

Code Compliance Certificate

Section 95, Building Act 2004

The Building

Street address of building:

Legal description of land where building is located: Current, lawfully established, use: 3 SEAFORTH AVENUE PALMERSTON NORTH LOT 6 DP 8044

RESIDENTIAL DWELLING

The Owner

Name of owner:		MAURICE PROPE	RTIES LTD
Contact person:		NOEL BRIDGEMA	N
Mailing address:	:	7 SHERATON GRO PALMERSTON NO	
Phone number		Landline:	
		Mobile:	027 608 5334
		Daytime:	
		After hours:	

Building Work

 Building Consent Number
 15573

 Project Description:
 ERECT THREE BEDROOM DWELLING WITH ATTACHED GARAGE

 Issued by:
 PALMERSTON NORTH CITY COUNCIL

мапамати Young Heart, Easy Living

Code Compliance

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

Navalker

Signature:

Name:	ROBBIE WALKER
Position:	PRINCIPAL BUILDING OFFICER
On behalf of:	PALMERSTON NORTH CITY COUNCIL
Date:	2 7 AUG 2009

15573

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



3514471



The Building

Street address of building:

(for structures that do not have a street address, state the nearest street intersection and the distance and direction from the intersection.

Legal description of land and where building is located:

(state legal description as at the date of application and, if the land is proposed to be subdivided, include details of relevant lot number and subdivision consent)

Building name:

Location of building within site / block number: (includes nearest street access)

Number of levels: (include ground levels and any levels below ground)

Level/Unit number:

Area: (total floor area; indicate area affected by the building work if less that the total area)

Current, lawfully established, use: (include number of occupants per level and use if more than 1)

Year first constructed: (approximate date is acceptable eg: 1920's or 1960-1970)

The Owner (All contact details must be in New Zealand)

Name of owner: (eg, Mr, Mrs, Miss, Dr if an individual)

Contact person: (insert N/A if the applicant is an individual)

Mailing address:

Street address / registered office:

Phone numbers

Landline: Mobile: Daytime: After hours: Facsimile:

Email address:

Evidence of ownership is attached to this application:

	jeafo. Iersto		Ave	
Lot	6	DP	8044	,
Sine	ple			
		Cor 18	port 0000 m	
Reti	denti	a)		

Maurice Properties Ktd.
Noel Bridgeman
7 Sheraton Street Palmerston North
0276085334
Certificate of Title Lease Agreement for Sale Other document and Purchase

Agent (only required if application is being made on behalf of the owner)

Name of agent:	
	plans.co.nz
Contact person: (insert N/A if the agent is an individual)	15 Walding Street Palmerston North
	Phone (06) 359 2844
Street address / registered office:	Fax (06) 354 5085
Phone numbers Landline:	027 222 4328 jeff@plans.co.nz
Mobile:	
Daytime: After hours:	
Facsimile:	
Email address:	
elationship to owner:	Designer.
(state details of the authorisation from the owner to make	
the application on the owner's behalf)	E 3 12
First point of contact for communication with the council / building consent authority: For Plans	For Building
Full name:	-) See owner
Mailing address:	
plans.co.nz	
Phone number (s):	
Palmerston North	
E (06) 334 3000	
Depice Details:	
prior arrangement only)	
Application	
	Information Memorandum 🛛 📝 Building Consent
For the building work described in this application (tick one o	r both as applicable)
Signature of the owner/agent on behalf of with the authority of the owner:	Dorrige
Date: 🔿	29/1/09.
Council use only	
PIM type:02	Receipt number: 2009 171175
Building consent type:	Date received: 30/1/09
Payment Option:	Deposit Paid 🔲 Invoice
Invoice to:	Initialed by agent:

Full description of work

Description of the building work:

(provide sufficient description of building work to enable scope of work to be fully understood; continue on a separate page if necessary, or refer to an attached document setting out the description)

		9				
					_	
l the b	uilding work re	esult in a cha	inge of use of tl	he building?	Yes	No
es, pro	vide details of t	he new use:				
	l ife of the build If years)	ing if less th	an 50 years:			
mber o	of years)		an 50 years: ued for this pro	ject (if any):		
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15573

Project information memorandum (do not fill in this section if the application is for a building consent only)

The following matters are involved in the project:

(tick the matters relevant to the project)

Subdivision

Alterations to the land contours

New or altered connections to public utilities

New or altered locations and / or external dimensions of buildings

New or altered access for vehicles

Building work over or adjacent to any road or public place

Disposal of stormwater and wastewater

Building work over any existing drains or sewers or in close proximity to wells or water mains.

Other matters known to the applicant that may require authorisations form the territorial authority: (specify)

Building consent (do not fill in this section if the application is for a project information memorandum only)

The following plans and specifications are attached to this application:

(all plans and specifications must meet the minimum requirements set out in the regulations

or required by the building consent authority) 1, Layart, Elevations, Dimonsions x2 pecifications offer Mar sections, Mumbing e drair pla window Alas details, SOF mat enert. Risk

The building work will comply with the building code as follows:

you're not sure which clauses are applicable, talk to the BCA or your architect)

Clause (tick relevant clause number of building code)	Means of compliance required (refer to the relevant compliance document(s) or detail or alternative solution in the plans and specifications; if not applicable, put N/A)	Waiver/modification (state nature of waiver or modification of building code required; if not applicable, put N/A)
B1 Structure	AS/1	
B2 Durability	ASII	
C1 Outbreak of fire	,	
C2 Means of escape		
C3 Spread of fire		
C4 Structural stability during fire		
D1 Access routes		
D2 Mechanical installations for access		
E1 Surface water	A5/1	
E2 External moisture	ASI	
E3 Internal moisture	ASII	
F1 Hazardous agents on site		
F2 Hazardous building materials		

F3 Hazardous substances and processes		
F4 Safety from falling		
F5 Construction and demolition hazards		
F6 Lighting for emergency		
F7 Warning systems	ASI	
F8 Signs		
G1 Personal hygiene	ASI	
G2 Laundering	ASI	
G3 Food preparation and prevention of contamination	ASII	
G4 Ventilation	ASI	
G5 Interior environment	ASI	
G6 Airborne and impact sound	ASI	
G7 Natural light	Asli	
G8 Artificial light	ASII	
G9 Electricity	ASI	
G10 Piped services	ASI	
G11 Gas and energy source	AN	
G12 Water supplies	ASII	
G13 Foul water	ASII	
G14 Industrial liquid waste		
G15 Solid waste		
H1 Energy efficiency	AS/1	

Compliance schedule (do not fill in this section if the application is for a Project Information Memorandum only).

The following systems for the building are as follows: (please tick which applies)

- Automatic systems for fire suppression
- Automatic and manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit and serves only that unit)
- Fire doors electromagnetic or automatic doors or windows (for example, ones that close on fire alarms activation)
- Emergency lighting systems
- Escape route pressurisation systems
- Riser mains for fire service use
- Automatic back-flow preventers connected to potable water supply
- Lifts, escalators, or travelators or other systems for moving people or goods within the building
- Mechanical ventilation or air conditioning systems
- Building maintenance units for providing access to the exterior and interior walls of buildings
- Laboratory fume cupboards
- Audio loops or other assistive listening systems
- Smoke control systems
- Emergency power systems for, or signs relating to, a system or feature specified in any clause 1-13

Any or all of the following systems and features, so long as they form part if a building's means of escape from fire, and so long as those means also contain any or all of the systems and features specified in clauses 1-6 and 9-13:

- systems for communicating spoken information intended to facilitate evacuation; and
- final exits (as defined by clause A2 of the Building Code); and
- fire separations (as so defined); and
- signs for communicating information intended to facilitate evacuation; and
- smoke separation (as so defined)

15573 The following systems will be altered, added to or removed in the course of the building work:
Automatic systems for fire suppression
 Automatic and manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit and serves only that unit)
Fire doors - electromagnetic or automatic doors or windows (for example, ones that close on fire alarms activation)
Emergency lighting systems
Escape route pressurisation systems
Riser mains for fire service use
Automatic back-flow preventers connected to potable water supply
Lifts, escalators, or travelators or other systems for moving people or goods within the building
Mechanical ventilation or air conditioning systems
Building maintenance units for providing access to the exterior and interior walls of buildings
Laboratory fume cupboards
Audio loops or other assistive listening systems
Smoke control systems
Emergency power systems for, or signs relating to, a system or feature specified in any clause 1-13
Any or all of the following systems and features, so long as they form part if a building's means of escape from fire, and so long as those means also contain any or all of the systems and features specified in clauses 1-6 and 9-13: – systems for communicating spoken information intended to facilitate evacuation; and – final exits (as defined by clause A2 of the Building Code); and – fire separations (as so defined); and – signs for communicating information intended to facilitate evacuation; and – smoke separation (as so defined).
There are no specified systems in the building
Attachments
following documents are attached to this application: ck as applicable or put N/A if there are no attachments.)
Plans and specifications (please list)
As per B/C.

Project Information Memorandum

Development Contribution Notice

Certificate attached to Project Information Memorandum

Contacts:

Designer/Architect:

Business/Name:	plans co.nz
Address:	15 Walding Street
Daytime:	Paimerston North
Mobile:	Brone (06) 359 2844
After hours:	Fax (06) 354 5085
Eacsimile	027 222 4328
Registration/Qualifi	ication: left(@plans.co.nz

Engineer (identify practice college):

Builder:

Business/Name:	
Address:	
Daytime:	
Mobile:	
After hours:	
Facsimile:	
Registration/Qualification:	

Head Contractor / Site Manager:

Business/Name:	
Address:	
Daytime:	
Mobile:	
After hours:	
Facsimile:	
Registration/Qualification:	

Structural Engineer:

Address:	
Daytime:	
Mobile:	
After hours:	
Facsimile:	
Registration/Qualification:	

Plumber:

Address:	
Daytime:	
Mobile:	
After hours:	
Facsimile:	

Drain Layer:

Business/Name:	
Address:	
Daytime:	
Mobile:	
After hours:	
Facsimile:	
Registration/Qualification:	

Other:

Business/Name:	
Address:	
Daytime:	
Mobile:	
After hours:	
Facsimile:	
Registration/Qualification:	

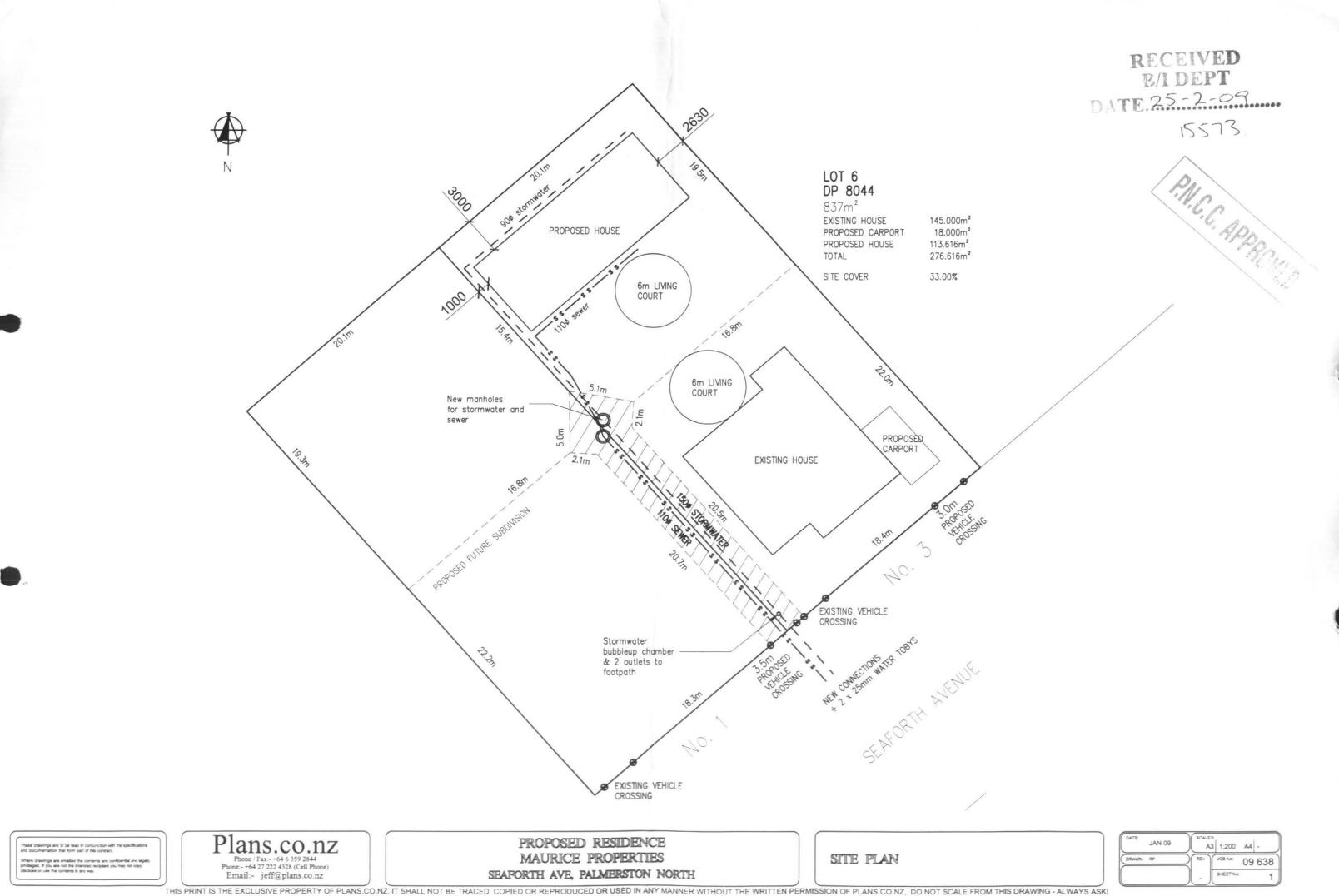
Privacy Information

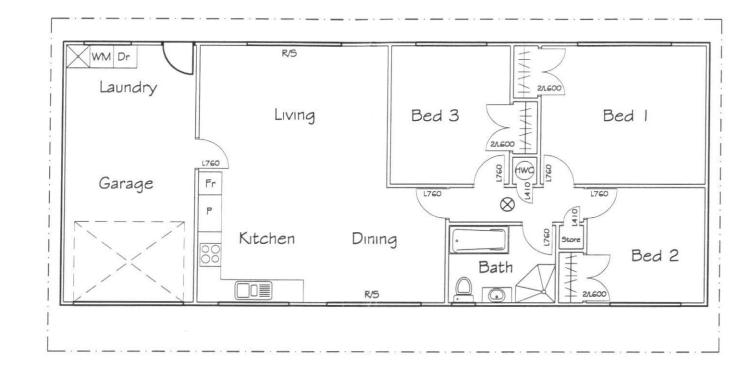
The information you have provided on this form is required so that your building consent application can be processed under the Building Act 2004. The Council collates statistics relating to issued building consents and has a statutory obligation to regularly forward these to Statistics New Zealand. The Council stores the information on a public register which must be supplied (as previously determined by the Ombudsman) to whomsoever requests the information.

Under the Privacy Act 1993 you have the right to see and correct personal information the Council holds about you.

HAGAN ONTRACTING LTD	AS BUILT DRAINAGE PLAN
Customer Name:	
Date:	
Location:	
Drawn By:	Signed:
Inspected By:	1
GARNGE	NEN HOUSE .
	S S NSPECTION NAMBER 15001M S W.

AS BUILT DRAINAGE PLAN BY:
Customer Name: NOEL BRIDGEMAN
Date: <7.6.09
Location: <u>SEAFORTH ANE</u>
Drawn By: <u>74</u> , Signed: <u>HAAA</u>
Inspected By: JAMIE PITT
DE NEN JOUSE
DL IVWLAT
(N) PELTICIN (HAMPER) (HAMPER)
To and we champer







CALCULATIONS :

AREA OF HOUSE : 113.616 SQM

ELEVATION

DENOTES HUSH BUTTON SMOKE ALARM TO BE FITTED

These drawings are to be read in conjunction with the specific and documentation that form part of this contract.

Where strewings are emailed the contants are confidential and legally privileged. If you are not the intended recipient you may not copy, disclose or use the contents in any way.



PROPOSED RESIDENCE MAURICE PROPERTIES SEAFORTH AVE, PALMERSTON NORTH

LAYOUT

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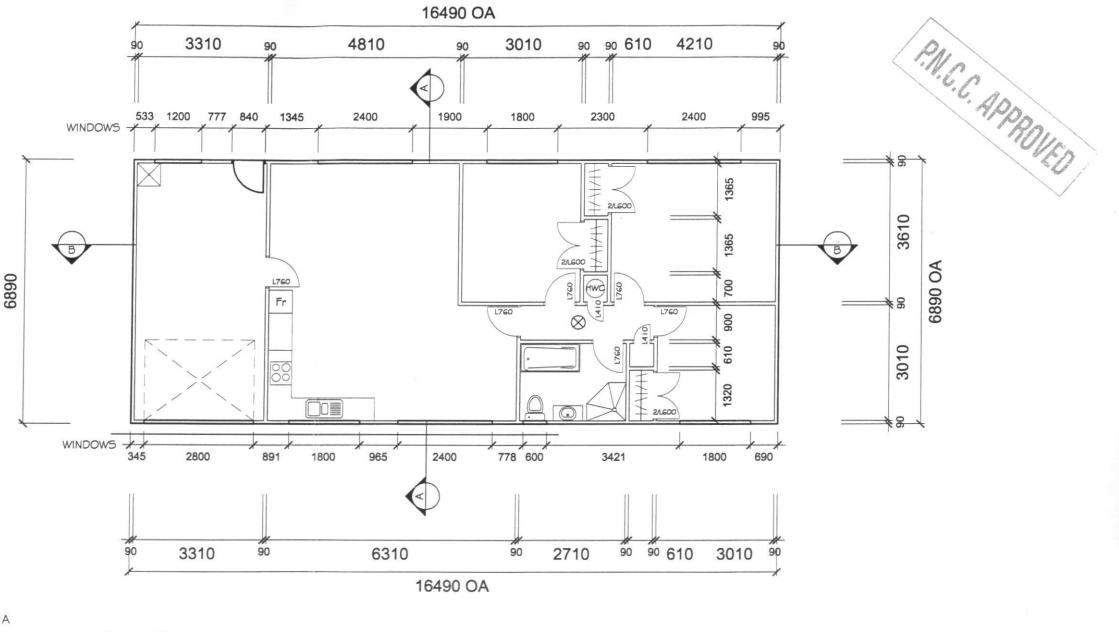
3 Seaforth Ave BC 15573 14590 043 00

P.M.C.C. APPROUED

DATE	JAN 09	A3	1:100	A4	-
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			SHEET NO	8	2



Risk Matrix:	Score
Wind zone	0
Number of storeys	0
Roof/wall intersection design	3
Eaves width	1
Envelope complexity	0
Deck design	0
Total:	4



NOTE:

MEDIUM WIND ZONE

DIMENSIONS SHOW FRAMING SIZE

STUD HEIGHT 2420 WITH 90x45 MSG8 H1.2 STUDS @ 600crs

TOP PLATE 90x45 + 140x35 MSG8 H1.2 BOTTOM PLATE 90x45 MSG8 H1.2 ON DPC

TOP PLATE TO STUD FIXING 2 GUN NAILS + 1 x PYRDA SN50 STRAP NAIL EACH STUD

BOTTOM PLATE FIXED TO SLAB OVER DPC WITH MI2 TRUBOLTS & SQUARE WASHERS @ 900crs

LINTEL HEIGHT APPROX 2120



CALCULATIONS : AREA OF HOUSE : 113.616 SQM

ELEVATION

DENOTES HUSH BUTTON SMOKE ALARM TO BE FITTED

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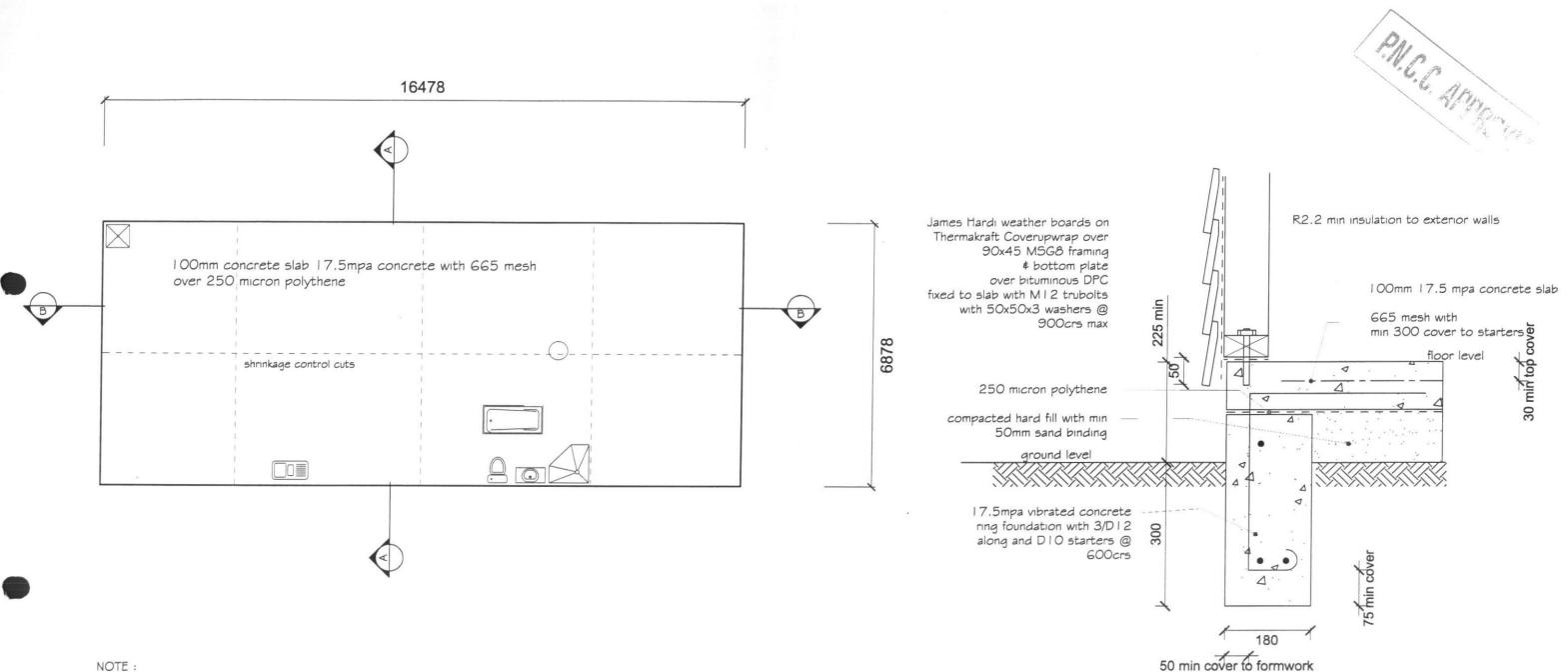


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DIMENSIONS

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NOTE :

DIMENSIONS ALLOW A 6mm FRAME OVERHANG

CUT SHRINKAGE CONTROL JOINTS TO A DEPTH OF 25mm BAY DIMENSIONS LIMITED TO A MAXIMUM RATIO OF LENGTH TO WIDTH OF 2 TO 1 WITH A MINIMUM DIMENSION OF 5 METRES.

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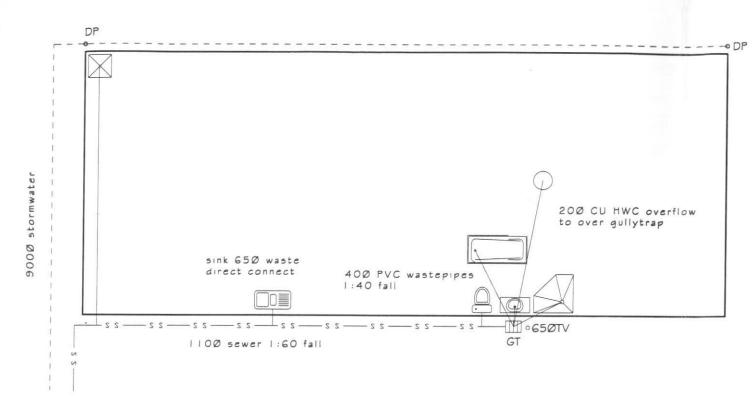


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SLAB PLAN

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			SHEET NO		5



CONNECTION TO SERVICES IN R.O.W.

HOT/COLD SUPPLY - PLUMBING

PLUMBING TO NZS G 13

SUPPLY 20mm REHAU HOT AND COLD SYSTEM

HOT WATER EX 180L RHEEM ELECTRIC HOT WATER CYLINDER WITH TEMPERING VLAVE & SEISMIC RESTRAINTS IN ACCORDANCE WITH NZBC: 2004 SECTION GI 2

PVC FIXTURE WASTE PIPES 40mm 1:40 MIN FALL UNLESS OTHERWISE NOTED

- GULLY TRAP
- INSPECTION POINT P
- INSPECTION BEND B
- TV . TV Ø AS SHOWN
- DP . 80mm PVC DOWNPIPES

SOIL FIXTURES SHALL MEET THE VENTING REQUIREMENTS OF TABLE GI3/ASI

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4

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Pla	ns	. c	0	. n	
	Fax:-+64 6 35		-		
	27 222 4328 (i jeff@plan				
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PROPOSED RESIDENCE NOEL BRIDGEMAN SEAFORTH AVE, PALMERSTON NORTH

PLUMBING & DRAINAGE

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- TEMPERATURE PRESSURE RELIEF VALVE 700kPA 1. 2.
- TEMPERING VALVE
- HOT WATER SUPPLY PB PIPE 3. EXPANSION VALVE
- 4.
- LIMITING VALVE 5.
- 6. NON RETURN VALVE
- LINE STRAINER (WHERE REQUIRED) 7
- ISOLATING VALVE 8. 9. MAINS WATER SUPPLY PB PIPE





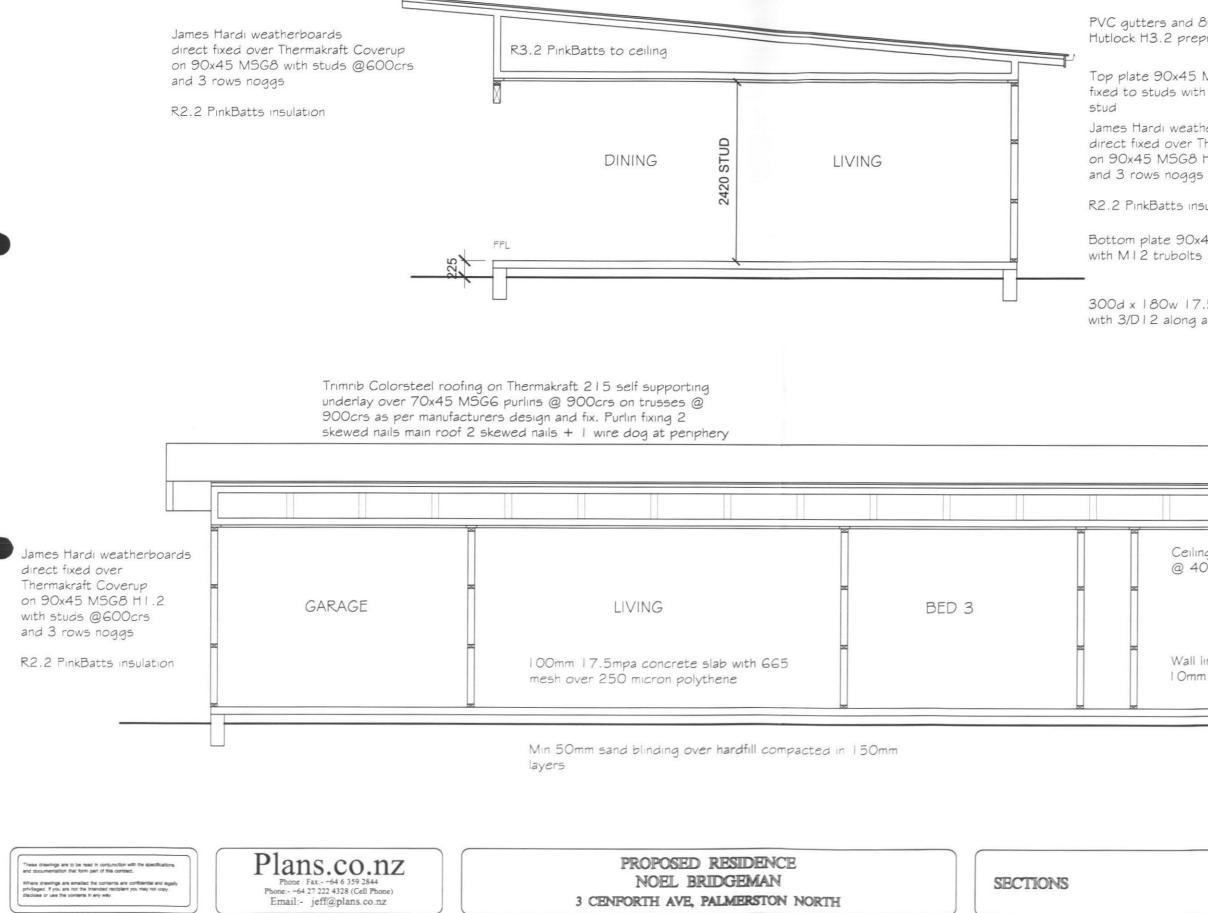








Trimrib Colorsteel roofing on Thermakraft 215 self supporting underlay over 70x45 MSG6 purlins @ 900crs on trusses @ 900crs as per manufacturers design and fix. Purlin fixing 2 skewed nails main roof 2 skewed nails + 1 wire dog at periphery



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RECEIVED BY:

PVC gutters and 80mm pvc downpipes Hutlock H3.2 preprimed fascia

P.N.C.C. APPROVED Top plate 90x45 MSG8 + 140x35 MSG8 fixed to stude with 2 skewed nails \$ a SN50 stud strap each

James Hardı weatherboards direct fixed over Thermakraft Coverup on 90x45 MSG8 H1.2 with studs @600crs

R2.2 PinkBatts insulation

Bottom plate 90x45 MSG8 fixed to slab over DPC with M12 trubolts @ 900crs

300d x 180w 17.5mpa concrete foundation with 3/DI2 along and DIO starters @ 600crs

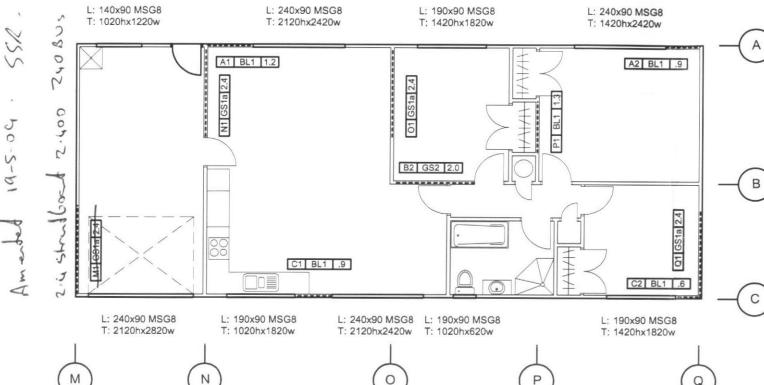
					_
Ceilings I Omm @ 400crs F4		35 batt	ens		
E	BED I			×	
Wall linings 10 10mm GIB Aqui		ept wet	areas	×	

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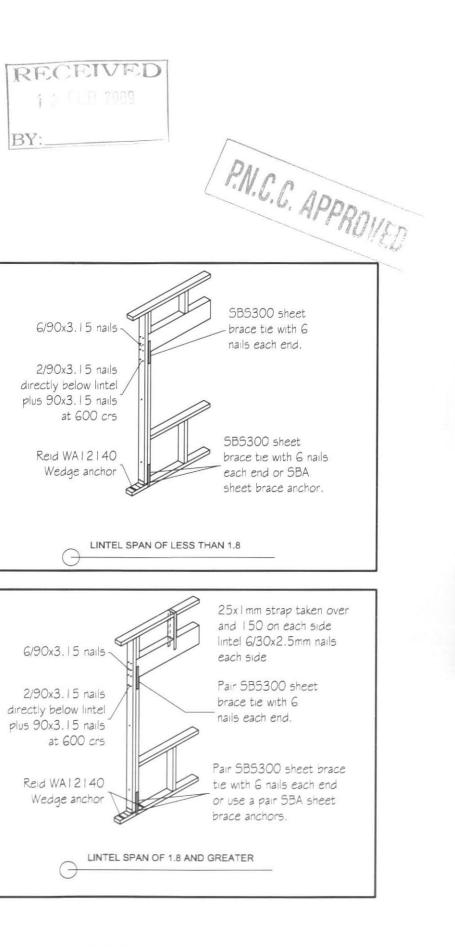
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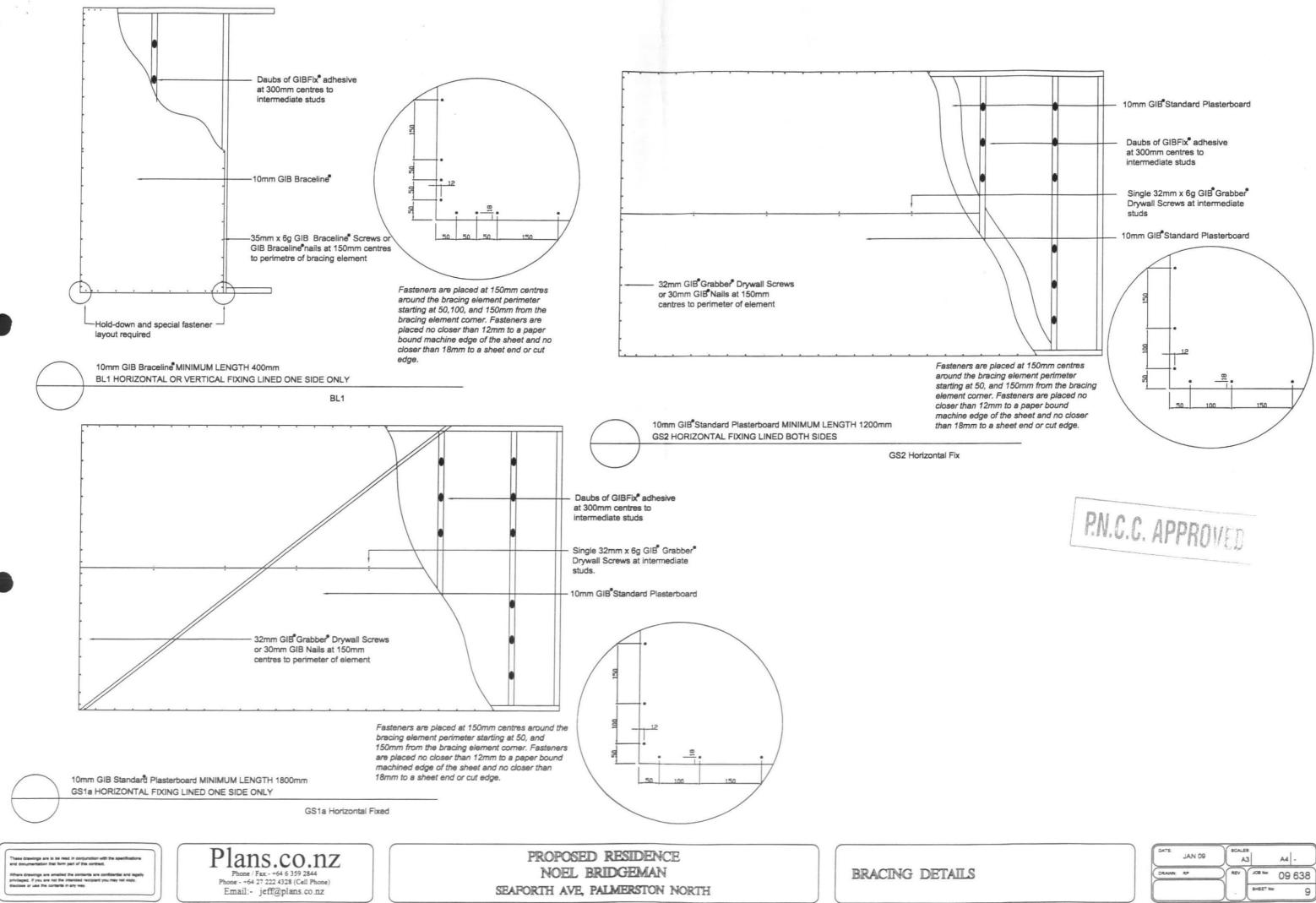
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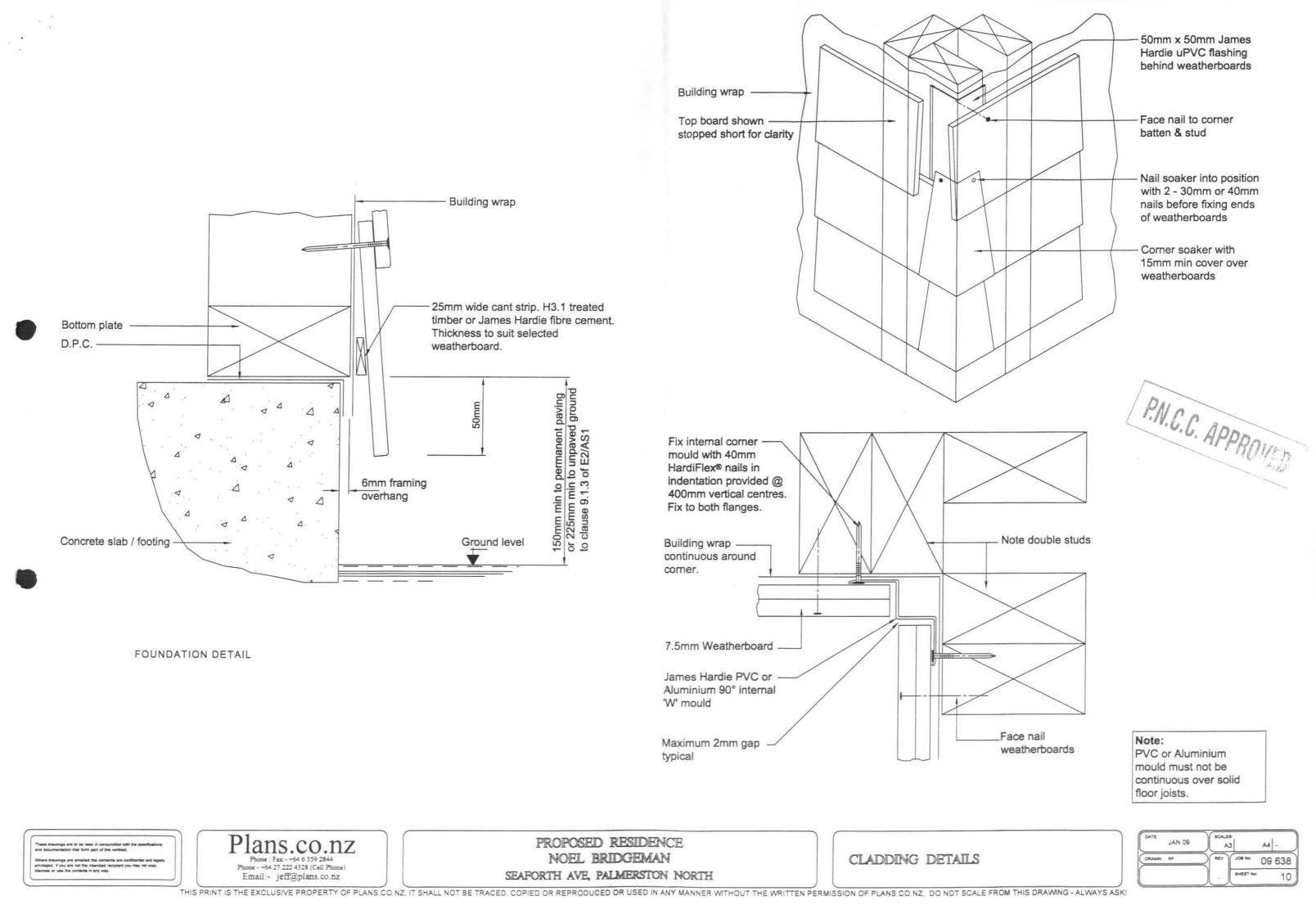


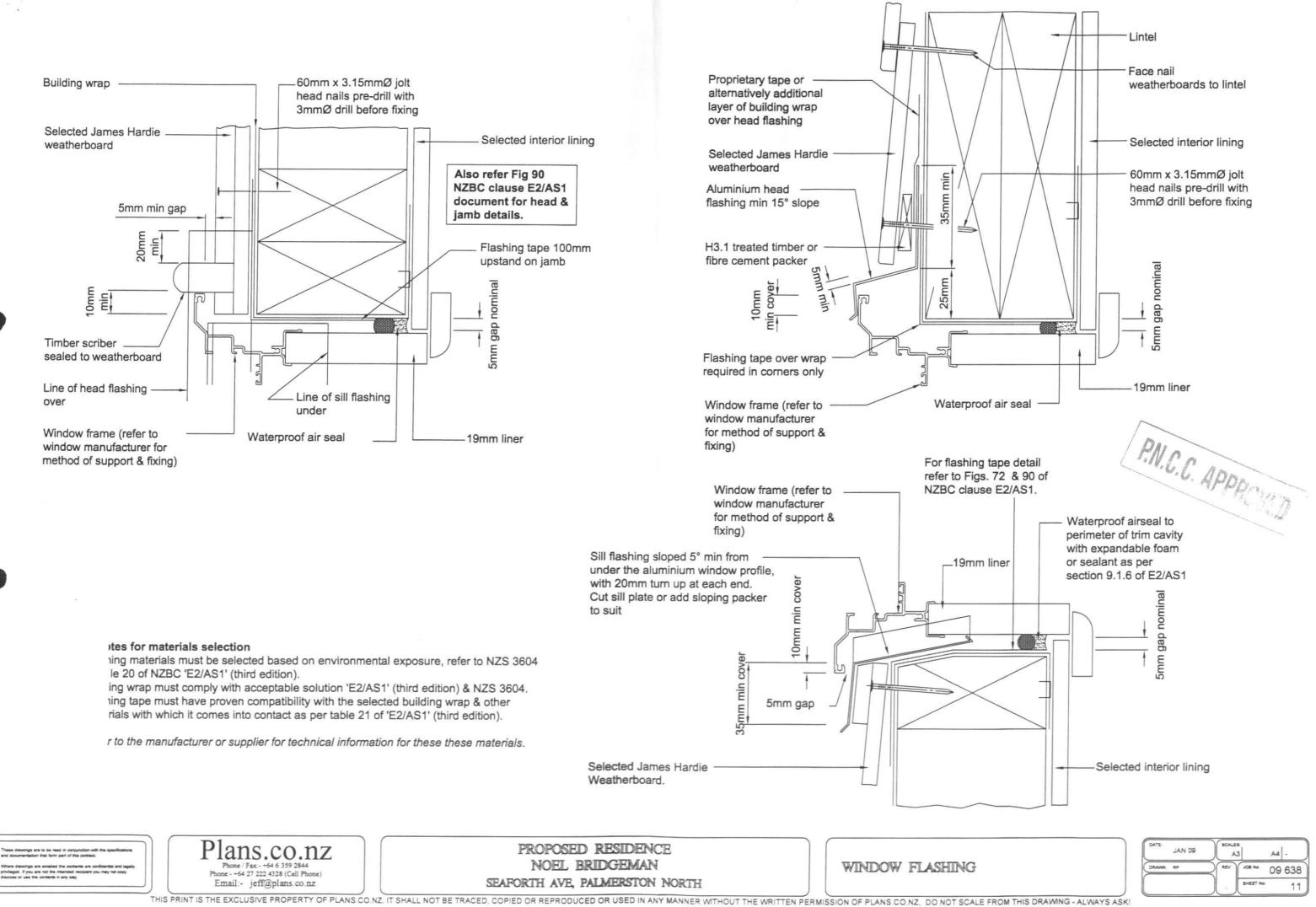
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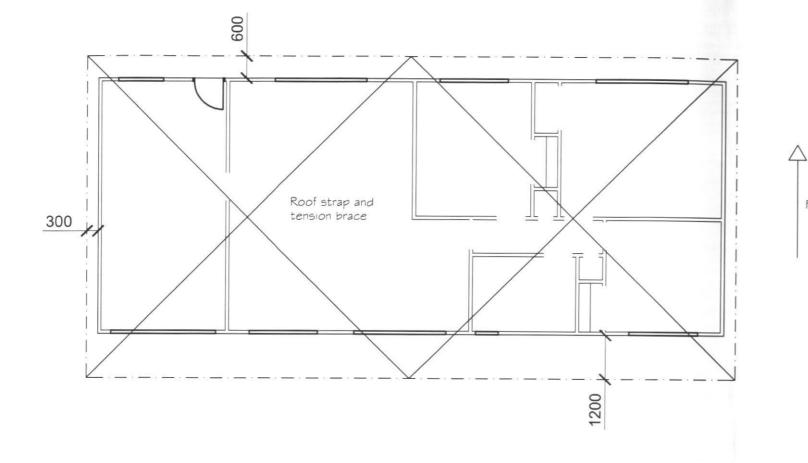
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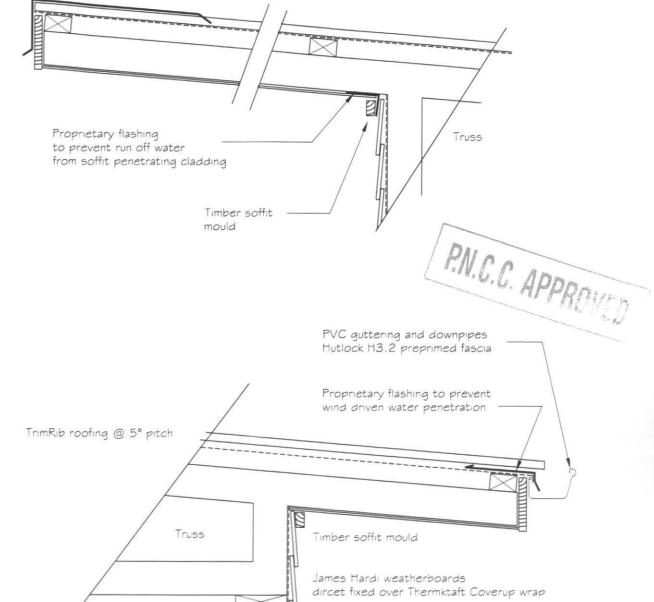


15573





FALL



NOTE :

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MEDIUM WIND ZONE

TRIMRIB COLORSTEEL ROOF

PITCH 5°

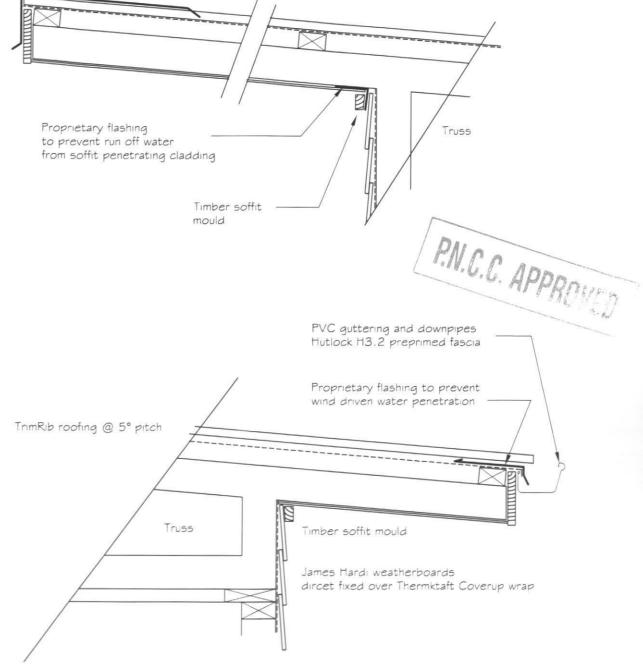
TRUSSES @ 900crs PURLINS 70x45 MSG9 @ 900crs FIXED WITH 2 X SKEWED NAILS MAIN ROOF 2 SKEWED NAILS + 1 WIRE DOG AT PERIPHERY

ROOF UNDERLAY THERMAKRAFT 215

EAVES AS DIMENSIONED CEILINGS I Omm GIB ON 70x35 BATTENS @ 400crs

TIMBER FASCIA AND BARGE BOARDS

ROOF PENETRATIONS TO BE FLASHED WITH DEKTITE EDPM FLEXIBLE BOOT FLASHINGS



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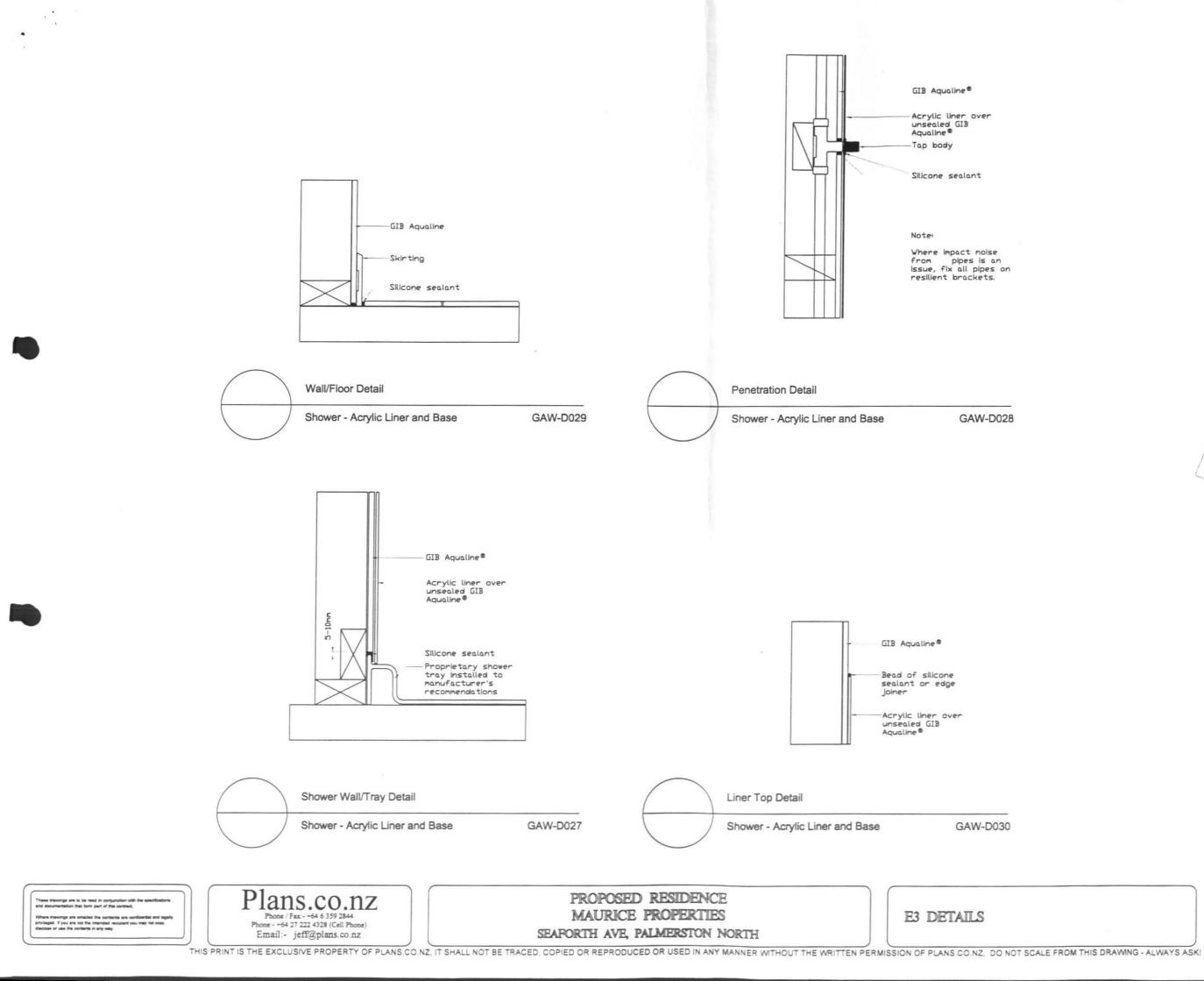
ROOF PLAN

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TrimRib roofing @ 5° pitch over Thermakraft 215 self supporting underlay on 70x45 purlins

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			SHEET No:		12



P.N.C.C. APPROVED

DATE	90 MAL	A3		A4 -
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			SHEET NO.	13

	LIGHTI	NG + VENTIL	ATION SCHEI	DULE HOUSE	
ROOM NAME	SQM	<u>10% LIGHT</u> Required	LIGHT ACHEIVED	5% VENTILATION REQUIRED	/
BED 1	15.1	1.5	3.36	0.75	
BED 2	9.0	0.9	2.5	0.5	
BED 3	10.8	1.0	2.5	0.5	
BATH	5.4	0.5	0.6	0.25	
LIVING					
DINING					
KITCHEN	33.12	3,3	10.08	1.6	

DINING/FAMILY/KITCHEN OPEN PLAN NOTE:

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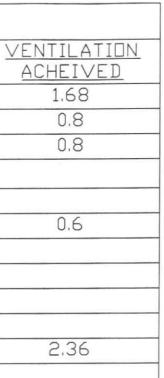
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PROPOSED RESIDENCE MAURICE PROPERTIES SEAFORTH AVE, PALMERSTON NORTH

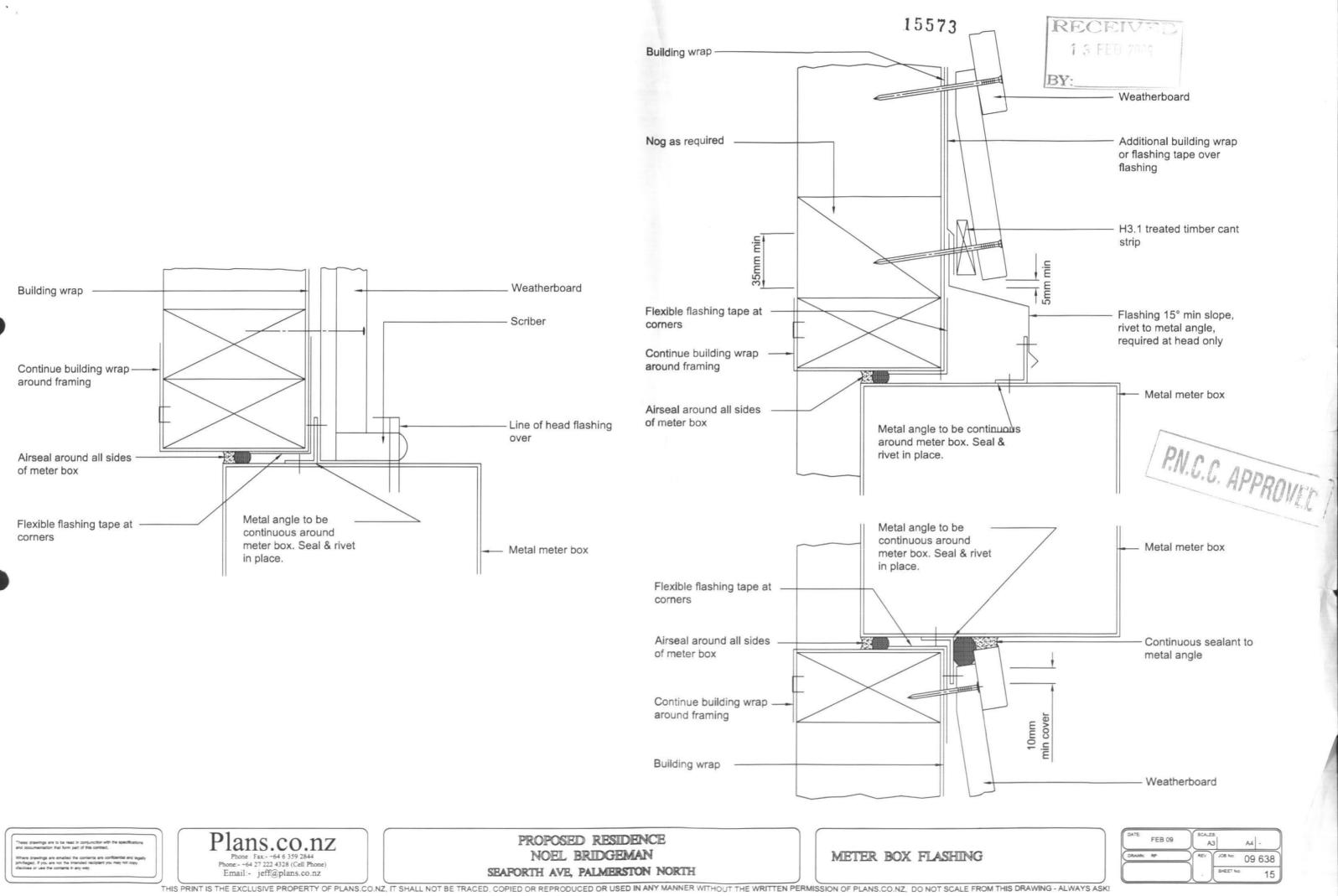
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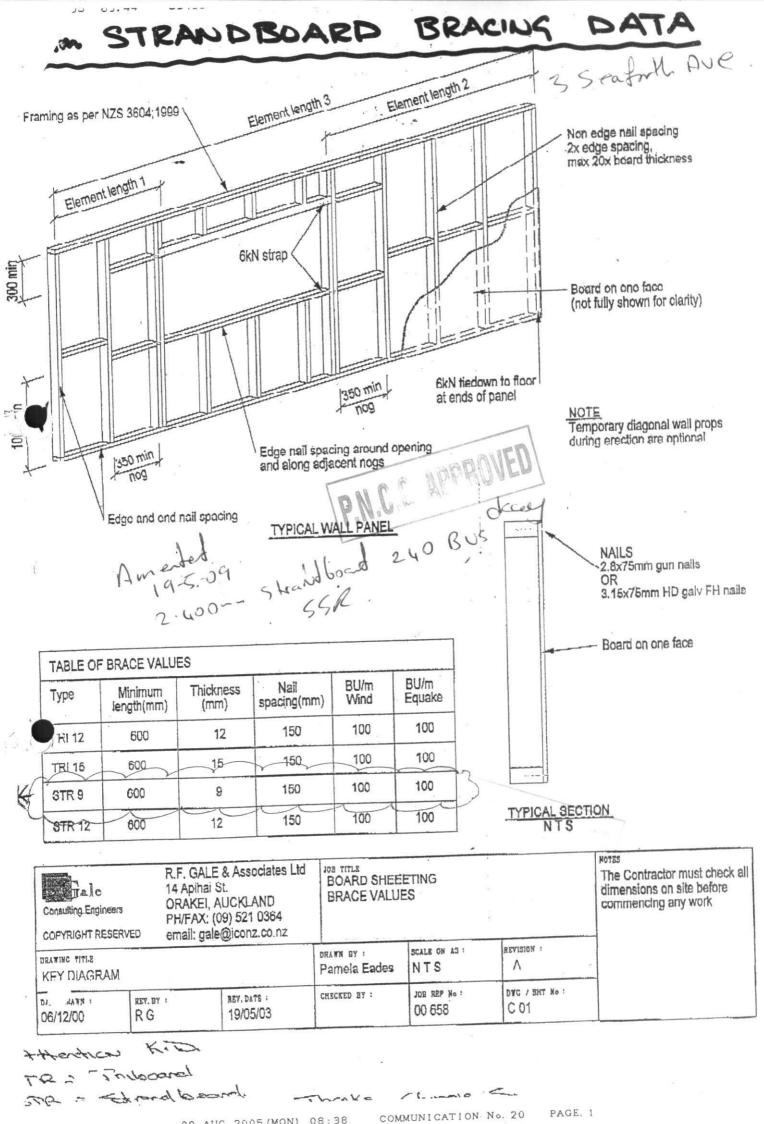
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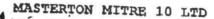
P.N.C.C. APPROVED

DATE	JAN 09	A3		A4	
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08. AUG. 2005 (MON) 08:38



PO Box 765 MASTERTON Ph (06) 377-4955 Fax (06) 377-4376

PRODUCER STATEMENT

8:18am 23 JAN 2009 Ver 3.5.3.8 PAGE 1 Job Ref: 2173

TRUSS DESIGN CRITERIA

Customer name : MEGA PLMSTN NTH. PALMERSTON NORTH

Site address : BRIDGEMAN 3 CENFORTH AVE.

DESIGN CRITERIA

(CRAIG LOADER). P.N.C.C. APPROVED Roofing - Longrun Ceiling - Gib Board (10mm) Top chord purlins - 900 mm Bottom chord restraints - 600 mm Standard truss spacing - 900 mm Standard roof pitch - 5.00 deg TIMBER SPECIES VSG8/MSG8 Design wind speed - 44 m/s (ultimate) Internal pressure coefficient up - 0.2

The truss designs for this job have been determined using computer software provided by the Technical Division within Pryda Truss Systems. These designs are in accordance with sound and widely accepted engineering principles and comply with the following New Zealand Standards:-

AS/NZS1170.1:2002 Loading Code Part 1: Dead and live loads and AS/NZS1170.2:2002 Loading Code Part 2: Wind loads NZ3603 : 1993 Timber Design AS1649 : 1974 Determination of Basic Working Loads for Metal Fasteners for Timber All trusses shall be manufactured in accordance with the fab::ication

specifications provided by Pryda, and installed, connected and braced in accordance with the recommendations given in - : AS4440:2004 "Installation of nailplated timber roof trusses"

d any other supplementary details that may be provided.

Name : KOUSES	Position: Trans imagine
Signed :	Date : 23-0/-09

MASTERTON MITRE 10 LTD PO-Sox 765 WASTERTON Ph (06) 377-4955 Fax (06) 377-4376 Estimator: <None>

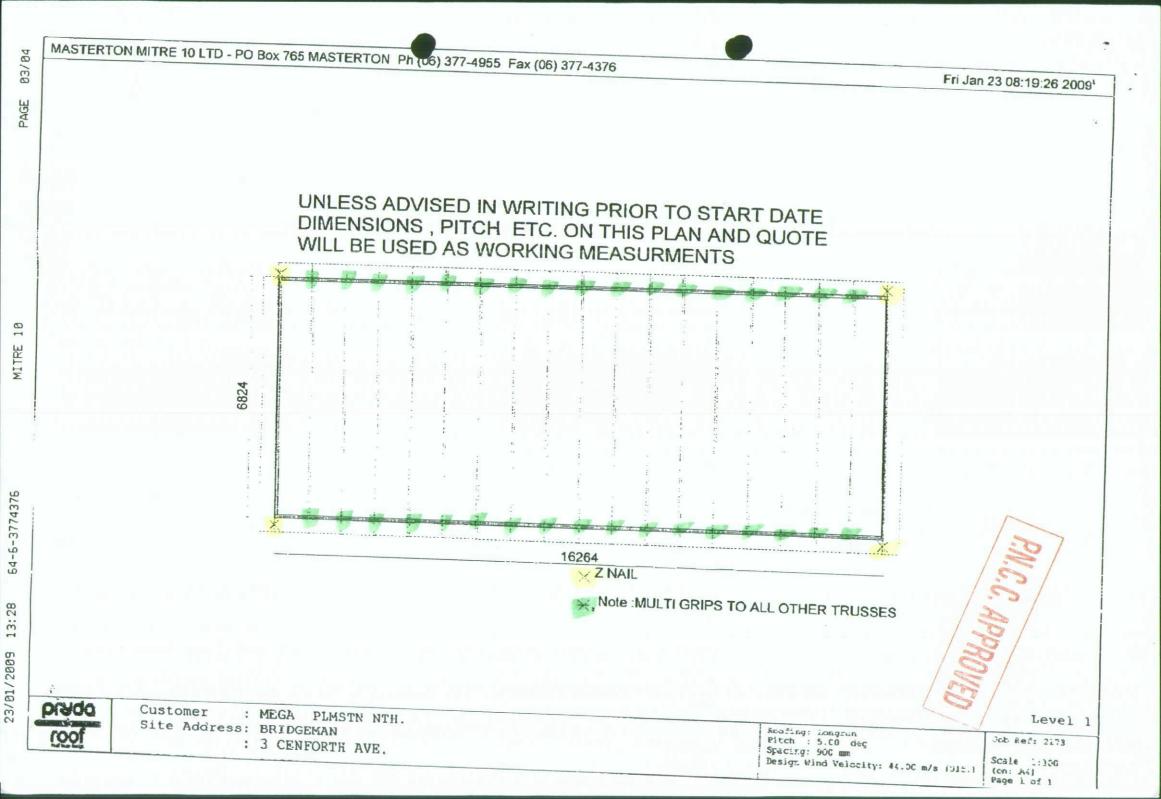
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3:20am 23 JAN 2009 Ver 3.5.3.8 PAGE 1 Job Ref: 2173

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MASTERION MITRE 10 LTD ~ PO Hox 765 MASTERION Ph (06) 377-4955 Fax (06) 377-4376

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GIB [®] Wall Bracing Calcula	ation Sheet A	single storey	V85A
		GIB [®] EzyBrace™	
Job Details		GIB [®] Bracing Systems, 200)6
Name	MAURICE PROPER	RTIES	1.1
Street and Number	SEAFORTH AVE		See.
Lot and DP Number	LOT 6 DP 8044		1994
City/Town/District	Palmerston North		
Designer and date	RP	29/01/09	1.10
Company Name	Plans.Co.NZ		-
Location of Storey	single	P.N.C.C.	0
Building Specification			
Floor Loading	2 kPa	a all the back	APD
Foundation Type	slab		""
Building Height to Apex (m)	4		
Roof Height above Eaves (m)	1		
Stud Height (m)	2.4		
Cladding Weight (top or single)	light		
Cladding Weight (lower)	light	not applicable (single storey building)	
Cladding Weight (subfloor)	light	not applicable (slab)	
Roof Weight	light		
Roof Pitch (degrees)	0-25		
Room in Roof Space	no		
Building Length (m)	16.49		
Building Width (m)	6.89		
Gross Building Plan Area (m2)	113.62		

Building Location

43

Wind Zone	Medium	Earthquake Zone
Region	R1	A
Terrain	Inland	22
Exposure	Sheltered	
Topography	Moderate	

Bracing Units required for Wind

Bracing Un	its required f	or Wind	Bracing Units required for Earthquake			
per m	subfloor	walls	per m2	subfloor	walls	
W along	n/a	34 BUs/m	E	n/a	3.6 BUs/m2	
W across	n/a	24 BUs/m				
Totals	subfloor	walls	Totals	subfloor	walls	
W along	n/a	234 BUs	E along	n/a	409 BUs	
W across	n/a	396 BUs	E across	n/a	409 BUs	

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GIB® EzyBi	race [™]						GID" Bracil	ng System:	5, 2000
Along								140 1	
Wall or Bra			ments prov	NAMES OF TAXABLE PARTY.				Wind 9W	Earthq.
1 Line Label	2 Minimum BUs Req/Ach	3 Bracing Element No.	4 Supplier	5 Bracing Type	7 Element Length L (m)	8 Element Height H (m)	6 Angle to Bracing line (degrees)	BUs Achieved	10EQ BUs Achieved
A	enter	1	GIB®	BL1	1.2	2.4	0	150	138
	enter	2	GIB®	BL1	0.9	2.4	0	113	104
line totals		3	0			0	0	0	0
W	263		0			0		0	0
EQ	203		0			0	1.	0	0
B	enter	1	GIB®	GS2	2	2.4		160	140
0	Cillor	2	0			0		0	0
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line totals W	160		0			0		0	0
EQ	160		0			0		0	0
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0	enter	2	0			0	0	0	0
		3	0			0		0	0
line totals		4	0			0		0	0
W	0	5	0			0		0	0
EQ E	0	1	0		-	0	11111 8.10	0	0
E	enter	2	0			0	5.85.942	0	0
			0			0	1.000	0	0
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		2	0			0		0	0
line totals		3	0			0		0	0
W	0	4	0			0		0	0
EQ	optor		0			0		0	0
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	enter	2	0			0		0	0
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BIB® Wa	all Bracing	g Calcula	ion She	et B		single stor	rey	Custom C	N85
IB® EzyE	Brace™					· · · · · · · · · · · · · · · · · · ·	GIB® Braci	ng System T	s, 2006
cross	racing Line	Bracing Ele	ments pro	vided				Wind	Earthq.
1	2	3	4	5	7	8	6	9W	10EQ
ne Label	Minimum BUs Req/Ach	Bracing	Supplier	Bracing Type	Element Length L (m)	Element Height H (m)	Angle to Bracing line (degrees)	BUs Achieved	BUs Achieved
	enter	1	GIB®	GS1a	2.4	2.4	0	180	156
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GIB[®] Bracing Systems, 2006

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For full construction details see literature GIB[®] Bracing Systems, 2006 P.N.C.C. APPROVED

	1				
Supplier	System	Minimum Length (m)	BUs W/m	BUs EQ/m	
	none	0	0	0	
GIB®	GS1a	1.8	65	55	
		2.4	75	65	
GIB®	GS2	1.2	70	60	
		1.8	80	70	
		2.4	90	80	
GIB®	BL1	0.4	120	115	
		0.6	125	115	
GIB®	BL1a	1.8	130	115	
GIB®	BLP	0.6	145	135	
		0.9 145		145	
GIB®	BLG	0.6	145	130	
		1.2	150	130	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
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Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	
Custom	Custom	0	0	0	

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SPECIFICATION

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

PROPOSED HOUSE

3 SEAFORTH AVE PALMERSTON NORTH

MAURICE PROPERTIES LTD

Job Number:

Date:

JAN 09

09-638

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2210 PREPARATION AND GROUNDWORK P.N.C.C. APPROVED 1. GENERAL This section relates to the of the site area in preparation for: - footings and floor slabs 1.1 DOCUMENTS Documents referred to in this section are: NZS 3604 Timber framed buildings OSH Approved code of practice for safety in excavation and shafts for **foundations** 1.2 SITE SAFETY Provide adequate support for all excavations. Cover holes and fence off open trenches and banks. 2. EXECUTION 2.1 **BURNING OF MATERIALS** Burning of materials is not permitted on site. 2.2 PROTECT EXISTING WORK Protect from damage existing buildings, structures, roads, paving and services. 2.3 SURFACE PREPARATION Comply with NZS 3604, section 3.5, Site preparation. Remove all turf, vegetation, trees, topsoil, stumps, uncontrolled fill and rubbish from the area to be built on. 2.4 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. 2.5 **GENERAL EXCAVATION** Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water. 2.6 FOUNDATION EXCAVATION Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and free of soft spots, stepped as detailed and clean and free of water. 2.7 INADEQUATE BEARING If bearing is not to NZS 3604, 3.1.2 and 3.1.3, then excavate further and backfill with material as follows. Confirm any changes with the territorial authority. Below slabs on grade: Hardfill compacted in 150 mm layers Below footings: 10 MPa concrete Service trenches: Hardfill compacted in 150 mm layers If excavation exceeds the required depths, backfill and compact to the correct level with material as listed. 2.8 GRANULAR BASE FOR SLABS To conform to NZS 3604, section 7.5.3, Granular base. Consolidate with a vibrating roller. Blind the surface with 20 mm of coarse sand or sand/cement and roll ready to

2.9 SURPLUS MATERIAL Remove surplus and excavated material from the site.

receive a damp-proof membrane.

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3120 CONCRETE

1. GENERAL

This section relates to formwork, reinforcement, concrete mixes and the placing of concrete.

1.1 DÓCUMENTS

Documents refe	rred to in this section are:	
NZS 3101.1	Concrete structures standard	
NZS 3104	Specification for concrete production	
NZS 3109	Concrete construction	
NZS 3114	Specification for concrete surface finishes	
NZS 3604	Timber framed buildings	
AS/NZS 4671	Steel reinforcing materials	

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

2. PRODUCTS

2.1 PRESCRIBED MIX CONCRETE

Prescribed mix concrete 17.5 MPa grade minimum strength, using either separate batching of sand and builder's mix or coarse aggregate to NZS 3104: table 3.1, Grading recommendations for combined and uncombined coarse aggregates.

2.2 REINFORCEMENT

Bars to AS/NZS 4671. Grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh to AS/NZS 4671.

2.3 TYING WIRE Mild drawn steel wire not less than 1.2 mm diameter.

2.4 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC to approval. Where concrete spacer blocks are used in exposed concrete work use blocks matching surrounding concrete.

2.5 DAMP-PROOF MEMBRANE

0.25 mm minimum polyethylene to NZS 3604, clause 7.5.4, Damp-proof membrane.

3. EXECUTION

3.1 HANDLE AND STORE

Handle and store reinforcing steel and accessories without damage or contamination. Store on timber fillets on hard ground in a secure area clear of any building operation. Lay steel fabric flat.

Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity.

3.2 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. Ensure timber or plywood used for formwork is non-staining to the set concrete.

Securely fix and brace formwork sufficiently to support loads and with joints and linings tight enough to prevent water loss. Do not use tie wires or rods unless approved in writing by the owner. Unless detailed otherwise, provide a 19 mm chamfer or fillet strip at all interior and exterior angles of beam and column forms. Mitre at intersections.

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Water blast to clean formwork. Keep formwork wet before concrete is placed.

3.3 INSTALL DAMP-PROOF MEMBRANE

Apply polythene 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.

3.4 CUT AND BEND REINFORCEMENT

Cut and being of NZS 3109: 3.3 Hooks and a table 3.1, Minimum radii of reinforcement being is necessary, use a purpose built tool, proper preparation and a ADJUSTMENTS Use a purpose built tool for on site bending and to deal with minor adjustments to steel reinforcement. Cut and bend bars using proper bending tools to avoid notching and to the requirements

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3.6

3.7

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 3.6, Spacing of reinforcement.

3.8 LAPPED SPLICES

Length of laps where not dimensioned on the drawings in accordance with the SELECTIONS. Increase laps of plain round steel by 100%. Provide laps only where indicated on the drawings. Tie all lapping bars to each other.

3.9 **REINFORCEMENT COVER**

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on the drawings. Where cover is not shown on drawings provide minimum cover to NZS 3101 part 1, table 3.6, Minimum required cover for a specified intended life of 50 years. Fix chairs for top reinforcement in slabs at 1.0 metre centres or to ensure adequate support. Cover tolerances to NZS 3109: clause 3.9. Tolerances for reinforcement.

3.10 CASTING IN

Build in all grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required by all trades and as shown on the drawings, prior to pouring the concrete.

Do not use grounds exceeding 100 mm in length. Location and form of conduits to be approved in writing by the owner. Minimum cover 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 accommodate expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

3.11 **PRE-PLACEMENT INSPECTION** Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the Building Consent Authority.

3.12 SURFACE FINISHES

To NZS 3114: clause 105, Specification of finishes, as scheduled or as denoted on the drawings.

3.13	CONCRETE SURFACE TOLERANCES To NZS 3114: clause 104, Surface tolerances and clause 105, Specification of finishes, with the suggested tolerances becoming the required tolerances.
3.14	PUMPING CONCRETE Set up and supervise pump operation, placing and compaction of the mix to NZS 3109: clause 7.4, Handling and placing and clause 7.6, Compaction Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.
3.15	COMPACTION Use power operated vibrators on foundations, vertical constructions and beams.
3.16	RESIDENTIAL FLOOR SLABS Construct to NZS 3604: clauses 4.8 Concrete and 7.5, Concrete slab-on-ground floors in 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 NZS 3109: clause 104, Surface tolerances.
3.17	SAW CUTS 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: $1/3$ slab depth or 30 mm minimum.
3.18	SURFACE DEFECTS Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with 1:2 mortar or plaster, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.
3.19	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.
3.20	STRIKE FORMWORK Strike formwork without damaging or overloading structure. Do not remove formwork before the following minimum periods:
	 12 hours: Sides of beams, walls and columns 4 days: Slabs in beam and slab construction (leave props under slab spans over 2 metres) 10 days: Props from under slab spans over 2 metres 18 days: Beams, soffits and slab spans over 5 metres
3.21	CLEAN OUT Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.
3.22	REMOVE Remove all unused materials and all concrete and reinforcing debris from the site.
4.	SELECTIONS
4.1	DAMP-PROOF MEMBRANE Brand/type: 250 micron polythene
4.2	REINFORCEMENT LAPS Where reinforcement laps are not shown on the drawings, lap as follows: <u>Bar diameter</u> <u>Grade 300E deformed</u> 10 mm 400 mm

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12 mm 500 mm

4.3 CONCRETE Normal concrete: 17.5 MPa:

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P.N.C.C. APPROVED

3820 CARPENTRY

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1.	GENERAL This section relates to the supply and erection of light timber framing.
1.1	DOCUMENTSDocuments referred to in this section are:AS/NZS 1748Mechanically stress-graded timberAS/NZS 2904Damp-proof courses and flashingsNZS 3602Timber and wood-based products for use in buildingNZS 3603Timber structures standardNZS 3604Timber framed buildingsNZS 3631New Zealand national timber grading rulesNZS 3640Chemical preservation of round and sawn timberAS/NZS 4347Damp-proof courses and flashings - Methods of testBRANZ BU 453Fasteners selection
1.2	DIMENSIONS All timber sizes except for battens are actual minimum dried sizes.
2.	PRODUCTS
2.1	TIMBER FRAMING, TREATED Species, grade and in service moisture content to NZS 3602 and treatment to NZS 3640. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.
2.2	TIMBER TRUSSES Moisture content: 16% at supply
2.3	NAILS Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ BU 453 Fasteners selection.
2.4	BOLTS AND SCREWS Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ BU 453 Fasteners selection.
2.5	NAIL PLATES 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.
2.6	CONNECTORS Galvanized steel connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.
2.7	BITUMINOUS IMPREGNATED DPC Heavy Kraft impregnated with high grade bitumen and coated with higher heat resistant bitumen to AS/NZS 2904 and AS/NZS 4347.
3.	EXECUTION
3.1	EXECUTION GENERALLY To NZS 3603 and NZS 3604 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).
3.2	SEPARATION Separate all timber framing timbers from concrete, masonry and brick by: - - a full length bituminous damp-proof membrane overlapping timber by at least 6 mm; or

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3.3	ATTENDANCE Provide and fix blocks, i	nogs, openings and o	ther items as required	by other trades.
3.4	MOISTURE CONTENT Maximum allowable equination centrally heated building Framing at erection: Framing at enclosure: Framing at lining:	uilibrium moisture con		conditioned or
3.5	SET-OUT Set out framing in accor support sheet linings an		ements of NZS 3604 a	nd as required to
3.6	FRAMING WALLS Frame to required loadir and fastened to NZS 36		ete with lintels, sills and	d nogs, all fabricated
3.7	FRAMING ROOFS Frame to required loadir purlins. Design and fit re to NZS 3604, section 9,	oof trusses complete	with anchorage. All fail	
3.8	FRAMING CEILINGS Frame to required loadir support ceiling lining. Al for openings in ceilings a Provide blocking for wat Water tanks in roof space	II fabricated and faste and hatches to NZS 3 er tanks located in the	ned to NZS 3604, sect 604 section 13.3, Ope	ion 13, Ceilings. Trim nings in ceilings.
3.9	INSTALLING WALL WR Refer to WALL CLADDII wraps, underlays and sh	NG and THERMAL IN		
3.10	DPC TO TIMBER Lay bituminous DPC und single layer with 50 mm			
4.	SELECTIONS			
● · 4.1	EXTERIOR WALL FRAM <u>Member</u> Exterior walls:	/ING <u>Species</u> Radiata pine	<u>Grade</u> MSG8	<u>Treatment</u> H1.2
4.2	ROOF FRAMING <u>Member</u> Trusses: Purlins:	<u>Species</u> Radiata pine Radiata pine	<u>Grade</u> MSG8 MSG6	<u>Treatment</u> H1.2 H1.1
4.3	EXTERIOR FINISHING [*] <u>Member</u> Fascia/barge/cover boan Exterior trim:	Species	<u>Grade</u> Dressing Dressing	<u>Treatment</u> H3.1 H3.1
4.4	INTERIOR FRAMING <u>Member</u> S Non structural walls:	Species Radiata pine Radiata pine	<u>Grade</u> ~ ~	<u>Treatment</u> H1.2 H1.2
4.5	Architraves:	IMBERS Species Radiata pine Radiata pine	<u>Grade</u> Dressing Dressing	

4.6	DPC	
	Brand/Type:	Bituminous

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4160T THERMAKRAFT WRAPS, UNDERLAYS AND DPC

1. GENERAL

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This section relates to the application of Thermakraft Industries (NZ) Ltd, DPC, DPM, underfloor foil insulation, wall wraps and roofing underlays. P.N.C. C AN

Documents

1.1	DOCUMENTS F		
	Documents refe	rred to in this section are:	
	NZBC E2/AS1	External moisture	
	AS 1530	Methods for fire tests on building materi	als, components and
		structures	
	NZS 2295	Pliable, permeable building underlays	
	AS/NZS 2904	Damp-proof courses and flashings	
	NZS 3604		
		Timber framed buildings	
	NZS 4200	Pliable building membranes and underla	
	AS/NZS 4347	Damp-proof courses and flashings - Met	
	AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings of	on steel wire
	BRANZ Appraisa	al Certificate No. 356	
		Thermakraft Cover-up™ breather-type	
	BRANZ Appraisa	al Certificate No. 614, Thermakraft Alubar	id™ /Aluminium window
		sealing tape and Aluband™ corner mot	ulded piece system
	NZMRM	NZ Metal Roof and Wall Cladding - Code	
·		• • • • • • • • • • • •	
		above and cited in the clauses that follow	
		ecification takes precedence in the event of	it being at variance with the
	cited document.		
1.2		R'S DOCUMENTS	
1.2			
		cuments relating to work in this section are:	
	i nermakran, pro	duct manual and technical data sheets.	
	Copies of the abr	ove literature are available from:	
	Web:	www.thermakraft.co.nz	
	Telephone:	0800 806 595	
	reiephone.	0000 808 393	
1.3	MANUFACTURE	R'S WARRANTY	
		k under normal environmental and use con-	ditions against failure of
		ecution. Thermakraft Industries Ltd warran	
		lation complies with relevant technical litera	
	industry Codes o		sure, NZDO, and recognised
	industry Codes o		
1.4	ABBREVIATION	s	
		oreviations are used in this specification.	
	NZMRM	New Zealand Metal Roofing Manufacture	are inc
	NASH	National Association of Steel Framed Bu	
	IIA3H		nungs
1.5	INTERPRETATIO	N	
1.0		ed in this specification has the same meani	ing as building wrans in
	NZS 3604 and N		ng as building maps in
			· ·
	Requirements		
	···· 1 -········		
1.6	NO SUBSTITUTI	ONS	
	Substitutions are	not permitted to any specified materials, or	associated products,
	components or a	•••	
	·		
1.7	INSTALLATION S		
		perienced in the installation of Thermakra	
	Thermakraft Indu	ustries technical literature and the NZMRM	NZ Metal Roof and Wali
	Cladding - Code of	of Practice.	

2. PRODUCTS

Materials

Wall wraps

2.1 POLYOLEFIN, NON ABSORBENT WOVEN BREATHER TYPE MEMBRANE **Thermakraft Cover-Up™**, high tensile coated polyolefin woven building membrane with micro perforated pores that allow the membrane to breathe. A fire retardant product, Flammability Index of 1, when tested to AS 1530:Part 2. The product has a BRANZ Appraisal, Certificate 356.

Roofing underlay

2:2 BITUMINOUS SELF-SUPPORTING ROOFING UNDERLAY Thermakraft 215[™], bituminous self-supporting roofing underlay to NZS 2295 and AS/NZS 4200 heavy₁duty classification.

Accessories

2.3 WINDOW DOOR SEALING SYSTEM

Thermakraft Aluband[™]/Aluminium system consists of polymeric faced bituminous window sealing tape, Thermakraft Aluband[™] Corner Moulding[™] piece, used in conjunction with the Thermakraft Aluband[™] Hand Tool to ensure good adhesion and a tight fit into corners. See Thermakraft Data Sheet 312 for installation details and BRANZ Appraisal, Certificate 614.

2.4 TAPE

Thermakraft tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers. **Thermakraft Aluband™ / Aluminium Window Flashing** tape can be used to repair damaged bituminous building papers.

3. EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

Design application and installation of **Thermakraft** Building products to NZBC E2/AS1, BRANZ Appraisals, **Thermakraft** Technical Literature and Industry Codes of Practice.

3.2 STORAGE

Store building underlays and accessory materials, under conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture.

3.3 INSPECTION

Before starting work, check that the building construction phase will allow work of the required standard. Carry out remedial work identified before laying underlay.

Application - Wraps

3.4 WALL UNDERLAY

Fix horizontally to outside face of framing in true alignment, with succeeding sheets overlapping 150 mm to NZS 3604 Table 4.1 and 4.2 requirement for fastenings. Fix to **Thermakraft** Industries Technical Data specifications. Scribe neatly around penetrations and openings to leave no gaps. Tape all penetrations. Keep clean, undamaged and without visible weather deterioration until closed in.

Application - Roofing underlay

BUILDING PAPER ROOF UNDERLAY

Lay horizontally across the rafter/trusses starting at the gutter line with succeeding sheets in true alignment and lapping 150 mm. Scribe around and fit neatly to all penetrations. Avoid prolong exposure by installing the roof immediately. Installation to comply with NZBC E2/AS1 clause 8.1.5.1.

Completion

- 3.6 CLEAN UP Clean up as the work proceeds.
- 3.7 LEAVE Leave work to the standard required by following procedures.
- 3.8 REMOVE Remove debris, unused materials and elements from the site.

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- 4. SELECTIONS
- 4.1 WALL WRAPS ABSORBENT CLADDING Type: Thermakraft Cover-Up[™] polyethylene fire retardant breather type membrane
- 4.2 ROOFING UNDERLAYS Type: Thermakraft 215™ bituminous self-supporting breather type building paper

Accessories

4.3 WINDOW/DOOR SEALING SYSTEM Type: Thermakraft Aluband™ / Aluminium Window Sealing System (comprising of Aluband Corner Moulded Piece™ and Aluband™ Window Sealing Tape).

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4231HW JAMES HARDIE WEATHERBOARD CLADDING

1.

GENERAL

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This section relates to the supply and fixing of the following fibre cement products: - James Hardie Weatherboard cladding - James Hardie selected soffit lining Documents 1.1 DOCUMENTS REFERRED TO Documents referred to in this section are: NZBC E2/AS1 External moisture, 9.0 Wall claddings NZBC E2/VM1 Weathertightness AS/NZS 1170.2 Structural design actions - Wind actions AS/NZS 2908.2 Cellulose-cement products - Flat sheet Timber and wood-based products for use in building NZS 3602 NZS 3604 Timber framed buildings Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document. 1.2 MANUFACTURER'S DOCUMENTS James Hardie documents relating to work in this section are: Linea[™] Weatherboard technical specification James Hardie Weatherboards technical specification Eaves and Soffit Linings installation manual James Hardie HomeRAB™ PreClad™ Lining Installation Manual BRANZ Appraisal certificate No. 446 (2005) Linea[™] Weatherboard BRANZ Appraisal certificate No. 447 (2005) Linea[™] Weatherboard cavity construction Copies of the above literature are available at Web: www.jameshardie.co.nz Telephone: Ask James Hardie™ on 0800 808 868 The BRANZ appraisal is available at www.branz.co.nz. Requirements 1.3 NO SUBSTITUTIONS Substitutions are not permitted to any specified system, or associated components and products. Warranties 1.4 WARRANTY - MANUFACTURER/SUPPLIER Provide a material manufacturer/supplier warranty: For failure of James Hardie™ Weatherboard Cladding 15 years: (refer to James Hardie™ product warranty) 15 year: For failure of accessories supplied by James Hardie (refer to James Hardie™ product warranty)

From: Date of purchase

4

- Provide this warranty on the manufacturer's standard form.

Refer to the general section WARRANTIES for additional requirements.

Performance

1.5 FIXINGS, WIND

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Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by James Hardie technical specification and the wind loads on various wall areas as given by AS/NZS 1170.

2. PRODUCTS

Materials

- 2.1 BUILDING WRAP Refer to section WRAPS, UNDERLAYS AND DPC.
- 2.2 JAMES HARDIE WEATHERBOARDS James Hardie Weatherboards, pre-primed, manufactured to AS/NZS 2908.2 and complying with NZBC E2/AS1.
- 2.3 SOFFIT LINING James Hardie 4.5 mm Hardisoffit[®] Lining, HardiFlex[®] Eaves Lining, Silkline[®] Soffit Lining Eclipsa[™] Eaves Lining, HardiGroove[®] Lining and 6mm HardiFlex[®] Lining soffit manufactured from treated cellulose fibre, Portland cement, sand and water and cured by high pressure autoclaving manufactured to AS/NZS 2908.2.

Components

2.4 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to NZS 3604, section 4 Durability, for requirements for fixing's material to be used in relation to the exposure conditions.

Exposure conditions & nail selection prescribed by NZS 3604, section 4, table 4.3 Steel items such as nails and screws used for framing and cladding.

Refer to NZBC E2/AS1, Table 20, Material selection, and Table 21, Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

2.5 GALVANIZED NAILS

60 mm x 3.15 mm diameter jolt head 75 mm x 3.15 mm diameter jolt head HardiFlex[®] Nail 40 mm x 2.8 mm diameter HardiFlex[®] Nail 50 mm x 2.8 mm diameter HardiFlex[®] Nail 60 mm x 3.15 mm diameter HardiFlex[®] Nail 75 mm x 3.15 mm diameter

2.6 SOFFIT JOINTERS AND CAPPING MOULDS Extruded uPVC jointer, 2 way jointer, capping and scotia mould.

Accessories

2.7 SEALANT Silaflex MS sealant or similar. Refer to James Hardie technical specifications for application requirements.

3. EXECUTION

Conditions

3.1 STORAGE

Take delivery of weatherboards dry and undamaged in pallets and lay horizontally on a smooth level surface. Protect edges and corners from damage and cover to keep dry until fixed.

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HANDLING

3.2

3.4

Avoid distortion and contact with potentially damaging surfaces. Carry weatherboards in vertical position. Do not drag weatherboards across each other, or across other materials. Protect edges, corner and surface finish from damage.

3.3 SUBSTRATE

Do not commence work until the substrate is of the standard required by James Hardie for the specified finish; plumb, level and in true alignment. Moisture content of timber framing must not exceed the requirements specified by NZS 3602 to minimise shrinkage and movement after sheets are fixed.

Application - generally

FIX BUILDING WRAP

Refer to WRAPS, UNDERLAYS AND DPC.

3.5 PENETRATIONS AND FLASHINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- Building wrap appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the building wrap.

- Wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames and other penetrations

- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.6 INSTALL FLASHINGS

Install flashings at all wall openings, penetrations, junctions, connections, window sills, heads and jambs to NZBC E2/AS1.

3.7 INSTALL JAMES HARDIE WEATHERBOARDS

Fit concealed soaker, internal corners and fix weatherboards as per James Hardie Weatherboard technical specifications. Fit and fix external corners and joint soakers as required.

3.8 INSTALL SOFFIT SHEETS

Cut sheets dry and ensure all edges and joints are fully supported. Nail and insert uPVC fasteners to James Hardie requirements. Fit complete with jointers and capping moulds. Refer to Eaves and Soffit Linings installation manual.

Completion

3.9 REPLACE Replace all damaged or marked elements.

3.10 LEAVE Leave work to the standard required for following procedures.

3.11 REMOVE Remove debris, unused materials and elements from the site.

4. SELECTIONS

James Hardie Weatherboards

4.1 JAMES HARDIE WEATHERBOARDS Brand/type: James Hardie Smooth Weatherboard Thickness: 7.5 mm Width: 240 mm Fastener type: Galvanised

Fixing:

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4.2 JAMES HARDIE WEATHERBOARD CORNERS Type: Soaker Soaker type: Aluminium

Face nail

4.3 SOFFIT SHEETS Brand/type: James Hardie Hardisoffit Thickness: 4.5mm Jointer type: PVC

P.N.C.C. APPROVED

4311 PROFILED METAL ROOFING

1. GENERAL

This section relates to the supply and fixing of proprietary overlap rigid sheet metal profiled roofing complete with accessories.

Documents

1.1 DOCUMENTS REFERRED TO

Documents release	eu to in this section are.
AS/NZS 1170.2	Structural design actions - Wind actions
AS 1397	Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc- coated
NZS 2295	Pliable, permeable building underlays
AS 3566	Self-drilling screws for the building and construction industries
NZS 3604	Timber framed buildings
AS/NZS 4200.1	Pliable building membranes and underlays - Materials
AS/NZS 4200.2	Pliable building membranes and underlays - Installation requirements
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
AS/NZS 4389	Safety Mesh
NZMRM	NZ Metal roof and wall cladding - Code of practice

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:		
BMT	Base metal thickness	
MRM	New Zealand Metal Roofing Manufacturers Inc	
MS	Modified silyl	

Requirements

1.3 QÚALIFICATIONS

Carry out work with experienced, competent installers familiar with the products being used and with appropriate qualifications such as the National Certificate in Metal Roofing and Cladding.

Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Warrant this work under normal environmental and use conditions against weatherproofing failure.

Period:5 years from the date of completion of the roofForm:Roofing installers standard form

Include a copy of the roofing manufacturers maintenance requirements with the warranty. Refer to the general section WARRANTIES - INSTALLER/APPLICATOR for additional requirements.

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against materials failure.

15 years	For failure of coating adhesion
15 years	For weatherproofing by material penetration
Form:	Roofing manufacturers standard form

Performance

1.6 FIXINGS, WIND

Design and use the fixings appropriate for the design loads of this site; as required by NZS 3604 and AS/NZS 1170.2. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply.

1.7 CO-ORDINATE

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.

1.8 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed roofing system, including penetrations through the roof and junctions with walls and parapets.

2. PRODUCTS

2.1

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Materials

UNDERLAY

Breather type kraft paper laminates to NZS 2295. Thermakraft 215

2.2 FLASHINGS GENERALLY

Formable grade 0.55 BMT for galvanized, aluminium/zinc-coated and pre-painted steel, and 0.90 for aluminium to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

Components

2.3 FASTENERS GENERALLY

Minimum Class 4 and durability not less than the roofing material being fixed. Screw fasteners to be head stamped identifying the manufacturer and class.

2.4 FIXING CLIPS

Galvanized steel (powder coated for aluminium) to suit the material and profile of the rigid sheet and location as required by the roofing manufacturer. Fix to steel with 16 mm x 10 gauge galvanized wafer head self-drilling screws and to timber with 50 mm long x 4.5 mm galvanized spiral rolled flat head nails.

2.5 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by the roofing manufacturer and with a minimum Class 4 durability and not less than the material being fixed.

2.6 RIVETS

2.7

Sealed aluminium, minimum diameter 4 mm.

Accessories

SEALANT

Neutral Curing silicone or MS polymer sealant as required by the roofing manufacturer and used as directed.

2.8 CLOSURE STRIPS Compressible, closed cell profiled foam strips to fit the sheet profile.

- 2.9 LAP SEALING TAPE Closed cell self adhesive nitrile tape.
- 3. EXECUTION

Conditions

3.1 INSPECTION

Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could adversely affect the roofing.

3.2 STORAGE

Take delivery of and accept packs of roofing undamaged on delivery. Reject all damaged material. Store on a level firm base with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets. If sheet packs become wet, fillet or cross stack to allow air movement between sheets.

3.3 HANDLING

Avoid distortion and contact with damaging substances, including cement. Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat soled shoes when fixing and for all other work on the roof.

3.4 SEPARATION

Place isolators between dissimilar metals, also separate roofing from treated timber and cement based materials. Do not use unpainted lead sheet or copper in contact with or allow water run-off onto galvanized or Zincalume[®] materials.

Application

3.5 LAY ROOF UNDERLAY

Lay underlay horizontally with a 150 mm side lap, oversailing the spouting and/or gutters by 10 mm.

3.6 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.

3.7 END LAPS

End laps are not permitted, except where specifically detailed.

3.8 FIXING GENERALLY

Install and fix in accordance with the NZMRM NZ Metal roof and wall cladding - Code of practice requirements, and to roofing manufacturer's recommendations. Paint colour matched fixings and accessories before installation.

3.9 MARKING AND CUTTING

Cut only by shearing tools. Do not use black lead pencils for marking aluminium/zinc coated products.

3.10 FIX SHEETS

Fix sheets in place using the fastening system required by the roofing manufacturer for specified profiles, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.

3.11 STOP ENDS AND DOWNTURNS

Form stop-ends at the upper end of sheets. Form downturns at the gutter line where the roof pitch is less than 8 degrees. Form using purpose made tools.

3.12 FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Where no detail is provided flash to MRM NZ Metal roof and wall cladding - Code of practice recommendations and the roofing manufacturer's requirements. Cut accurately and fix using sealant and rivets to detail and to the roofing manufacturer's requirements to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.

USE OF SEALANTS

Select and use sealants only as recommended by the roofing manufacturer. Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

FLASHING PENETRATIONS 3.14

Flash all penetrations through the roof. Fit pipe flashings with a proprietary collar flashing to manufacturer's requirements, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

Completion

3.15 REPLACE

Replace damaged or marked elements.

3.16 LEAVE

Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.

3.17 REMOVE

Remove trade rubbish and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spoutings, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

SELECTIONS 4.

ROOFING UNDERLAYS 4.1 Thermakraft 215 Brand/type:

PRE-FINISHED HOT-DIPPED ALUMINIUM/ZINC COATED STEEL 4.2 TrimRib Brand/profile: 40 mm BMT:

P.N.C.C. APPROVED

3.13

4520 ALUMINIUM WINDOWS AND DOORS

1.

1.1

GENERAL

This section relates to the manufacture, supply, and installation of ~:

- aluminium windows
- aluminium doors and frames
- hardware and furniture
- flashings

Documents

DOCUMENTS REFERRED TO

Documents referred to in this section are: External moisture NZBC E2 NZBC F4/AS1 Safety from falling Structural design actions - Wind loads AS/NZS 1170.2 Structural design actions - Earthquake actions - New Zealand NZS 1170.5 Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate AS 1734 Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow AS/NZS 1866 shapes Performance requirements and test procedures for high performance AAMA 2604.05 organic coatings on aluminium extrusions and panels Metal finishing - Thermoset powder coatings for architectural AS 3715 applications Methods of tests for paints, Part C5: Determination of film thickness BS 3900 NZS 4211 Performance of windows Code of practice for glazing in buildings - Human impact safety NZS 4223.3 requirements Testing of building facades AS/NZS 4284 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles AS/NZS 4680 **US Federal Specification** Sealing compound, silicone rubber base (for caulking, sealing and TT-S-001543A glazing in buildings and other structures) Sealing compound, elastomeric type, single component (for caulking, TT-S-00230C sealing and glazing in buildings and other structures) Window installation system - An Alternative Solution for the installation WANZ

of windows and doorsWANZPowder Coating Quality Assurance System (PQAS)WANZSFA 3503-03:2005 Anodising StandardBRANZ BU 337Protecting Window Glass from Surface Damage

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.2

1.3

ABBREVIATIONS AND TERMS DWP Design wind pressure SLS Serviceability limit state

ULS Últimate limit state WANZ Windows Association of Zealand PQAS Powder Coating Quality Assurance System

Requirements

QUALIFICATIONS

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

Warranties

 1.4
 WARRANTY - MANUFACTURER/SUPPLIER

 Provide a material manufacturer/supplier warranty:

 5 years:
 For fabrication

Refer to the general section for the required form of WARRANTY AGREEMENT and details of when completed warranty must be submitted.

 1.5
 WARRANTY - INSTALLER

 Provide an installer/applicator warranty:
 2 years:

 For installation
 For installation

P.N.C.C. APPROVED

- Provide this warranty in the installer/applicator standard form.

Refer to the general section WARRANTIES for additional requirements. **Performance**

RESPONSIBILITY FOR PERFORMANCE

Accept responsibility for the structural and weather-tight performance of the completed window and door installation, the glazing work and all spandrel and infill panel work.

Finishes

1.6

1

1.7 CERTIFY COATINGS

Certify on request compliance with this specification and support with control and sampling records. Test for film thickness to BS 3900, part C5, method No. 4, using method (b) for certifying thickness and method (a) where any dispute arises as to the thickness provided.

The coating should be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

1.8 CERTIFICATION

Provide evidence of a certificate by a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the requirements of NZS 4211 and the specified design wind pressure and air leakage level.

2. PRODUCTS

Materials

- 2.1 ALUMINIUM EXTRUSIONS Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.
- 2.2 REVEALS TIMBER PAINTED Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.
- 2.3 FLASHINGS GENERALLY Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components - for direct fix systems

2.4 SILL PAN FLASHING Flashing for direct fix claddings to collect and drain water that may penetrate through the window or door unit. Size to extend from the inner most point of the aluminium frame out over the external face of the cladding.

Components

2.5 GLAZING GASKETS Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.

2.6 HARDWARE AND FURNITURE

Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable window hardware able to be keyed alike.

Finishes

- 2.7 POWDER COATED ALUMINIUM Polyester powder organic coating in accordance with WANZ Powder Coating Quality Assurance System and AS 3715.
- 3. EXECUTION

Conditions - generally

- 3.1 DO NOT DELIVER Do not deliver to site any elements which cannot be unloaded immediately into suitable conditions of storage.
- 3.2 UNLOAD WINDOW JOINERY Unload, handle and store elements in accordance with the window manufacturer's requirements.
- 3.3 AVOID DISTORTION Avoid distortion of elements during transit, storage and handling.
- 3.4 PREVENT DAMAGE Prevent prefinished surfaces rubbing together, and contact with mud, plaster and cement. Keep paper and cardboard wrappings dry.
- 3.5 PROPRIETARY ELEMENTS Fix in accordance with the window manufacturer's requirements.

3.6 PROTECTIVE COVERINGS

Retain protective coverings and coatings to BRANZ BU 337 and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

3.7 ADDITIONAL PROTECTION

Supply and fix additional protection as necessary to prevent marking of surfaces which will be visible on completed work.

Conditions - fixings and fastenings

3.8 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS.

- 3.9 EXPOSED FIXINGS AND FASTENINGS Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 316 stainless steel.
- 3.10 PROTECTED FIXINGS AND FASTENINGS Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

3.11 TIMBER REVEALS

Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces.

Assembly

3.12 FABRICATION

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Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

3.13 HARDWARE GENERALLY

Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.

3.14 SAFETY STAYS

Factory fit safety stays to all windows scheduled for safety stays and to all windows where safety stays are required to comply with NZBC F4/AS1 4.0, Opening windows.

Application

3.15 CORROSION PROTECTION

Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.

3.16 CONFIRM PREPARATION OF WALL OPENINGS

Confirm that wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames
- claddings neatly finished off to all sides of openings
- interior linings neatly trimmed ready for installation of jamb liners and completion of air seals to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

3.17 INSTALLATION

Fix to comply with the reviewed shop drawings and installation details including flashings and bedding compounds, pointing sealants and weathering sealants.

3.18 INSTALLATION DIRECT FIX

Install to window manufacturers details and drawings including sill pans to window and door units.

3.19 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 head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail unit by 30 mm minimum at each end.

3.20 COMPLETE AIR SEAL

Form an air-tight seal by means of a proprietary expanding foam or sealants used with backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20 mm, to provide a continuous air tight seal to the perimeter of the window or door.

3.21 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.22	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. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.
3.23	PREPARE Ensure joints are dry, Remove loose material, dust and grease.
3.24	PREPARE JOINTS Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary.
3.25	PREPARATION Mask adjoining surfaces which would be difficult to clean if smeared with sealant.
3.26	BACKING Insert polyethylene rod or tape back-up behind joints being pointed with sealant.
3.27	BACK UP When using back-up material do not reduce depth of joint for sealant to less than the minimum required by the manufacturer of the sealant.
3.28	POINTING, BEAD Tool sealant to form a smooth, flat bead.
3.29	POINTING, FILLET Tool sealant to form a smooth fillet with a profile and dimensions required by the sealant manufacturer.
3.30	FINISHING Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.
	Completion - cleaning
3.31	REMOVE TRADE DEBRIS Remove trade debris by appropriate means on a floor by floor basis as each floor is completed and again before any work is covered up by others. Arrange for general removal.
3.32	TRADE CLEAN Trade clean window frames, operable windows and doors, glass and other related surfaces inside and out at the time of installation to remove marks, dust and dirt, to enable a visual inspection of all surfaces.
3.33	PROTECTIVE COVERINGS Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.
3.34	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. Masking tape must not be used for this purpose.
	Completion
3.35	REPLACE Replace damaged, cracked or marked elements.

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3.36 PROTECTION

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Protect finishes against damage from adjacent and following work.

- 3.37 IN SITU TOUCH-UP TO POWDER COATED ALUMINIUM In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted only to minor surface scratching. Otherwise replace all damaged material.
- 3.38 LEAVE Leave work to the standard required for following procedures.
- 3.39 REMOVE Remove safety indicators and protective coverings, and wipe down all joinery thoroughly to leave it perfectly clean. Remove debris, unused materials and elements from the site.
- 3.40 MANIFESTATIONS Apply manifestations to comply with NZS 4223.3, 303.1 Manifestations.

4. SELECTIONS

4.1 WIND ZONE - DESIGN TO NZS 3604 Building wind zone: MEDIUM

4.2 WINDOW AND DOOR REVEALS - TIMBER Timber species: Radiata Pine Grade/treatment: H3.1 Thickness: 20 mm Reveals: Flush Finish: Paint

P.N.C.C. APPROVED

4555 GARAGE DOORS

1. GENERAL

This section relates to the manufacture, supply and installation of garage door systems including required opening/operating systems.

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1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:AS/NZS 1170Structural design actionsNZS 1170.5Structural design actions - Earthquake actions - New ZealandNZS 3604Timber framed buildingsAS/NZS 4505Domestic garage doors

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

Performance

1.2 LOADS

Garage doors complete with hinges, roller assemblies and fasteners to comply with wind and seismic load performance requirements to NZS 3604, table 5.1, AS/NZS 1170 and NZS 1170.5

1.3 RESPONSIBILITY FOR PERFORMANCE Accept responsibility for the structural and weather-tight performance of the completed garage door installation.

2. PRODUCTS

2.1 GARAGE DOOR Manufactured to AS/NZS 4505 complete with a compliance label stating manufacturer, serial number, wind and seismic classification and testing/certification details

3. EXECUTION

- 3.1 PREPARATION FOR INSTALLATION 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.
- 3.2 MANUFACTURERS REQUIREMENT FOR INSTALLATION Install door, track and operating equipment complete with all specified and necessary accessories and hardware to the manufacturer's requirements.

3.3 START UP Carry out start up procedures and verify proper performance of the doors.

3.4 ADJUSTMENT

Lubricate bearings and sliding parts and adjust doors to operate easily, free of warp, twist or distortion with a weather tight fit round the entire perimeter.

3.5 DEMONSTRATION

Carry out start up procedures and verify proper performance of the door. Demonstrate the operation of the door to the principal/principal's representative. Set security features to principal's requirements. Reset security features at practical completion of the contract works.

3.6 OPERATING INSTRUCTIONS AND MAINTENANCE PROCEDURES Provide operating instructions for the garage doors and associated opening equipment. Provide a list of all components requiring regular maintenance.

Completion

- 3.7 ENSURE Ensure all elements are free of marks or blemishes, with all moving parts working fully and freely.
- 3.8 REPLACE Replace damaged, cracked or marked elements.
- 3.9 LEAVE Leave work to the standard required by following procedures.
- 3.10 REMOVE Remove all debris, unused materials and elements from the site.
- 4. SELECTIONS

3

4.1 WIND ZONE Building wind zone: MEDIUM

P.N.C.C. APPROVED

- 4.2 SECTIONAL OVERHEAD DOOR Brand: TBA Type: TBA Finish: TBA
- 4.3 GARAGE DOOR CONTROLLERS Brand: TBA Model number: TBA

5110G GIB[®] PLASTERBOARD LININGS

GENERAL This section relates to the supply, fixing and jointing of GIB[®] plasterboard linings and accessories to timber and steel framed walls and ceilings to form: standard systems

- bracing systems

Documents

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:AS/NZS 2588Gypsum plasterboardAS/NZS 2589Gypsum linings - Application and finishingNZS 3604Timber framed buildingsBRANZ technical paper P21: A wall bracing test and evaluation procedure

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section are:General:GIB® Site Guide (May 2006)Wet areas:GIB Aqualine® Wet Area Systems (March 2007)Bracing:GIB® Bracing Systems (March 2006)

Copies of the above literature are available at Web: www.gib.co.nz Telephone: 0800 100 442

Requirements

1.3 NO SUBSTITUTIONS Substitutions are not permitted to any specified GIB[®] systems, GIB[®] system components, GIB[®] plasterboard, associated GIB[®] products or GIB[®] accessories.

1.4 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB[®] plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB[®] plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or

 Contractor membership of the Association of Wall and Ceiling Industries New Zealand (AWCINZ)

Performance

1.5 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

1.6 BRACING REQUIREMENTS

Provide braced wall systems using bracing rated plasterboard sheet to meet the requirements of NZS 3604 when tested to BRANZ technical Paper P21: A wall bracing test and evaluation procedure. Refer to drawings for location and type.

2. PRODUCTS

Materials

GIB[®] PLASTERBOARD 2.1 Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish. GIB[®] Standard plasterboard GIB Braceline® wall bracing plasterboard GIB Aqualine® wet area plasterboard 2.2 CORNICE GIB-Cove[®] plasterboard cornice. Refer to SELECTIONS for profile and size. Components P.N.C.C. APPROVED 2.3 SCREWS GIB[®] Grabber[®] drywall screws. 2.4 NAILS GIB[®] Nails (gold passivated). Size: 30 mm, 40 mm 2.5 METAL ANGLE TRIMS GIB[®] galvanized steel slim angle trims. TAPE ON TRIMS AND EDGES 2.6 GIB[®] Goldline[™] tape-on paper tape and galvanized steel trims and edges or GIB[®] UltraFlex high impact corner mould. Accessories 2.7 ADHESIVE Timber frame: GIBFix[®] Wood Bond wallboard adhesive. GIBFix[®] All-Bond wallboard adhesive. Timber frame LOSP treated: GIBFix[®] All-Bond wallboard adhesive. Steel frame: 2.8 JOINTING COMPOUND GIB Tradeset[®], GIB Lite Blue[®], GIB Promix[®] All Purpose, GIB[®] AquaMix, GIB Plus 4[®] Bedding compound: GIB ProMix[®] All Purpose GIB ProMix[®] Lite, GIB[®] All Purpose and GIB Plus 4[®], GIB[®] Topcoat GIB-Cove[®] Bond Finishing compound: Cove: JOINTING TAPE 2.9 GIB[®] paper jointing tape. 3. EXECUTION Conditions 3.1 STORAGE

Store GIB[®] plasterboard sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material. Refer to GIB[®] Site Guide (May 2006).

3.2 LEVELS OF PLASTERBOARD FINISH Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589. Refer to GIB[®] Site Guide (May 2006).

	3.3	CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE Before commencing work, agree in writing upon the surface finish assessment procedure necessary to ensure that the levels of finish specified, along with the effect of the type and/or angle of illumination on them, are obtained and are acceptable.
		Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the required plasterboard level of finish has been achieved.
		"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB [®] plasterboard prior to the application of a range of decorative finishes under various lighting conditions. Refer to GIB [®] Site Guide (May 2006).
	3.4	SUBSTRATE Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Refer to GIB [®] Site Guide (May 2006).
•	3.5	TIMBER FRAME MOISTURE CONTENT Máximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to GIB [®] Site Guide (May 2006).
-	3.6	PROTECTION Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB [®] Site Guide (May 2006).
	ł	Application
	3.7	LINING WALLS AND CEILINGS GENERALLY Form to GIB [®] Site Guide (May 2006). Ensure bulk insulation thickness shall not exceed that of the wall framing.
	3.8	BOARD ORIENTATION Horizontal
	3.9	FORM WET AREA SYSTEMS Form to GIB Aqualine [®] Wet Area Systems (March 2007).
	3.10	FORM BRACING SYSTEMS Form to GIB [®] Bracing Systems (March 2006).
	3.11	INSTALL COVES Install to GIB-Cove [®] literature using GIB-Cove [®] Bond.
	3.12	INSTALL TAPE-ON TRIMS Install to GIB [®] Goldline [™] Tape-on trims literature and/or GIB [®] Ultraflex high impact corner mould literature.
		Finishing
	3.13	FINISHING GENERALLY To GIB [®] Site Guide (May 2006) and AS/NZS 2589.
		Completion
	3.14	REPLACE Replace damaged sheets or elements.
	3.15	CLEAN DOWN Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean.

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3.16 REMOVE

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Remove debris, unused materials and elements from the site.

3.17 LEAVE Leave work to the standard required by following procedures.

4. SELECTIONS

Plasterboard

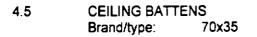
4.1 STANDARD SYSTEMS WALLS Plasterboard type / Lining Thickness Finish Location Plasterboard type / Lining Thickness Finish All walls except GIB® Standard plasterboard 10 mm F4 Wet areas GIB Aqualine® plasterboard 10 mm F4

4.2	STANDARD SYSTE			
	Location	Plasterboard type / Lining	Thickness I	<u>Finish</u>
		requirements	ļ	level
	~	GIB [®] Standard plasterboard	10 mm 🛛 I	F4

4.3 BRACING SYSTEMS Refer to GIB Bracing Systems (March 2006). For bracing element location refer to drawn documentation.

Accessories

4.4 CORNICE Size/brand/type: 55 mm GIB Cove



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7123R REHAU HOT AND COLD WATER SYSTEM

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1.1

GENERAL

This section relates to **Rehau** Hot and Cold Water System, from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of tapware.

Documents

	DOCUMENTS REI	ERRED TO
		to in this section are:
	NZBC B2/AS1	Durability
		Water supplies
	NZBC H12/AS1	Energy Efficiency
	AS/NZS 2492	Cross-linked polyethylene (PE-X) pipes for pressure applications
	AS 2537	Mechanical jointing fittings for use with cross-linked polyethylene
	102007	(PE-X) pipe for hot and cold water applications
	AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design, and performance requirements
	AS/NZS 3500.1	Plumbing and drainage - Water services
	AS/NZS 3500.4	Plumbing and drainage - Heated water services
	NZS 4607	Installation of thermal storage electric water heaters: valve vented Systems
	NZS 4617	Tempering (3-port mixing) valves
	NZS 5261	installation of gas burning appliances and equipment
,	ATS 5200.490	Technical Specification for plumbing and drainage products - Cross-
		inked polyethylene/aluminium/polyethylene-composite pipe systems for pressure applications

Plumbers, Gasfitters and Drainlayers Act 2006 BRANZ Appraisal Certificate 434 (2002) Rehau PE-Xa Piping System.

Documents listed above and cited in the clauses that follow are part of this specification. However this specification takes precedence in the event of it being at variance with the cited document.

1.2 MÁNUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are: **Rehau** Rautitan Installation Systems Technical Information

Rehau Rautitan Plumbing System Product List for New Zealand

Rehau Rautitan his 311 Plumbing System

Rehau Rautitan Stabil Plumbing System

Copies of the above literature are available from Rehau (NZ) LtdWeb:www.rehau.co.nzTelephone:09 272 2264Facsimile:09 272 2265

Requirements

1.3 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Rehau** or associated products, components or accessories.

1.4 QUALIFICATIONS

Plumbers to be a member of **Rehau** Authorised Installer Network, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a plumber registered under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.5 INFORMATION FOR MAINTENANCE MANUAL

Supply maintenance manual information to requirements set out in the GENERAL section.

1.6 DURABILITY

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The work cover by this part of the specification has been designed and installed to achieve a durability of 50 years to comply with NZBC B2 Durability table 1. Refer to the following: BRANZ Appraisal Certificate No. 434 (2002) Rehau PE-Xa Piping System.

Warranties

1.7 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Refer to the general section WARRANTIES for the required details of when completed warranty must be submitted.

1.8 MANUFACTURER'S MATERIAL AND INSTALLATION WARRANTY Provide a **Rehau** materials and installation warranty certificate in the manufacturer's standard form.

Warranty period:25 yearsFrom:Date of completion of system testing.



Performance

1.9 SYSTEM DESIGN

Planning, installation and commissioning to comply with AS/NZS 3500 and to **Rehau** technical information.

1.10 TESTING

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Testing method and compliance to AS/NZS 3500.1: section 16.

2. PRODUCTS

Materials

2.1 PE-Xa POLYETHYLENE PIPE

To AS/NZS 2492, peroxide-cross-linked polyethylene (PE-Xa) complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to NZBC B2/AS1 Durability, table 1 and NZBC G12/AS1 Water supplies table1. Rautitan his 311 hot and cold water pipes for potable water, for both residential and commercial applications are designed for normal operation of 1MPa at a temperature of 70°C.

2.2 PE-AL-PEX COMPOSITE PIPE

To ATS 5200.490, cross-linked polyethylene/aluminium/polyethylene composite pipe (PE-AL-PEX) complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to NZBC B2/AS1 Durability, table 1 and NZBC G12/AS1 Water supplies table1. Rautitan Stabil hot and cold water pipes for potable water, for both residential and commercial applications are designed for normal operation of 1MPa at a temperature of 70°C.

2.3 FITTINGS

Rautitan fittings for the installation system made of special dezincification resistance brass to DIN EN 12164, DIN EN 12165, DIN EN 12168 grade A, stainless steel or red casting brass. Fitting joints to comply with AS 2537.

Rautitan system transition, both made from stainless steel manufactured to DIN EN 10088, part 3 (material designation 1.4404/1.4571) and DZR brass.

Special fittings that are use exclusively in heating installations are made of brass, copper or stainless steel.

The compression sleeves made of thermally distressed brass to DIN EN 12164, DIN EN 12165, and DIN EN 12168.

2.4 FIXINGS AND TOOLS

Brackets, clips, support channels and Rautool kit for system installation.

2.5 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to NZBC G12/AS1: Water supplies.

2.6 TEMPERING VALVE Tempering valve to NZS 4617 and to NZBC G12/AS1: Water supplies.

Materials - hot water heating appliances

2.7 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE To NZS 4305, ceramic-coated steel thermal storage cylinder, insulated and complete with required fittings.

Components

2.8 INSULATION Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to NZBC H12/AS1.

2.9 PROTECTIVE TAPE Plasticised PVC tape system with primer, mastic fixing and outer coating.

2.10 SEALANT BRANZ appraised modified MS neutral cure sealant.

Accessories

2.11 BACKFLOW PREVENTION DEVICES Provide backflow prevention devices to AS/NZS 2845 where it is possible for water or contaminants to backflow into potable water supply. Refer to NZBC G12 AS/1 3.4 Backflow protection, and table 2, Selection of Backflow Prevention.

3. EXECUTION

Conditions

3.1 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover out of direct UV radiation, and stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.2 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.3 CONCEALED

Concealed pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.4 PIPE PROTECTION

P.N.C.C. APPROVED Pipework to be protected by shielding with a suitable protective sleeve, timber-or-metal where there is the possibility of penetration by a mechanically driven fixing.

3.5 **INGROUND PIPE INSTALLATION**

The requirements of AS/NZS 3500.1, 4 & 5 for below ground installations to be followed. Fittings must be adequately protected with an inert water proof material. In soil conditions in which chemical attack or permeation is possible, a suitable protective sleeve must be installed.

UV PROTECTION FOR INSTALLED PIPEWORK 3.6

UV radiation (e.g. sunlight or some types of fluorescent lights) may damage the pipes. Pipes installed in areas where they could be exposed to UV radiation must be completely covered in a suitable manner, e.g. by using a protective sleeve.

CORROSION 3.7

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, taping, or separator strips.

THERMAL MOVEMENT 3.8

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.9 PIPE SIZE

Flow rates to each outlet to be no less than those given in NZBC G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in table 4, Tempering valve and nominal pipe diameters.

Application - jointing

JOINTING POLYETHYLENE PIPE 3.10 Seal ring compression joints and electrofusion to NZBC G12/AS1: Water supplies.

CONNECTION TO OTHER PIPE SYSTEMS 3 11 When connecting to other pipe systems use a threaded connection to provide a clear separation between both systems.

Application - pipework installation

WATER SUPPLY CONNECTION 3.12

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to NZBC G12/AS1: Water supplies.

POTABLE WATER SUPPLY PIPEWORK INSTALLATION 3.13

To AS/NZS 3500.1 and 2. From connection point, run pipes complete with all fittings, support and fixing, joins and install to Rehau specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to NZBC G12/AS1: Water supplies, table 3. Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off.

Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

Do not install PE-X or PE-AL-PEX polyethylene pipe in areas exposed to UV radiation (see clause 3.6) or in the flow and return piping to any solar water heating system or uncontrolled heat source (e.g. wood fired heaters).

3.14 HOT WATER PIPEWORK

To AS/NZS 3500.4. Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/AS1: Water supplies, table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings.

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Lag all pipes with rigid insulation to the manufacturer's requirements and G12/AS1: Water supplies.

3.15 EQUIPOTENTIAL BONDING

Earth metallic water supply pipe and metallic sanitary fixtures to NZBC G12/AS1: Water supplies: 9.0.

Application - hot water systems

- 3.16 HOT WATER CYLINDER INSTALLATION GENERALLY Install hot water cylinders complete to the manufacturer's requirements and with seismic restraint as required to storage cylinders, to NZBC G12/AS1: Water supplies, 6.10, Water heater installation. Valve-vented systems to NZS 4607. Fit a minimum of 1 metre of copper piping prior to the installation of the Rehau Rautitan his 311 piping system.
- 3.17 INSTALL TEMPERING VALVE Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions.

Installation - tapware

- 3.18 INSTALLING APPLIANCE ISOLATING VALVES CONCEALED Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.
- 3.19 INSTALLING TAPWARE Install tapware supplied under SANITARY FIXTURES, TAPWARE AND ACCESSORIES. Install in accordance with the manufacturer's requirements.
- 3.20 INSTALLING BACKFLOW PREVENTION DEVICE Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS/NZS 2845.3

Completion

3.21 LABEL Label all pipework with permanent adhesive markers at 3 metre minimum intervals.

- 3.22 REPLACE Replace damaged or marked elements.
- 3.23 LEAVE Leave work to the standard required by following procedures.
- 3.24 REMOVE Remove debris, unused materials and elements from the site.

4. SELECTIONS

Water main

4.1 POLYETHYLENE WATER MAIN Size: 25 mm outside diameter

Pipework

- 4.2 PE-Xa POLYETHYLENE WATER SYSTEM Brand: Rautitan his 311 Pipe sizes: 20mm
- 4.3 PE-AL-PEX COMPOSITE WATER SYSTEM Brand: Rautitan Stabil Pipe sizes: 20mm

Hot water systems

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> 4.4 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE Brand: Rheem Model size: 180L

Valves and accessories

- 4.5 MAIN ISOLATING VALVE Location: Garage Brand/type: Plumbers Choice
- 4.6 APPLIANCE ISOLATING VALVES EXPOSED Appliance: Washing machine Brand/type: Refer to tapware selections
- 4.7 TEMPERING VALVE Location: HWC Brand/type: Plumbers Choice
- 4.8 BACKFLOW PREVENTION DEVICE Location: HWC Brand/type: Plumbers Choice
- 4.9 IN LINE FILTER Location: Garage Brand/type: Plumbers Choice

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7410 DRAINAGE

1. GENERAL

This section relates to the supply and laying of gravity foul water, stormwater and field drains.

1.1	DOCUMENTS REFERRED TO							
		ed to in this section are:						
	NZBC B1/AS1							
	NZBC E1/AS1	Surface water						
		3.0 Drainage system materials and construction						
	TO NZBC E2/AS1	External moisture						
	N700 043/463	12.3 Drainage Foul Water - drainage						
	- NZBC G13/AS2 AS/NZS 1254	PVC pipes and fittings for storm and surface water applications						
	AS/NZS 1254 AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications						
	AS/NZS 2032	Installation of PVC pipe systems						
·	AS/NZS 2033	Installation of Polyethylene pipe systems						
	AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design						
	AS/NZS 2566.2	Buried Flexible Pipelines - Installation						
	AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage						
•	AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage						
	AS/NZS 4671	Steel reinforcing materials						
	AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and						
	N70 0404	sewerage applications Specification for concrete production						
	NZS 3104 Blumbors, Casfitte	ers and Drainlayers Act 2006						
1.2	AS-BUILT DRAW							
1.2	Supply a 1:100 sc	ale as-built drawing of drains and fittings to the territorial authority and						
	to the owner on co	mpletion.						
	,							
1.3	QUALIFICATIONS							
	Drainlayers to hold a current licence within the terms of the Plumbers Gasfitters &							
		06 and be experienced, competent and familiar with the materials and						
	techniques specifie	30.						
2.	PRODUCTS							
2.1	CONCRETE							
	17.5 MPa prescribed mix to NZS 3104.							
22								
2.2	REINFORCEMEN	т						
2.2	REINFORCEMEN							
	REINFORCEMEN Plain round and/or	т						
2.3	REINFORCEMEN Plain round and/or UPVC PIPES	T deformed steel bars, Grade 300 to AS/NZS 4671.						
	REINFORCEMEN Plain round and/or UPVC PIPES	т						
	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES						
2.3	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.						
2.3 2.4	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES						
2.3	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES and fittings to AS/NZS 5065.						
2.3 2.4	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES						
2.3 2.4 2.5	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS To NZBC G13/AS2	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES and fittings to AS/NZS 5065. 2: 3.3 Gully traps, complete with grating.						
2.3 2.4	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS To NZBC G13/AS2	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES and fittings to AS/NZS 5065.						
2.3 2.4 2.5	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS To NZBC G13/AS2 DRAINAGE AND F	T deformed steel bars, Grade 300 to AS/NZS 4671. , junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES and fittings to AS/NZS 5065. 2: 3.3 Gully traps, complete with grating. FILLING MATERIALS Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm.						
2.3 2.4 2.5	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS To NZBC G13/AS2 DRAINAGE AND F	T deformed steel bars, Grade 300 to AS/NZS 4671. a, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES a and fittings to AS/NZS 5065. 2: 3.3 Gully traps, complete with grating. FILLING MATERIALS Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm. Fine grain soil or granular material suitable for bedding; excluding						
2.3 2.4 2.5	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS To NZBC G13/AS2 DRAINAGE AND F Granular: Selected:	T deformed steel bars, Grade 300 to AS/NZS 4671. a, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES a and fittings to AS/NZS 5065. 2: 3.3 Gully traps, complete with grating. FILLING MATERIALS Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm. Fine grain soil or granular material suitable for bedding; excluding topsoil.						
2.3 2.4 2.5	REINFORCEMEN Plain round and/or UPVC PIPES uPVC pipes bends POLYETHYLENE Polyethylene pipes GULLY TRAPS To NZBC G13/AS2 DRAINAGE AND F Granular:	T deformed steel bars, Grade 300 to AS/NZS 4671. a, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260. PIPES a and fittings to AS/NZS 5065. 2: 3.3 Gully traps, complete with grating. FILLING MATERIALS Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm. Fine grain soil or granular material suitable for bedding; excluding						

3. EXECUTION

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3.1 **EXCAVATE**

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

3.2 MANUFACTURER'S REQUIREMENTS

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

3.3 DRAINAGE GENERALLY

Carry out drainage work and tests to AS/NZS 3500.2 (sanitary drainage) AS/NZS 3500.3 (stormwater drainage) as modified by NZBC B1/AS1: 6.0. Lay uPVC pipe systems to relevant sections of AS/NZS 2032, NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene

3.4

pipes and fittings to relevant sections end LAY FOUL WATER DRAINS Lay drains in straight runs to correct gradients, to discharge into the network utility apprator's sewer. Set inspection fittings on a concrete base. 3.5 protect the top of the fitting. Trowel off.

LAY STORMWATER DRAINS 3.6

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

3.7 FIELD TEST

Field test drains for watertightness (UPVC to AS/NZS 2032 or AS/NZS 2566. 2 Appendix N) to the satisfaction of the territorial authority inspector.

3.8 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.

Compliance Details

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NZS4218:2004 Schedule Method Compliance

The use of the Schedule Method is _permitted _.

In order to comply the R-values for all the construction elements must be the same or larger than the permitted minimum R-values. This design __does not comply__ with the NZS4218:2004 Schedule Method.

	Permitted minimum Option 1	Permitted minimum Option 2	Actual minimum
Floor R-value	1.3	<u> </u>	1.48
Wall R-value	1.9		1.94
Roof R-value	2.9		2.72
Glazing R-value	0.26		0.26
Skylight R-value	0.26		0

NZS4218:2004 Calculation Method Compliance

The use of the Calculation Method is permitted .

In order to comply the Actual Heat Loss must be the same or smaller than the Reference Heat Loss AND all component R-values must be the same or larger than 60% of the R-values in the '60% Rule' table below. complies with the NZS4218:2004 Calculation Method. This design

Reference Building Heat Loss					
	Area	R-			
		value			
Floor	113.6	1.3			
Wall	78.3	1.9			
Roof	113.8	2.9			
Glazing (30% of Total Wall)	33.5	0.26			
Glazing (surplus of 30%)	0	0.31			
Skylight	0	0.31			

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Heat Loss:	Reference	Actual
	297	261
Minimum R-values ("60% rule"):	Permitted minimum	Actual minimum
Floor R-value	0.8	1.48
Wall R-value	<u> </u>	1.94
Roof R-value	1.7	2.72
Glazing R-value	0.15	0.26
Skylight R-value	0.15	0

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NZS4218:2004 Modelling Method Compliance

The use of the Modelling Method is <u>permitted</u>. Showing compliance with this method requires a fullscale computer simulation of the building's heating energy use. If this heating energy is smaller than the simulated heating energy of a reference building with the following R-values: Floor: <u>1.3</u>, Walls: <u>1.9</u>, Roof: <u>2.9</u>, Glazing (up to 30%) <u>0.26</u>, Glazing (above 30%) <u>0.31</u> and Skylight <u>0.31</u> then the building complies.

Building Performance Index Compliance

The use of the Building Performance Index (BPI) method is <u>permitted</u>. To test for compliance with the Building Performance Index (BPI) please use the <u>BRANZ</u> ALF software and follow the guidelines provided in the <u>ALF Guide</u>. If the BPI is smaller than <u>1.55</u> kWh/DegMonth.m² the building complies.

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Design Details

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Building Dimensions		
Floor Area	113.6	
Gross Wall Area	<u>111.8</u>	
Net Wall Area	86.4	\sim
Wall (North) Area	25.5	Du
Wall (East, South and West) Area	a <u>60.9</u>	P.N.C.C. APPROVED
Gross Roof Area	113.8	APPDO.
Net Roof Area	113.8	
Glazing Area	25.4	
Window (North) Area	14.1	\sim
Window (East, South and West) Area	11.3	
Skylight Area		
Glazing Area Percentages		
Total Glazing Percentage	22.7%	
East, South and West Window Percentage	<u>15.6%</u>	
Total over 30%	no	
East, South and West over 30%	no	
Total over 50%	no	
Wall Construction Type	······	
Solid Construction	non-solid	
<u>Climate</u>		
Location	Palmerston Nth.	
Climate Zone	2	

Heat Loss Details

	Id	Orientation	Width	Height	Net Area	R-value	Heat Loss
Floors				-			
Floor 1					113.6	1.48	76.8
<u>Walls</u>							
Wall 1		North	16.49(2.4	25.4	1.94	13.1
Window 1-1			1.2	<u> </u>	1.3	.26	5.1
Window 1-2			9	2.1		.26	7.3
Window 1-3			2.4	2.1	5	.26	19.4
Window 1-4			1.8	1.4	2.5	.26	9.7
Window 1-5			2.4	1.4	3.4	.26	12.9
Wall 2		East	6.8	2.4	16.3	1.94	8.4
Wall 3		South	16.49(2.4	28.3	1.94	14.6
Window 3-1			1.8	1.4	2.5	.26	9.7
Window 3-2			1.6	1.1	1.8	.26	6.8

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H1 Compliance Report

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Window 3-3		<u>2.4</u> <u>2.</u>	<u>1 </u>	5	.26	19.4	\sim
Window 3-4		<u> </u>	<u>1 </u>	2	.26	7.6	
Wall 4	 West	6.8 2.4	<u>4</u>	16.3	1.94	8.4	Phic
<u>Roofs</u>		:					
Roof 1		6.9 16.4	191 1	13.8	2.72	41.8	"· APPROL
<u>Total Heat Loss</u>						261	· ···UVEn /

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Compliance with Clause E3

This building complies with the R-value targets in NZBC Clause E3 .

Component	i Minimum R-value	Project R-value
Framed wall constructions with cavities	1.5	
Single skin masonry wall without a cavity	0.6	
Solid timber wall no less than 60 mm thick	0.6	
Roof or ceilings	1.5	

This report was created with the Design-Navigator (www.design-navigator.co.nz).

C Print Report	

Floor R-value calculator

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This page calculates the R-value of suspended timber floors, slab-on-ground floors and retaining walls. The R-value of the floors depend on several dimensions and structural factors.



Please select the floor type:

- Suspended timber floor
- Slab on ground floor 1
- Retaining walls **⊡**

Slab floor area [m²]	113.6
Perimeter length [m]	46.71:
External wall thickness [mm]	180
Soil conductivity [W/m °C]	1.2
Insulation: no insulation	1
The specified slab floor has an R-value of 1.4 8	3 m² ℃/W. 🖬

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Construction R-value Calculator

Try out the new H1 compliance calculator!

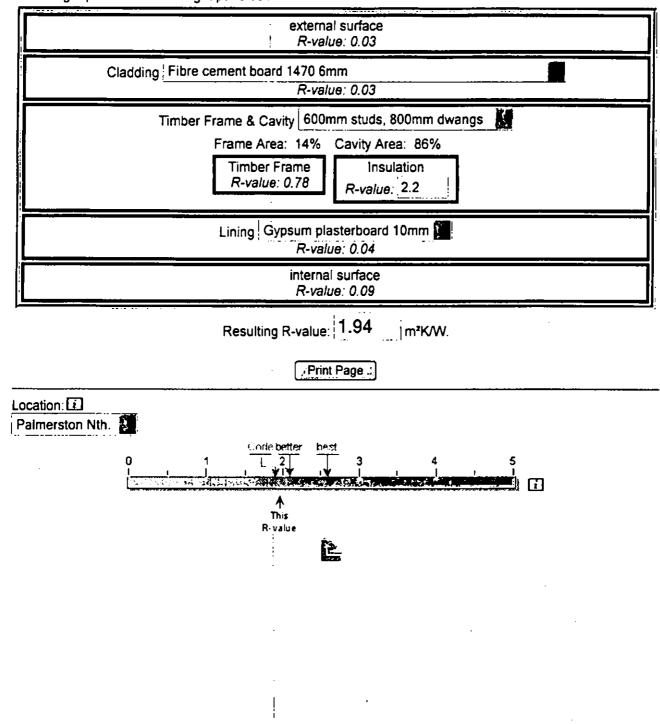
P.N.C.C. APPROVED This webpage calculates the R-value of walls and roofs for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214.2002.

Wall or roof construction:

Wall: 94mm timber frame (direct fixed cladding)

If your construction is not listed, please send an e-mail to customerservice@design-navigator.co.nz with a detailed description of it. I will let you know when it is added.

Choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel 1.



Page 1 of 1

2

Construction R-value Calculator

Try out the new H1 compliance calculator!

This webpage calculates the R-value of walls and roofs for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2002.

Wall or roof construction:

Roof: Timber framed roof (94mm), flat ceiling

If your construction is not listed, please send an e-mail to <u>customerservice@design-navigator.co.nz</u> with a detailed description of it. I will let you know when it is added.

Choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel **D**.

