranty is offered by Walter Larsen and Sons Ltd (Larsens)
for Eletank 10,000 Litre Precast Concrete Tank

installed at lot 46 Simpson Crescent,
Raumati

This warranty is offered to the original purchaser (other than for purposes of resale) for a period of Eight Years.

This Warranty covers manufacturing defects in materials and workmanship, which occur within the duration of the warranty period.

This Warranty does not cover-

1. Any incidental, indirect, or consequential loss, damage or expense that may result from any defect, failure or malfunction of the warranted product.
2. Any failure that results from an accident, purchaser's abuse, neglect, use in association with corrosive chemical or solvents, operation in excess of stated maximum working pressure and temperature or failure to operate and maintain the warranted product.
3. Items or service that is normally required to maintain the product (eg. Reseal inner surface)
4. Any product not actually manufactured by Larsens. Components supplied with the tank are covered by their respective manufacturers warranties. Larsens obligation shall consist only of passing on to the Customer any warranty indemnification payment actually received by Larsens from the original manufacturer so far as Larsens is permitted to do so.

Responsibilities of Larsens are to-

Repair or replace at Larsens option the affected concrete tank that has failed as a result of faulty manufacture, within the duration of the warranty period. If repair or replacement is not feasible, Larsens may at its option refund the purchase price.

Responsibilities of Purchaser are to-

1. Provide access to the concrete tank. Travel costs or any costs associated with providing access to the tank, if incurred must be borne by the purchaser.
2. Use reasonable care in the operation and maintenance of the product
3. Report any faults within 30 days of becoming aware of the defect so that it can be remedied with a minimum of fuss and costs.
4. for warranty service, send a written description of the defect with a copy of your invoice to-

Larsens Concrete
437 Heads Road
Castlecliff,
Wanganui 4501

"If its made of concrete we can do it"

LARSENS

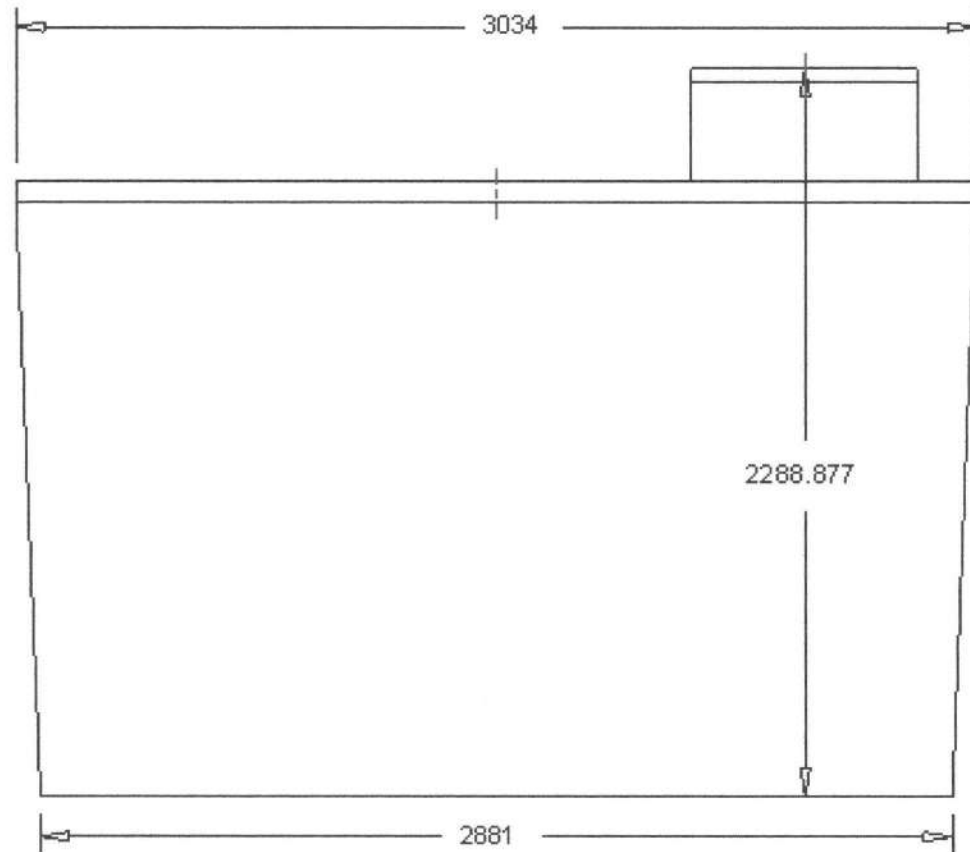
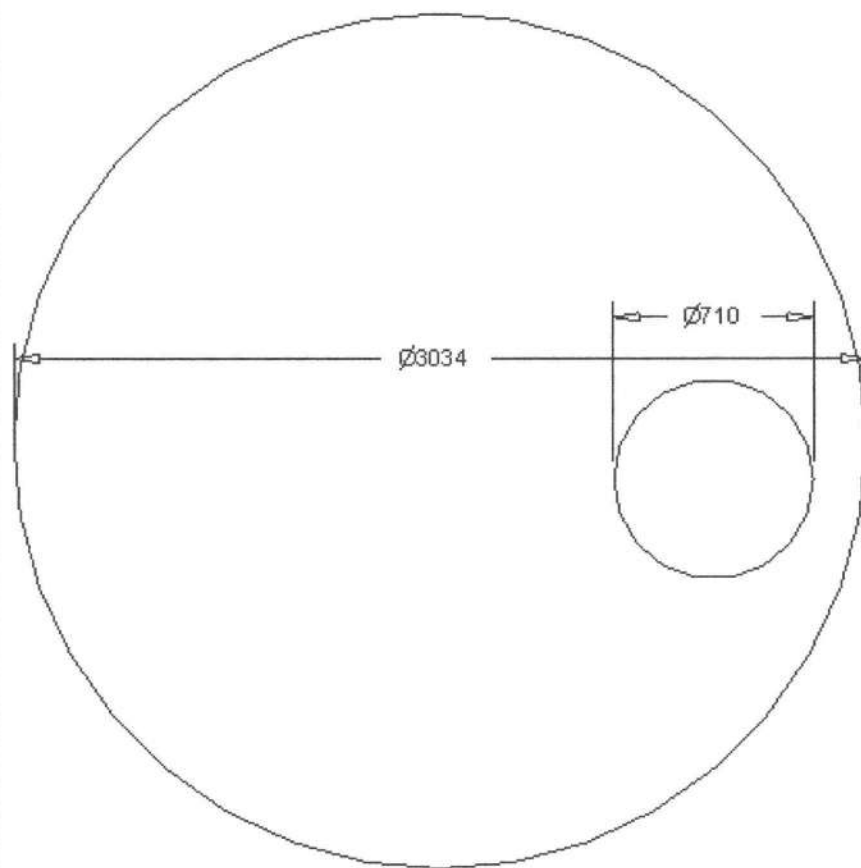
CONCRETE & DRAINAGE

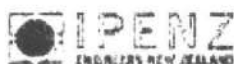
WANGANUI

10,000 LITRE UNDERGROUND WATER TANK

SUITABLE FOR 300MM TOPSOIL COVERAGE

NOT SUITABLE FOR INSTALLATION UNDER A DRIVEWAY WITHOUT EXTRA ENGINEERING WORK





Building Code Clause(s)

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on the reverse side)

ISSUED BY: SUMI RESOURCES LTD (Design Firm)

TO: LARSEN'S CONCRETE & DRAINAGE (Owner/Developer)

TO BE SUPPLIED TO:

IN RESPECT OF: LARSEN'S ELE 10000 LITRE WATER TANK (Description of Building Work)

AT: (Address)

LOT..... DP..... SO.....

We have been engaged by the owner/developer referred to above to provide STRUCTURAL DESIGN TO REINFORCED CONCRETE TANK services in respect of the requirements of

Clause(s) 6.7 of AS/NZS 1546.1:1998 of the Building Code for

☐ All or ☐ Part only (as specified in the attachment to this statement); of the proposed building work.

The design carried out by us has been prepared in accordance with:

☐ Compliance Documents issued by Department of Building & Housing (verification method/acceptable solution) OR

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled..... and numbered.....

together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

I, DAVID MOLHOLLAND am: ☐ CPEng #.....
(Name of Design Professional) ☐ Reg Arch #.....

I am a Member of: ☒ IPENZ ☐ NZIA and hold the following qualifications:

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ ☐ YES ☐ NO

SIGNED BY: [Signature] ON BEHALF OF SUMI RESOURCES LTD (Design Firm)

Date 15/2/2010 (signature) DAVID MOLHOLLAND [Signature]

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.*

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

CONSTRUCTION CHEMICALS

LIQUID FLASH / FLEXIBLE SEALER

PACKAGING

MIXING



APPLICATION



KEMSCREED

PACKAGING

MIXING



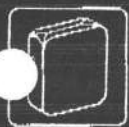
APPLICATION



ADHERING TILES

PACKAGING

MIXING



APPLICATION



SUBSTRATES

CONCRETE,
CEMENT SHEET,
STRUCTURAL
STEEL FLOORING

Tiling on Waterproof Membranes

BATHROOMS, KITCHENS, LAUNDRIES, FLAT ROOFS & BALCONIES

Tests conducted on direct adhesive fixing of ceramic tiles to the following membranes result in adhesion failing the requirements of AS2358 or BS5385 in the short or long term.

URETHANE OR POLYURETHANE
POLYESTER RESIN (FIBREGLASS)
BUTANOL
TORCH ON OR HOT MELT MEMBRANES
EPOXY RESIN MEMBRANES
BITUMEN & BITUMEN COMPOUND

Construction Chemicals therefore does not guarantee direct fixing adhesives to these membranes.

Construction Chemicals manufactures membranes compatible with ceramic tile adhesives (listed below) where the adhesion performance exceed the requirements of the standards. The membrane and the adhesive are compatible and the system is guaranteed.

WATERPROOF MEMBRANES

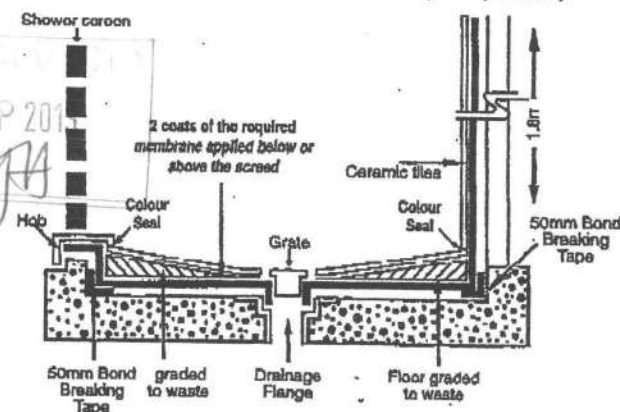
PRODUCT	DESCRIPTION
Flexible Sealer	A premixed acrylic waterproof membrane.
Liquid Flash	A premixed fibre reinforced acrylic membrane.
Kemscreead	A two pack fast setting acrylic water proofing membrane.

CERAMIC TILE ADHESIVES

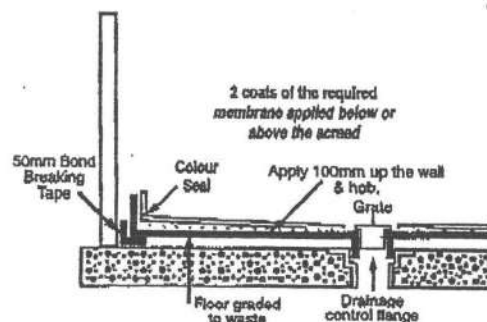
PRODUCT	DESCRIPTION
Kemgrip mixed with Elastacrete	A cement based adhesive mixed with a flexible resin additive
Monoflex	A polymer modified rubber cement based adhesive
Gripflex	A white polymer modified cement based adhesive
Kemflex	A two pack flexible cement / rubber adhesive

WATERPROOFING SHOWERS

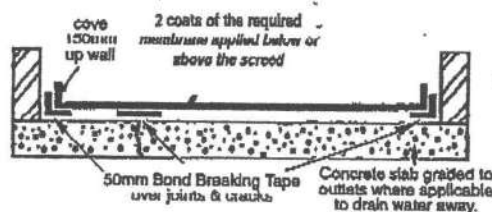
Waterproof 1.8m up the wall and 1.5m in a horizontal radius from the rose. (Waterproofing is ceased at shower screen, when provided)



WATERPROOFING WET AREA FLOORS (BATHROOMS, LAUNDRIES, etc.)



WATERPROOFING FLAT ROOFS / BALCONIES



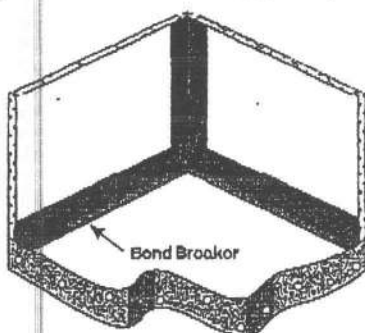
CONSTRUCTION CHEMICALS

• ADELAIDE 487 - 488 SOUTH RD REGENCY PARK 5010 PH: (08) 8346 8018 FAX: (08) 8340 2052
• BRISBANE 45 COULSON ST WACOL 4078 PH: (07) 3271 9414 FAX: (07) 3271 3822
• MELBOURNE 1 / 10 GABRIELLE CT BAYSWATER NORTH 3153 PH: (03) 9761 4711 FAX: (03) 9761 4746
• PERTH 61 DOWD ST WELSHPOOL 6108 PH: (08) 9358 5493 FAX: (08) 9358 5493
• SYDNEY 2 / 31-33 NEWTON RD WETHERILL PARK 2164 PH: (02) 9756 3833 FAX: (02) 9756 3534
• AUCKLAND 18 CARPENTER RD EAST TAMAKI PH: (09) 278 5444 FAX: (09) 278 5444
• KUALA LUMPUR LOT 2 JALAN KECAPI 8312 ELITE INDUSTRIAL ESTATE OFF JALAN BUKIT KEMUNING PH: (03) 652 2522 FAX: (03) 522 2526

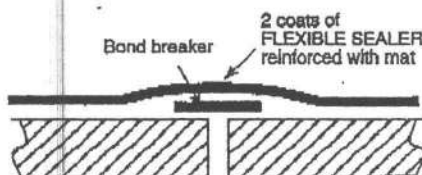
"The information contained in this technical publication is based on our current knowledge and experience and is provided as a guide only in view of the many factors that may affect application it is the users sole responsibility to ensure suitability for a specific purpose."

2/3

W A W/proofing Sys'



Floor & Wall Junction



Floor sheeting / Wall board Junction

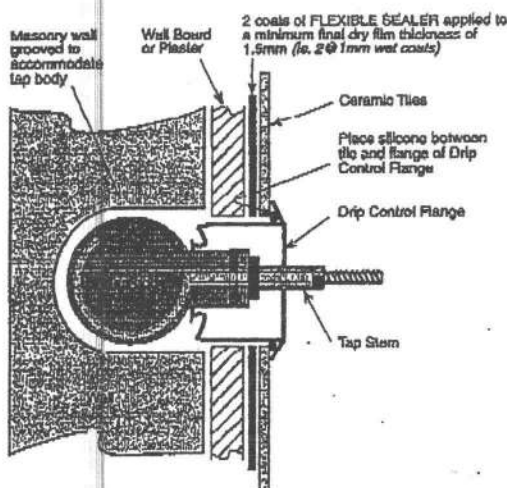
APPLY 1st COAT TO THE WALL (1mm wet film thickness)

Apply a thick coat of FLEXIBLE SEALER 75mm either side of the wall junctions and around tap outlets. Immediately bed in the reinforcing tape, then coat the remainder of the wall. Coat to a height of 1.8m in shower alcoves, 300mm above bath sinks, troughs etc and 100mm above the floor. The 100mm above the floor should be left to be coated with the floor coating.

APPLY 1st COAT TO THE FLOOR (1.5mm wet film thickness)

Check the wet film thickness at 0.5 metre intervals and also at 0.5 metres along the bond breaking tape, with a wet film thickness gauge.

Shower Areas - Apply the FLEXIBLE SEALER to the primed shower floor and 100mm up the wall, hob and waste. Apply a thick coat and immediately bed the reinforcing mat into the wet FLEXIBLE SEALER. Force the mat into the wet FLEXIBLE SEALER from different directions to preclude entrapped air and to bed mat firmly to the floor around the waste.



Tap or Fitting Connection

**CONSTRUCTION
CHEMICALS**

HANDY TIP

Bedding reinforcing mat into the FLEXIBLE SEALER is made easier by using clean wet rubber gloves and thick coats of FLEXIBLE SEALER (this reduces damage of the reinforcing mat).

Wet Area Floors - Apply a thick coat of FLEXIBLE SEALER 100mm up the wall, floor and waste then immediately press the fibreglass mat into the FLEXIBLE SEALER at junctions and corners. Apply a thick coat of FLEXIBLE SEALER to the remaining floor area.

APPLY a 2nd COAT (1.0mm wet film thickness)

Apply a 2nd coat of FLEXIBLE SEALER to the wall first then the floor, working towards the exit. - recoat time is 2 hours.

Apply a second coat of FLEXIBLE SEALER at 90° to all previous coat applying a thick coat to fully saturate and cover the reinforcing mat. Clean up the uncured coating with clean water.

THICKNESS Check the wet film thickness at 0.5 metre intervals and also at 0.5 metres along the bond breaking tape, with a wet film thickness gauge.

ADHERE TILES

Allow the membrane to cure for 72 hours before fixing tiles with KEMGRIP mixed with CLASTACRETE or GRIPFLEX, MONOFLEX, KEMFLEX 2:1. Tiles must be laid so that adequate fall is towards the floor waste. A cement screed can be used to achieve this.

GROUTING

Allow adhesive to cure 24 hours before grouting with KEMGROUT FLEXIBLE.

FLEXIBLE MASTIC

Apply COLOUR SEAL in place of the grout in:

Shower Alcoves - at the junction of the wall/wall, wall/floor, hob/floor and hob/wall.

Trough, Sink & Baths - at the junction of the tiles and the trough, sink or bath for the length of the fixture and the bath surround and the wall.

PRECAUTIONS

Do not use shower for 28 days after applying FLEXIBLE SEALER. It is advisable to flood test the shower after curing (approx. 72 hours 20°C 50%RH). This should be done before tiling commences.

SAFETY PRECAUTIONS

FLEXIBLE SEALER and PRIMER AND GROUT ADDITIVE are non-harmful or toxic. Splashes on the skin and eyes must be washed away with clean water. Apply products in well ventilated areas.

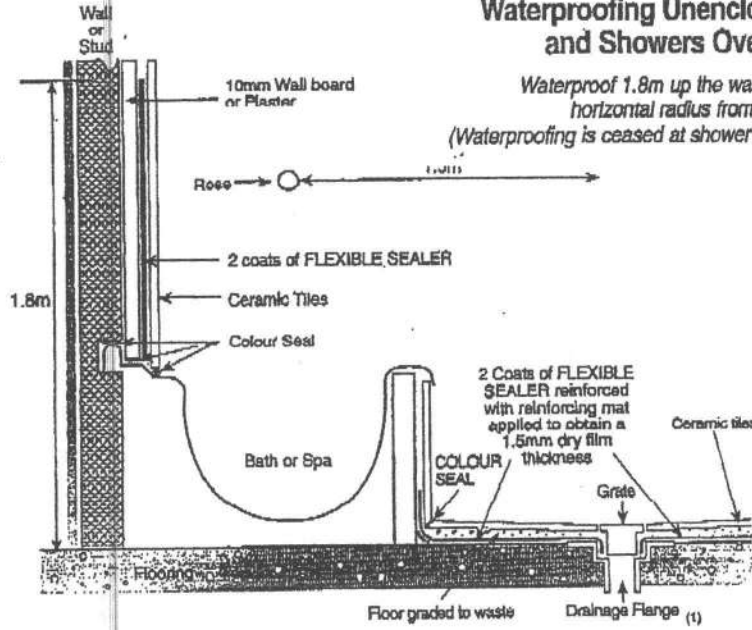
- ADELAIDE 467 - 469 SOUTH RD REGENCY PARK 5010 PH: (08) 8346 8013 FAX: (08) 8340 2052
- BRISBANE 45 COULSON ST WACOL 4076 PH: (07) 3271 2944 FAX: (07) 3271 9992
- MELBOURNE 11 GABRIELLE CT BAYSWATER NORTH 3163 PH: (03) 9761 4711 FAX: (03) 9761 4748
- PERTH 11 COLLIE RD WELSHPOOL 6106 PH: (08) 9356 9999 FAX: (08) 9356 9955
- SYDNEY 31 NEWTON RD WETHERILL PARK 2164 PH: (02) 8758 3533 FAX: (02) 8756 3534
- AUCKLAND 16 CARPENTER RD EAST TAMAKI PH: (09) 278 5444 FAX: 0800 288 238
- KUALA LUMPUR LOT 2 JALAN KECAP 332 ELITE INDUSTRIAL ESTATE OFF JALAN BUKIT KEMUNING 40000 SHAH ALAM PH: (603) 5122 2522 FAX: (603) 5122 2526

7/3

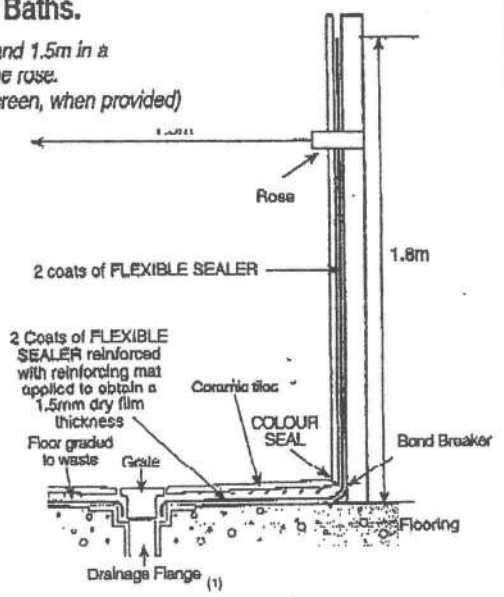
W Area W/proofing Syst

Waterproofing Unenclosed Showers and Showers Over Baths.

Waterproof 1.8m up the wall and 1.5m in a horizontal radius from the rose.
(Waterproofing is ceased at shower screen, when provided)



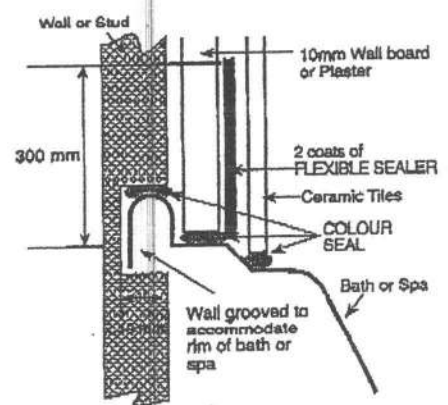
Shower Over a Bath



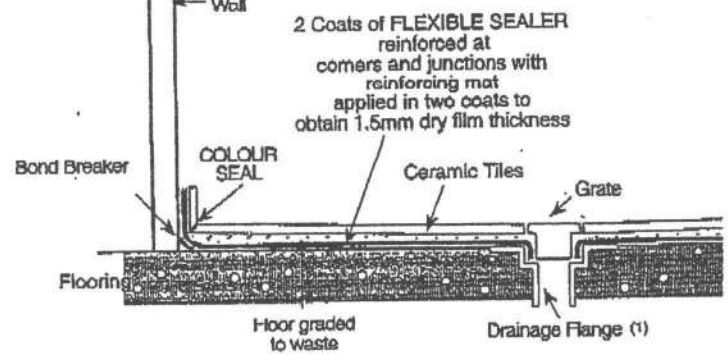
Unenclosed Shower

Waterproofing above Baths, Sinks, Troughs etc.

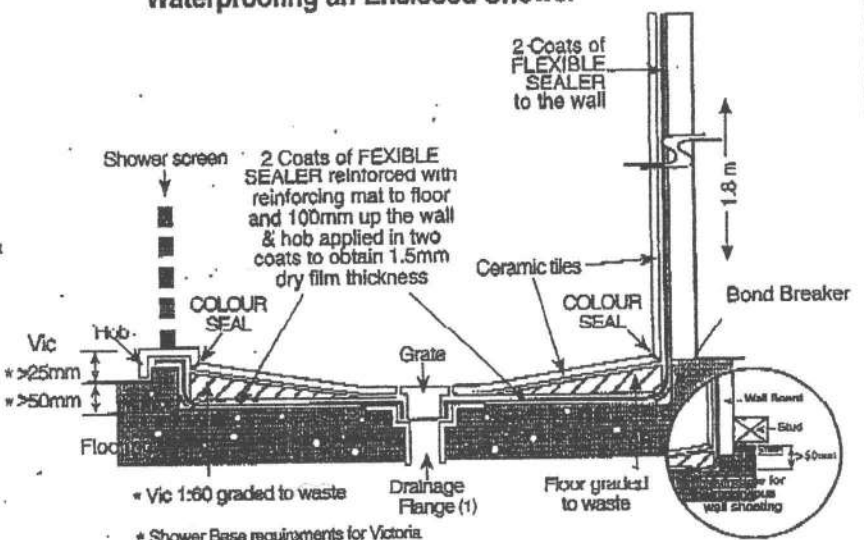
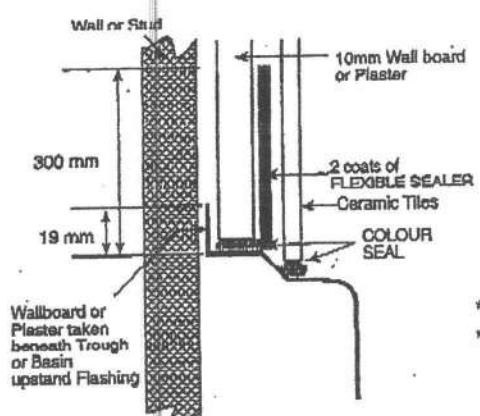
Waterproof a minimum of 300mm above the fixture for its length when fixture is within 75mm of the wall.



Waterproofing Wet Area Floors – Bathrooms & Laundries etc.



Waterproofing an Enclosed Shower



(1) Waste connection details vary depending on local regulations. The connection must comply with local requirements.

* Vic 1:60 graded to waste
* Shower Base requirements for Victoria



**ISP CONSULTING
ENGINEERS LTD**

Civil & Structural
Seismic Risk Analysis
Building Compliance

Lower Hutt Office
Tel: 04 566 8004
Fax: 04 566 8037
Level 1, 14 Laings Rd
Hutt City Dental Centre
P.O. Box 30 535
Lower Hutt 5040

Paraparaumu Office
Tel: 04 902 5750
P.O. Box 537
Coastlands Parade
Paraparaumu 5254

Email: email@isp.co.nz
Web: www.isp.co.nz

Structural Calculations

For

Lot 46 Simpson Crescent

Raumati

These calculations are in accordance with:

AS/NZS1170:2004 Structural Design Actions
NZS3101:2006 Design of Concrete Structures
NZS3603:1993 Design of Timber Structures
NZS3604:2011 Timber Framed Buildings

Engineer:
Geoff Lanyon
Craig McGhie

Initials:
GL
CM

Preamble:

Design driven-timber pile foundations for a new house to be built in Simpson Crescent.

Date:
23 August 2013

Job No.
25421



ISO 9001

PRODUCER STATEMENT - PS1 - DESIGN

(Guidance notes on the use of this form are printed on the reverse side*)

ISSUED: ISP Consulting Engineers Ltd

TO: **Paterson Homes**
(Owner / Developer)

TO BE SUPPLIED TO: Kapiti Coast District Council
(Building Consent Authority)

IN RESPECT OF: **Proposed New Dwelling**
(Description of Building Work)

AT: **Lot 46 Simpson Crescent, Raumati**
(Address)
LOT 46 DP

We have been engaged by the owner/developer referred to above to provide **structural design services and construction monitoring of specifically designed elements** in respect of the requirements of Clause B1 (B2 of specifically designed elements) of the building code for

☐ All☒**Part only as specified of building work:**

- Foundations including driven timber piles

The design carried out by us has been prepared in accordance with Compliance Documents issued by Department of Building & Housing B1, VM1 & VM4

The proposed building work covered by this producer statement is described on the drawings titled Lot 50 Simpson Crescent and numbered **S1**. *sk 2 & sk 3*

On behalf of the **Design Firm**, and subject to:

- (i) Site verification of the following design assumptions: Bearing capacity of driven timber piles to be confirmed on site by the Engineer.
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided will comply with the relevant provisions of the Building Code and b), the persons who have undertaken this design work have the necessary competency to do so.

I, John O'Hagan am CPEng #179947

I am a member of: IPENZ and hold the following qualifications: BE(Hons), NZCE(Civil), MIPENZ, CPEng

The design firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$ 200,000*.

The Design Firm is a member of ACENZ

SIGNED BY John O'Hagan ON BEHALF OF ISP Consulting Engineers Ltd

Date 23 August 2013

(Signature).....

Note: this statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provide to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1992. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional Engineers New Zealand, Association of Consulting Engineers New Zealand in consultation with the Building Officials Institute of New Zealand. The original suite of producer statements has been revised as at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

- PS1 Design** Intended for the use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;
- PS2 Design Review** Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;
- PS3 Construction** Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:20031 ; or Schedules E1/E2 of NZIA's SCC 2007 2
- PS4 Construction Review** Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate. This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACENZ, IPENZ and NZIA to interpret the Producer Statement.

Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence-based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as the Institution of Professional Engineers New Zealand (IPENZ) or the New Zealand Institute of Architects (NZIA) provides additional assurance of the designer's standing within the profession. If the design firm is a member of the Association of Consulting Engineers New Zealand (ACENZ), this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional".

Professional Indemnity Insurance

As part of membership requirements, ACENZ requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to \$500,000.

Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-5)3 (OL1-OL4)2. The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project concerned.

Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design Firm's engagement.

Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

Refer Also:

1 Conditions of Contract for Building & Civil Engineering Construction NZS 3910: 2003

2 NZIA Standard Conditions of Contract SCC 2007 (1st edition)

3 Guideline on the Briefing & Engagement for Consulting Engineering Services (ACENZ/IPENZ 2004)

www.acenz.org.nz
www.ipenz.org.nz
www.nzia.co.nz

**Memorandum from licensed building practitioner:
Certificate of design work
Section 45 and Section 30C, Building Act 2004**

J25421



**ISP CONSULTING
ENGINEERS LTD**

Civil & Structural
Seismic Risk Analysis
Building Compliance

Lower Hutt Office
Tel: 04 566 8004
Fax: 04 566 8037
Level 1, ISP Centre
14 Laings Road
P.O. Box 30 535
Lower Hutt 5010

Paraparaumu Office
Raumati Beach
P.O. Box 537
Paraparaumu 5254

Email: email@isp.co.nz
Web: www.isp.co.nz

THE BUILDING

Street address: Lot 46 Simpson Crescent

Suburb:

Town/City: Raumati

Postcode:

THE OWNER

Name(s): Paterson Homes

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the **Specialist** designer who supervised specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work.

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I, John O'Hagan, supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is restricted building work	Description (as required)
Specific Foundations (✓)	Driven timber piles
Specific Walls (outside the scope of NZS 3604:2011) (✗)	
Specific Retaining Walls (✗)	
Specific Beams (✗)	
Specific Columns (✗)	
Specific Bracing (✗)	
Other (✗)	

WAIVERS AND MODIFICATIONS

No waivers or modifications of the building code are required.

ISSUED BY

Name: John O'Hagan

CPEng number: 179947

DECLARATION

I, John O'Hagan, LBP, state that I have applied the skill and care reasonably required of a competent design professional in supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code; or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form.

Signature:

Date: 23 August 2013



ISO 9001

Date 20/8/13

Eng. GL

Job No. 23421

Sheet No. 1

Project Lot 46 Simpson Cr

Brief

Design foundations for single level house
Soil is soft. Driven timber piles are required

Loads

Roof $G = 0.35 \text{ kPa}$
 $Q = 0.25 \text{ kPa}$

timber framed walls $G = 0.35 \text{ kPa}$
brick clad walls $G = 2.17 \text{ kPa}$

Timber piles

Try 15mm sds, 1000 drop, 500 kg hammer
ultimate dependable capacity 75 kN
(see sheet 2)

Pile cap $500 \times 500 \times 200 \text{ G} = 1.2 \text{ kN/m}^2$

Slab $G = 2.4 \text{ kPa}$
 $Q = 1.5 \text{ kPa}$

$1.26 + 1.50 = 5.13 \text{ kPa} = 6.63 \text{ in garage}$

$3 \times 3 \text{ grid} = 59.67 + 1.2 \times 1.2 = 61.07 \text{ kN} < 75 \text{ kN}$
OK.

300 wide footings

Gang slab worst case
 $1.26 + 1.50 = 6.63 \text{ kPa}$

treat as two way slab $L_y/L_x = 1$
four edges continuous

$M_x = M_y = 0.024 \times 6.63 \times 32$
 $= 1.452$

ve moments $= 1.53 \times 1.452 = 1.91 \text{ kNm}$

SE-62 mesh $A_s = 146 \text{ mm}^2/\text{m}$

$\phi M_u = 0.85 \times 146 \times 500 \left(50 - \frac{0.85 \times 146 \times 50}{2 \times 1000} \right) \times 10^{-6}$

$= 2.96 \text{ kNm} \text{ OK.}$

in garage max span = 2.5m

in house max span = 3m

piles on a $3 \text{ m} \times 3 \text{ m}$ grid

Capacity of Driven Timber Piles

Using Hiley Formula: $R = Whn/(S+C/2)$

Where: R = Ultimate Driving Resistance (kN)

W = Weight of Hammer (kN)

h = Freefall Height of Hammer (mm)

S = Final set or penetration per blow (mm)

C = Sum of temporary compressions of pile (mm)

n = Efficiency of blow

$W = 5.0\text{kN}$

$h = 1000\text{mm}$

$S = 15\text{mm}$

$$C = C_c + C_p + C_q$$

Put $C_c = 2.0\text{mm}$

$C_q = 4.0\text{mm}$

$$C_p = 7.0 \times 10^{-4} L \text{ (Medium driving timber pile)}$$

L (pile length) = 3600mm

Gives $C_p = 2.5\text{mm}$

Therefore $C = 8.5\text{mm}$

Assuming $W \gg Pe$

$$\text{Therefore } n = (W + Pe^2)/(W + P)$$

P = Weight of pile, anvil, helmet and follower (kN)

Say $P = 0.25\text{kN} + 0.1\text{kN/m} \times L$

$P = 0.6\text{kN}$

e = Coefficient of restitution of materials subject to impact

Put $e = 0.25$

Gives $n = 0.90$

Therefore $R = 233.1\text{kN}$

Putting $\phi = 0.33$ Gives Dependable Ultimate Pile Capacity $\phi R = 76.9\text{kN}$

Date	20/8/15	Eng.	GL	Job No.	25421	Sheet No.	3
Project	Lot 46 Simpson Cr						



Foundation Beam

Trg piles @ 3.0m c/s max

Roof	$Q = 0.25 \times 4$	$= 1.0 \text{ kN/m}$
Wall	$G = 0.35 \times 14$	$= 2.8 \text{ kN/m}$
Footing	$G = 2.17 \times 2.4$	$= 5.208 \text{ kN/m}$
Slab	$G = 24 \times 0.9 \times 0.3$	$= 3.6 \text{ kN/m}$
	$G = 2.4 \times 1.5$	$= 3.6 \text{ kN/m}$
	$Q = 1.5 \times 1.8$	$= 2.25 \text{ kN/m}$

$$1.26 + 1.5Q = 1.2 (2.8 + 5.208 + 3.6 + 3.6) + 1.5 (1.0 + 2.25) = 23.125 \text{ kN/m}$$

$$23.125 \times L = 75 \text{ kN}$$

$$L = 3.24 \text{ m} \quad \text{use } 3.0 \text{ m spacing}$$

$$\text{Steel } \frac{wL^2}{8} = 23.125 \times \frac{3^2}{8} = 26.02 \text{ kNm}$$

$$d = 520 - 75 - 6 = 419$$

2 HD 12 bars

$$M_{12} = 0.85 \times 226 \times 500 (419 - \frac{0.59 \times 226 \times 500}{20 \times 300}) = 39.2 \text{ kNm} \quad \text{O.K.}$$

check HD 12 top steel $d = 500 - 50 = 450$

$$M_{12} = 0.85 \times 113 \times 500 (450 - \frac{0.59 \times 113 \times 500}{20 \times 300}) = 21.34 \text{ kNm} \quad \text{O.K.}$$

$$\text{as } M_{12} = 23.125 \times \frac{3^2}{10} = 20.81 \text{ kNm} \quad \text{O.K.}$$

Date

23/8/13

Eng.

GL

Job No.

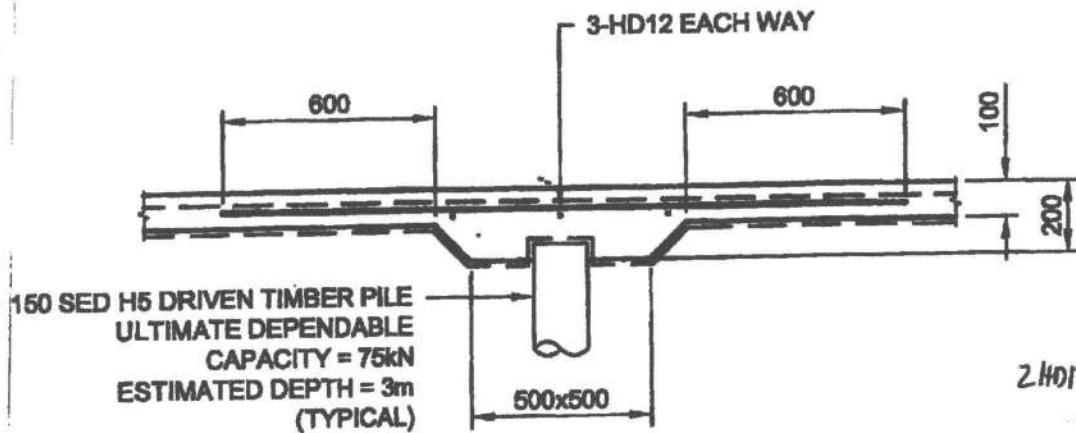
23421

Sheet No.

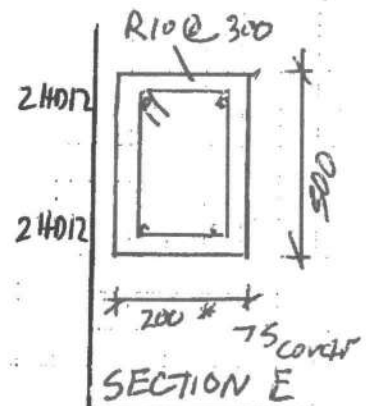
SK2

Project

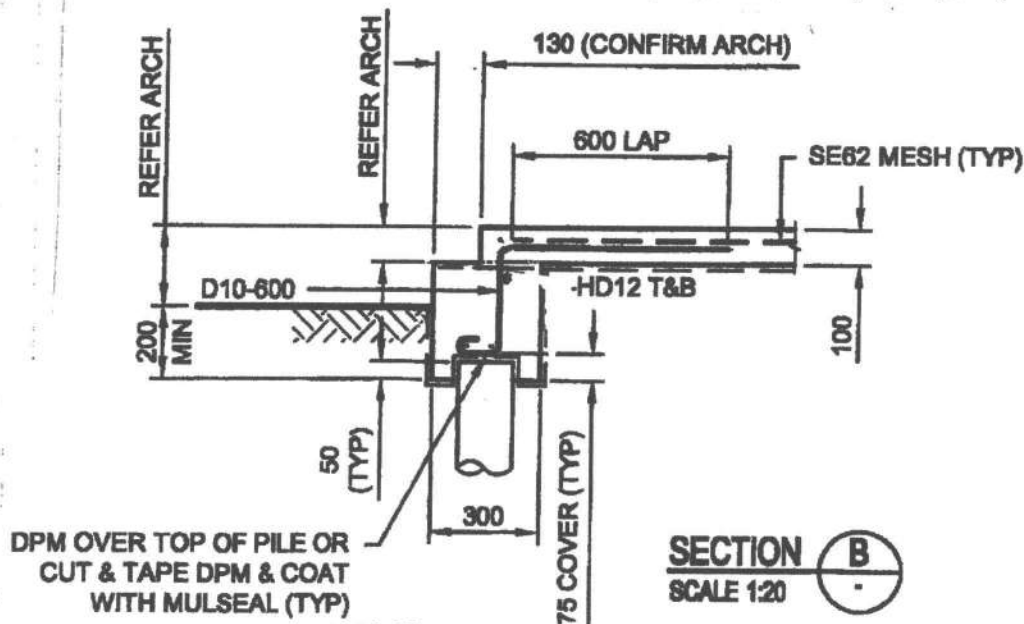
Lot 46 Simpson Cr



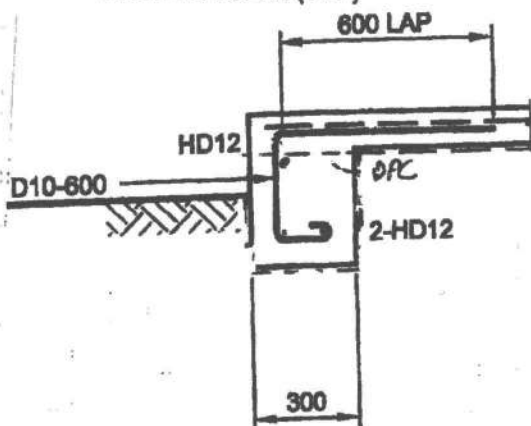
SECTION A
SCALE 1:20



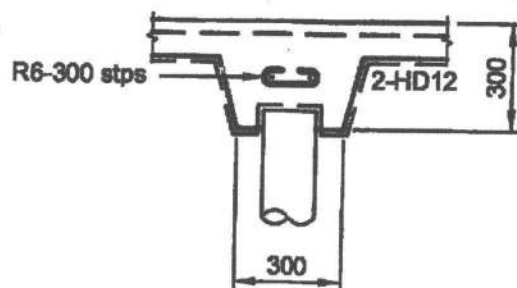
* minimum width to suit width of timber wall



SECTION B
SCALE 1:20



SECTION D
SCALE 1:20



SECTION C
SCALE 1:20

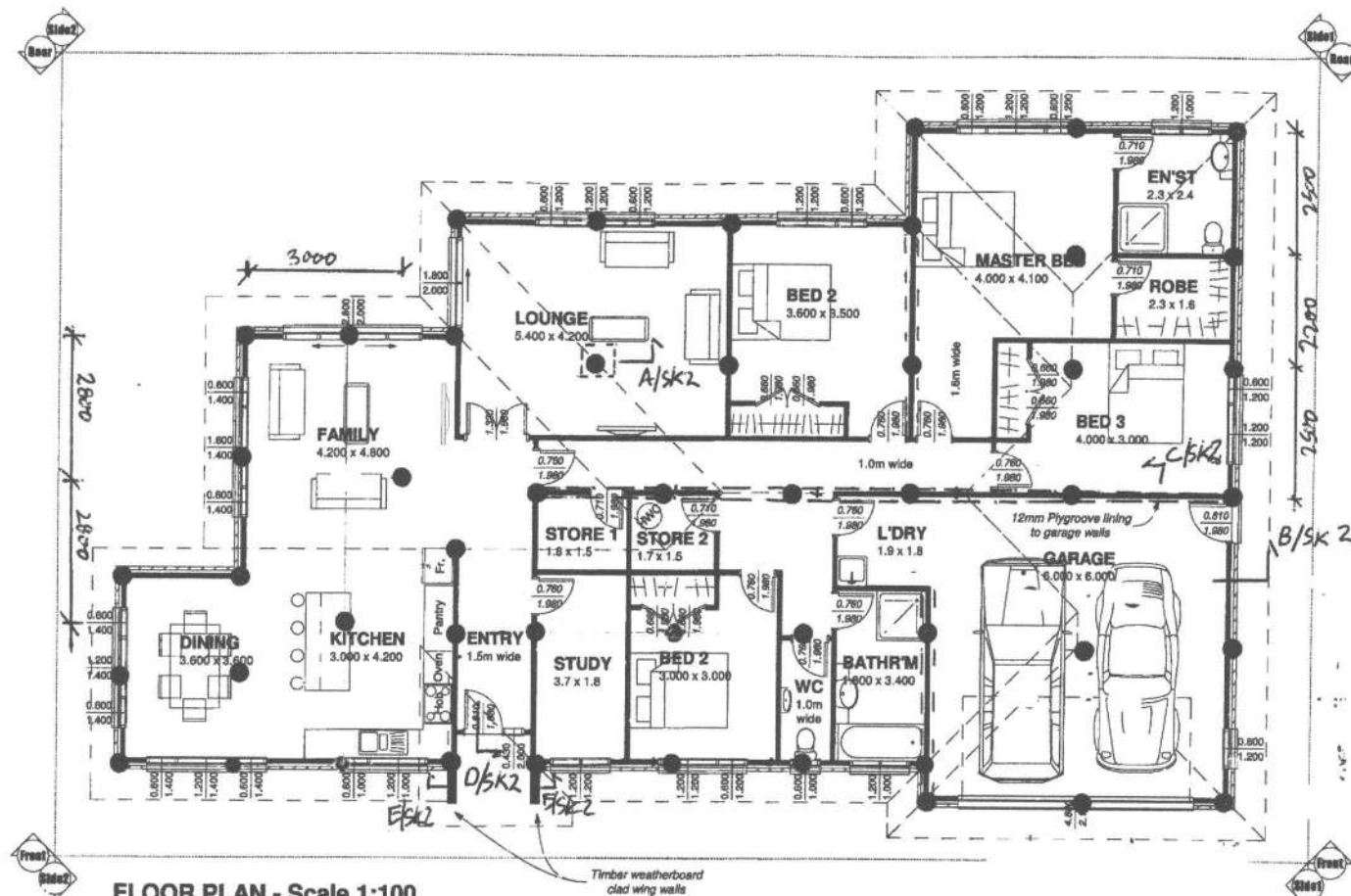
Date **15/8/13**Eng. **GL**Job No. **25421**Sheet No. **SK3**

Project

LOT 46 Simpson Cr**NOTES:**

1. REFER ARCHITECT'S DRAWINGS FOR DIMENSIONS, UNLESS NOTED OTHERWISE AND FOR DETAILS OF ALL SERVICES TO BE CAST IN SLAB. DO NOT SCALE OFF THIS DRAWING
2. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF NZS3109:1997
3. CONCRETE SHALL BE:
 - SLABS & FOOTINGS N25 (25MPa)
 - PILES N17.5 (17.5MPa)
7. MAXIMUM SLUMP TO BE 100mm UNLESS NOTED OTHERWISE
8. HD12 BARS LAP LENGTH IS 600mm
9. CONCRETE FINISHES SHALL BE:
 - SLABS U3
 - EXPOSED FOOTINGS F4
10. CONCRETE COVER
 - 25mm MIN. INTERIOR
 - 40mm MIN. EXTERIOR
 - 75mm MIN. IN CONTACT WITH GROUND
11. ALL REINFORCEMENT SHALL COMPLY WITH AS/NZS4871:2001 (HD BARS SHALL NOT BE REBENT)
12. PILING CONTRACTOR TO PROVIDE RECORD OF PILE SETS AND PILE DRIVING EQUIPMENT DETAILS. TOP OF PILES TO BE PAINTED WITH METALEX AND HAVE A GAP BETWEEN PILE AND FOOTING STEEL OR A LAYER OF DPC
13. ENGINEER TO INSPECT PRIOR TO POURING CONCRETE. ENGINEER REQUIRES 24 HOURS NOTICE BEFORE ANY VISIT

SKI



FLOOR PLAN - Scale 1:100
Area = 244m² (over brick)

- 150 SED Driven timber pile, 3000 long
- Ultimate dependable bearing capacity - 75 kN
- === Footing under load bearing wall (see detail C/SK2)
- pile cap (typ. call) see A/SK2

Proposed New Building for: Lot 46 Simpson Cres
PAUMATI

Prepared by:



Drawn: S. Neale

Date: 13.08.13

Issue:

Job Number
PA 046

These plans have been prepared with all reasonable care taken to ensure dimensions and specifications are correct, and in the assumption they will be further checked on site and verified by the building manager who will have a sound knowledge of the NZBC and NZS 8804. If any discrepancy in the drawings is found it is to be immediately reported to the Designer (Design House Ltd) in writing. The Designer accepts no responsibility for costs or delays caused by any errors or omissions in any plans produced which are not reported to the Designer before any building or related work commences. Any works carried out by any contractor, sub-contractor or supplier without the approval of the Designer, constitute a breach of contract. The Designer is not responsible for any delays or claims arising from any errors or omissions in any plans produced.

- 5 SEP 2013

BY: *APM*

GIB EzyBrace® 2011 Software



Demand Calculation Sheet

single storey

V06/11

Job Details

Name Paterson Homes Ltd
Street and Number 12 Simpson Crescent
Lot and DP Number Lot 46
City/Town/District Paraparaumu
Designer S Neale
Company Name The Plan Workz
Date 30/08/2013



Building Specification

Select Lining Option

10 or 13 mm GIB® Plasterboard

Number of storeys

single

Floor Loading

2kPa

Foundation Type

slab

Cladding Weight

heavy

Roof Weight

light

Room in Roof Space

no

Roof Pitch (degrees)

20

Roof height above eaves (m)

2.6

Building height to apex (m)

4.9

Ground to lower floor level (m)

0.3

Stud Height (m)

2.4

Building Length (m)

22.7

Building Width (m)

13.7

Building Plan Area (m2)

244

Complete Single Floor
Column only

Building Location

Wind Zone

Very High

Select by Building Consent Authority Map

or Preference

Very High

Wind Region

Preference selected

Lee Zone

Preference selected

Ground Roughness

Preference selected

Site Exposure

Preference selected

Topographic Class

Preference selected

Earthquake Zone

3

Soil Type

D&E (deep to very soft)

Annual exceedance probability

1/500 (NZS3604:2011 default)

Bracing Units required for Wind

Demand W (BU)

Walls single

along

slab

877

across

slab

1486

Bracing Units required for Earthquake

Demand along / across E (BU)

Walls

single

slab

1935

GIB EzyBrace® 2011 Software



SINGLE OR UPPER STOREY WALLS ACROSS

V06/11

[illegible]

GIB EzyBrace® 2011 Software



SINGLE OR UPPER STOREY WALLS ALONG

V08/11

[illegible]

- 5 SEP 2013

H1 Information required to support Building Consent Applications Effective from 30 June 2008

Form to be completed for all non-solid construction residential building consent applications

Site address	LOT 46 12 SIMPSON CRESCENT BAUMATI			
Climate Zone	Climate Zone 2			
Construction type	Non-solid (standard timber framed buildings)			
Construction Details (specify materials/products for each area)				
Roof	TIMBER FRAME / PITCHED / METAL TILE			
Walls	TIMBER FRAME / BRICK VENEER / WB (TIMBER)			
Floor	CONCRETE SLAB			
Glazing type	DOUBLE GLAZED ALUMINIUM			
Glazing Rules				
Area of glazing less than 30% of total wall area	Total Glazing	=	41.92~2	
	Total wall area	=	172.32~2	
	Glazing/wall area	=	% 24.3%	
Window area of east, south and west walls less than 30% of total wall area of these walls	Total Glazing	=	27.2~2	
	Total wall area	=	118.32~2	
	Glazing/wall area	=	% 23%	
Products to be used and R-values				
Building thermal envelope component	Minimum required construction R-values in climate zone 2	Product specified and R-values	Construction R-value achieved	Reference to supporting technical data
Roof	R-2.9	R3.2	R3.1	BEANZ
Walls	R-1.9	R2.2	R1.9	BEANZ BRICK/WB
Floors	R-1.3	R1.5	R1.5	BEANZ A/2=3.0
Glazing (vertical)	R-0.26	R0.26	R0.26	BEANZ
Glazing (skylights)	R-0.26	-	-	-

EXCL
FLOOR
COVERINGS

Note;

If the sum of the area of glazing on the East, South & West facing walls is more than 30% of the total wall area of all these walls, then the calculation or modeling method shall be used.

Carpets or floor coverings are not included in the floor R-value. The floor R-value is met by concrete slab-on-ground and suspended floors with continuous closed perimeter with 100mm draped foil.

Exposed floors will require additional treatment (e.g. pole houses)

Total area of skylights must be no more than 1.2m² The calculation or modeling method must be used for designs where the total area of skylights is more than 1.2m²



BEL ACOUSTIC

CONSULTING

- 5 SEP 2013

19TH AUGUST 2013

**GLEN PATERSON
PATERSON HOMES LTD
PO BOX 493
PARAPARAUMU**

AIRPORT NOISE ASSESSMENT:

PROPOSED DWELLING – LOT 46 AT 12 SIMPSON CRESCENT, RAUMATI

I have perused the supplied plans and drawings of the proposed new dwelling at Lot 46 (#12) Simpson Crescent. The site is located within the Residential Zone as shown in Figure 1 below.



Figure 1: Location of the site in Simpson Crescent

In relation to the airport Outer Control Boundary (OCB) and the Air Noise Boundary, the site is located **outside** both boundaries as illustrated in Figure 2 below. The property was previously on Airport Land.

The Kapiti Coast District Council requires that residences within the Outer Control Boundary (OCB) of Paraparaumu Airport (Urban Planning Map 11) comply with noise conditions set out in the District Plan for the Residential Zone in question. This property is located within the 45dBA Noise Standard Zone shown in the plan in Figure 2 below. There is also provision for land that was previously Paraparaumu Airport land. This provision is stated below:

(iv) Residential Zoned Land Previously Paraparaumu Airport

This standard is independent of any existing or future standard imposed by the Airport noise contours contained within the District Plan, unless the future requirement is more restrictive than that set out below.

Prior to the issue by Council of building consent for any dwelling or for any addition or alteration to a dwelling, an acoustic certificate shall be provided to the Council by a suitably qualified and experienced acoustic engineer to demonstrate that the building has been designed to achieve an internal noise environment of no more than 45dBA L_{dn} in all habitable rooms with ventilating windows open.

Where necessary to have windows closed to achieve the acoustic design requirements an alternative ventilating system shall be provided. Any such ventilating system shall be designed to satisfy the requirements of the Building Code and achieve a level of no more than NC30 in any habitable room.

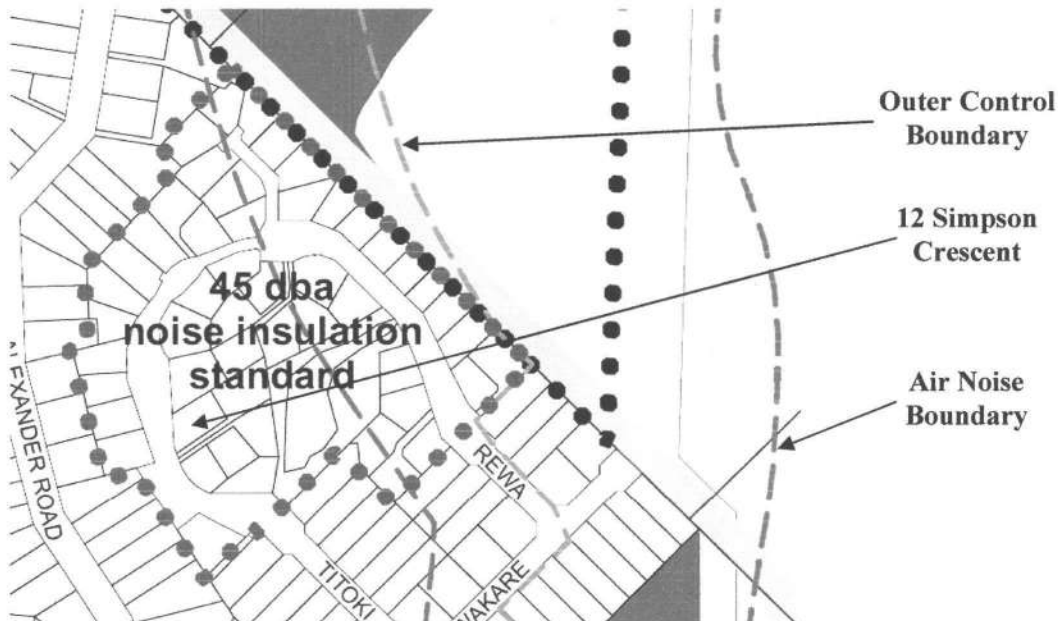


Figure 2: Part of District Plan Map 11 showing location of site in relation to the Outer Control Boundary and the Air Noise Boundary

In accordance with the District Plan rules, since this site lies outside the Outer Control Boundary and the land was previously Airport Land, it requires the buildings to comply with *Rule D1.2.1 Permitted Activity Standards: Noise: (iv) Residential Zoned Land Previously Paraparaumu Airport*. The location of the property means that **the level of exposure externally will be significantly less than 55dBA L_{DN}** – probably less than 50dBA L_{DN}.

The proposed dwelling needs to be designed to achieve an internal noise environment of no more than 45dBA L_{dn} in all habitable rooms with ventilating windows open. Therefore the external envelope of the dwelling will be required to achieve a noise insulation of at least 5dBA in the habitable spaces in order to ensure compliance with the District Plan rules.

ASSESSMENT

I have studied the plans and drawings of the project. The building is to be a single level dwelling unit located on reasonably level ground in the centre of the site with a layout as illustrated in the plans illustrated below. The house will be constructed over a concrete slab floor.

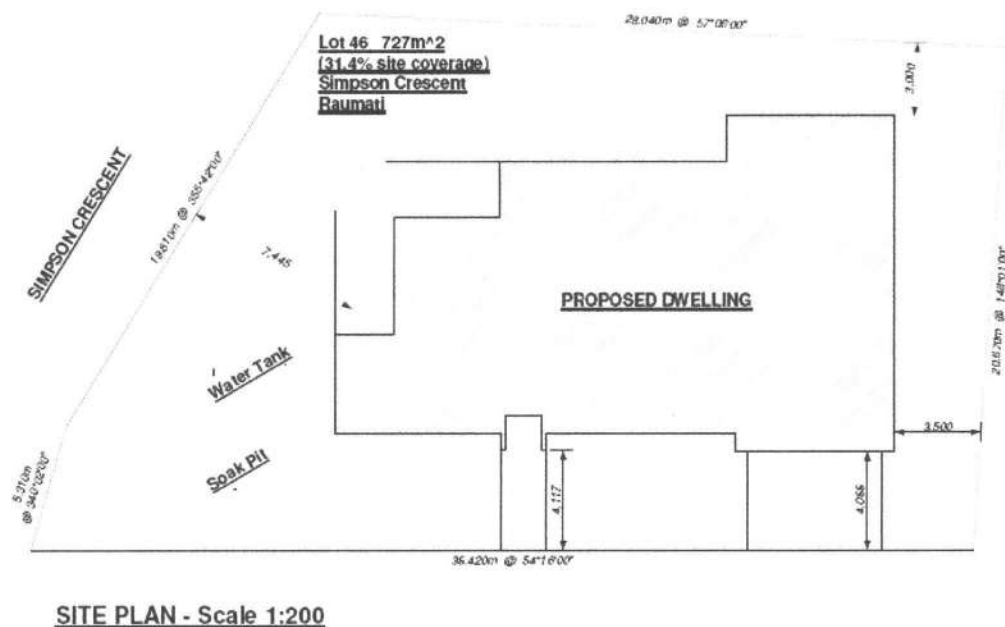


Figure 3: Location of the house on the site

Only the external walls and the ceiling/roof need to be considered in this assessment. The construction will include a sloping metal tile roof. The external walls are to comprise a series 70 brick veneer cladding system, but there are relatively small areas of the external walls in the family room and the dining room which incorporate Timber Weatherboard cladding system. There is also an area around the entrance doorway and

the wing walls in that area that is to be similarly clad with Timber Weatherboards. The internal linings are **proposed to be Standard Gib walls and ceilings – 10mm on the walls and 13mm on the ceilings.** The windows and ranch sliders are to be double glazed.

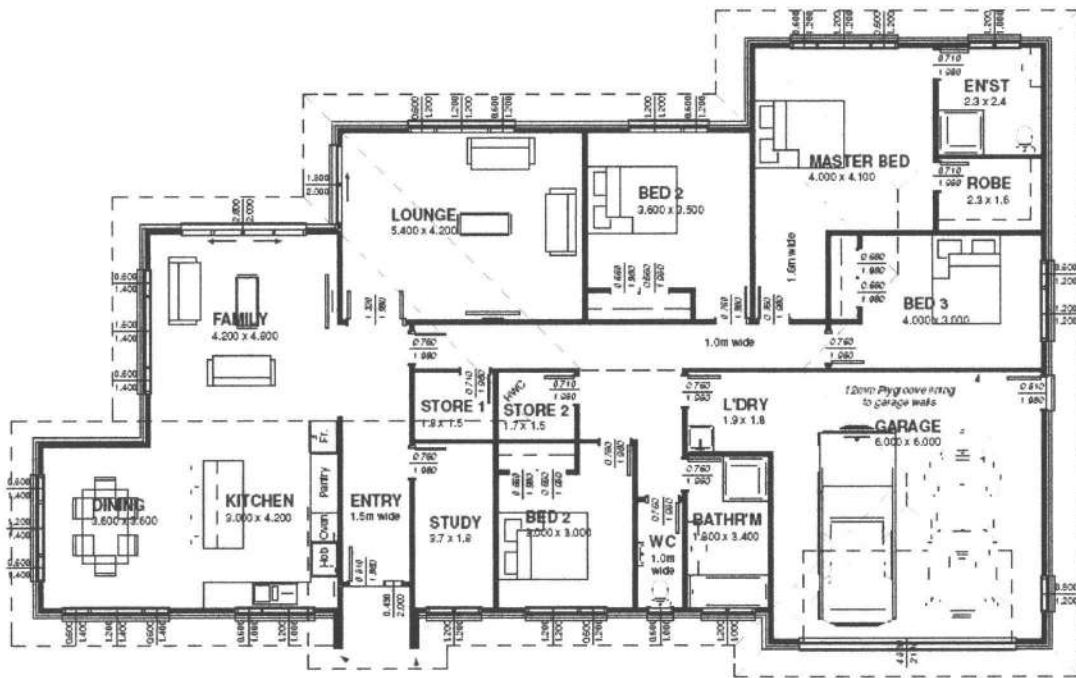


Figure 4: Layout of proposed house at 12 Simpson Crescent

There are three external entrance doorways – main front entrance into a hallway and two ranch sliders – one in the Family Room and one in the Lounge. The entrance into the garage and then from the garage through the laundry into the passageway makes this a buffered entrance and as such will not contribute significantly to the noise entering into the dwelling. The windows are standard double glazed aluminium type using two panes of 3mm glass with a 10mm (approx) cavity between.

The type of construction proposed and stated above will comply with the District Plan requirement for acoustic treatment and will achieve the required acoustic insulation for protection from Airport Operations.

NOISE INSULATION

The minimum type of construction required to achieve the required acoustic insulation is described below.

WALLS

All the external walls in the habitable rooms (Lounge, Kitchen/Family/Dining, Study and 3 Bedrooms) should take the form of that already proposed (and stated above):

Series 70 brick veneer over plywood on the outside of the timber framing with **standard 10mm Gib linings** with cavity thermal insulation, except for the feature areas of the external walls, which can be Timber Weatherboard as proposed.

ROOF/CEILING

The proposed roof of metal tile roof is adequate for the purpose. The ceilings in all the habitable rooms need to have an internal lining of at least **1 layer of 10mm standard Gib plaster board – 13mm plasterboard is proposed.**

The junctions between the ceiling and wall linings will need careful sealing with Gib Soundseal acoustic sealant or the equivalent in accordance with the manufacturer's installation instructions.

The proposed roof space thermal insulation will also double as a suitable acoustic absorber and so special treatment is unnecessary in the roof space.

It is very important that all joints and gaps in the construction of the outer envelope of the building are filled meticulously with a suitable mastic building material, such as Gib Soundseal. Care in this respect is very important around the frames of doors and windows. The smallest gap or crack in the envelope will negate the process of keeping out the external noise. The manufacturer's instructions on the installation of the lining products must be strictly adhered to.

If recessed down-lights are installed in the ceiling, the fixture will need to have a capping on the loft side to seal off any gaps in the fixture through which sound can easily penetrate down into the room below. This can take the form of a proprietary box or a timber or metal box installed on site.

Surface mounted lighting requires no special treatment.

WINDOWS

The windows in all the habitable spaces are to be of double glazed construction with rubber compression seals on opening windows. These will be adequate for the purpose.

In order to maximise the sound reduction achievable, it is important that all opening windows are sealed using compressive type acoustic seals all round the frame to ensure no gaps when the openings are closed.

DOORS

The front entrance door needs no special treatment since it opens into an entrance hallway.

The sliding doors in the Lounge and Family Room should have rubber compression seals fitted where appropriate on the doors.

The entrance door into and from the garage laundry area needs no special treatment since it opens into a passageway.

VENTILATION

There is no need to maintain windows or doors closed in order to achieve the acoustic design requirements and therefore an alternative ventilating system is NOT required.

CONCLUSIONS

In accordance with the requirements of Rule D1.2.1 *Permitted Activity Standards* in the District Plan:

- The incorporation of the noise control measures stated in this report will result in the dwelling meeting the requirement for a maximum noise level of 45dBA L_{dn} in all the habitable rooms within the building with windows and doors open.
- It will also result in a sound reduction of aircraft noise of at least 15dBA.
- Since windows may be open for ventilation, an alternative ventilating system will not be necessary



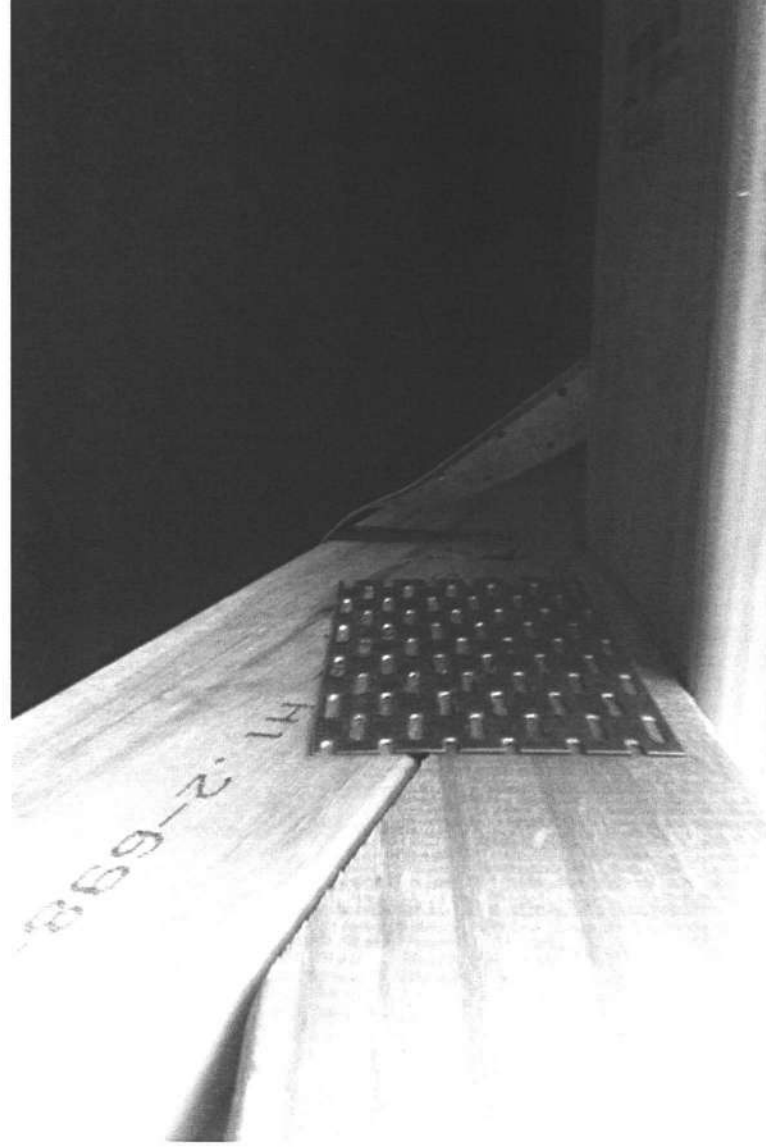
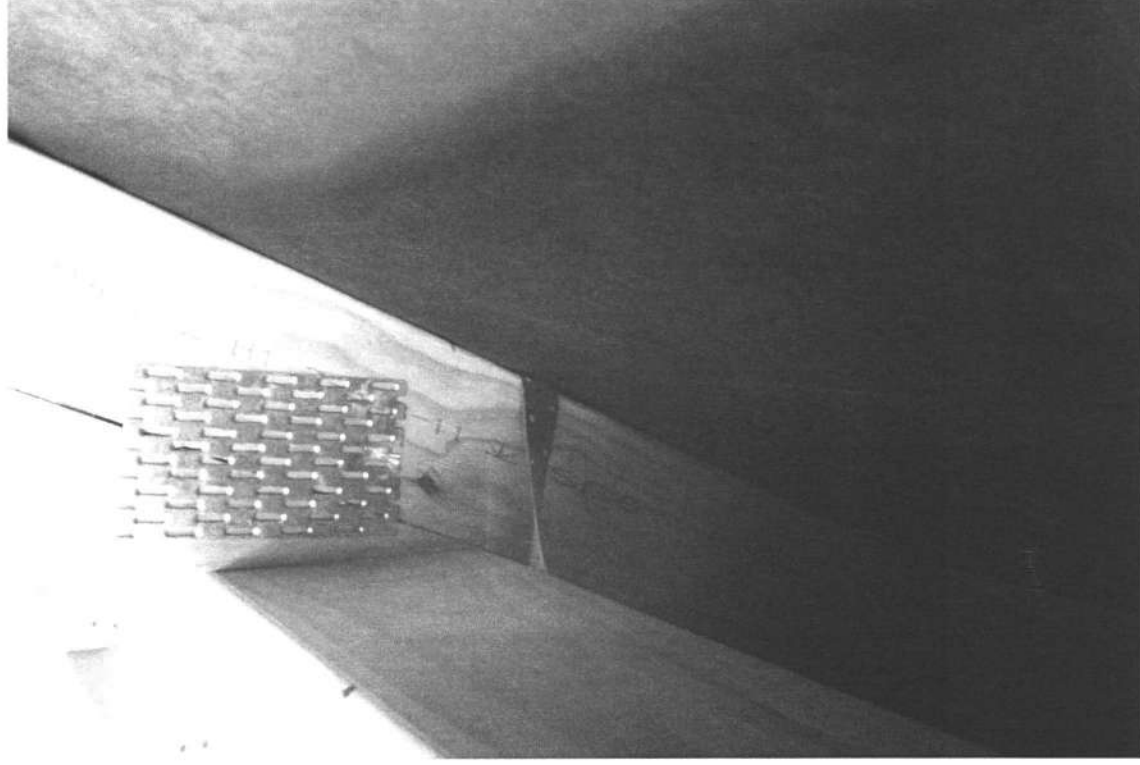
G Bellhouse



BL 130603



BC 130 603



BL 130 603



BC 130603



BC130603



Paterson Homes Ltd
PO Box 493
Paraparaumu

3 October 2013

COPY

Dear Building Consent Applicant / Building Owner

Request for Further Information - Building Consent: 130603

Site Address:	12 Simpson Crescent, Raumati Beach
Legal Description:	LOT 46 DP 401543 C/T 404318
Project Description:	Build a one storey home lined with ply and brick and tile roof.

Following checking of your Building Consent it is apparent that further information is required.

Information Needed:

- 1) Page 2 indicates a 2m fall across the building area. A note next to that states developed flat site. Please clarify if is this site was developed as apart of the original development of the sub division or has this work been carried out by the builder? Also please revise the contour plan to reflect the actual site contours.
- 2) The provided PS1 indicates an incorrect lot number midway down the page and also drawings SK2 and SK3 appear to have been omitted.

We have suspended your application and will not proceed any further with its processing until the above information is received. Please send it to us by 03/11/12. If we do not receive it by this date, we may not be able to issue your Building Consent.

If you have any questions or you would like to discuss this matter, please contact me on (04) 296-4700 or 0800 486 486 referencing the Building Consent Number noted above.

Yours sincerely

Jaime Sherlock

Jaime Sherlock

From: Craig McGhie [craig@isp.co.nz]
Sent: Friday, 4 October 2013 2:40 p.m.
To: Jaime Sherlock
Cc: Glen & Mae (gpbuilding@xtra.co.nz)
Subject: Lot 46 Simpson Cres
Attachments: 25421 Calcs 4 Oct 2013.pdf

Jamie

Please find attached revise structural documentation with a new PS1 and LBP form.

Note that Sketches SK2 and Sk3 are A4 sheets include just after the LBP form

Please contact the undersigned if you have any questions.

Regards

Craig McGhie
SENIOR ENGINEER



Lower Hutt Office
 Tel: 04 566 8004
 Fax: 04 566 8037
 Level 1
 14 Laings Rd
 Lower Hutt 5010

Kapiti Office
 Tel: 04 902 5750
 Level 1 Kayel Building
 Margaret Road,
 Raumati Beach
 Paraparaumu 5032

*Civil & Structural Design
 Earthquake Prone Analysis
 Building Compliance
 Fire Reports*

Email: craig@isp.co.nz

Web:

www.isp.co.nz

Mob: 021 243 9164

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Please consider the environment before printing this email.

From: Glen & Mae [mailto:gpbuilding@xtra.co.nz]
Sent: Friday, 4 October 2013 12:59 p.m.
To: Craig McGhie
Subject: Fwd: Fwd: RE: lot 46 Simpson Cr

----- Original Message -----

Subject: Fwd: RE: lot 46 Simpson Cr
Date: Thu, 03 Oct 2013 16:59:07 +1300
From: Glen & Mae <gpbuilding@xtra.co.nz>
To: Geoff Lanyon <LanyonG@isp.co.nz>

Hi Geoff / Craig

Could you please do the changes and send back to me ASAP

The council man says the PS1 has the wrong lot number down the page (has lot 50 down instead of lot 46) and also the drawings for SK2 and SK3 appear to be ommitted.

Thanks

Mae Paterson

7/10/2013

----- Original Message -----

Subject:RE: lot 46 Simpson Cr

Date:Thu, 3 Oct 2013 03:09:21 +0000

From:Jaime Sherlock <jaime.sherlock@kapiticoast.govt.nz>

To:'Glen & Mae' <gpbuiding@xtra.co.nz>

Hi Mae

I have attached a copy of the PS1 outlining the deficiencies.

Regarding the retaining wall, I need to have that placed on the site plan and also have a cross section of it (indicating materials, and depths). I need to establish whether it is surcharged. Also was it driven piled?

Cheers

Jaime Sherlock

Building Control Officer

Āpiha Whakatū Whare

Kāpiti Coast District

Council

Tel 04 296 4700

www.kapiticoast.govt.nz

From: Glen & Mae [<mailto:gpbuiding@xtra.co.nz>]

Sent: Thursday, 3 October 2013 3:26 p.m.

To: Jaime Sherlock

Subject: Fwd: lot 46 Simpson Cr

Hi Jamie

Is this what you are after for number 2 question?

Thanks

Mae

----- Original Message -----

Subject:lot 46 Simpson Cr

Date:Wed, 28 Aug 2013 21:14:31 +0000

From:Geoff Lanyon <LanyonG@isp.co.nz>

To:gpbuiding@xtra.co.nz <gpbuiding@xtra.co.nz>

Mae,

Please find calculations, sketches, PS1 etc attached.

regards

Geoff Lanyon

Structural Engineer

ISP Consulting Engineers Ltd

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7/10/2013

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Jaime Sherlock

From: Steve [steve@theplanworkz.co.nz]
Sent: Monday, 7 October 2013 1:48 p.m.
To: Jaime Sherlock
Cc: Glen & Mae
Subject: Re: Fwd: RE: lot 46 Simpson Cr
Attachments: Lot46Sheet2.pdf

Hi Jaime – updated Site Plan showing a site cross-section with the retaining wall

Regards
Steve

From: Glen & Mae
Sent: Thursday, October 03, 2013 4:50 PM
To: Steve
Subject: Fwd: RE: lot 46 Simpson Cr

Hi Steve could you put the retaining wall on the plan see below what Jamie has written thanks
Mae

----- Original Message -----

Subject: RE: lot 46 Simpson Cr
Date: Thu, 3 Oct 2013 03:09:21 +0000
From: Jaime Sherlock <mailto:jaime.sherlock@kapiticoast.govt.nz>
To: 'Glen & Mae' <mailto:gpbuiding@xtra.co.nz>

Hi Mae
I have attached a copy of the PS1 outlining the deficiencies.
Regarding the retaining wall, I need to have that placed on the site plan and also have a cross section of it (indicating materials, and depths). I need to establish whether it is surcharged. Also was it driven piled?

Cheers

Jaime Sherlock
Building Control Officer
Āpiha Whakatū Whare

Kāpiti Coast District
Council
Tel 04 296 4700
www.kapiticoast.govt.nz

From: Glen & Mae [<mailto:gpbuiding@xtra.co.nz>]
Sent: Thursday, 3 October 2013 3:26 p.m.
To: Jaime Sherlock
Subject: Fwd: lot 46 Simpson Cr

Hi Jamie
Is this what you are after for number 2 question?
Thanks

7/10/2013

Mae

----- Original Message -----

Subject:lot 46 Simpson Cr

Date:Wed, 28 Aug 2013 21:14:31 +0000

From:Geoff Lanyon <mailto:LanyonG@isp.co.nz>

To:gpbuilding@xtra.co.nz <mailto:gpbuilding@xtra.co.nz>

Mae,

Please find calculations, sketches, PS1 etc attached.

regards

Geoff Lanyon
Structural Engineer
ISP Consulting Engineers Ltd

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PLANNING PROCESSING CHECKSHEET

Building Consent Number : BC 130 603



Property Information				
Property Address	12 SIMPSON CRESENT, RAUMATI			
Legal Description	Lot 46 DP401543.			
Planning Zone	Residential.			
Building Project	PROPOSED NEW DWELLING.			
	Yes	No	Action reqd	Action
Certificate of Title	.			
Easements		✓		
Section 221	✓		Include copy	
District Plan Items to Check				
	Yes	No	Action Reqd	Actioned
Designations		✓		
Heritage Register		✓		
Eco-site/Native Veg		✓		
Flood Hazards		✓		
Min Floor Level		✓		
Coastal Hazards		✓		
Relocatable / No build		✓		
Other Hazards		✓		
EQ Faults		✓		
Airport Zones	✓		45dba + Horizontal Surface.	
45dba / Acoustic Rept	✓		included.	
	Complies?		Action Reqd	Actioned
Yards (+water bodies)	✓		Neighbours Approval??	
HIRB	✓			
Max Height	✓			
Site Coverage	✓			
Permeable Surface	✓			
Earthworks	✓			
Water Tank / Siting	✓✓			
Parking	✓			
Retaining Walls	N/A			

Building Consent Number : BC 130603

	Complies?		Action Req'd	Actioned
Licences	N/A.			
Other Provisions				
	Yes	No	Action req'd	Actioned
Does the building straddle Title/crosslease boundary		✓	Section 77 required	
Existing Resource Consent?		✓		
Resource Consent Required?		✓	Apply Section 37 and advise Plan Vetting Team.	
Section 72 Required?		✓	Advise Plan Vetting Team and send letters out.	\$ 367
Section 221 Consent Notice	✓		Advise Plan Vetting Team	
DIF Required?		✓	Advise Plan Vetting Team and send letter out.	
Calculate DIF Fees			<i>Paid on subdivision</i>	Amount
			2 nd Comm / Ind Floor area X \$13.31	
			Non-residential 0.002 X area	
Invoice codes	RM		Water Supply	
	RM		Sewage	
	RM 79		Community Facilities	
	RM		Roads	
	RM		Flood Mitigation	
	RM		Reserves	
Send DIF letter out			TOTAL	

Additional Comments

* ALL WORK TO BE IN ACCORDANCE WITH RM060081
 & SEC 221 CONSENT NOTICE *

Decision: (delete item that does not apply)

- Application complies with District Plan requirements
- ~~Application does not comply with District Plan - BC to be issued subject to s37~~

Officer's Name & Signature: *J. Burke* Date: 21-9-13