

There is no work section specification relating to the following selections

DAMP PROOF COURSE

Type: 90MM CROMFORD

BUILDING WRAP

Type: THERMACRAFT COVERUP

**COUNCIL
COPY**



RRD001NI80

Document Number: **RDC-143152**

Date Received: **8/09/2010**

0421 WALL CLADDING

SOFFIT

Type/thickness: 4.5 mm
Finish: PAINTED
Fixings: TO HARDIE SPECS
Jointers: PVC

0422 BRICK VENEER CLADDING

BRICK VENEER

Type: AS SELECTED
Bond: AS SELECTED
Pointing: AS SELECTED ~

0431 ROOFING

ROOFING GARRARD METAL TILE
Underlay: SELF SUPPORTIG UNDERLAY

Flashings: COLOURSTEEL
Colour: TO MATCH ROOF COLOUR

PIM/BC

No 65805

0432 RAINWATER SYSTEM

SPOUTING

Type: 1/4 ROUND ON BILDON TIMBER FASCIA

DOWNPIPES

Type: 80MM PVC
Fixing: PVC

452 ALUMINIUM WINDOWS AND DOORS

ALUMINIUM WINDOWS AND DOORS

Brand/type: AS SELECTED
Finish: AS SELECTED
Jamb liners: H3.1 TAN TIMBER CLEARS
Flashings: COLOURSTEEL
Hardware: AS SELECTED

0453 GARAGE DOORS

There is no work section specification relating to the following selections

GARAGE DOOR

Type: AS SELECTED
Face panel: AS SELECTED
Finish: AS SELECTED

GARAGE DOOR CONTROLLER

Type: AS SELECTED

**COUNCIL
COPY**

GIB® EzyBrace™ FP for GIB® EzyBrace™ Systems, 2009

GIB®

GIB® Wall Bracing Calculation Sheet A

single storey

V03/09

Job Details

Name JOHN PATTERSON
Street and Number 32 NIKAU ST LIGHT ROOF
Lot and DP Number Lot 130 DP 392624
City/Town/District ROTORUA
Designer KEN INGLIS
Company Name PLATINUM DESIGN LTD
Date 11/02/2010



Select GIB® Lining
Option

10 mm GIB® Plasterboard

Building Specification

Number of storeys single
Floor Loading 2kPa
Foundation Type slab

Single Floor

Cladding Weight heavy
Roof Weight light
Room in Roof Space no
Roof Pitch (degrees) 25
Roof height above eaves (m) 2.6
Building height to apex (m) 5.3
Ground to lower floor level (m) 0.3

Complete Single Floor
Column only

PIM/BC
No. 65805

Stud Height (m) 2.4
Building Length (m) 12.4
Building Width (m) 12.1
Building Plan Area (m2) 125

Building Location

Wind Zone Medium
Select by Building Consent Authority Map
or Preference Medium
Region Preference selected
Terrain Preference selected
Exposure Preference selected
Topography Preference selected

Earthquake Zone

A

Consult GIB® EzyBrace™ Systems, 2009
for Wind Zone definitions

Bracing Units required for Wind

Demand W (BU)
Walls single
along slab 597
across slab 627

Bracing Units required for Earthquake

Demand along / across E (BU)
Walls
single
slab 703

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GIB® EzyBrace™ FP for GIB® EzyBrace™ Systems, 2009



GIB® Wall Bracing Calculation Sheet B								Single or Upper Walls Along		V03/09
Along		Bracing Elements provided						Wind	Earthq.	
1	2	3	4	6	5	7	8	9W	10EQ	
Line Label	Minimum BUs Req/Ach	Bracing Element No.	Available Wall Length L (m)	Angle to Bracing line (degrees)	Element Height H (m)	Bracing Type	Supplier	BUs Achieved	BUs Achieved	
A	106	1	1.2		2.4	SP1	PLY	120	120	
	OK	2	1.2		2.4	SP1	PLY	120	120	
line totals		3								
W	240	4								
EQ	240	5								
B	70	1	2.4		2.4	GS2(10)	GIB®	216	192	
	OK	2	0.6		2.4	SP2	PLY	51	51	
line totals		3								
W	267	4								
EQ	243	5								
C	70	1	0.9		2.4	SP1	PLY	90	90	
	OK	2	2.4		2.4	GS2(10)	GIB®	216	192	
line totals		3	0.45		2.4	SP4	PLY	34	38	
W	340	4								
EQ	320	5								
D	119	1	1.2		2.4	SP1	PLY	120	120	
	OK	2	0.9		2.4	SP1	PLY	90	90	
line totals		3								
W	210	4								
EQ	210	5								
E		1								
		2								
line totals		3								
W		4								
EQ		5								
F	enter	1								
		2								
line totals		3								
W		4								
EQ		5								
G	enter	1								
		2								
line totals		3								
W		4								
EQ		5								
H	enter	1								
		2								
line totals		3								
W		4								
EQ		5								
©Winstone Wallboards Limited, 1999-2009. All rights reserved.								Wind	Earthq.	
Totals Achieved		Achieved/Demand		W	177%	EQ	144%	1057	1013	
Concrete Slab								OK	OK	
Totals Required (from Demand)								597	703	

GIB® EzyBrace™ FP for GIB® EzyBrace™ Systems, 2009



GIB® Wall Bracing Calculation Sheet B								Single or Upper Walls Across		V03/09
Across		Bracing Elements provided						Wind	Earthq.	
1	2	3	4	6	5	7	8	9W	10EQ	
Line Label	Minimum BUs Req/Ach	Bracing Element No.	Available Wall Length L (m)	Angle to Bracing line (degrees)	Element Height H (m)	Bracing Type	Supplier	BUs Achieved	BUs Achieved	
M	121	1	0.6		2.4	SP2	PLY	51	51	
	OK	2	0.6		2.4	SP2	PLY	51	51	
line totals		3	0.6		2.4	SP2	PLY	51	51	
W	204	4	0.6		2.4	SP2	PLY	51	51	
EQ	204	5								
N	70	1	2.4		2.4	GS1(10)	GIB®	166	132	
	OK	2	2.7		2.4	GS1(10)	GIB®	186	149	
line totals		3								
W	352	4								
EQ	281	5								
O	70	1	1.2		2.4	GS2(10)	GIB®	90	84	
	OK	2	1.8		2.4	GS2(10)	GIB®	162	144	
line totals		3								
W	252	4								
EQ	228	5								
P	116	1	0.45		2.4	SP4	PLY	34	38	
	OK	2								
line totals		3	0.6		2.4	SP2	PLY	51	51	
W	152	4	0.45		2.4	SP4	PLY	34	38	
EQ	166	5	0.45		2.4	SP4	PLY	34	38	
Q		1								
		2								
line totals		3								
W		4								
EQ		5								
R		1								
		2								
line totals		3								
W		4								
EQ		5								
S		1								
		2								
line totals		3								
W		4								
EQ		5								
T	enter	1								
		2								
line totals		3								
W		4								
EQ		5								

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						Wind	Earthq.
Totals Achieved	Achieved/Demand	W	153%	EQ	125%	960	878
Concrete Slab						OK	OK
Totals Required (from Demand)						627	703



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Email bs-sch@bigpond.net.au
ABN 872 722 01100

Mr. S Plester
Construction Chemicals
18 Carpenter Road
East Tamaki 1702
NEW ZEALAND

**COUNCIL
COPY**

27th May 2005

Dear Steve,

RE: DURABILITY OF LIQUID FLASH I

PIM/BC
No. 65805

Liquid Flash I was assessed for suitability as a waterproofing membrane by the Australian Building Systems Appraisal Council (now CSIRO Appraisals) in October 1996 as Technical Assessment No 209. Part of this assessment was the undertaking of durability testing by both BASF Australia (Project Report No 1997 July 1990) and by CSIRO (July 1996). The testing undertaken in both of these reports was done to a testing protocol which has now been included in a joint Australian and New Zealand Standard AS/NZS 4858 – 2004 'Wet area membranes' for the durability testing part of this standard. The testing undertaken by both BASF and CSIRO for Liquid Flash I met the durability requirements. Further, the Liquid Flash I Technical Assessment 209 is still current. Its performance will have been assessed by CSIRO Appraisals as part of the ongoing monitoring undertaken of products that maintain their term of validity. No unsatisfactory field performance has been reported on Liquid Flash I, when it has been installed in compliance with the manufactures instructions, since the publication of the appraisal report in October 1996.

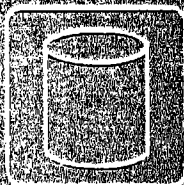
Based on the above information Liquid Flash I will have a durability of at least 15 years and exceeds the requirements of the NZ Building Code, section B2 – Durability, provided it is installed in compliance with the manufacturer's instructions particularly in regard to substrate preparation, membrane thickness and curing.

Yours faithfully

Barry L. Schafer

Attachment copy of CV of Barry L. Schafer

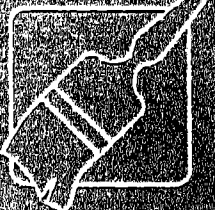
PACKAGING



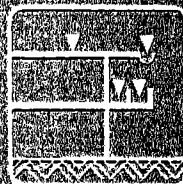
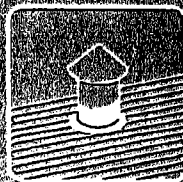
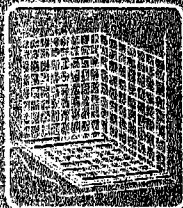
MIXING



APPLICATION



USES



SUBSTRATES



DESCRIPTION

Liquid Flash is a premixed one pack **white waterbased reinforced acrylic flexible waterproofing membrane** that is easily applied with a brush to form a resilient waterproof flashing membrane between different building surfaces. Liquid Flash will remain pliable and elastic and will bridge cracks and smooth irregular surfaces.

Liquid Flash has Certificate of Conformity No. 97/003 and ABSAC appraisal No. 209 for use in **internal wet areas**. Internal wet areas must be waterproofed in accordance with AS3740 and local regulations. For more details refer to brochure titled "Waterproofing Enclosed Shower Alcoves Prior to Tiling with Liquid Flash".

USES

A waterproof membrane for roofs, balconies, retaining walls, planter boxes, internal wet areas (eg bathrooms, kitchens, laundries and toilets). A flashing material for roof vent pipes, parapet walls and roof sheeting/tiles. For use on cement render, concrete, brick, block and building boards such as gypsum and cement sheeting on walls and structural timber and compressed cement sheeting on floors, roof and gutter repairs.

FEATURES

- Easy to apply – apply straight from the bucket.
- Permanently flexible reinforced membrane.
- Excellent UV Light resistance.
- Excellent adhesion to correctly prepared surfaces.
- Bridges cracks
- Colour – White and can be overpainted with waterbased acrylic paints to colour match surroundings.

COVERAGE (approximate)

Two coats give a final coverage of 1.4 L/m² (dry film thickness of 1.5mm).

PERFORMANCE DATA

Weather Resistance Slight chalking after over 5000 hours QUV

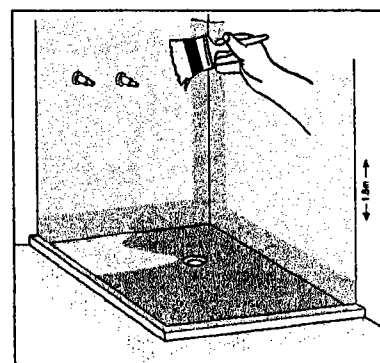
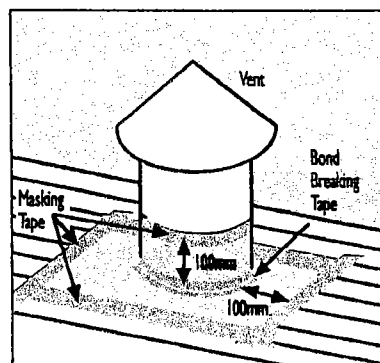
Moisture Vapour Transmission 0.001 perms-cm when tested in accordance with ASTM: E96-66

Tensile Strength (ASTM D412) 2.45 N/mm²

Elongation (ASTM D412) 145%

Adhesion to Substrates (AS1526j)	Aluminium	4.75N/mm ²
	Mortar	0.57N/mm ²
	Glass	0.69N/mm ²

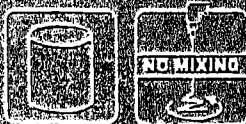
Exceeds SISIR (Singapore) requirements for rooftop waterproofing.



CONSTRUCTION CHEMICALS

LIQUID FLASH / FLEXIBLE SEALER

PACKAGING MIXING



APPLICATION



KEMSCREED / LIQUID FLASH II

PACKAGING MIXING



APPLICATION



ADHERING TILES

PACKAGING MIXING



APPLICATION



SUBSTRATES

CONCRETE
CEMENT SHEET
STRUCTURAL
FIBRE FLOORING
BRICK BLOCK
CEMENT RENDER
GYPSUM BUILDING
BOARD

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.
Kemscreed	A two pack fast setting acrylic water proofing membrane.
Liquid Flash II	A two pack fast setting acrylic reinforced 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

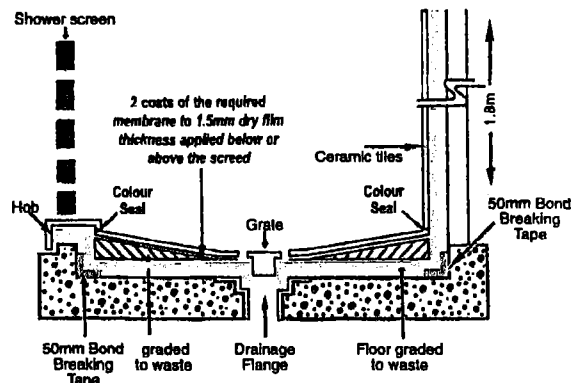
CONSTRUCTION CHEMICALS

- ADELAIDE 457 - 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 3692
- MELBOURNE 1 / 10 GABRIELLE CT BAYSWATER NORTH 3153 PH: (03) 9761 4711 FAX: (03) 9761 4748
- PERTH 61 DOWD ST WELSHPOOL 6106 PH: (08) 9358 6493 FAX: (08) 9358 6493
- SYDNEY 2 / 31-33 NEWTON RD WETHERILL PARK 2164 PH: (02) 8756 3533 FAX: (02) 8756 3534
- AUCKLAND 16 CARPENTER RD EAST TAMAKI PH: (09) 273 5444 FAX: 0800 266 236
- KUALA LUMPUR LOT 2 JALAN KECAPI 33/2 ELITE INDUSTRIAL ESTATE OFF JALAN BUKIT KEMUNING PH: (03) 522 2522 FAX: (03) 522 2526

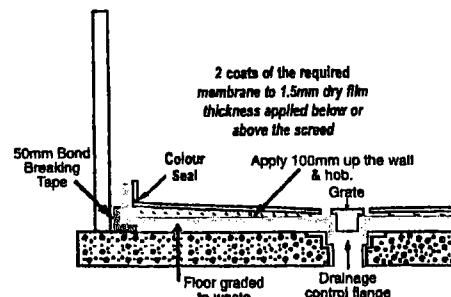
"The Information contained in this technical publication is based on our current knowledge and experience and is provided as a guide only. In view of the many factors that may affect application it is the users sole responsibility to ensure suitability for a specific purpose."

WATERPROOFING SHOWERS

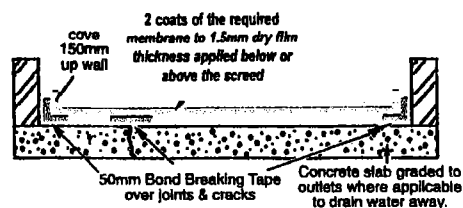
Waterproof 1.8m up the wall and 1.5m in a horizontal radius from the rose. (Waterproofing is ceased at shower screen, when provided)



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



WATERPROOFING FLAT ROOFS / BALCONIES



SPECIFICATION

The waterproof flashing shall be a fibre reinforced water based acrylic membrane and have a tensile strength 2.45M/mm² and 145% elongation such as Liquid Flash manufactured by Construction Chemicals and shall be applied in accordance with the manufacturer's instruction.

SURFACE PREPARATION

Surfaces must be sound and clean of grease, oil, dust and other contaminants. Treat surfaces as follows before applying Liquid Flash – **Galvanised Iron** – new: degrease with xylene or similar and wash clean with water and allow to dry. **Rusty Surfaces** – wire brush to remove flaky rust and treat with a rust inhibitor. **Timber** – Prime with a timber primer. **Plastic Pipes** – roughen area to be coated with sand paper. **Painted Surfaces** – Abrade with a wire brush or sand down to obtain a good mechanical key. Scrub thoroughly with detergent and water and allow to dry. **Cement sheet / Plaster Board** – Prime with 50:50 mix of Bonding Additive and water. **Masonry** – Render must be at least 7 days old, concrete 28 days old and a minimum 25 MPa. Smooth surfaces must be mechanically roughened, washed thoroughly and allowed to dry. Prime with 50:50 mix of Bonding Additive and water.

MEMBRANE APPLICATION

Before applying Liquid Flash apply 50mm bond breaking tape (masking tape) to the junction of walls/floors, walls/walls, structural cracks and joints in building boards to accommodate extremes in movement. Apply two coats. Apply the second coat at 90° to the first as soon as it is dry (recoat time is approximately 2 hours at 20°C). Apply each coat thickly (approximately 1.5mm wet) allowing it to flow rather than being brushed on. Use a soft brush for best results. Clean wet brushes in water. A final thickness of 1.5mm is required.

FLASHING APPLICATION

At the junction of 2 surfaces apply 50mm bond breaking tape (masking tape) equally to both surfaces. This will eliminate wastage of material dropping through the hole and allow for extremes of movement. On round pipes use 50mm square pieces of masking tape around the circumference of the pipe. To make a clean line at the edge of the flashing, apply masking tape to the outside of the area to be coated. Apply two coats 100mm or more to each surface. Can be painted to colour match surroundings.

SHOWER ALCOVES

It is advisable to flood test the shower after curing (approximately 72 hours). This should be done before tiling commences.

CURING

7 days at 20°C @ 50% relative humidity. Protect from rain for the first 24 hours. Cold damp conditions – increase curing time. Hot dry conditions – reduces curing time. Immersed applications must be allowed to cure for 28 days before being put into use.

PRECAUTIONS

- Apply at temperatures between 10°-30°
- Do not thin material or add filler.
- Liquid Flash should not be used over surfaces where continuous rising damp is a problem or hydrastatic pressure is present.
- Liquid Flash used in shower alcoves should be allowed 72 hours to cure before tiling. Allow 7 days after application of Liquid Flash before using shower.
- It is advisable to flood test the shower after curing (approx. 72 hours at 20°C 50°RH) before tiling commences.

CLEANING

Equipment may be cleaned with clean water, cured material with Xylene or MEK.

SHELF LIFE

2 years



● ADELAIDE 467 - 469 SOUTH RD REGENCY PARK 5010 PH: (08) 8346 8013 FAX: (08) 8340 2052
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● KUALA LUMPUR LOT 2 JALAN KECAPU 33/2 ELITE INDUSTRIAL ESTATE OFF JALAN BUKIT KEMUNING
PH: (03) 522 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."



MiTek New Zealand Ltd.

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PO Box 58-014, Botany 2163
Phone: 09 274 7109
Fax: 09 274 7100

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www.mitek.nz.co.nz

Printed: 09:14:02 27 Jul 2010

MiTek 20/20 Engineering 4.6.4.14

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

ISSUED BY: **MiTek New Zealand Ltd**
TO: **Cambridge Manufacturing**
IN RESPECT OF: **GANG-NAIL Truss Designs**

**COUNCIL
COPY**

This producer statement covers the MiTek 20/20™ truss design and the structural performance of the GANG-NAIL plate for the job reference **FC4412** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek 20/20™ truss design program has been developed by MiTek New Zealand Ltd for the design of GANG-NAIL® timber roof, floor and attic trusses in New Zealand. The truss designs computed by MiTek 20/20™ are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents of the New Zealand Building Code and Verification Method B1/VM1; and internationally accepted standard ANSI/TPI 1 - 2002 as an alternative solution to satisfy the requirements of Clause B1 of the New Zealand Building Code.

PIM/BC

No. 65805

On behalf of MiTek New Zealand Ltd, and subject to:

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence

I believe on reasonable grounds that the trusses, if constructed in accordance with the MiTek 20/20™ truss design and shop drawings, will comply with the relevant provisions of the New Zealand Building Code.

MiTek New Zealand Ltd holds a current policy of Professional Indemnity Insurance no less than \$500,000.

On behalf of MiTek New Zealand Ltd,

Date: April 2010

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

Job: FC4412

Client: Carters Rotorua
Phone:Site: Res. Patterson
34 Nikau Street
RotoruaDescription:
Building Consent No.:
MiTek 20/20 Engineering 4.9.4.14

Phone:

MiTek New Zealand Ltd.

Printed: 09:14:02 27 Jul 2010

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **Cambridge Manufacturing**, being licensed to use the MiTek 20/20™ software, to the client listed above and may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

MiTek 20/20™ TRUSS DESIGN DATA

The MiTek 20/20™ computer design for this job is based on the following design parameters entered into the program. The Fabricator shall ensure that these job details are current and relevant to the project for the design of the GANG-NAIL trusses.

Job Details

Importance Level : 2

Design Working Life : 50 years

Roof Truss

Timber Group: MSG45H1H3

Pitch: 25.000 deg

Nominal Overhang: 600 mm

Roof**Ceiling****Wind**

Material: Metal Tiles

Material: Standard

Area: High (44.0 m/s)

Dead Load: 0.210 kPa

Dead Load: 0.200 kPa

Pressure Coeff: Cpe = varies; Cpi = -0.30, 0.20

Restraints: 400 mm centres

Restraints: 600 mm centres

Live Load: Q_{ur} = 0.250 kPaLive Load: Q_c = 1.400 kNQ_c = 1.100 kN

The timber for these GANG-NAIL trusses shall be treated to the requirements of NZS 3602:2003 and shall be graded to the requirements of NZS 3603:1993. Unless otherwise noted, this design assumes that the steel fixings and timber connectors proposed are located in a "closed environment", as defined by NZS3604:1999 Section 4.

GANG-NAIL Truss List

Legend: * = detail only, ? = input only, ~~xxx~~ = failed design, Ø = non certified, Unmarked trusses = designed successfully, LB = lateral bracing required
WB = windbeam required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
J01H	2	3107	25.000	900	J01B	1	3107	25.000	900	J04	1	1957	25.000	900
J01H	2	3107	25.000	900	J01C	2	3107	25.000	900	J04A	1	1957	25.000	900
T01	1	9860	25.000	900	J01C	2	3107	25.000	900	J04B	1	1957	25.000	900
T02	1	7385	25.000	900	J01D	1	3107	25.000	900	J05	1	1057	25.000	900
T05	1	5860	25.000	677	J01E	1	3107	25.000	900	J05A	1	1057	25.000	900
T08	1	3960	25.000	900	J01F	1	3107	25.000	900	T03	1	7385	25.000	770
TG01	1	9160	25.000	900	J01G	1	3107	25.000	900	T04	1	5860	25.000	900
TG02	1	7385	25.000	900	J02	1	2207	25.000	900	T06	2	5860	25.000	677
TR01	1	9860	25.000	900	J02A	1	2207	25.000	900	T07	1	3960	25.000	900
TR02	1	7385	25.000	900	J02B	2	2207	25.000	900	T09	1	3107	25.000	776
ET01	1	5860	25.000	900	J02B	2	2207	25.000	900	V01	1	2293	25.000	900
J01	2	3107	25.000	900	J03	1	1307	25.000	900	V02	1	1523	25.000	900
J01	2	3107	25.000	900	J03A	1	1307	25.000	900	V03	1	877	25.000	900
J01A	2	3107	25.000	900	J03B	1	1307	25.000	900					
J01A	2	3107	25.000	900	J03C	1	1307	25.000	900					

Total quantity : 54

The computer design input has been carried out by:

Name of Computer Operator: Andre Schaefer

Qualifications and Title: Truss Detailer

Signed:

CARTERS
A Division of Carter Holt Harvey

Dated: Tuesday, 27 July 2010

BUILDING CONSENT LAYOUT

CARTERS**MANUFACTURING
CAMBRIDGE**07 823 7312
07 823 7297 FaxJOB No **FC4412**Client: J.Patterson
Job Name: Nikau Str.
Address: 34 Nikau Street
RotoruaPitch: 25.0
Roof Material: Metal Tile
Soffit Overhang: 600 mm
Wind Area: High
Snow Load: 0 kPaTrusses And Rafters At 900 Centres
Unless Stated Otherwise.This layout is to be read in conjunction
with the Architectural plans.

DRAWN BY Andre Schaefer

DATE 27/07/10 PAGE 1 of 2

**BUILDING CONSENT
INFORMATION**

These layouts and associated design statements are provided as a means of showing compliance with NZBC and may be used for Building Consent Application purposes only. This is a Buildable layout which may have some dimensional changes completed at the time of truss manufacture.

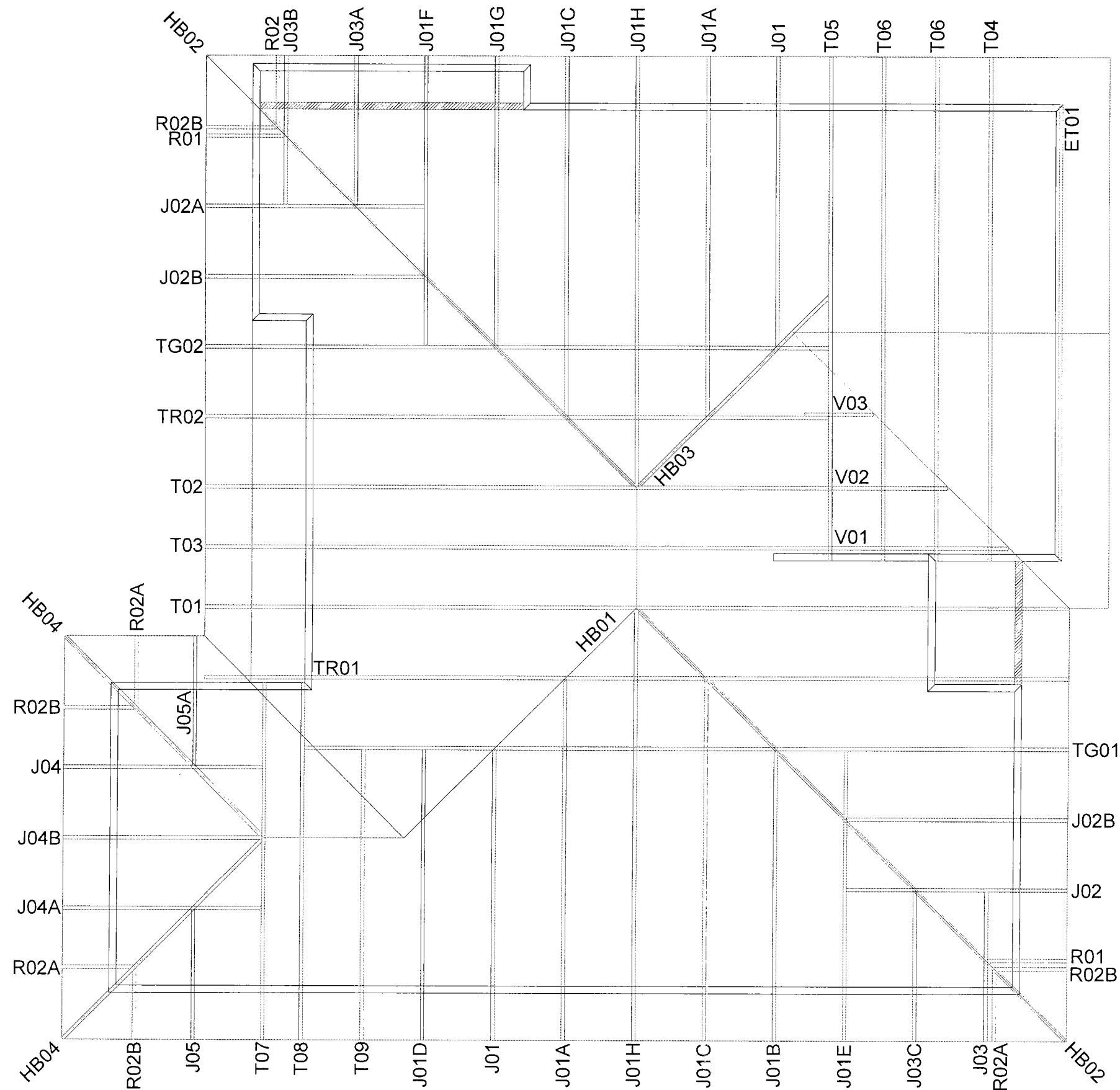
As to be Built roof truss layouts, truss fixing details, point load notification, and a Producer Statement for the design of the roof trusses will be provided to the Local Authority at the time of manufacture.

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

These layouts and associated design statements are valid only if the job is manufactured by CARTERS.

TRUSS FIXINGS

Truss to Top Plate - 2 wire dogs
Truss to Truss - Joist Hanger
or alternatively as specified by
CARTERS on the Final Layout

See Page 2 for Dimensions
and Point Load notification

0431 ROOFING

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

1.1 QUALIFICATIONS

Use experienced competent roofers familiar with the materials and techniques specified.

1.2 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.

1.4 METAL TILES

Profile, metal and finish as selected. Accessories, cappings, flashings, and fixings to match and to the roofing manufacturer's requirements.

1.6 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 required.

1.7 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.

1.8 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.

1.9 LAY ROOF UNDERLAY

Lay and fix to NZBC E2/AS1, 8.1.5 Underlays, and to NZS 3604, 11.2 Roof cladding underlays.

1.10 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.

1.12 INSTALL TILE BATTENS

Install to the roofing manufacturer's requirements, with joints fully supported and staggered.

1.13 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.

1.16 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.

PIM/BC**No - 65805**

- 1.17 **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.
- 1.18 **PENETRATIONS**
Flash and overflash penetrations through the roof. Fit proprietary boots to pipework penetrations.
- 1.19 **COMPLETE**
Ensure the work is complete with flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.
- 1.20 **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.

**COUNCIL
COPY**

SPECIFICATION

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

PATTERSON-MCFARLAINE RESIDENCE

(project name)

^{32A}
34 NIKAU STREET

(project address)

PIM/BC

No. 65805

(owners name)

Job Number: ~

Date: APRIL 2010

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0121 PROJECT

- 1.1 PROJECT
Street address: 34 NIKAU STREET ROTORUA~
- 1.2 OWNER
Name: JOHN PATTERSON AND ROBBIE MC FARLAINE
Mailing address: ~
Telephone: ~
Email: ~
Facsimile: ~
- 1.3 DESIGNER
Name: KILLYLEAGH DESIGN LTD
Mailing address: PO BOX 561 ROTORUA
Telephone: 07 350 1101
Email: ~
Facsimile: 07 350 1124
- 1.4 ENGINEER
Name: CLIENT TO ADVISE
Mailing address: ~
Telephone: ~
Email: ~
Facsimile: ~
- 1.5 PROJECT DESCRIPTION
Type: RESIDENTIAL UNIT
Intended use: SINGLE RESIDENTIAL UNIT
Intended life: NOT LESS THAN 50 YEARS
- 1.6 CONTRACTOR
Name: TO BE ADVISED
Mailing address: ~
Telephone: ~
Email: ~
Facsimile: ~

0122 DOCUMENTATION

1.1	DRAWINGS		
	Number	Revision	Title
	16	~	~
1.2	ENGINEERS DOCUMENTS		
	NIL		
1.3	OTHER DOCUMENTS		
	BRACING CALCS		
1.4	PRODUCER STATEMENTS		
	LIQUID FLASH FOR WET AREAS		
1.5	PRODUCT CERTIFICATION		
	NIL		
1.6	BRANZ APPRAISALS		
	NIL		
1.7	MANUFACTURERS LITERATURE		
	NIL		

0123 COMPLIANCE

1.1 SITE DATA

Wind zone: M
Earthquake zone: A

1.2 BUILDING DATA

Building
Floor live load: 40 KPa
Overall height of building 5.0 metres
Risk assessment: 3

1.3 SITE

Legal description: Lot 130 , DP 392624
Area: 365 m²

1.4 SITE COVERAGE - PROPOSED

House: 34.78 m²

1.5 EXCAVATION

104 m³

1.6 PRODUCER STATEMENTS

Provide Producer Statements for the following
Truss design
Waterproofing
Roofing
Plastering
Glazing

0124 SELECTIONS

0221 PREPARATION AND GROUND WORK

FILL

Type: COMPACTED PUMICE

BACKFILL TO RETAINING WALLS

Type: FREE DRAINING SCORIA OR SIMOLAR

0311 CONCRETE

DAMP PROOF MEMBRANE

Type/thickness: CROMFORD 90MM UNDER PLATES
.25 POLYTHENE UNDER SLAB

REINFORCEMENT

Type: 665 HRC MESH

CONCRETE

Location: FOOTINGS AND SLAB AND BLOCKWORK
Strength: 20 MPa
Surface finish: STEEL FLOAT

0331 CONCRETE MASONRY

CONCRETE MASONRY

Type: FIRTH
Bond: MORTAR
Pointing: RECESSED

0341 STRUCTURAL STEELWORK

There is no work section specification relating to the following selections

STEELWORK

Item: FOOTINGS AND BONDBEAM -D12
SLAB 665 MESH
STARTERS D10

0381 TIMBER FRAMING

EXTERIOR WALL FRAMING

Type/treatment: H1.2 MSG8 MINIMUM
H3.1 TO WET AREAS---WC BATH AND LAUNDRY
Cavity battens: H3.2 TO OVER WINDOWS

ROOF FRAMING

Type/treatment H1.2

INTERIOR WALL FRAMING

Type/treatment: H1.2 MINIMUM
H3.1 TO WET AREAS---WC BATH AND LAUNDRY

ENGINEERED TIMBER

Location: LINTELS MSG8
Type/treatment: H1.2

0412 DAMPPROOFING, WRAPS AND RIGID AIR BARRIERS

There is no work section specification relating to the following selections

DAMP PROOF COURSE

Type: 90MM CROMFORD

BUILDING WRAP

Type: THERMACRAFT COVERUP

0421 WALL CLADDING

SOFFIT

Type/thickness: 4.5 mm
Finish: PAINTED
Fixings: TO HARDIE SPECS
Jointers: PVC

0422 BRICK VENEER CLADDING

BRICK VENEER

Type: AS SELECTED
Bond: AS SELECTED
Pointing: AS SELECTED ~

0431 ROOFING

ROOFING: MONIER
Underlay: SELF SUPPORTIG UNDERLAY

Flashings: COLOURSTEEL
Colour: TO MATCH ROOF COLOUR

0432 RAINWATER SYSTEM

SPOUTING

Type: 1/4 ROUND ON BILDON TIMBER FASCIA

DOWNPIPES

Type: 80MM PVC
Fixing: PVC

452 ALUMINIUM WINDOWS AND DOORS

ALUMINIUM WINDOWS AND DOORS

Brand/type: AS SELECTED
Finish: AS SELECTED
Jamb liners: H3.1 TAN TIMBER CLEARS
Flashings: COLOURSTEEL
Hardware: AS SELECTED

0453 GARAGE DOORS

There is no work section specification relating to the following selections

GARAGE DOOR

Type: AS SELECTED
Face panel: AS SELECTED
Finish: AS SELECTED

GARAGE DOOR CONTROLLER

Type: AS SELECTED

Remotes number: 1

0471 INSULATION

WALLS

Type/R Value: R2.2 PINK BATTS

CEILING/ROOF

Type/R Value: R3.2 PINK BATTS

0481 FLASHINGS

There is no work section specification relating to the following selections

FLASHINGS - GENERALLY

Type: ~

FLASHINGS - CONCEALED

Type: ~

0511 INTERIOR LININGS

WALL LININGS

Location: 10MM GIB BOARD—10MM AQUALINE TO WET AREAS

Type/finish: LEVEL 4 WALLPAPER FINISH

CEILING LININGS

Location: 13MM GIB BOARD—13MM AQUALINE TO WET AREAS

~
Type/finish: LEVEL 5 PAINT FINISH

0521 INTERIOR DOORS AND TRIM

DOORS

Location: AS SELECTED

Type/finish: AS SELECTED

Hardware: AS SELECTED

TRIM

Skirtings: 60MM BEVELLED PINE

Architraves: 40MM BEVELLED PINE

Scotia: 55MM GIB COVE

0551 JOINERY FIXTURES AND FITTINGS

CABINETRY

Carcass: AS SELECTED

Finish: AS SELECTED

Bench: AS SELECTED

0552 HARDWARE

There is no work section specification relating to the following selections

BRAND TYPE AS SELECTED

0621 TILING

FLOOR TILES

Location: AS SELECTED

Tile: AS SELECTED
WALL TILES
Location: AS SELECTED
Tile: AS SELECTED

0641 VINYL FLOORING

There is no work section specification relating to the following selections

FLOOR VINYL
Location: AS SELECTED
Type: AS SELECTED

0651 CARPETING

There is no work section specification relating to the following selections

CARPET
Location: AS SELECTED
Type: AS SELECTED
Underlay: AS SELECTED

0671 PAINTING

EXTERIOR PAINTING AS SELECTED

INTERIOR PAINTING AS SELECTED

0672 PAPER HANGING

WALL PAPER AS SELECTED

0711 WATER SYSTEM

WATER SYSTEM
Pipework: ~
Hot water cylinder: ~

0712 SANITARY PLUMBING-- AS PER PLAN SHEET 1

0713 SANITARYWARE, TAPWARE AND ACCESSORIES

SANITARYWARE
Location: AS SELECTED
Type/reference: AS SELECTED
TAPWARE
Location: AS SELECTED
Type/reference: AS SELECTED

SANITARY ACCESSORIES
Type/reference: AS SELECTED

0771 ELECTRICAL---AS PER PLAN SHEET 9

0125 REFERENCED DOCUMENTS

Documents listed below are, when referred to in the text, part of this specification. However, this specification takes precedence in the event of it being at variance with and requiring a higher standard than any cited document.

Acts and Regulations

Building Act 2004
Gas Regulations 1993
Health and Safety in Employment Act 1992
Electricity Regulations 1997
Plumbers, Gasfitters and Drainlayers Act 1976
New Zealand Electrical Codes of Practice (ECP)

New Zealand Building Code verification methods

E2/VM1 External moisture

New Zealand Building Code acceptable solutions

B1/AS1 Structure - general
D1/AS1 Access routes
E1/AS1 Surface water
E2/AS1 External moisture
F2/AS1 Hazardous building materials
F7/AS1 Domestic smoke alarms
G10/AS1 Piped services - Gas
G12/AS1 Water supplies
G13/AS2 Foul water - Drainage

New Zealand Standards

AS/NZS 1748 Mechanically stress - Graded for structural purposes
AS/NZS 2642 Polybutylene pipe systems
AS/NZS 2269 Plywood - Structural
AS/NZS 2589 Gypsum linings - Application and finishing
AS/NZS 2699.1 Built-in components for masonry construction Wall ties
AS/NZS 3000 Electrical installations (known as the Australian/NZ Wiring Rules)
AS/NZS 3500.2 Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 3500.3 Plumbing and drainage - Stormwater drainage
AS/NZS 4129 Fittings for polyethylene pipes for pressure applications
AS/NZS 4130 Polyethylene (PE) pipes for pressure applications
AS/NZS 4357 Structural laminated veneer lumber
AS/NZS 4666 Insulating glass units
AS/NZS 4671 Steel reinforcing materials
NZS 3103 Sands for mortars and plasters
NZS 3104 Specification for concrete production
NZS 3109 Concrete construction
NZS 3114 Concrete surface finishes
NZS 3501 Specification for copper tubes for water, gas and sanitation
NZS 3602 Timber and wood-based products for use in building
NZS 3604 Timber framed buildings
NZS 3631 New Zealand national timber grading rules
NZS 4210 Masonry construction materials and workmanship
NZS 4218 2004 Thermal insulation - Housing and small buildings
NZS 4223.1 Glazing in buildings - Glass selection and glazing
NZS 4223.3 Glazing in buildings - Human impact safety requirements
NZS 4223.4 Glazing in buildings - Wind, dead, snow and live actions
NZS 4229 Concrete masonry buildings not requiring specific design
NZS 4251.1 Solid plastering - Cement plasters for walls, ceilings and soffits
NZS 4357 Structural laminated veneer lumber
NZS 5261 Gas installation
NZS 6803 Acoustics - Construction noise

Building Research Association of New Zealand (BRANZ)

Good practice guide: Stucco

Good practice guide: Tiling

Good practice guide: Membrane roofing

Bulletin 441 Sealed joints in external claddings - 2. Sealants

Bulletin 453 Fasteners selection

Other documents

Department of Labour – Occupational Safety and Health (OSH)

Approved code of practice for demolition

Approved code of practice for safety in excavation and shafts for foundations

Guidelines for the management and removal of asbestos

Repainting lead based paints

New Zealand Metal Roofing Manufacturers Inc

NZ Metal roofing and wall cladding: Code of practice

Window Association of New Zealand Incorporated (WANZ)

Aluminium Window Handbook

Specification for powder coatings on architectural aluminium products

Installation code for aluminium joinery products

WIS™ Window Installation System

0126 GENERAL REQUIREMENTS

1.1 THE WORKS

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

1.2 PERSONNEL

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

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

1.3 THE SITE

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.

1.4 SPECIFICATION SECTIONS

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

1.5 INTERPRETATIONS

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

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

Approval: Approval in writing.

Direction: Direction in writing.

Notified: Notified in writing.

1.6 ABBREVIATIONS

The following abbreviations are commonly used throughout the specification:

AS Australian Standard

AS/NZS Joint Australian/New Zealand Standard

BCA Building Consent Authority

BRANZ Building Research Association of New Zealand

NZBC New Zealand Building Code

NZS New Zealand Standard

NZS/AS Joint New Zealand/Australian Standard

NUO Network Utility Operator

OSH Occupational Safety and Health

TA Territorial Authority

1.7 INCONSISTENCIES

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

1.8 SUBSTITUTIONS

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

Notify proposed substitution of specified products. Include sufficient information to allow the owner to confirm that the substitution is equivalent or superior to that specified.

Advise the owner whether an amendment will or may be required to the Building Consent and the expected costs of such amendment.

1.9 THE WORDS "PROVIDE" OR "FIX"

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

- 1.10 **MANUFACTURERS AND SUPPLIERS**
Manufacturers and suppliers requirements, instructions, specifications or details are those issued by them for their particular material, product or component and are the latest edition.
- 1.11 **REFERENCED DOCUMENTS**
Reference is made to various New Zealand Building Code (NZBC) acceptable solutions (AS) and verification methods (VM) for criteria and/or methods used to establish compliance with the Building Act 2004. Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS) and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise. Documents cited both directly and within other cited publications are part of this specification.
- 1.12 **PRECEDENCE OF REFERENCED DOCUMENTS**
This specification takes precedence in the event of it being at variance with and requiring a higher standard than, the cited documents. Resolution of any variance must be confirmed in writing and where Building Consent is affected, the change notified to the Building Consent Authority.
- 1.13 **BUILDING CONSENT COMPLIANCE**
It is an offence under the Building Act 2004 to carry out any work not in accordance with the Building Consent. Refer the resolution of matters concerning compliance to the owner for a direction. Where Building Consent is affected refer any change to the BCA.
- 1.14 **STATUTORY OBLIGATIONS**
Comply with all statutory obligations and regulations of regulatory bodies controlling execution of the works.
- 1.15 **BUILDING CONSENT**
Obtain the original or copies of the Building Consent form and documents from the owner and keep on site. Liaise with the BCA and/or the building certifier for all required notices and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.
- 1.16 **INSPECTIONS**
Do not proceed with work noted on the Building Consent for inspection until it has been inspected and passed by the BCA inspector.
- 1.17 **PRODUCER STATEMENTS**
When producer statements verifying construction are required, provide copies to both the BCA and the owner. Provide producer statements in the form required by the BCA.
- 1.18 **TRADE GUARANTEES AND WARRANTIES**
Where specific trade guarantees/warranties are offered covering materials and/or execution of proprietary products or complete installations, or are required as a condition of Building Consent, provide guarantees/warranties to the owner.
- 1.19 **CODE COMPLIANCE CERTIFICATE**
Provide documentation that the Owner requires in order to obtain a Code Compliance Certificate for the consented work. Provide Certificates of Compliance for electrical and gas work carried out.
- 1.20 **SITE ACCOMMODATION**
Provide, erect and maintain scaffolding, sheds, toilets, water, power and hoardings. Allow for cartage, craneage, plant hire and storage. Arrange for temporary works and services necessary for the completion of the works.

- 1.21 **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.
- 1.22 **PROTECT THE WORKS**
Protect parts of the work liable to damage until completion of the works. Take all precautions necessary to protect the works from damage by unauthorised entry or inclement weather. Brace and support all parts of the works against damage during construction.
- 1.23 **STORAGE AND PROTECTION**
Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers requirements.
- 1.24 **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.
- 1.25 **MEANS OF COMMUNICATION**
All directions and approvals in writing.
- 1.26 **PROGRAMME**
Provide a programme for the contract works, including the work of separate contractors being carried out concurrently with this contract. Form of programme: A dated bar chart, identifying the contract work's critical path and all key dates for the provision of labour, materials and elements. Supply a copy of the programme, and any updates to the owner.
- 1.27 **WORKING HOURS**
Work on site is restricted to between 0800 to 1800, Monday to Friday, excluding statutory holidays. Work outside these hours may be permitted, with prior approval in writing by the owner.
- 1.28 **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.
- 1.29 **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.
- 1.30 **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 TA and relevant Acts and Standards.
- 1.31 **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.
- 1.32 **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.

- 1.33 **MATERIALS AND PRODUCTS**
Use only new materials and products, unless stated otherwise, of the specified quality and complying with cited documents.
- 1.34 **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.
- 1.35 **COMPLETE ALL SERVICES**
Ensure completed building services are operational, with temporary labelling removed, required labelling fixed and service instructions provided.
- 1.36 **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.
- 1.37 **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.

0221 PREPARATION AND GROUNDWORK

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

1.1 SITE SAFETY

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

1.2 FILLING MATERIALS

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.

1.3 EXCAVATION GUIDELINES

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

1.4 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.

1.5 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.

1.6 SURFACE PREPARATION

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

1.7 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 NUO approval.

1.8 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.

1.9 GENERAL EXCAVATION

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

1.10 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.

1.11 INADEQUATE BEARING

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

Slabs on grade: Hardfill
Footings: 10 MPa concrete
Service trenches: Hardfill

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

1.12 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.

1.13 GENERAL BACKFILLING

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

0311 CONCRETE

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

- 1.1 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.
- 1.2 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.
- 1.3 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.
- 1.4 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.
- 1.5 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.
- 1.6 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.
- 1.7 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.
- 1.8 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%.
- 1.9 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.
- 1.10 SURFACE FINISHES
To comply with NZS 3114, section 105 Specification of finishes, 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, section 104 Surface tolerances and clause 105.3.2.
- 1.11 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.
- 1.12 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.

1.13 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 Surface tolerances.

1.14 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.

1.15 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.

1.16 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.

1.17 STRIKE FORMWORK

Strike formwork without damaging or overloading structure.

1.18 CLEAN OUT

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

0331 CONCRETE MASONRY

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

1.1 QUALIFICATIONS

Carry out masonry work with people competent and experienced, under the supervision of a registered mason.

1.2 INSPECTION

Call for inspection of the work at critical stages including set out, reinforcing, and the time prior to and during grouting. All as set out in NZS 4210, section 1.4 Inspection.

1.3 TESTS AND RECORDS

Carry out required tests in accordance with NZS 4210, appendix 2A. Keep accurate records relating to strength and quality of materials used in the construction, and make the information available to the BCA inspector on request.

1.4 ACCESSORIES

Reinforcement: To AS/NZS 4671.

Mortar: Sand to NZS 3103. Chloride levels not exceeding 0.04% by dry weight of sand. Mortar to NZS 4210, section 2.2 Mortar. Compressive strength of not less than 12.5 MPa.

Grout: To NZS 4210, section 2.3 Grout. Spread value 450 - 530 mm.

Water: From local authority supply.

1.5 STORAGE

Store masonry clear of the ground, under cover and well ventilated until placed in the work. Ensure masonry units are air dry prior to laying.

1.6 CHECK BASE CONCRETE

Ensure the base concrete is true to line and level, requiring a base mortar bed of 10 mm (minimum) to 20 mm (maximum).

1.7 STARTER POSITIONS

Before commencing masonry laying check the location of starter reinforcement by measure or by a dry trial lay up of the first course. Do not correct misplacement by cranking bars; obtain direction.

1.8 INSTALL REINFORCEMENT

Detailed, bent and placed in accordance with NZS 4210. Refer to drawings for details of reinforcement and extent of grout filling. Minimum cover as required for reinforced concrete, with grout and masonry work treated as a homogeneous material. Maintain reinforcing bars for retaining walls a minimum of 15 mm and for other concrete masonry, a minimum of 6 mm, from the masonry face, with the space filled with grout.

1.9 TOLERANCES

Construct within the tolerances set out in NZS 4210, clauses 2.6.5 Tolerances and 2.7.1 General. Lay masonry units with bedding of consistent thickness throughout.

1.10 LAY MASONRY UNITS

Execution generally to NZS 4210 and NZS 4229. Ensure consistent, fully filled and tooled joints. Where walls are reinforced, prevent mortar droppings from entering the cells being grouted. Provide clean out holes at base of wall, unless "low lift" (NZS 4210) grouting is used. Ensure reinforcement is accurately placed and tied. Lay in regular running bond with all necessary special units and sill units. Cut masonry, if necessary, true and square without chipping.

1.11 PROTECTION

Protect fair-faced masonry walls, keeping them clear of mortar droppings, grout splashes, or stains.

- 1.12 MASONRY JOINTS
Not exceeding 10 mm thick, or less than 8 mm when the masonry units are bedded in.
Joints tooled concave.
- 1.13 CONTROL JOINTS
Locate at major changes of wall height or thickness, at openings, and at not more than 8 metre centres, or, as shown on the drawings.
- 1.14 BRACING
Provide sufficient temporary lateral bracing to ensure stability until the final construction is in place.
- 1.15 GROUTING OF CELLS
Inspect walls prior to grouting. Ensure cells are clean and reinforcement is correctly placed. Grout all masonry cells below finished grades, all cells in retaining walls and all cells containing reinforcing. Use procedures set out in NZS 4210.
- 1.16 CONSTRUCTION JOINTS
Form and treat construction joints between grout pours and between masonry walls and hardened concrete work to ensure bonding occurs. Comply with NZS 4210, section 2.16 Horizontal construction joints.
- 1.17 BUILD IN
Mortar in components such as sills, copings, lintels, and steps, as work proceeds. Build in plugs, bolts, ties, metal flashings, dowels, fastenings and fixings as required and as shown on the drawings.
- 1.18 CLEANING
Clean off mortar splashes and grout spills as they occur, making good any damage at the same time. Clean down masonry and remove waste material from adjoining surfaces and floors.

0381 TIMBER FRAMING

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

1.1 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.

1.2 TIMBER FRAMING DRY, H1.2 MIN, 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.

1.3 ACCESSORIES

Damp proof course:	High impact embossed polyethylene
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.

1.4 ATTENDANCE

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

1.5 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%

1.6 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.

1.7 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.

0421 WALL CLADDING

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

- 1.1 FIBRE CEMENT SOFFIT LINING
Cellulose cement autoclaved sheets.
- 1.2 TIMBER FASCIAS AND BARGE BOARDS
As selected, or radiata pine to NZS 3631 for grading and to NZS 3602, table 2 Requirements for wood-based building components ..., for selection and treatment.
- 1.3 ACCESSORIES
Building wrap: Breather type, waterproof.
Rigid Air Barriers: Proprietary rigid sheet pre-cladding systems.
PVC jointers: To suit sheet thickness.
Nails, screws, fastenings: Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.
- 1.4 MOISTURE CONTENT
Maximum allowable moisture content to NZS 3602, table 4 Allowable moisture content....
- 1.5 EXECUTION GENERALLY
To NZBC E2/AS1 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).
- 1.6 INSTALL WALL WRAP/RIGID AIR BARRIER
Fix to the manufacturer's requirements.
- 1.7 INSTALL CAVITY BATTENS
Install battens to form a drained cavity to NZBC E2/AS1, 9.1.8 Drained cavities, to suit the selected wall cladding.
- 1.8 INSTALL FIBRE CEMENT SOFFITS
Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details and fixings durability requirements to NZS 3604.
- 1.9 INSTALL EXTERIOR TIMBER FINISHINGS
Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.
- 1.10 INSTALL FLASHINGS
Install flashings, covers and soakers as detailed on the drawings and to NZBC E2/AS1, 4.0 Flashings.
- 1.11 USE OF SEALANTS
Selection and use of sealants to follow BRANZ Bulletin 441: Sealed joints in external claddings - 2. Sealants.
- 1.12 COMPLETE
Complete all flashings, finishings and trim so the cladding system is completely weathertight.

0422 BRICK VENEER CLADDING

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

1.1 QUALIFICATIONS

Carry out brickwork with persons competent and experienced in the trade.

1.2 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.

1.3 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.

1.4 MORTAR COLOUR

Add mineral oxide pigment to the requirements of NZS 4210, clause 2.2.2.2 (f).

1.5 STORAGE

Store bricks and other materials clear of the ground, under cover and well ventilated until placed in the work.

1.6 VENEER WORK GENERALLY

Comply with NZS 3604, 11.7 masonry veneer wall cladding, NZS 4210, section 2.9 veneer and cavity wall construction.

1.7 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.

1.8 BOND

Stretcher bond, single width unless detailed or stated otherwise.

1.9 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 Veneer and cavity wall construction, as modified by NZBC B1/AS1, 3.1. Install ties to NZS 3604, 11.7.5, Wall ties, subclause 11.7.5.3.

1.10 MORTARING

To maximum practical density. Mortar fully laid, firmly placed, correctly cured and not re-tempered. Discard any mortar not used within 1 1/2 hours of mixing. Joint thickness 10 mm plus or minus 2 mm.

1.11 RAKE OUT

Rake out joints as work proceeds, for pointing as detailed. Maximum depth of rake 6 mm.

1.12 POINTING

Joints tooled concave after initial stiffening.

- 1.13 **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.
- 1.14 **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.
- 1.15 **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.
- 1.16 **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.
- 1.17 **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.

0431 ROOFING

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

1.1 QUALIFICATIONS

Use experienced competent roofers familiar with the materials and techniques specified.

1.2 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.

1.3 CONCRETE TILES

Type and finish as selected. Accessories, capping, flashings, fixings and mortar pointing to match and to the roofing manufacturer's requirements.

1.4 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 required.

1.5 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.

1.6 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.

1.7 LAY ROOF UNDERLAY

Lay and fix to NZBC E2/AS1, 8.1.5 Underlays, and to NZS 3604, 11.2 Roof cladding underlays.

1.8 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.

1.9 INSTALL TILE BATTENS

Install to the roofing manufacturer's requirements, with joints fully supported and staggered.

1.10 INSTALL CONCRETE TILES

Install and fix with metal ties every third tile and to all perimeter tiles. Incorporate matching accessories, flash to roof features and penetrations, with anti-ponding boards and under-cloaks where required, to the roofing manufacturer's requirements.

1.11 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.

- 1.12 **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.
- 1.13 **PENETRATIONS**
Flash and overflash penetrations through the roof. Fit proprietary boots to pipework penetrations.
- 1.14 **COMPLETE**
Ensure the work is complete with flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.
- 1.15 **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.

0432**RAINWATER SYSTEM**

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

- 1.1 UPVC DOWNPIPES
Tubes, stand-off brackets and fittings brand matched and complete to the manufacturers specifications.
- 1.2 ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING
Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.
- 1.3 ELECTROLYTIC ACTION
Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.
- 1.4 LIAISON
Ensure liaison with associated installations to ensure material selections are compatible and required flashing work is completed.
- 1.5 INSTALL UPVC 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.
- 1.6 ENSURE
Ensure rainwater services are operational, flashings complete and the building weathertight.

0451 GARAGE DOOR

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

- 1.1 **TIMBER**
As selected and to NZS 3602.
- 1.2 **EXTERNAL FACINGS, FRAMES, SCRIBERS AND ARCHITRAVES**
As detailed, or to match existing.
- 1.3 **INSTALL GARAGE DOORS**
Check that the trimmed and lined openings are formed and constructed to suit the required door units. Do not proceed until openings are properly formed. Install and fix the garage door installations, complete with specified operating systems and hardware, all strictly in accordance with the door manufacturer's requirements and installation instructions.
- 1.4 **FIT HARDWARE**
Fit hardware selected and provided, all in accordance with the hardware manufacturer's requirements.
- 1.5 **CHECK**
Check and adjust operation of doors sets, hardware and furniture.

0452 ALUMINIUM WINDOWS AND DOORS

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

- 1.1 **WINDOW AND DOOR REVEALS**
As selected with timber jamb liners to NZS 3602.
- 1.2 **FLASHINGS**
As required.
- 1.3 **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.
- 1.4 **SEALANT, GLAZING TAPE AND GASKETS**
To the window manufacturer's requirements.
- 1.5 **FIXINGS**
Ensure fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.
- 1.6 **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.
- 1.7 **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.
- 1.8 **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.
- 1.9 **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.
- 1.10 **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.
- 1.11 **DRAINAGE**
Anti-condensation channels to sills. All sills to sashes and fixed lights to incorporate positive drainage to the exterior.
- 1.12 **GLAZING INSTALLATION**
All glass held in aluminium beads and black PVC gaskets.
- 1.13 **SAFETY GLASS INSTALLATION**
Use in doors, sidelight panels, low level windows and all other locations to comply with NZS 4223.3, as modified by NZBC F2/AS1, 1.0 Glazing.

- 1.14 **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.
- 1.15 **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.
- 1.16 **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 4223.3, 303.1 Manifestations (making glass visible).
- 1.17 **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.

0471 INSULATION

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

1.1 GLASS FIBRE THERMAL INSULATING PADS

Glass fibres bonded with a thermosetting resin to form a rectangular insulating pad.

1.2 INSTALL INSULATION - GENERAL

Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to the insulation manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246.

1.3 FIT GLASS FIBRE THERMAL INSULATING PADS

Friction fit insulating pads in place to completely fill the whole of the cavities. Carefully scribe cut insulating pads slightly oversize to maintain friction fit to each other, to smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating pads over the whole of the installation. Do not cover vents and leave a 150 mm gap around recessed light fittings and metal flues.

0511 INTERIOR LININGS

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

1.1 FRAMING MOISTURE CONTENT

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

1.2 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.

1.3 PLASTERBOARD

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

1.4 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.

1.5 FIBRE CEMENT SHEET

Cellulose cement autoclaved sheets.

1.6 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.

1.7 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.

1.8 LINE PLASTERBOARD CEILINGS AND WALLS

Line walls and ceilings with plasterboard sheets, fastened to the plasterboard manufacturer's requirements.

1.9 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.

1.10 FIX PLASTERBOARD EXTERNAL ANGLES

Fix full length to external corners, with clouts at 100 mm each side staggered.

1.11 FIX PLASTERBOARD CORNICE

Fix with adhesive and with joints scribe-fitted to the plasterboard manufacturer's requirements.

1.12 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.

1.13 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.

1.14 INSTALL FIBRE CEMENT SHEET LININGS

Fix to timber framing with jointing as detailed and to the panel manufacturer's requirements.

1.15 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.

0521 INTERIOR DOORS AND TRIM

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

- 1.1 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.
- 1.2 DOORS GENERALLY
As selected.
- 1.3 TIMBER LOUVRE DOORS
Solid timber framed with louvres slotted in.
- 1.4 DOOR HINGES
Type: loose-pin zinc-plated steel
Size: 89 mm
Material: zinc-plated steel
Number: 3 hinges per door
- 1.5 DOOR HARDWARE
As selected.
- 1.6 NAILS
Zinc-plated steel, stainless steel and galvanized steel of pattern to suit location and to BRANZ Bulletin 453: Fasteners selection.
- 1.7 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.
- 1.8 INTERNAL JOINERY FRAMES
Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face.
- 1.9 FIT HARDWARE
Fit hardware selected and provided, all in accordance with the hardware manufacturer's requirements.
- 1.10 CHECK
Check and adjust operation of doors sets, hardware and furniture.

0551 JOINERY FIXTURES AND FITTINGS

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

- 1.1 **TIMBER BOARDS AND FRAMES**
Carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.
- 1.2 **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).
- 1.3 **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.
- 1.4 **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.
- 1.5 **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.
- 1.6 **INSTALL JOINERY FITTINGS**
Scribe fit on site and install level, square, plumb and true to line and face.
- 1.7 **STAIRCASE ELEMENTS**
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....
- 1.8 **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..

0621 TILING

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

1.1 QUALIFICATIONS

Use tilers experienced with the materials and techniques specified.

1.2 ADHESIVES COMPATIBILITY

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

1.3 SLIP RESISTANCE

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

1.4 ACCESSORIES

Waterproofing membranes:	As selected.
Cement-based screed:	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.

1.5 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.

1.6 SUBSTRATE

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

1.7 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.

1.8 LAYOUT

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

1.9 EXECUTION GENERALLY

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

1.10 SURFACE PREPARATION

To BRANZ Good practice guide: Tiling, section 4.0.

1.11 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.

1.12 LAY SHEET WATERPROOFING MEMBRANE

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

1.13 APPLY LIQUID WATERPROOFING MEMBRANE

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

- 1.14 **INSTALL UNDER TILE ELECTRIC HEATING**
Install to the membrane manufacturer's requirements. Arrange for electrician to connect power supply.
- 1.15 **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.
- 1.16 **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.
- 1.17 **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.
- 1.18 **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.
- 1.19 **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.
- 1.20 **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.

0671 PAINTING

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

1.1 QUALIFICATIONS

Carry out work using competent and experienced painters.

1.2 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.

1.3 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.

1.4 GAP FILLERS

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

1.5 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 work to proceed.

1.6 PROTECT

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

1.7 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.

1.8 PRIMING AND SEALING

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

1.9 ENVIRONMENTAL CONDITIONS

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

1.10 SELECTIONS

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

1.11 SHARP EDGES, CRACKS AND HOLES

Repair as required by the paint manufacturer.

1.12 PREPARE SURFACES

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

1.13 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.

1.14 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.

- 1.15 SCUFF BETWEEN COATS
Scuff between all coats to remove any dust pick-up, protruding fibres and coarse particles.
- 1.16 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.
- 1.17 CLEAN
Clean adjoining surfaces, glass and fittings of any paint contamination.
- 1.18 REPLACE
Replace hardware without damage to the hardware or the adjoining surfaces.

0672 PAPERHANGING

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

1.1 QUALIFICATIONS

Carry out work using competent and experienced paperhangers.

1.2 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.

1.3 SELECTIONS

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

1.4 CONFIRM WALLPAPER BATCH

Confirm that all rolls of each pattern are from the same batch.

1.5 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.

0711 WATER SYSTEM

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

- 1.1 QUALIFICATIONS
Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.
- 1.2 COPPER WATER PIPE
To NZS 3501.
- 1.3 POLYBUTYLENE WATER PIPE
Polybutylene tubing complete with fittings and accessories brand-matched to AS/NZS 2642.
- 1.4 POLYETHYLENE WATER PIPE
Proprietary high-density cross-linked polyethylene composite pipe and fittings to AS/NZS 4130.
- 1.5 INSULATION FOR HOT WATER PIPES
Preformed closed cell foam.
- 1.6 EXPOSED PIPES
 - white polyethylene composite pipe with white nuts and accessories
 - pipework finish to include escutcheon plates and bends and elbows protruding from walls or fittings.
- 1.7 EXECUTION GENERALLY
Carry out work and tests as applicable to NZBC G12/AS1.
- 1.8 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 crox 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.
- 1.9 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.
- 1.10 OUTLET LOCATIONS
Ensure wall outlets for exposed pipes are level and centred on the fixture to ensure the neat installation of exposed pipework.
- 1.11 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.
- 1.12 INSTALL ELECTRIC HOT WATER CYLINDERS
Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and NZBC G12/AS1, 6.11 Water heater installation.
- 1.13 PENETRATIONS
Provide and fit collars and escutcheon plates to match pipework at penetrations through constructions.

0712 SANITARY PLUMBING

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

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

1.2 UPVC WASTE, SOIL AND VENT PIPES

uPVC pipe, complete with fittings brand-matched to the pipe manufacturer's requirements.

1.3 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.

1.4 EXECUTION GENERALLY

Carry out sanitary plumbing work and tests as applicable to:

- NZBC G13/AS1
- AS/NZS 3500.2

1.5 ELECTROLYTIC ACTION

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

1.6 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 3500.2. 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.

1.7 PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

1.8 TEST

Test soil and waste disposal systems to ensure no leakage exists and leave in working order.

1.9 ENSURE

Ensure all sanitary plumbing fittings and pipework are complete and operational.

0713 SANITARYWARE, TAPWARE & ACCESSORIES

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

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

1.2 EXECUTION GENERALLY

Carry out installation work and tests as applicable to AS/NZS 3500.2.

1.3 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.

1.4 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.

1.5 TEST

Test soil and waste disposal systems to ensure no leakage exists and leave in working order.

1.6 ENSURE

Ensure all sanitary plumbing fittings and pipework are complete and operational.

0741 DRAINAGE

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

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

1.2 MATERIALS

Concrete:	17.5 MPa prescribed grade.
Reinforcement:	Grade 300 deformed bars.
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.

1.3 FITTINGS

Gully traps:	To NZBC G13/AS2, 3.3 Gully traps, complete with 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.

1.4 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs.

1.5 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

1.6 EXECUTION GENERALLY

Carry out drainage work as applicable to:

- NZBC G13/AS1, G13/AS2 and G13/AS3
- AS/NZS 3500.2 and AS/NZS 3500.3

1.7 LAY WASTEWATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the NUO's sewer. Set inspection fittings on a concrete base.

1.8 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.

1.9 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 NUO's stormwater system.

1.10 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.

1.11 FIELD TEST

Field test drains for watertightness to the satisfaction of the BCA inspector.

- 1.12 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.
- 1.13 AS-BUILT DRAWINGS
Supply a 1:100 as-built drawing to the BCA and the owner on completion.

0771 ELECTRICAL

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

1.1 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 NUO's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.2 QUALIFICATIONS

Carry out work by or under the direct supervision of a holder of a practising certificate under the Electricity Regulations 1997.

1.3 CERTIFICATE OF COMPLIANCE

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

1.4 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 is maintained.

1.5 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 mm² on 10 amp MCBs for domestic construction

Power circuits: 1.5 mm² on 16 amp MCBs for domestic construction

1.6 ELECTRICAL ACCESSORIES

As selected and to the following details:

Switch units:	Minimum 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.
Switched socket units:	10 amp, 230 volt flush polycarbonate 3 pin combined switch units.
Hot water system switch:	One way 20 amp switch complete with clamp for flexible PVC conduit.
Stove/range socket outlet and switch:	32 amp, 230 volt flush polycarbonate 3 pin combined switch unit, with remote isolating switch.

1.7 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.

1.8 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 or to match existing.

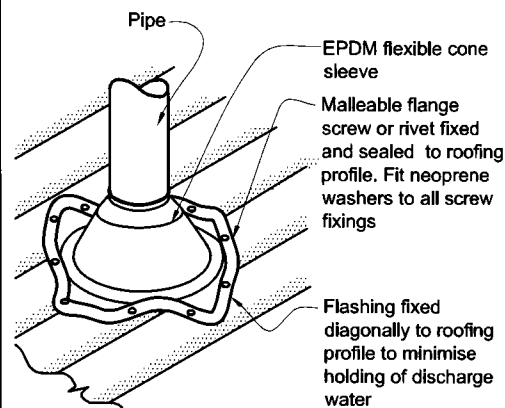
Switch Units: 1000 mm.

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.

- 1.9 **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.
- 1.10 **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.
- 1.11 **WIRE FOR PLUMBING FITTINGS**
Wire for fittings to the Electricity Regulations 1997 and to the fitting manufacturer's requirements.
- 1.12 **INSTALL SMOKE ALARMS**
Install alarms to NZBC F7/AS1, 3.3 Location of smoke alarms, and to manufacturer's requirements, fitted neatly and without damage to the surrounding finish.
- 1.13 **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.
- 1.14 **COMPLETION**
Leave all fittings, lamps and tubes operational, with equipment and diffusers clean.

Figure 53: Flashing for small pipes
Paragraphs 8.3.10, 8.4.17 a), 9.6.8.5 and 9.6.9.6

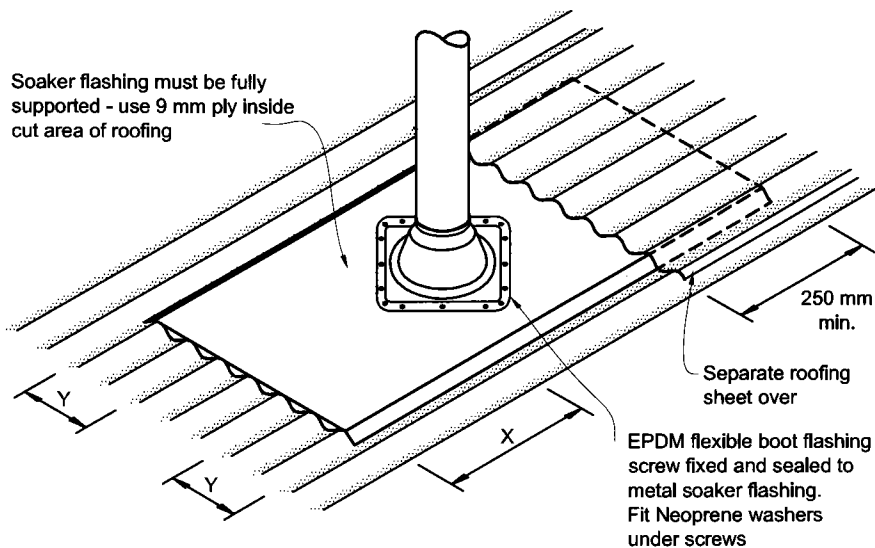


NOTE:

- (1) Max. roof pitch for this flashing 45°, minimum pitch 10°.
- (2) For pipes up to 60 mm diameter.

Figure 54: Soaker flashing for pipe penetrations
Paragraphs 8.3.10 and 8.4.17 b)

- NOTE: (1) X = variable according to *wind zone* – refer Table 7.
 (2) Y = to cover minimum of two crests – refer Table 7.
 (3) Suitable for pipes from 60 mm to 500 mm diameter.
 (4) Suitable only for roof pitches of 10° or higher.



Amend 2
Jul 2005

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