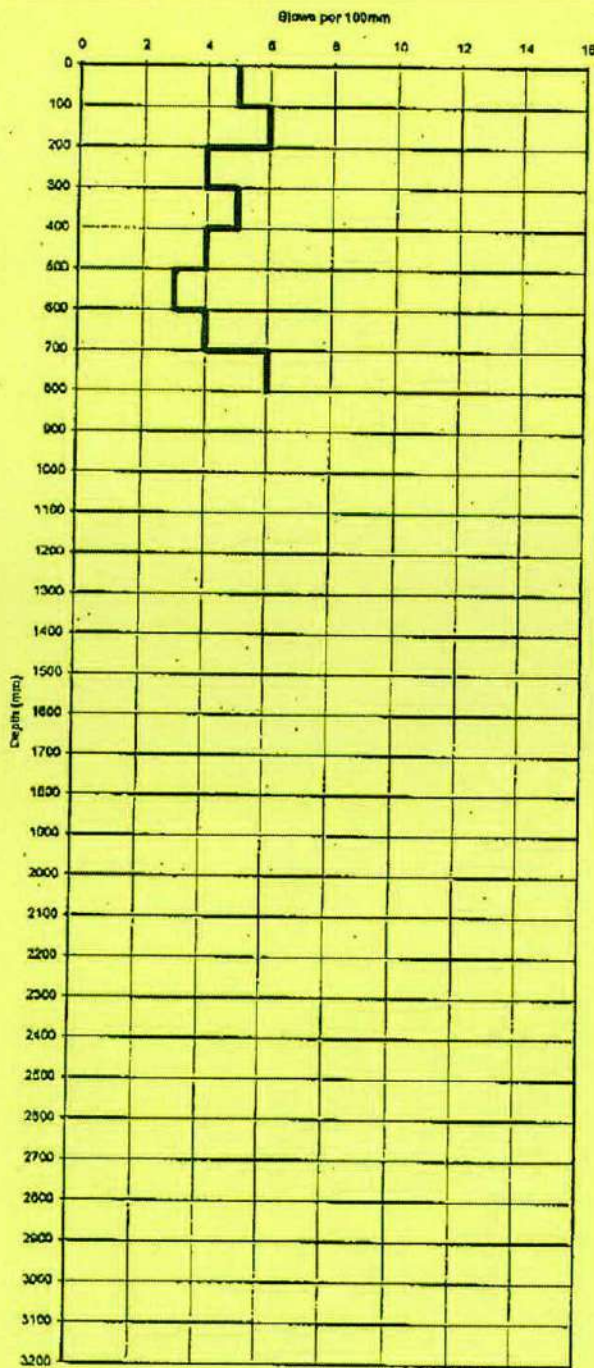
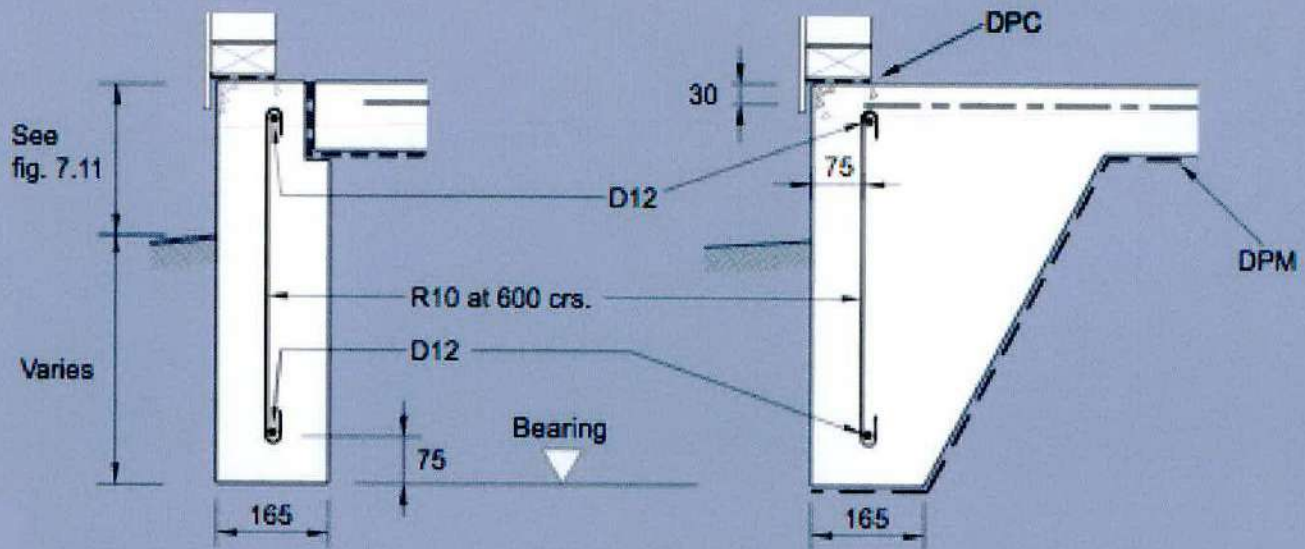


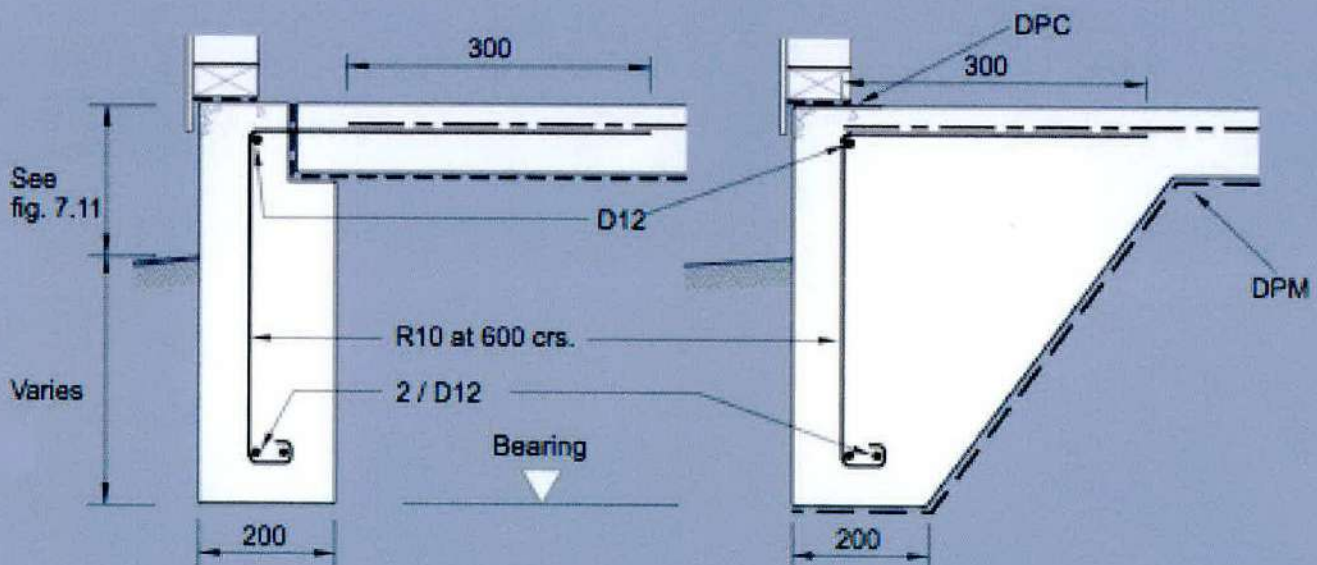
**SP5**



<b>Swanney</b> Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 03 548 9870 Mobile: 021 082011	Client: Riddell	SCALA PENETROMETER TESTS	
	Location: 1370 Mot Valley Highway	Date: 19-Feb-10	
	Tester: J Swanney	Job No. 1325	



(A) DIMENSIONS &amp; REINFORCING FOR SINGLE STOREY



(B) DIMENSIONS &amp; REINFORCING FOR 2 STOREYS

## NOTE –

- (1) For in-situ concrete foundations for masonry veneer see figure 7.15.
- (2) Min. external cover to reinforcement
  - (a) Against ground 75 mm;
  - (b) Against formwork 50 mm;
  - (c) Top cover to mesh 30 mm.
- (3) For foundation bearing see 3.4.

Unless otherwise stated, all dimensions are in mm.

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

## Dave Stebbings

---

**From:** Ben Smithies  
**Sent:** Tuesday, 17 May 2011 4:36 p.m.  
**To:** 'keni-duke hetet'  
**Cc:** Dave Stebbings  
**Subject:** RE: Whitehead Residence

Hi Keni,

Thank you for the revised details and the earth fill certificate. I will accept these and attach them to the file free of charge.

Dave Stebbings the B/I is on his way to site (weather permitting) to do a penetrometer test on the platform for all our peace of mind. I trust his judgement implicitly, and if he felt that the platform was possibly questionable then his actions were for the benefit of the house owner, and I support his decision.

Let us hope for good test results, then we can all move on.

Cheers,

Ben.

---

**From:** keni-duke hetet [<mailto:kdhetet@gmail.com>]  
**Sent:** Tuesday, 17 May 2011 10:56 a.m.  
**To:** Ben Smithies  
**Subject:** Whitehead Residence

Hi Ben, please find attached report from Geoff Swanney and revised foundation detail. Have also attached 3604 detail - as you can see what we are proposing is slightly over and above the requirements for single storey.

Will wait to hear from you.

--

Regards

Keni-Duke Hetet  
Designer  
PO Box 1398  
Nelson

03 97 00 757  
m. 021 811 931

**Request: 1106008**  
**To: Building Inspections**  
**Attn: David Stebbings**

**Closed: 17/05/11 - 13.56**

**District: MOTUEKA**  
**Received by: Sarah Abrey**  
**Date & time received: 06/05/11 - 14.04**  
**How received: TDC Staff**  
**Date & time of incident: -**  
**Action required: Investigate**

**Caller Information**

**Name** Shane Mickell  
**Address** .  
**Phone** (Hm) 021611001  
**Email**

**Request**

**Type** CCC Final Inspection Interior/Exterior/Certs  
**Details** BC101007 2.1 A1 Homes/Thorpe-Orinoco Road, Thorpe/Construct new 2 level, 4 bedroom dwelling with i/a garage  
Final inspection requested work completed on 28/04/11.Rec: electr cert, gas fitting cert.

**Actions**

**Status** Investigate - David Stebbings - Arrived: 17/05/11 - 13.56 - Completed: 17/05/11 - 13.56  
**Details** Final booked for Dave for Friday 20 May at 1.00pm - Time confirmed with Ray Davisby phone on 17/05/11. Please do courtesy call as a reminder the day before. Shane Mickell wil not be onsite but please send final inspection notes to him.

## Dave Stebbings

---

**From:** sarah.abrey@tasman.govt.nz  
**Sent:** Tuesday, 17 May 2011 1:58 p.m.  
**To:** Dave Stebbings  
**Subject:** Service Request 1106008 - Deadline 20/05/11  
**Attachments:** 1106008.pdf

To: Building Inspections  
Attn: David Stebbings

Service Request [1106008](#)

Closed: 17/05/11 - 13.56

District: MOTUEKA  
Date & time received: 06/05/11 - 14.04  
Date & time of incident: -

Received by: Sarah Abrey  
How received: TDC Staff  
Action required: Investigate

Request type: CCC Final Inspection Interior/Exterior/Certs

Name: Shane Mickell

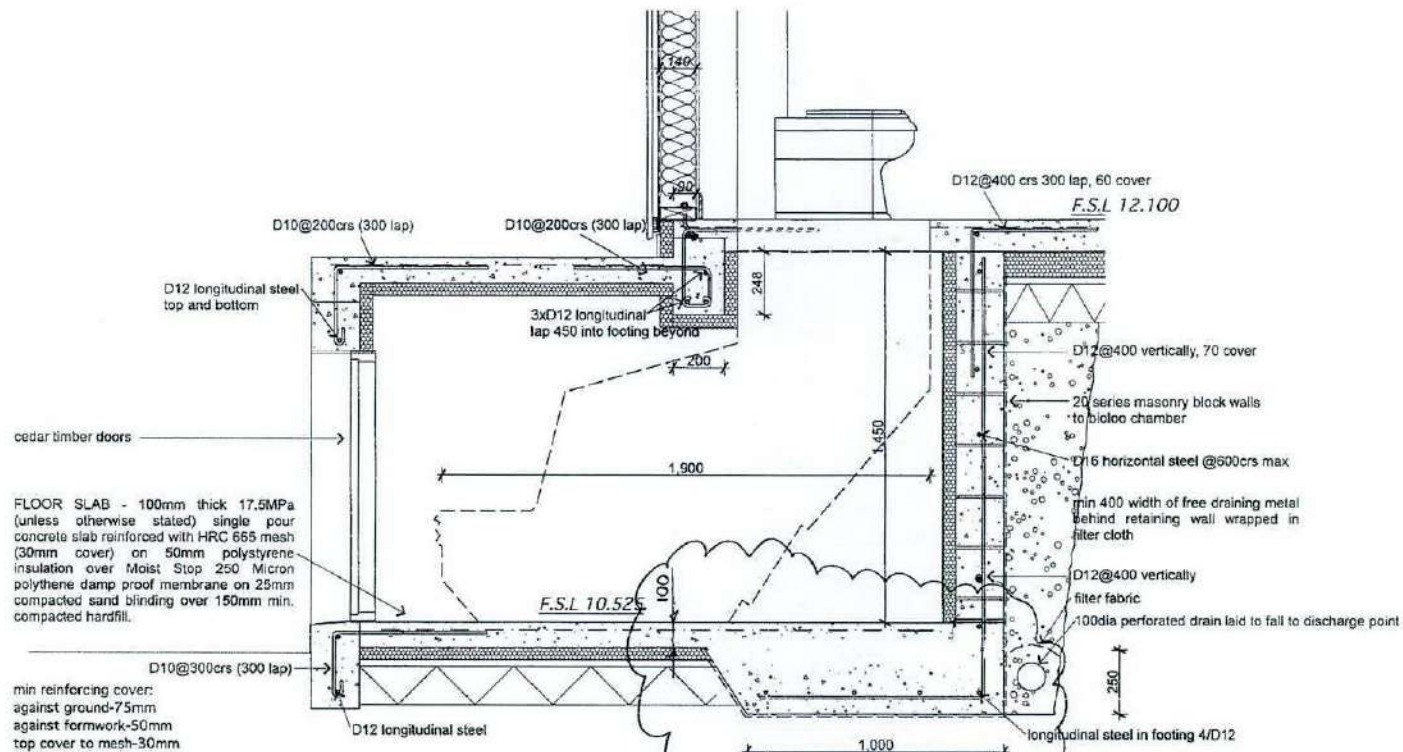
Address: .

Phone: (Hm) 021611001

Email

Details BC101007 2.1 A1 Homes/Thorpe-Orinoco Road, Thorpe/Construct new 2 level, 4 bedroom dwelling with i/a garage

Final inspection requested work completed on 28/04/11. Rec: electr cert, gas fitting cert.



FLOOR SLAB - 100mm thick 17.5MPa (unless otherwise stated) single pour concrete slab reinforced with HRC 665 mesh (30mm cover) on 50mm polystyrene insulation over Moist Stop 250 Micron polythene damp proof membrane on 25mm compacted sand blinding over 150mm min. compacted hardfill.

min reinforcing cover:  
against ground-75mm  
against formwork-50mm  
top cover to mesh-30mm

4.2  
Bioloo section  
1:10

A - Slab & footing poured as one

general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone - 1

**BIO LOO SECTION 1:20**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification -check all dimensions on site prior to construction -do not scale off drawings	<div style="text-align: center;"> <b>K D HET ET LTD</b>          architectural designer          P O BOX 1398, NELSON n. 021 811 931       </div>	<h1 style="margin: 0;">405</h1> <span style="font-size: 2em; vertical-align: middle;">A</span>
1370 Motueka Valley Highway	19/04/11			

# swanney

15 March 2010

The Consents Officer,  
Tasman District Council  
Private Bag 4  
Richmond

1370 Motueka Valley Highway, Ngatimoti  
Earth Fill Certification

Swanney Geotechnical and Civil Engineering have been engaged by Dave Riddell to monitor construction of the fill platform at 1370 Motueka Valley Highway, Ngatimoti (Lot 2, DP 326533, Lot 1 DP 378582 CT 315582) and provide certification that the fill has been placed in accordance with NZS 4431:1989 Earthfill for Residential Subdivision.

The building platform has been constructed on flat ground adjacent to the Motueka River. Development of the site has involved stripping out the topsoil and placing and compacting Moutere clay to form an elevated building platform. The stripped out surface exposed alluvial sands. The clay fill was compacted directly on the sands using a 10tonne self-propelled roller in approximately 300mm thick layers (loose). Final fill depths range from approximately 1.5m to 2.0m. The outside fill batters have been formed at approximately 1V:2.5H.

The works were inspected after the initial strip-out, during placement and compaction of the fill and at completion. Site visits were carried out on 18/8/09, 13/1/10, 14/1/10, 28/1/10 and 19/2/10. The moisture content of the soils was visually assessed as near optimum for compaction.

Compaction testing was carried out by Swanney Ltd. Scala Penetrometer testing was used to determine the consistency of the compaction and a field shear vane was used to confirm the undrained shear strength. The shear vane testing indicated the compacted fill will be able to provide 100kPa allowable bearing capacity (ie "good ground" as defined in NZS3604:1999). A site plan showing the test locations and test results are appended.

We can confirm that the fill has been placed in general compliance with NZS 4431:1989 Earthfill for Residential Development.

If you require any further information, I can be contacted on 548 9870 or 021 882011

Yours faithfully,

Jeff Swanney

Swanney Geotechnical and Civil Engineering  
2 Bridge St,  
PO Box 828,  
Nelson

Appended: Site Plan and test results

1325 1370 Motueka Valley Highway

Fill Certification

15 March 2010

# Swanney

Geotechnical and Civil Engineering

Client: DAVE RUSSELL

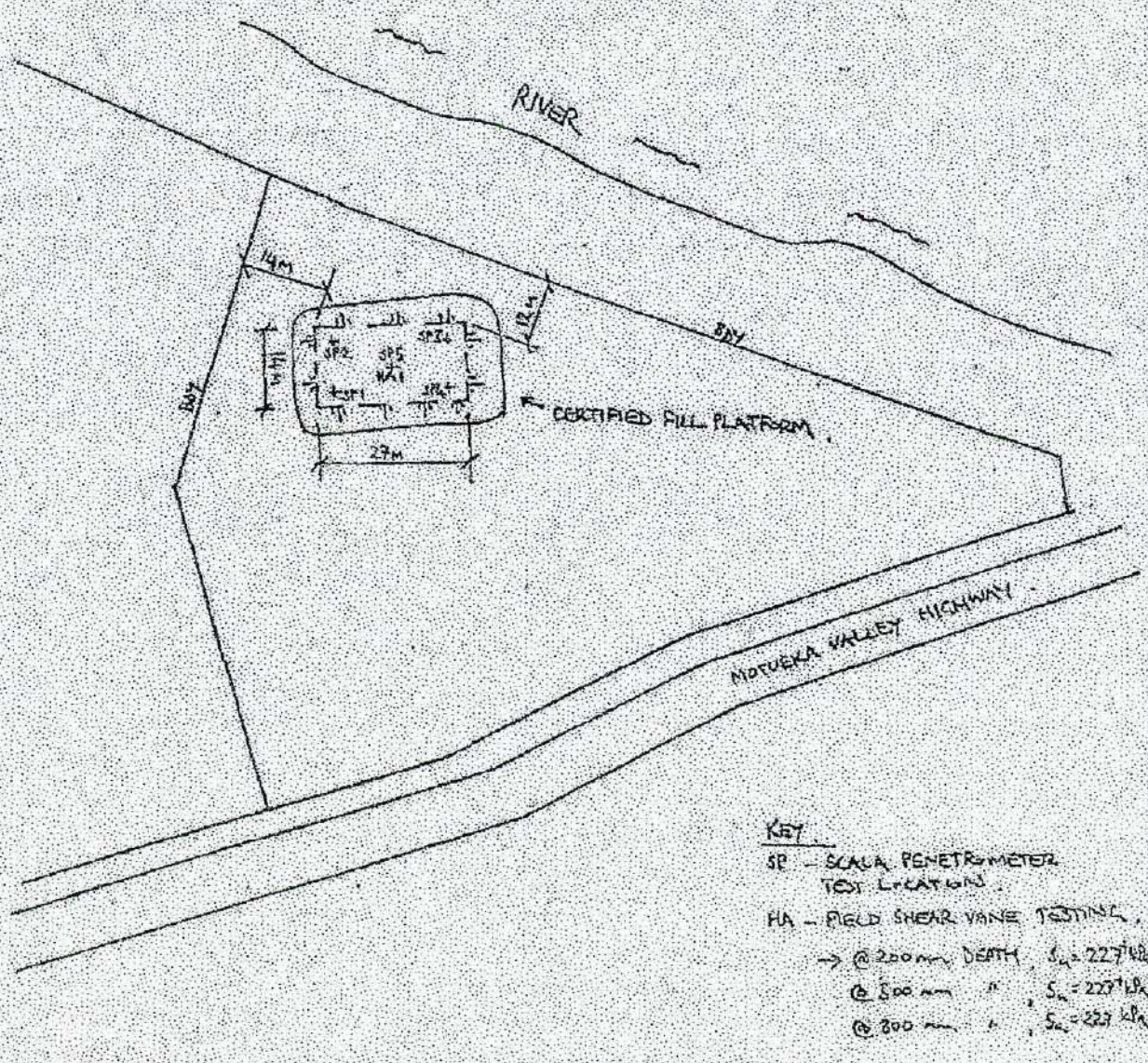
Project: 1370 MOTUEKA VALLEY HIGHWAY

Subject: FILL TESTING

Date: 15 MARCH 2010

Job No. 1325

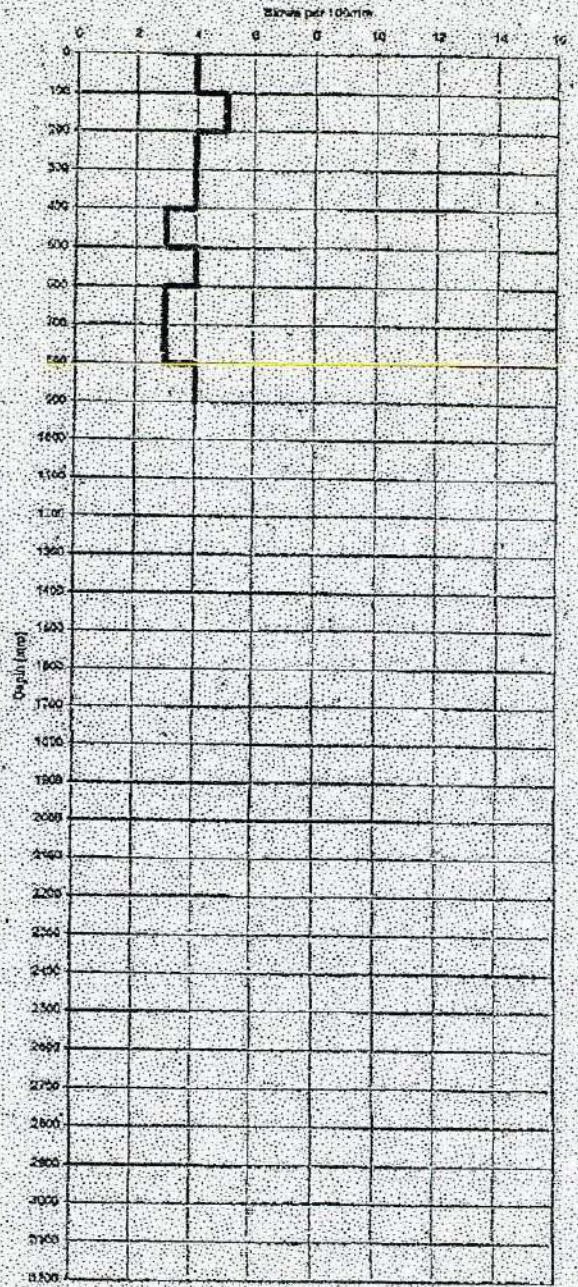
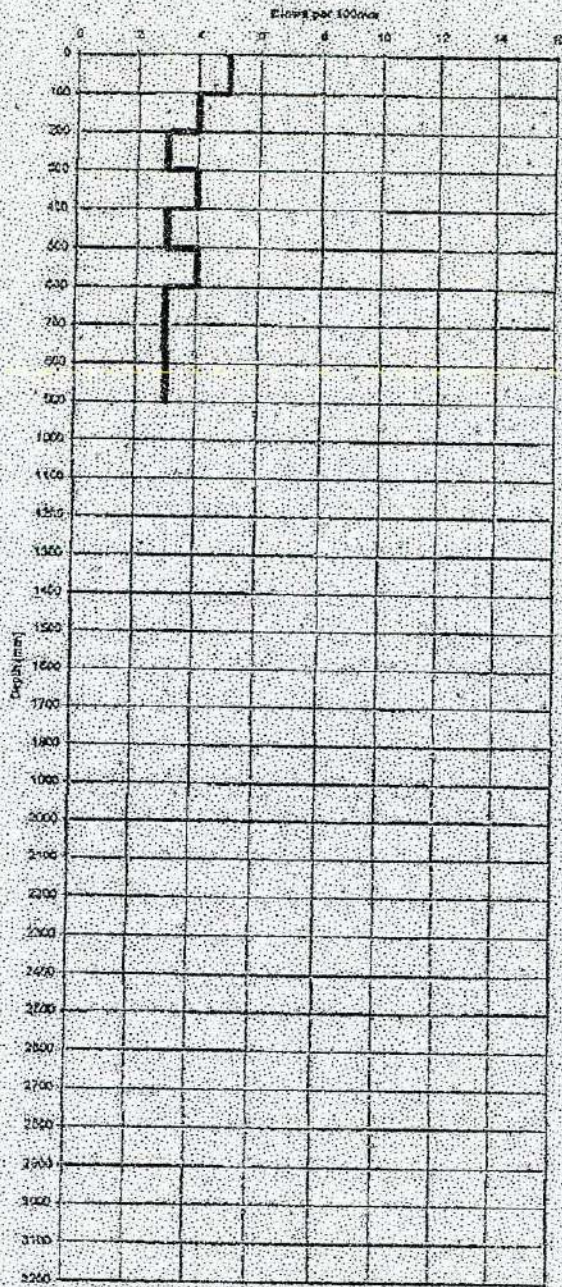
By: JS Page: 1



- KEY**
- SP - SCALA PENETROMETER TEST LOCATIONS
  - HA - FIELD SHEAR VANE TESTING
  - @ 200mm DEPTH,  $S_u = 227 \text{ kPa}$
  - @ 500mm " ,  $S_u = 227 \text{ kPa}$
  - @ 800mm " ,  $S_u = 227 \text{ kPa}$

SP1

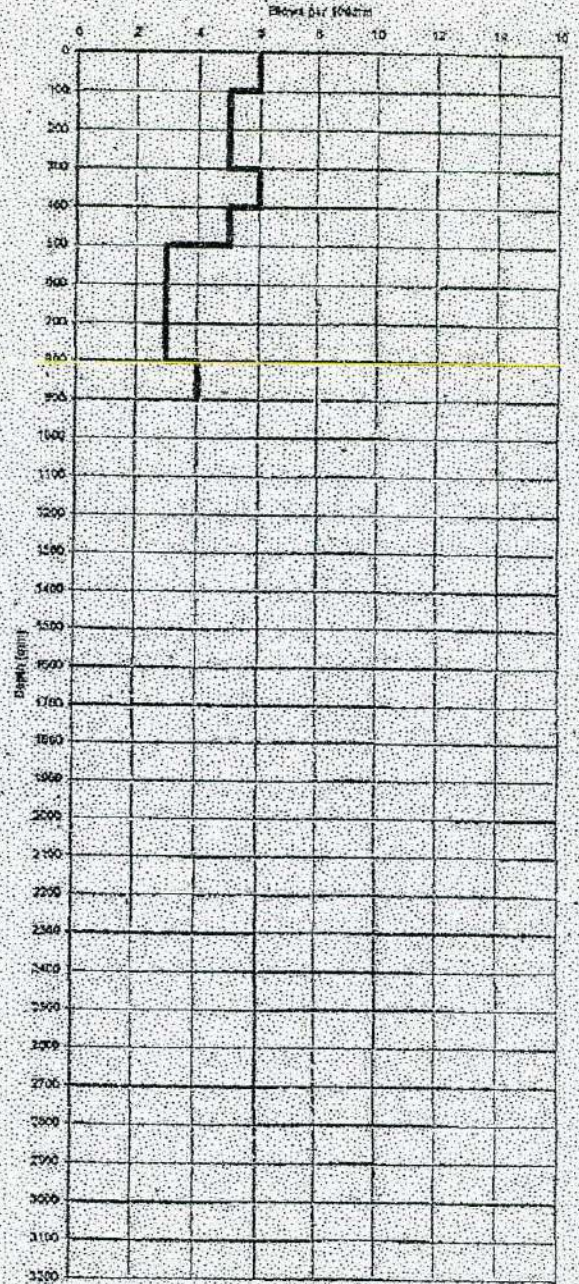
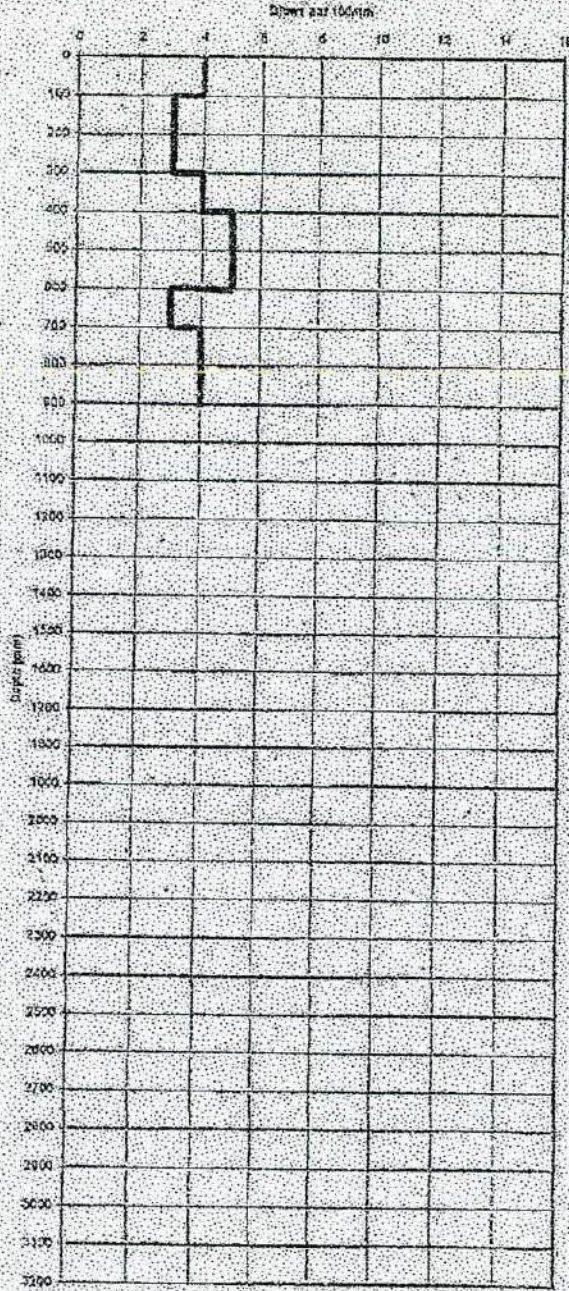
SP2



<b>Swanney</b> Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 03 543 9270 Mobile: 021 592911	Client:	Riddell	SCALA PENETROMETER TESTS	
	Location:	1370 Mot Valley Highway	Date:	19-Feb-10
	Tester:	J Swanney	Job No.:	1325

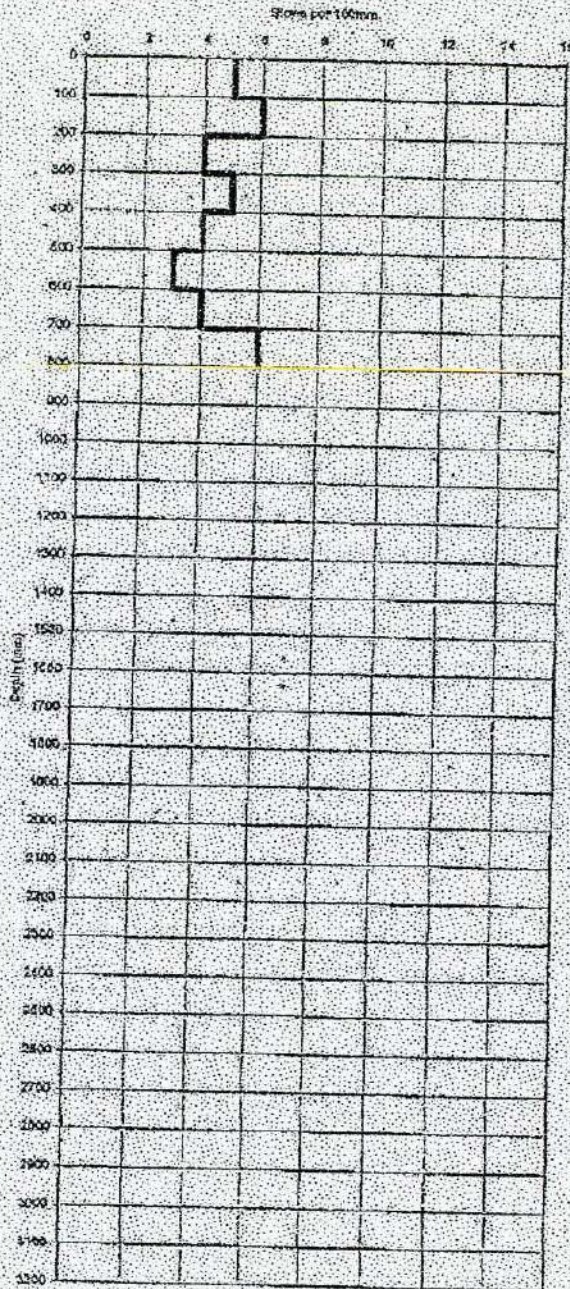
SP3

SP4



<b>Swanney</b> Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 01 548 9370 Mobile: 021 832011	Client:	Riddell	SCALA PENETROMETER TESTS	
	Location:	1370 Mot Valley Highway	Date:	19-Feb-10
	Tester:	J Swanney	Job No.:	1325

### SPS



<b>Swanney</b> Geotechnical and Civil Engineering PO Box 628, Nelson Phone: 03 548 8370 Mobile: 021 882031	Client:	Riddell	SCALA PENETROMETER TESTS	
	Location:	1370 Mot Valley Highway	Date:	19-Feb-10
	Tester:	J Swanney	Job No.	1325

**REPORT ON FLOODING  
and  
RECOMMENDED MITIGATION MEASURES  
TO ENABLE BUILDING ON  
DP 326533**

**1. THE PURPOSE OF THIS REPORT**

This report has been written at the request of Mr. David Riddell to provide support for an application to erect a dwelling on his property on the east bank of the Motueka River just south of Peninsula Bridge, Ngatimoti.

**2. MY QUALIFICATIONS**

Close to 30 years of my working life has been spent on river and flood control, with 22 of those being in Nelson for the Nelson Catchment Board, Nelson-Marlborough Regional Council, Tasman District Council and on my own behalf. I hold a BE (Civil) degree and am a Fellow of the Institution of Professional Engineers New Zealand.

**3. LOCATION**

The property is located on Motueka River flood plain near the end of Greenhill Road. The proposed house site lies between Greenhill Stream and the Motueka River at a location where an old wooden building supported on drums is currently located.

**4. FLOODING**

Tasman District Council holds records showing that the property is regularly inundated by the Motueka River. Although actual records have not been gathered for the Greenhill Stream it is likely that this too floods the property to some extent even though the Motueka River is not in flood. In other words this is a situation where the Building Act prohibits the construction of a building unless the inundation can be satisfactorily mitigated.

**5. FLOODING - MITIGATION**

The greatest potential depth of flooding at the proposed site is from the Motueka River and hence that is the only flooding situation that needs to be considered.

The Motueka River flood of 9/10 July 1983 had a return period of close to 50 years at the

gauging station a few kilometres upstream at Woodstock. There is no way of knowing what the return period of the flood was at the proposed building site for there are two significant tributaries between (the Pearce and the Graham) and the flood could have been larger or smaller. However the likelihood is, given the nature of that rain event and its wind direction, that the event was slightly larger at the property than at the gauging station.

Immediately after the event the limits reached by the floodwater were plotted by a local Nelson Catchment Board staff member with an intimate personal knowledge of the area. This plot, with which I am very familiar is now held by Tasman District Council and I have checked the original plan for the TDC computer version is slightly in error.

At the downstream end of the property the flood water encroached onto the nearby highway and luckily at one end of the encroachment the road slopes reasonably gently so that it is possible to determine with considerable accuracy what the level of the floodwater was at that location.

Using an assumed datum on the highest point of a decorative granite boulder in the centre of the property I have transferred the flood level to the proposed house location and determined that the general ground level there is 1.01 metres lower than the measured flood level. However the house site is upstream of the measured level and to allow for flood gradient 210mm must be added to the surveyed flood level to obtain the level at the proposed site.

The TDC Engineering Regulations require that the building platform for a dwelling be 400mm higher than a 50 year flood level. For a larger river such as the Motueka this is a generally sensible freeboard to cope with inaccuracies in determining the 50 year flood level, changes in the river regime, new flood plain obstructions and velocity head. In this particular location the flooded area is basically a backwater and the main overland flooding path is on the opposite side of the river so I believe that with the freeboard the proposed dwelling should be safe from damage by inundation during much larger floods.

With the addition of the flood gradient of 210mm and the Engineering Regulations 400mm the level of the building platform at the proposed building site must be 1.62 metres higher than general ground level in order to satisfy the TDC requirements or, specifically, 1.26 metres higher than the assumed datum on the granite and 820mm above the top of the post driven into the ground immediately north of the proposed house site.

## **6. ADVERSE EFFECTS UPON OTHERS**

Any obstruction placed in the path of flowing water diverts water elsewhere and also causes a local raising of water levels. In this situation the flood plain is, to some extent, a limited extent backwater and hence flood flow velocities should be lower than usual and the amount of diversion equally diminished. In any event the total flood plain width at this river distance is so large at about 500 metres during the 1983 flood that any diversion

of water to the sides is irrelevant in terms of adverse effects. Any local raising of flood levels could add a few millimetres to the depth of flow at the boundary with the upstream neighbour, but in this semi-ponding situation there is no accurate way of calculating how much without taking measurements during an actual flood. In any event I met the upstream neighbour on site and he had no concerns about any such effect which is hardly surprising given that the nearest dry land on his property was so far upstream in 1983 (about 120 metres), that the proposed building platform could not possibly have any effect on flood levels there.

## **7. EROSION**

The Building Act requires that erosion hazards be mitigated.

The Middle Motueka do not fall within Council's river maintenance programme. The only bank protection measures are willows planted by property owners and willow protection can fail spectacularly.

Inspection suggests that the ground under the house is silty sand down almost to low flow water level in the Motueka and it certainly extends down as far as the bottom of the older river bank twenty metres from the proposed site, and to the invert of the adjacent stream. Sand erodes very easily when subject to attack. The only river bank protection is a line of crack willow at the existing water edge and these trees appear to be old and near the end of their useful life. They are also nearly twenty metres away from the older river bank and hence even if they remain in place during a major flood they will not greatly reduce velocities along that bank. If a willow were to fall inland during a flood the potential would exist for a significant attack to be initiated.

However, Tasman District Council has decided, as per rule 17.4.4 (f) in the TRMP, that any potential erosion hazard from a river will be mitigated by a building setback of at least 20 metres from the top of the bank of a river the size of the Motueka and 8 metres for lesser watercourses such as the adjacent stream. In this situation it is my opinion that it is absolutely essential that the twenty metres be measured from the top of the old river bank rather than the small bank at the present normal water's edge.

## **8. BUILDING PLATFORM**

The building platform must be constructed as per the requirements of the Building Act in terms of material and compaction. In my opinion the batters of the platform should not be steeper than 3 horizontal to 1 vertical and should be kept well grassed on the upstream batter and sides unless provided with even heavier protection such as rock riprap.

## **9. CONCLUSIONS AND RECOMMENDATIONS**

I conclude that Tasman District Council's own rules for flood level and erosion permit the construction of a dwelling at the proposed location and that this can be done without adverse effect upon others.

The level required for the building platform is 820mm above the top of the post driven into the ground just north of the house site with the minimum setback from the top of the bank of the Motueka River 20 metres and from the top of the bank of the stream 8 metres.

I strongly recommend that measurement of the 20 metre setback from the Motueka River starts at the bank at the edge of the actual property.

I also recommend that the batters of the building platform be no steeper than 3 horizontal to 1 vertical.

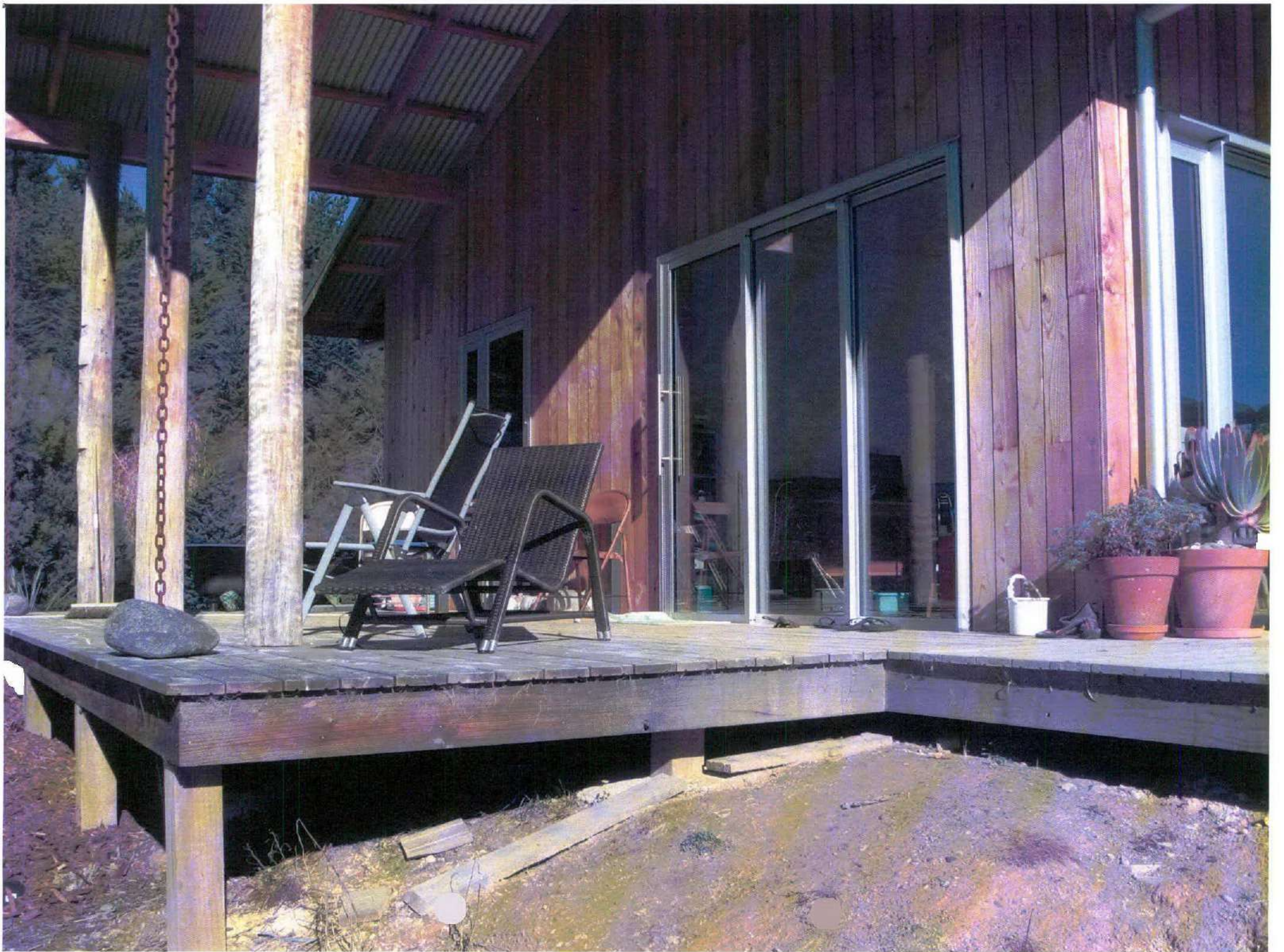
Doug Nottage B E (Civil), FIPENZ  
8<sup>th</sup> October 2006



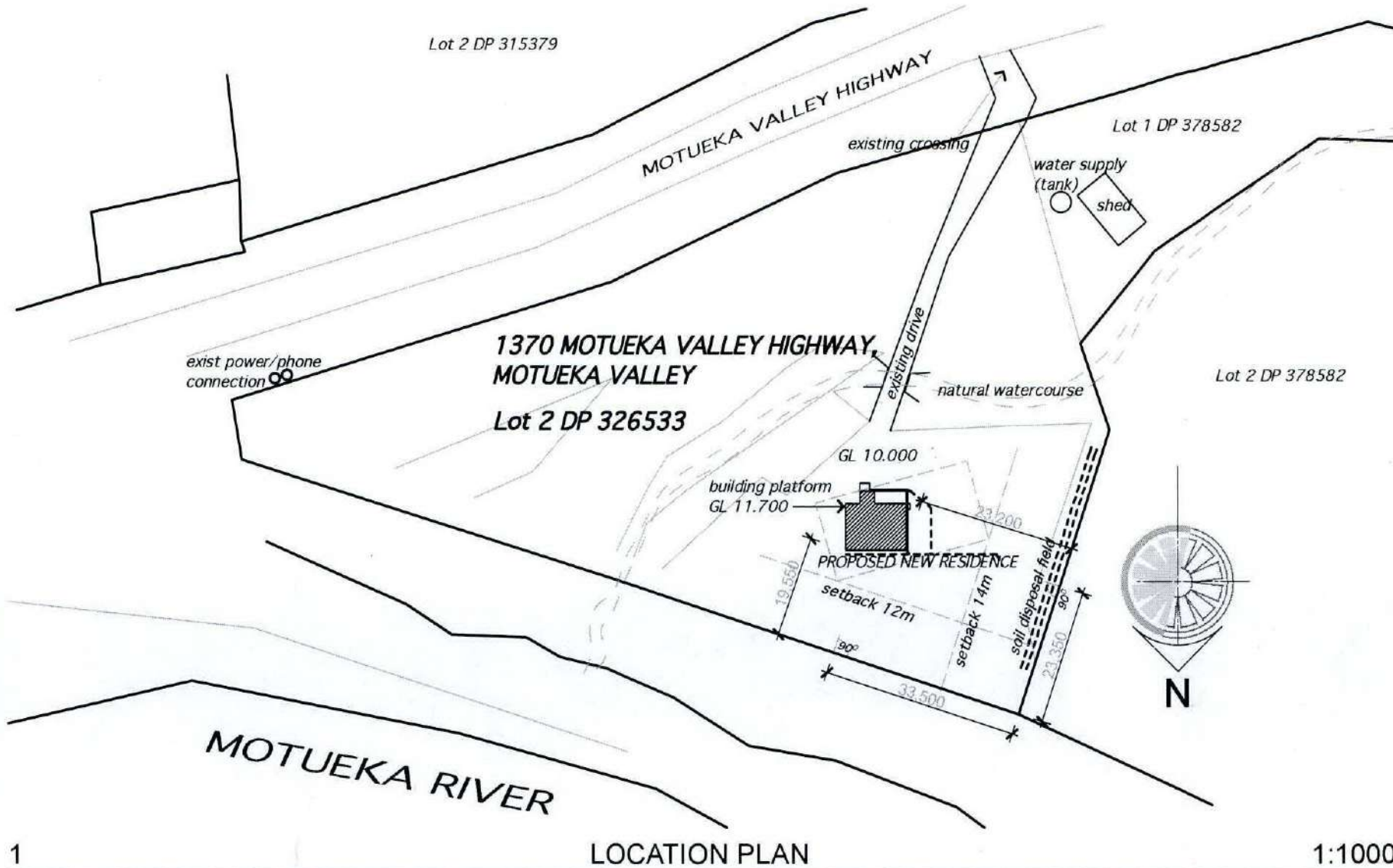
Easton District  
BUILDING / PHOTO #

BC No. 110216  
Date 23.5.12 Time  
Office *Dole*

BC 110216.







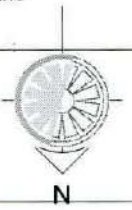
**Drawing Schedule**

Sheet No.	Sheet Name
101	SITE PLAN
102	FOUNDATION PLAN
103	FLOOR PLAN
104	ROOF FRAMING PLAN
105	PLUMBING PLAN
106	BRACING PLAN
201	SECTIONS
301	ELEVATIONS
401	DETAILS
402	DETAILS
403	DETAILS
404	DETAILS
405	BIOLOO DETAILS

general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone -1



**SITE DESCRIPTION**

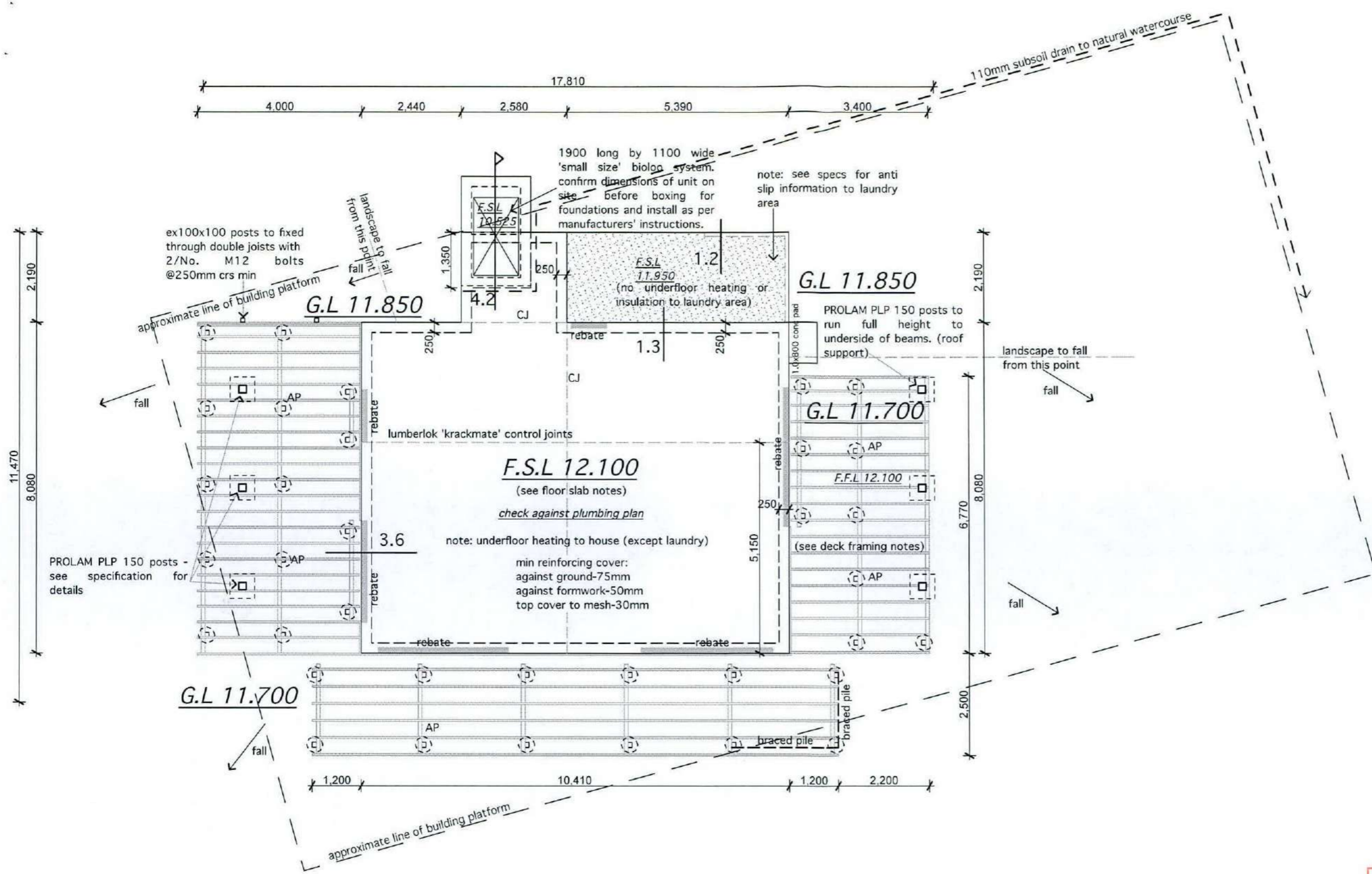
LOT 2  
DP 326533  
MOTUEKA VALLEY HIGHWAY  
MOTUEKA

AREA OF SITE=8758M<sup>2</sup>  
AREA OF BUILDING = 133M<sup>2</sup>  
SITE COVERAGE = 0.015%



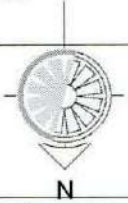
**LOCATION PLAN 1:1000, 1:1**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer PO BOX 1398, NELSON m. 021 811 931	<b>101</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		



general notes:  
do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone -1



**slab plan notes:**

control joints with lumberlok 'krack mate'  
bay dimensions not to exceed 1:2 and not  
more than 6m at exposed concrete

provide cover to all steel work:  
30mm top cover to mesh  
50mm against any formwork  
75mm from ground

all mesh to comply with AS/NZS 4671

FLOOR SLAB - 125mm thick 17.5MPa  
(unless otherwise stated) single pour  
concrete slab reinforced with HRC 665 mesh  
(30mm cover) on 100mm polystyrene  
insulation over Moist Stop 250 Micron  
polythene damp proof membrane on 25mm  
compacted sand blinding over 150mm min.  
compacted hardfill. Allow for underfloor  
heating, see specifications for info.

DECK - selected timber decking on 140x45  
MSG8 H3.2 joists @400crs (max span  
2.45m) on 140x90 MSG8 H3.2 bearers (max  
2.0m span)

PILED FOUNDATIONS - 125x125 square  
H5 piles encased in 400dia concrete piles.  
bearing depth to 'good ground' as defined in  
NZS 3604:1999 section 3/3.1.3

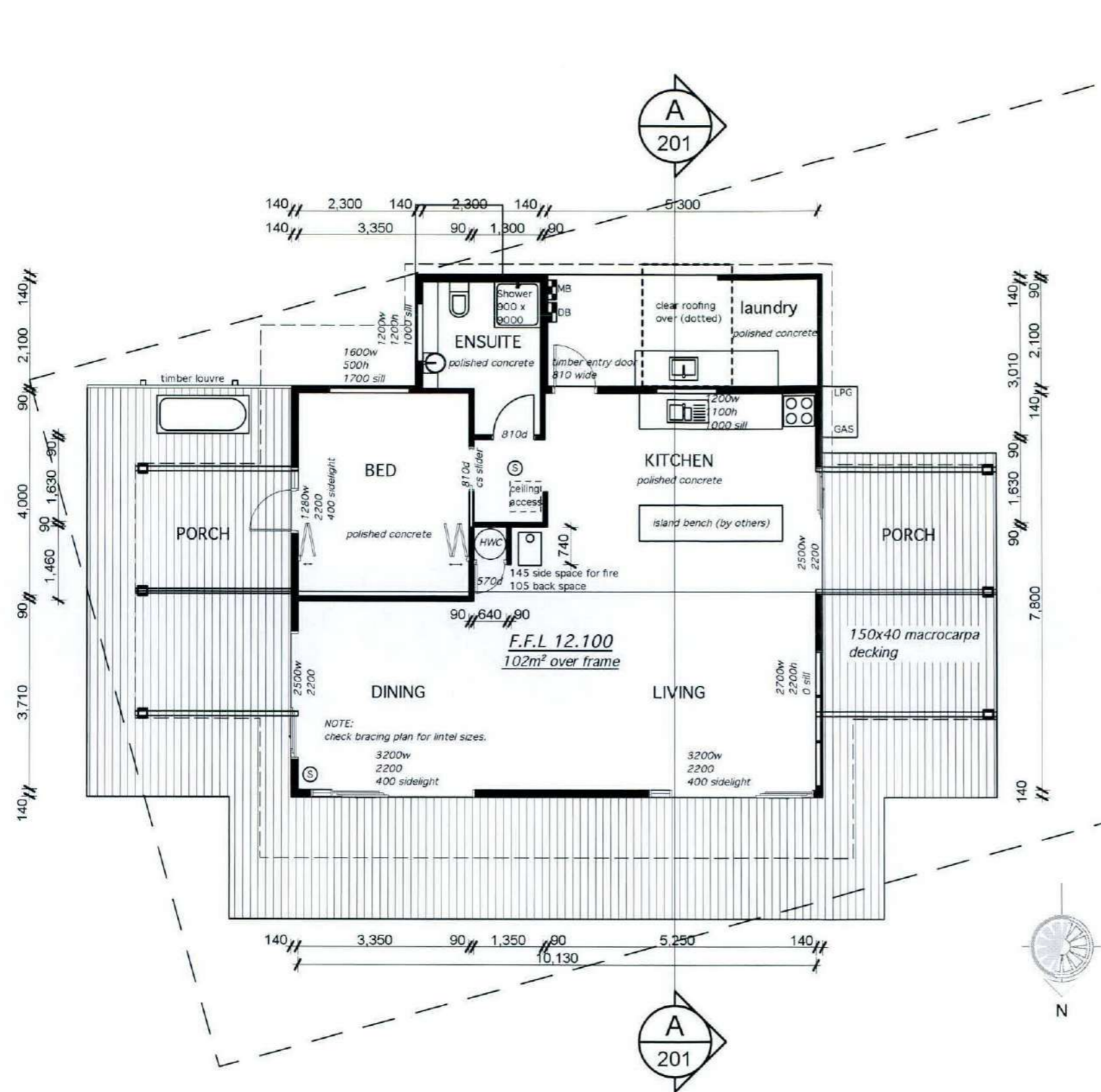
**check truss manufacturers  
design for additional foundation  
details**

Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
APPROVED  
21 APR 2011  
BUILDING CONSENT

ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

**FOUNDATION PLAN 1:100**

RIVERFRONT HOUSE 1370 Motueka Valley Highway	#CAD Technician 19/04/11	-to be read in conjunction with all other drawings and specification -check all dimensions on site prior to construction -do not scale off drawings	K D HETET LTD architectural designer P O BOX 1398, NELSON m. 021 811 931	<b>102</b>
---	-----------------------------	--	--	------------



general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone -1

**FLOOR PLAN NOTES**

use Gib Fyrelite wall lining to area behind GAS cooktop. protect wall lining from cooktop with georgian glass splashback

kitchen rangehood to be vented through wall, bathroom/ensuite extractor fans to be vented through wall

electric hot water cylinder to be installed with pressure, relief and tempering valves, hot water pipe lagging as per NZS4305

hot water cylinder to be secured with seismic restraints and temperature set as per G12/AS1

**lintels:** all lintels and beams to be MSG8-VSG8 and shall be preservative treated min 'H1.2' unless otherwise shown.

**recessed downlights:** \*refer to NZECP figure 1 for minimum clearances for recessed luminaires. all downlights to be CA rated

**wet area wall linings:** -pigmented sealer bottom coat and waterbourne enamel top coat to all wet areas, paint to comply with NZBC E3 3.1.2

-wet area wall linings finished with semi-gloss or gloss paint as per E3/AS1 3.1.2 walls (f).

\*vanity mirror units to be recessed into wall

\*shower to be proprietary acrylic unit

\*all dimensions are to framing unless otherwise stated

**S = smoke alarms** - domestic smoke alarm complying with any of the following standards, UL217, ULC-S531, AS3786 or BS5446 - Part 1

**insulation**  
walls - R3.2 latitude  
ceilings - R5.8 latitude

**linings**  
walls - 10mm gib  
ceilings - 12mm grooved ply  
gib aqualine to wet areas - see bracing plan (13mm ceilings, 10mm walls)

**stud sizes**  
**High wind zone**  
-exterior walls - Chemical Free Douglas fir 140x45 MSG8 at 600crs - see notes for lintels (treated H1.2)  
Internal walls:  
-studs <2.7m 90x45 at 480 max crs  
-studs <3.0m 90x70 at 600 max crs  
-studs <3.6m 90x90 at 400 max crs  
\*all wall framing to be MSG8/ VSG8  
\*H1.2 douglas fir bottom plates  
top plates: 140x45 + 190x35 No.1 framing



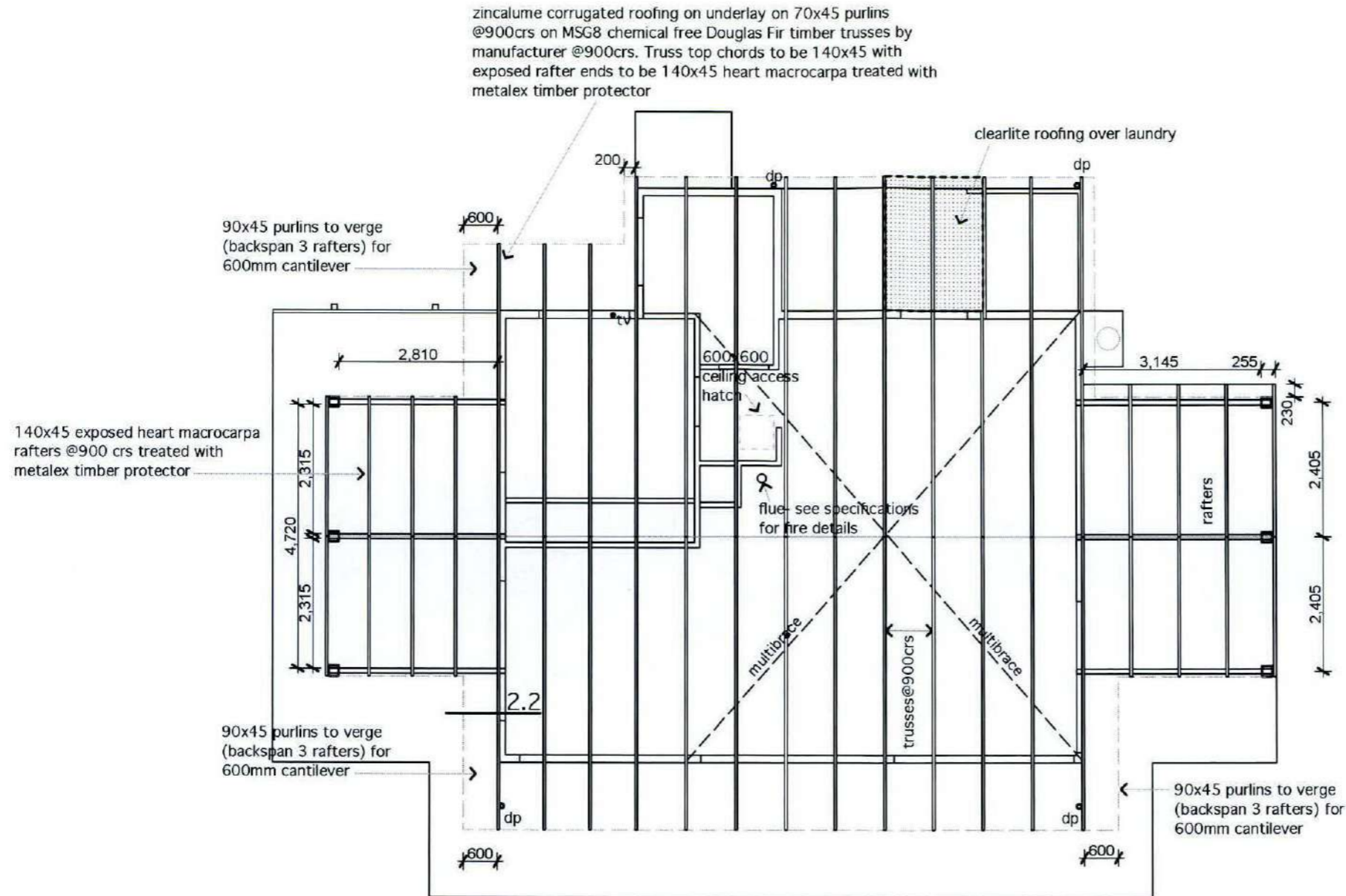
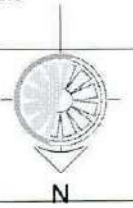
**Ground Floor 1:100**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer	<b>103</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings	P O BOX 1398, NELSON m. 021 811 931	

general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone - 1



**FIXINGS**

**HIGH WIND ZONE FIXINGS**

all uplift fixings as per NZS3604:1999 fig 8.12

70 x 45 MSG8 H1.2 purlins to truss connections:

**main roof** (0.7kN required)-

2/ 90mm x 3.15 dia. power driven nails

**periphery roof** (1.1kN required)-

2/ 100mm x 3.75 dia. skewed nails + 1/14g Type 17 screw)

**ROOF FRAMING PLAN 1:100**

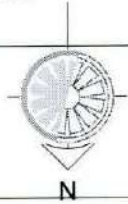


RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer P O BOX 1398, NELSON m. 021 811 931	<b>104</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		

general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

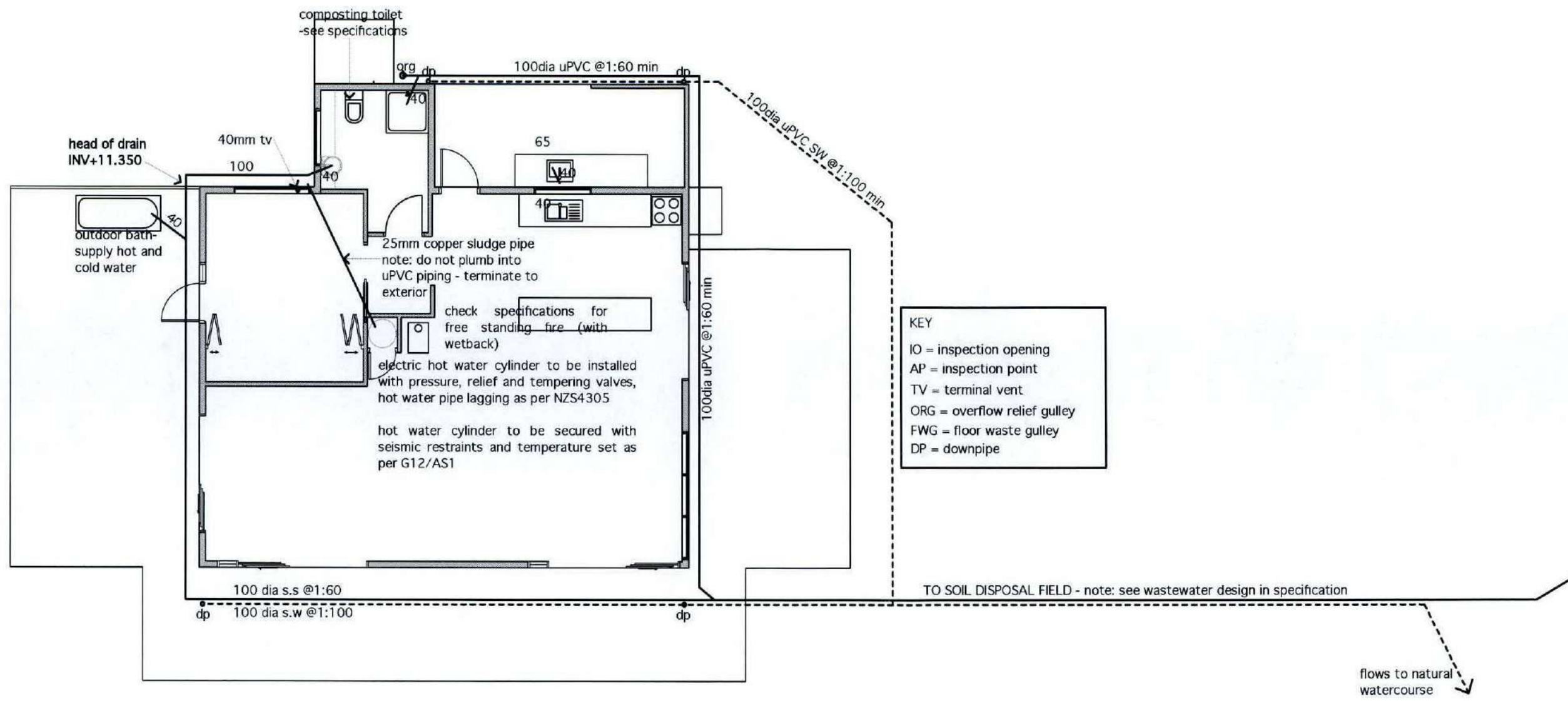
wind zone - High  
earthquake zone - A  
corrosion zone -1



plumbing table  
branch lines

size	unvented length	unit loading	grade
sanitary drainage			
65mm	10m	5	1:40
80mm	10m	12	1:60
100mm	10m	30	1:60
sanitary plumbing			
40mm	2.5		1:40
50mm	2.5		1:40
65mm	2.5		1:40
80mm	2.5		1:60
100mm	2.5		1:60

refer AS/NZS 3500.2.2 for installation details



**PLUMBING PLAN 1:100**

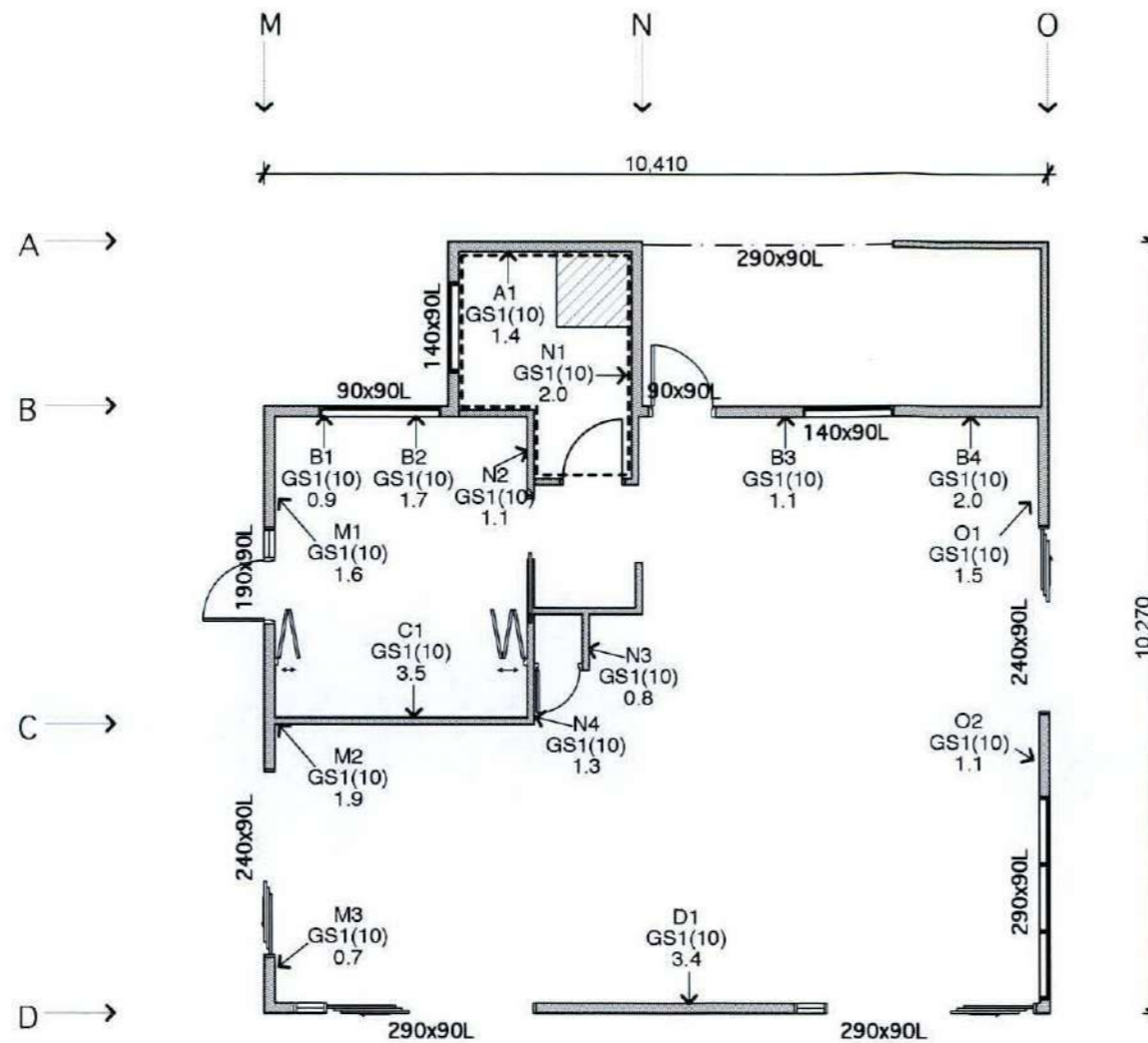
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BUILDING CONSENT AUTHORITY  
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DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer	105
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		
			P O BOX 1398, NELSON m. 021 811 931	

general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone - 1



NZS 3604:1999

SECTION 8 - WALLS

Table 8.9 - Lintels supporting roof only (see figure 8.7) - VSG 8 and MSG 8

Loaded dimension* of lintel (m)	Maximum span for lintel sizes listed below (m)									
	WIDTH x THICKNESS (mm)									
	90 x 70	90 x 90	140 x 70	140 x 90	190 x 70	190 x 90	240 x 70	240 x 90	290 x 70	290 x 90
Light roof	3	1.0	1.1	1.6	1.8	2.3	2.5	2.9	3.1	3.5
	4	1.0	1.0	1.5	1.6	2.1	2.3	2.6	2.9	3.2
	5	0.9	1.0	1.4	1.5	1.9	2.1	2.5	2.7	3.0
	6	0.8	0.9	1.3	1.5	1.8	2.0	2.3	2.5	2.8
Heavy roof	3	0.5	0.9	1.3	1.4	1.8	2.0	2.3	2.5	2.8
	4	0.5	0.8	1.2	1.3	1.7	1.8	2.1	2.3	2.6
	5	0.7	0.8	1.1	1.2	1.5	1.7	1.9	2.2	2.3
	6	-	0.7	1.0	1.2	1.4	1.6	1.8	2.0	2.1

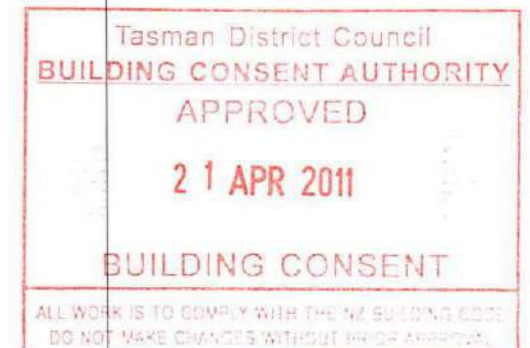
\* Loaded dimension is defined in figure 1.3

NOTE: Members 70 mm and 90 mm thick may be substituted with built up members sized and nailed in accordance with 2.4.4.7.

WET AREA WALL LININGS

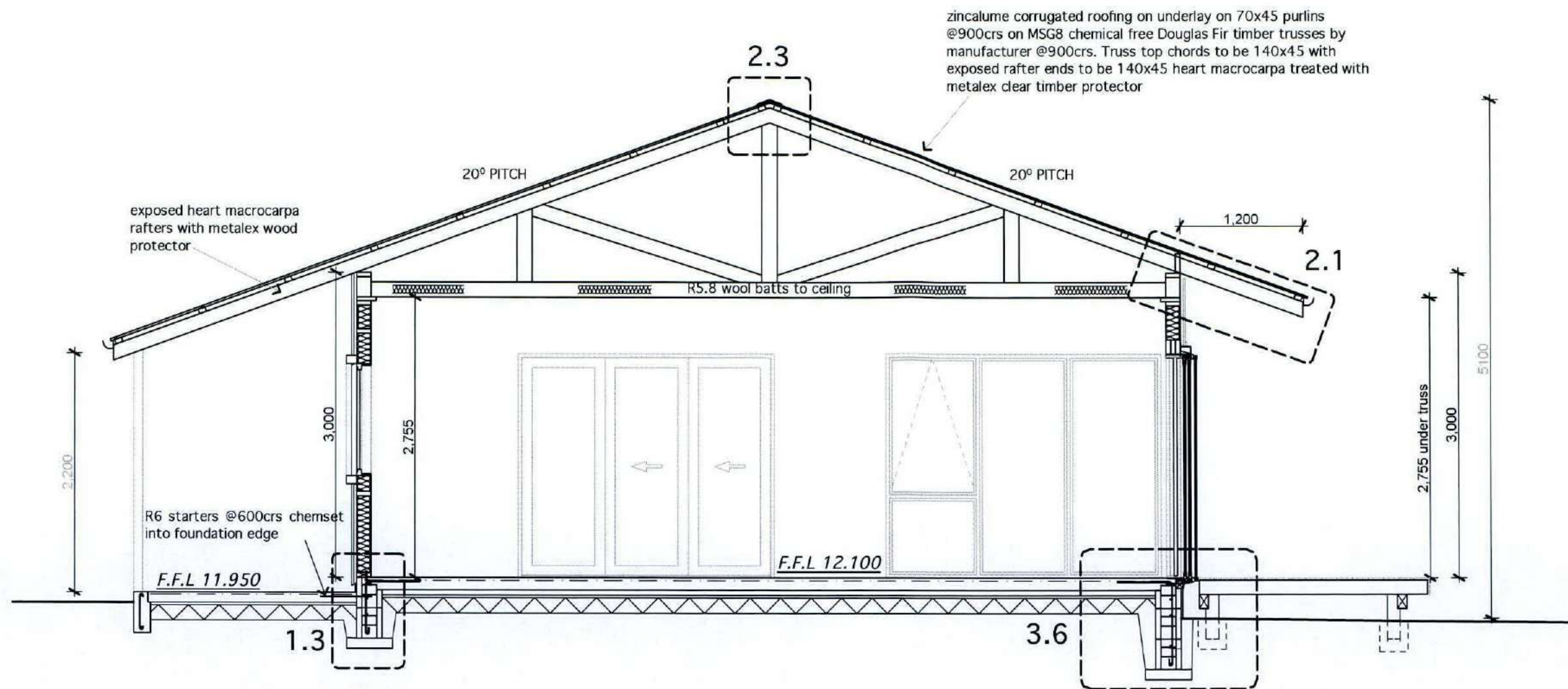
- areas where bracing elements are restricted
- Gib 10mm aqualine to walls  
Gib 13mm aqualine to ceilings

NOTE:  
where BL1, BLP and BLG bracing elements  
have been specified 15kN mechanical  
fastenings must be used instead of M12  
galv hold down bolts



**BRACING PLAN 1:100**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	<b>K D HETET LTD</b> architectural designer	<b>106</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		
			P O BOX 1398, NELSON m. 021 811 931	



**general notes:**

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone -A  
corrosion zone -1

**FIXINGS**

**HIGH WIND ZONE FIXINGS**

70 x 45 MSG8 H1.2 purlins to truss connections:

**main roof** (0.7kN required)-

2/ 90mm x 3.15 dia. power driven nails

**periphery roof** (1.1kN required)-

2/ 100mm x 3.75 dia. skewed nails + 1/14g Type 17 screw)

**all uplift fixings as per NZS3604:1999 fig 8.12**

**lintel to trimming stud:**

3/ 90mm x 3.15 dia. power driven nails end driven

**double top plate to top plate and top plate to lintel:**

3/ 90mm x 3.15 dia. power driven nails at 500mm max crs

**stud to top plate fixings** (PR studs at 600mm max crs):

loaded dimension 1.5m (1.7kN required)-

2/ 90mm x 3.15 dia. plain steel wire nails driven vert. into stud + 1/ Tylok 2T4 plate

loaded dimension 1.5-2.5m (2.7kN required)-

2/ 90mm x 3.15 dia. plain steel wire nails driven vert. into stud + 2/ Tylok 2T4 plate

loaded dimension 2.5-5.5m (6.0kN required)-

2/ 90mm x 3.15 dia. plain steel wire nails driven vert. into stud +

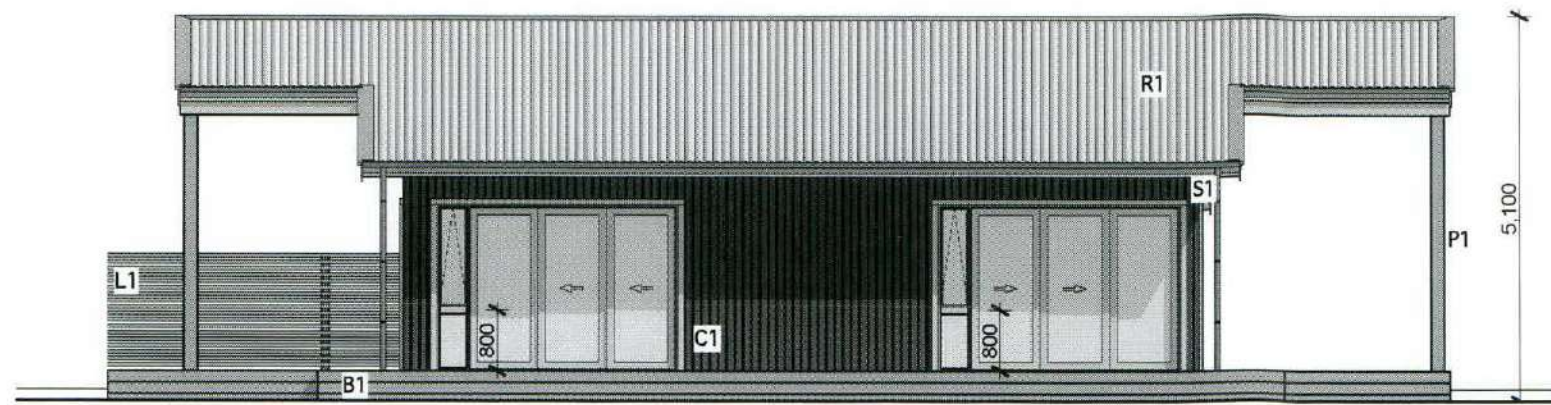
1 lumberlok sheet brace strap (3/ 30mm x 3.15 dia. nails into each stud face

**Section A 1:50**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer	<b>201</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		

P O BOX 1398, NELSON m. 021 811 931

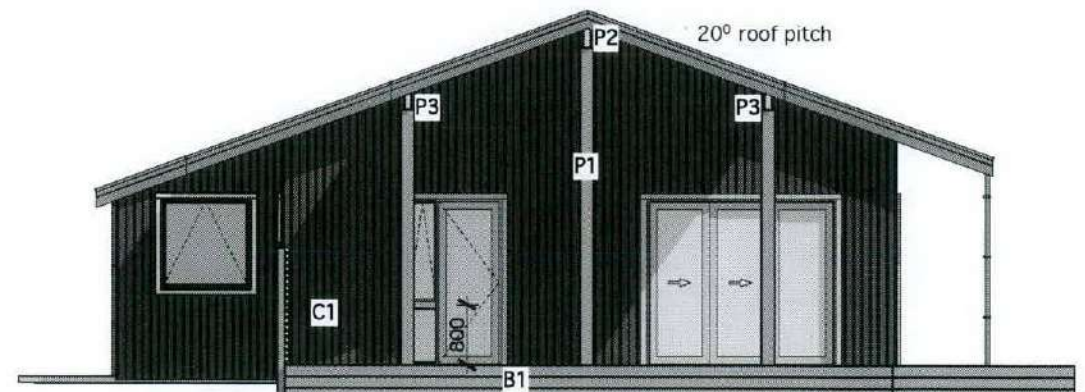
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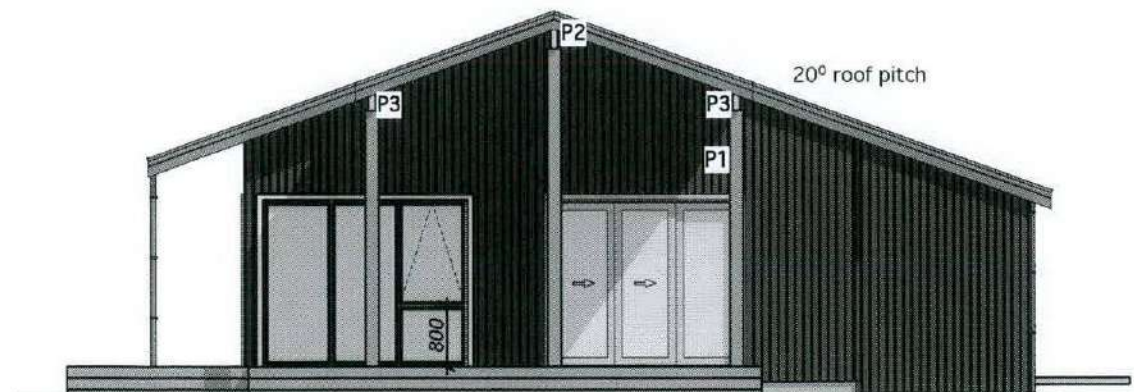
E-01 North Elevation 1:100



E-03 South Elevation 1:100



E-02 East Elevation 1:100



E-04 West Elevation 1:100

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

H1 CALCULATION (NZS 4218:2004)  
 Wall areas for S,W,E Elevations = 108M<sup>2</sup>  
 Glazing area for S,W,E Elevations = 24M<sup>2</sup>

**PERCENTAGE GLAZING TOTAL = 22%**  
 (Complies with Schedule Method)

**CLIMATE ZONE 3**  
 Minimum R-Values      R-Values for house  
 Roof R 2.5                      Roof R5.8  
 Wall R 1.9                      Wall R3.2  
 Floor R 1.3                      Floor R2.6  
 Glazing R 0.26                      Glazing R0.26

general notes:

do not scale from drawings.  
 confirm all dimensions on site  
 confirm any discrepancies with the  
 designer prior to construction.

wind zone - High  
 earthquake zone -A  
 corrosion zone -1

P1 - PROLAM PLP 150 (135X135) exterior laminated posts  
 P2 - PROLAM PLL 250 (240X88) exterior laminated beam  
 P3 - PROLAM PLVR 150 (140x63) exterior laminated beam

R1 - zincalume corrugated roofing/  
 S1 - zincalume barge flashings and spouting with 80mm downpipes

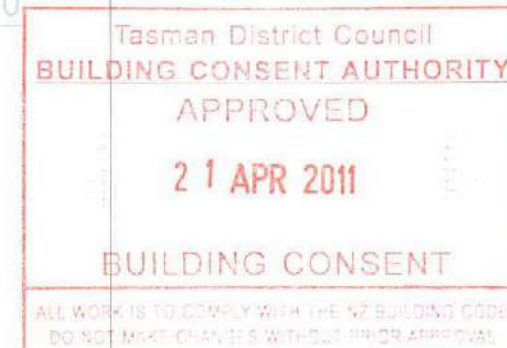
C1 - heart redwood vertical shiplap weatherboards

B1 - Baseboards ex 150x25

L1 - timber louvres - ex 50x25 macrocarpa on 100x100 square posts

WINDOW AND DOOR JOINERY

- \*all exterior units anodised aluminium
- \*site is in high wind zone
- \*all units double glazed
- \*all units to be checked on site before manufacture
- \*check hinging against the plan

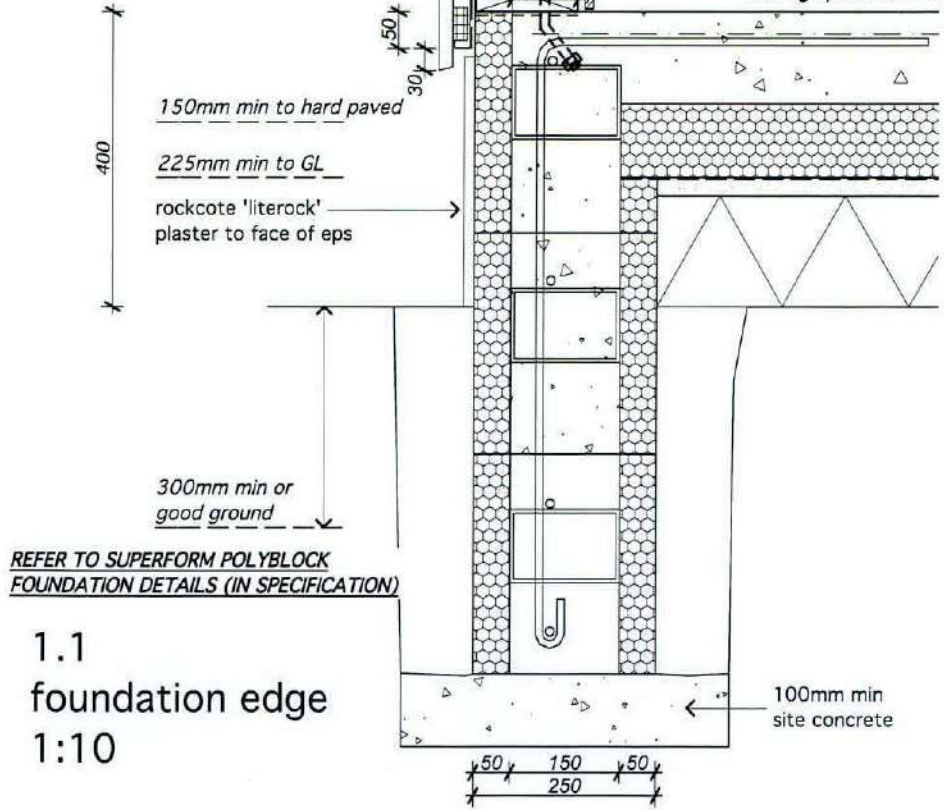


**East Elevation, North Elevation, South Elevation, West Elevation 1:100**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer	<b>301</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		
			PO BOX 1398, NELSON m. 021 811 931	

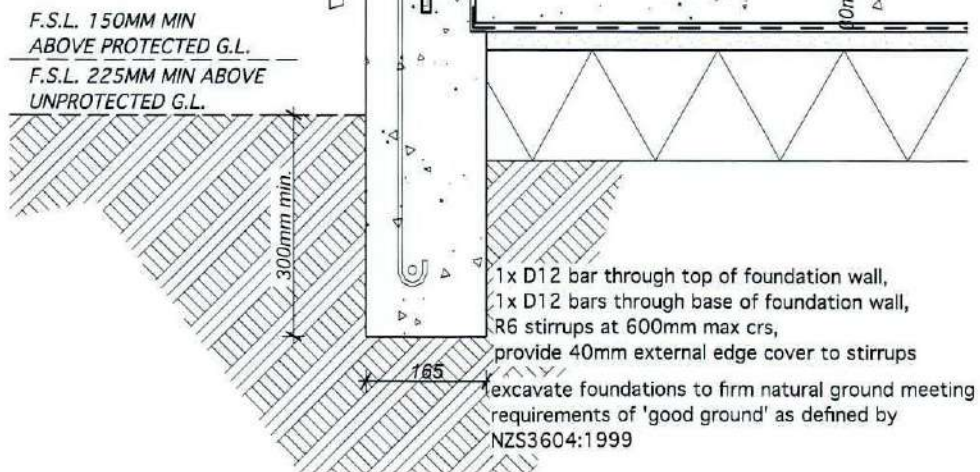
all wall framing to be chemical free MSG8 Douglas Fir @600crs with H1.2 treated bottom plate and dwangs at 800mm max centres - protect bottom plate from concrete with dpc

hang upvc starter strip 50mm below floor level. weatherboards to overhang starter strip 30mm

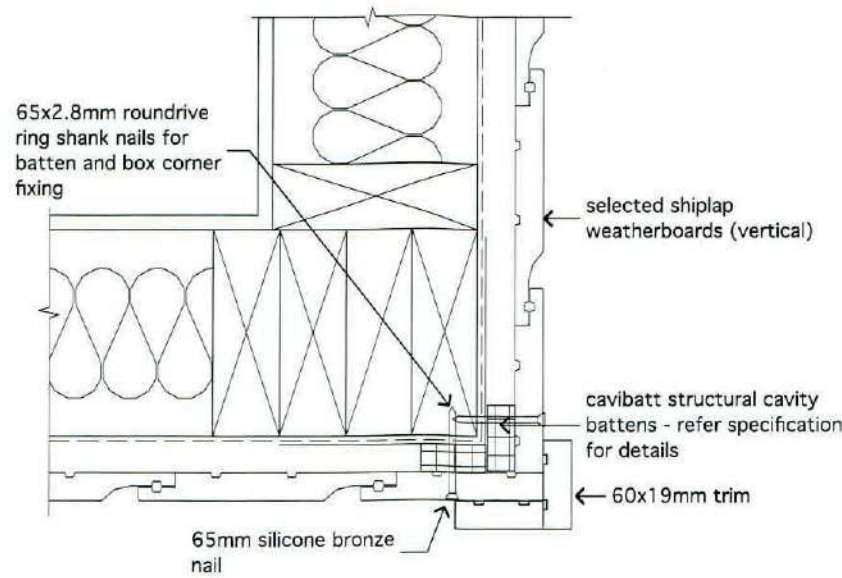


1.1 foundation edge 1:10

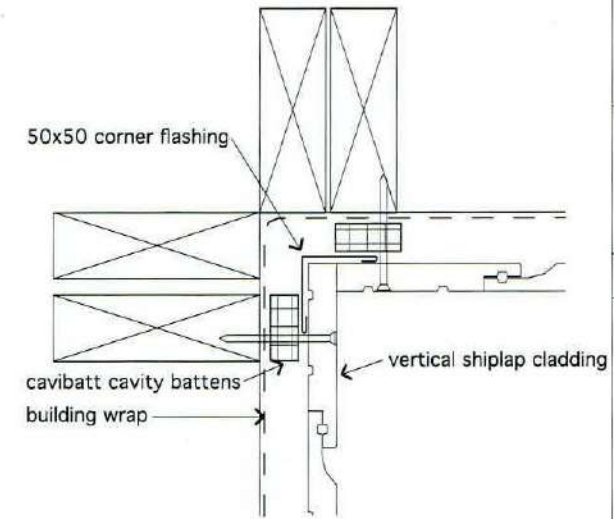
1.2 foundation edge (laundry) 1:10



**GENERAL DETAILS 1:10, 1:5**



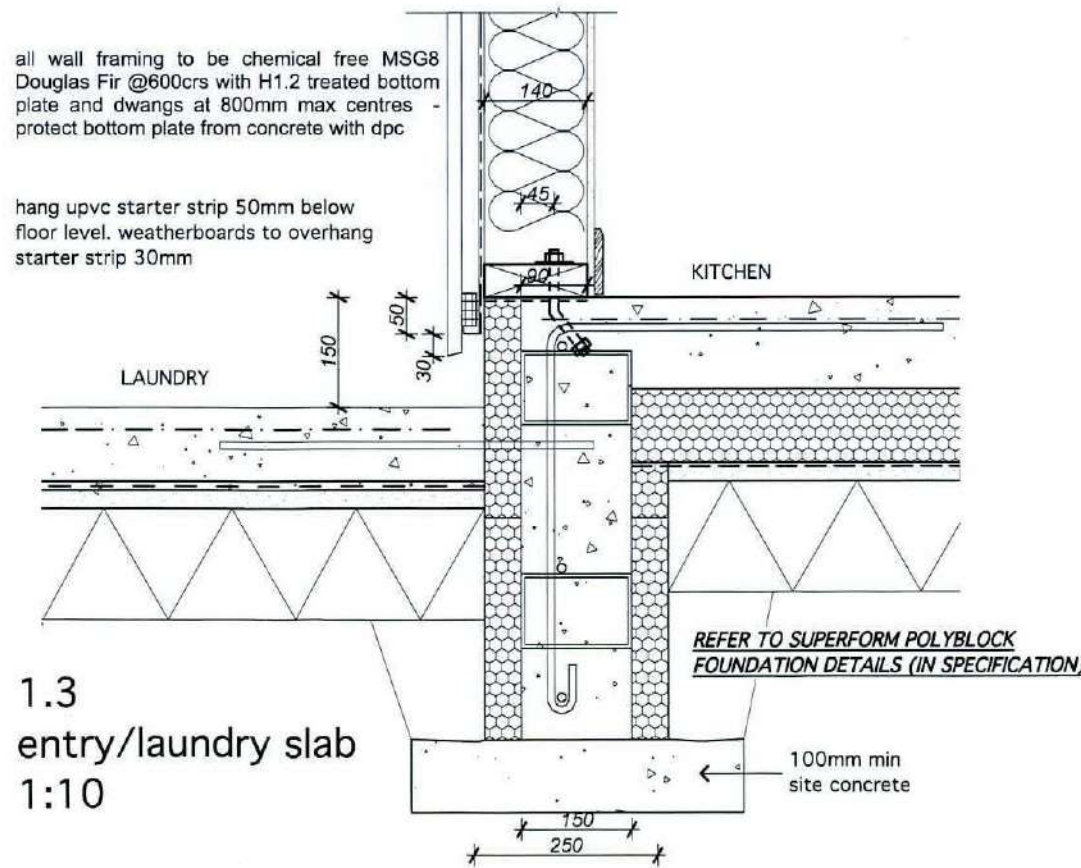
1.4 External shiplab w'board 1:5



1.5 Internal shiplab w'board 1:5

all wall framing to be chemical free MSG8 Douglas Fir @600crs with H1.2 treated bottom plate and dwangs at 800mm max centres - protect bottom plate from concrete with dpc

hang upvc starter strip 50mm below floor level. weatherboards to overhang starter strip 30mm



1.3 entry/laundry slab 1:10

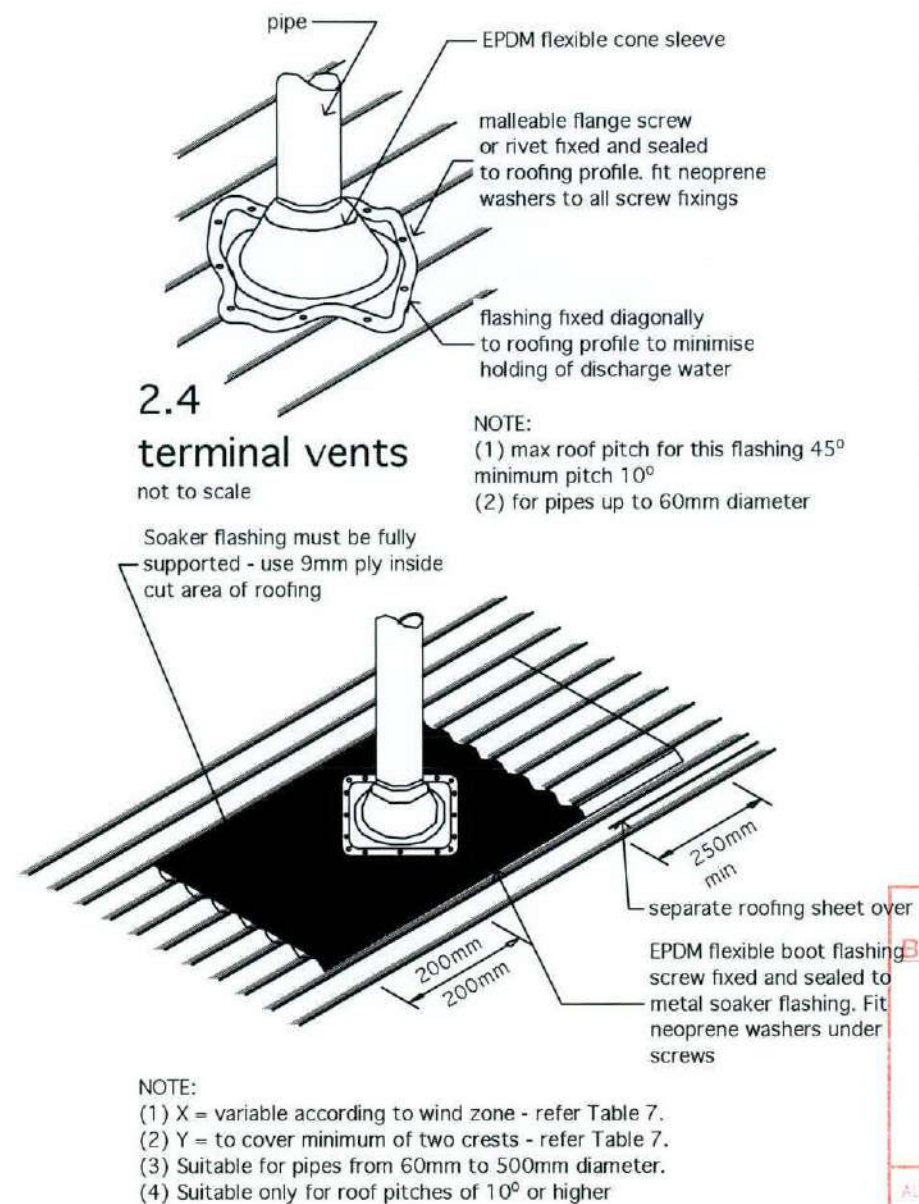
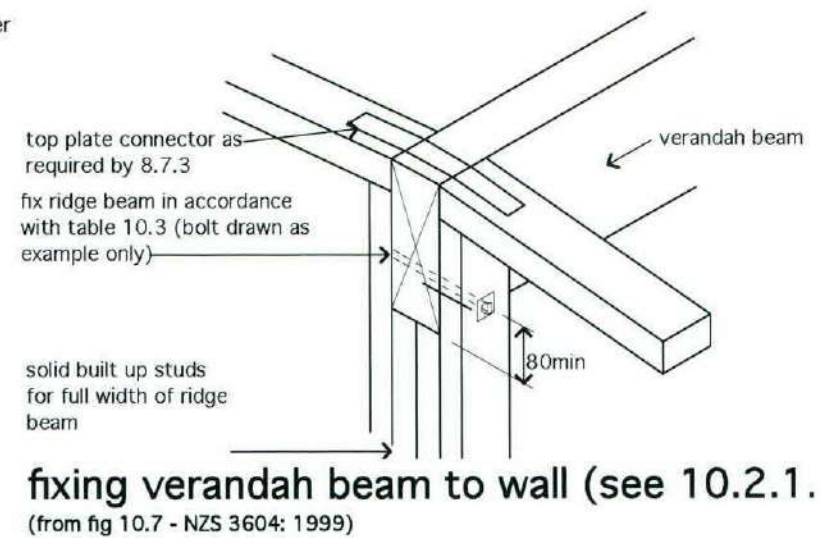
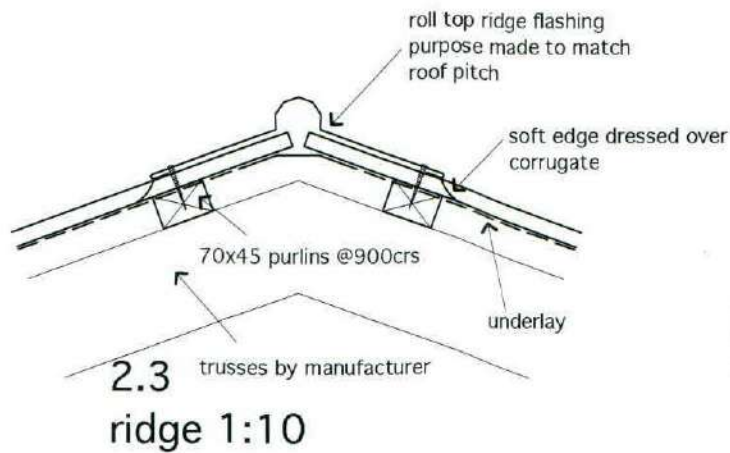
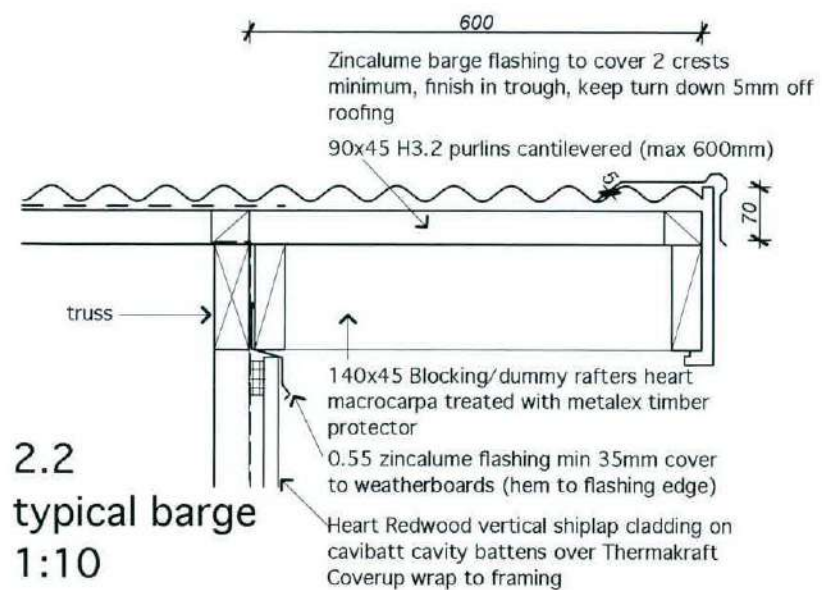
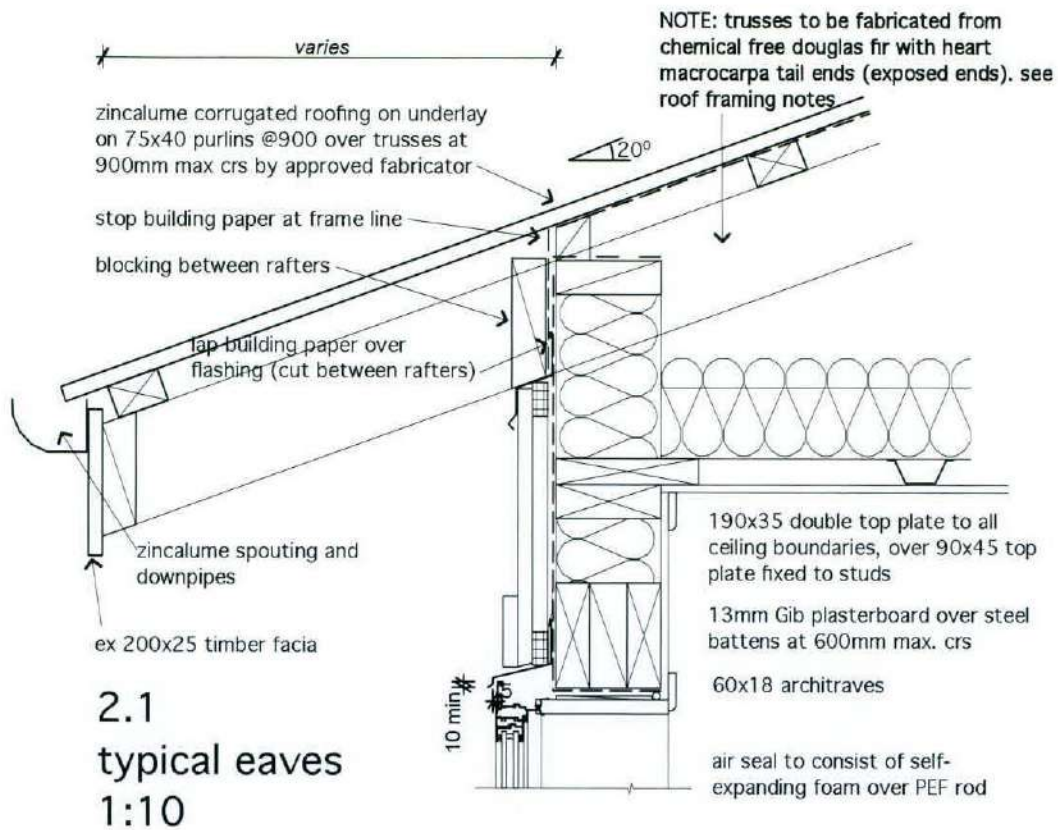
general notes:

do not scale from drawings. confirm all dimensions on site confirm any discrepancies with the designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone -1



RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer P O BOX 1398, NELSON m. 021 811 931	401
1370 Motueka Valley Highway	21/04/11	-check all dimensions on site prior to construction -do not scale off drawings		



**general notes:**

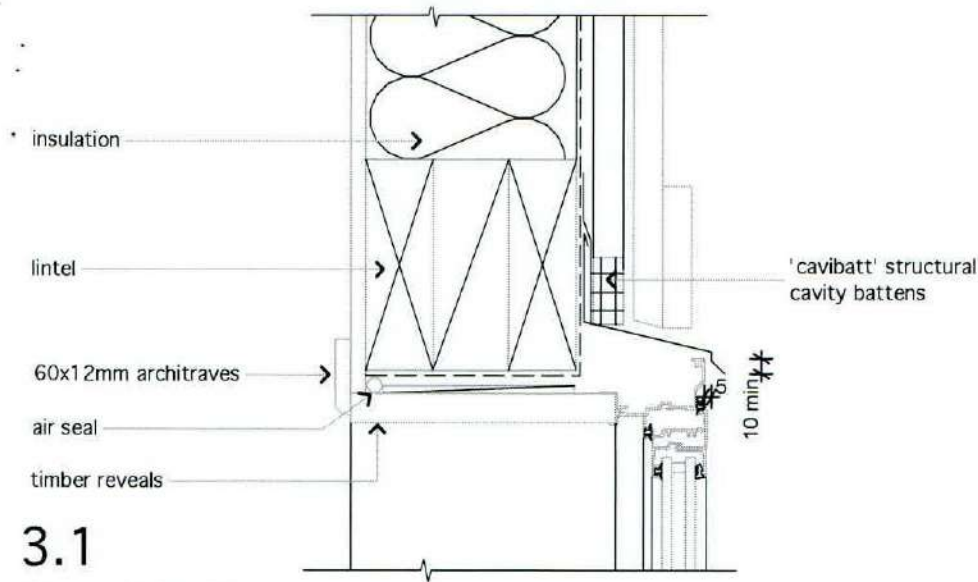
do not scale from drawings. confirm all dimensions on site confirm any discrepancies with the designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone - 1

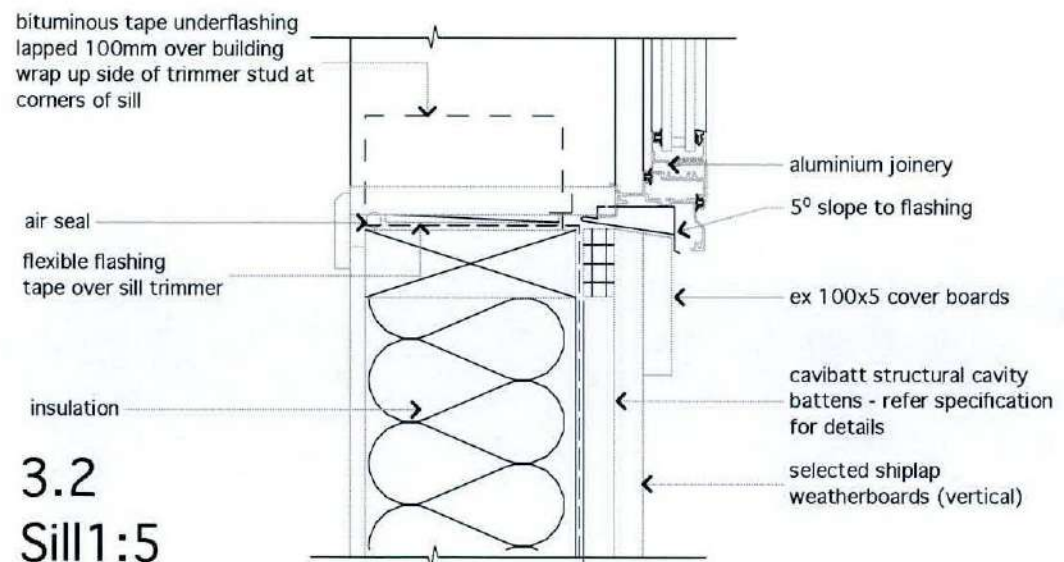
**GENERAL DETAILS 1:10**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer P O BOX 1398, NELSON m. 021 811 931	<b>402</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		

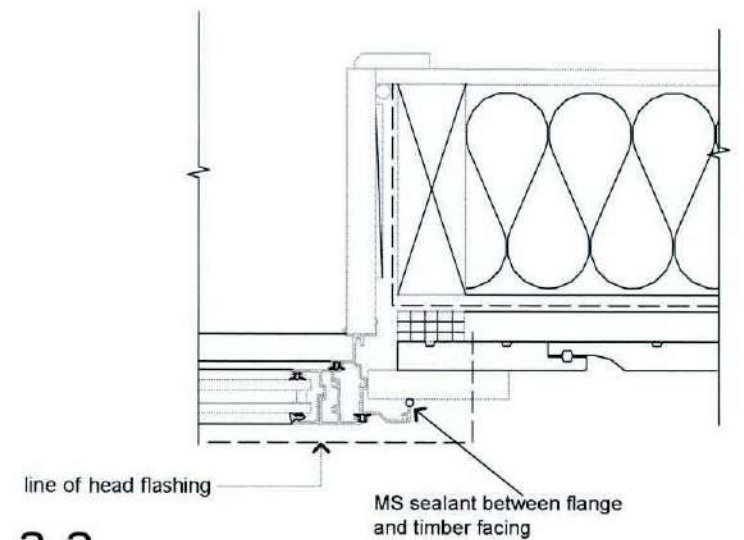
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**3.1**  
Head 1:5

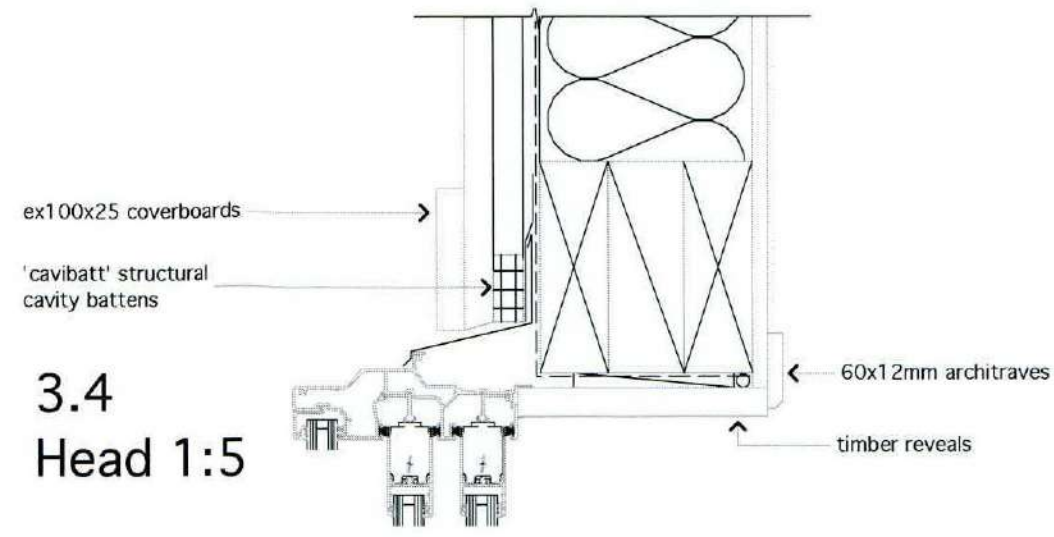


**3.2**  
Sill 1:5



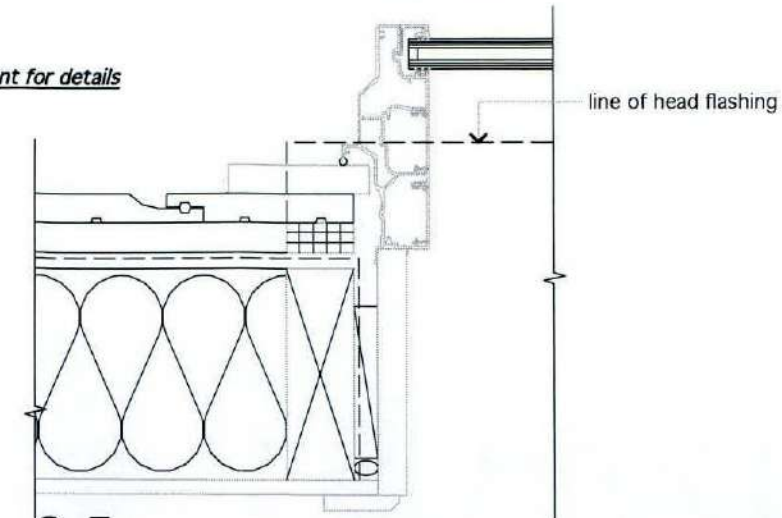
**3.3**  
Jamb 1:5

**DOOR AND WINDOW DETAILS 1:5**

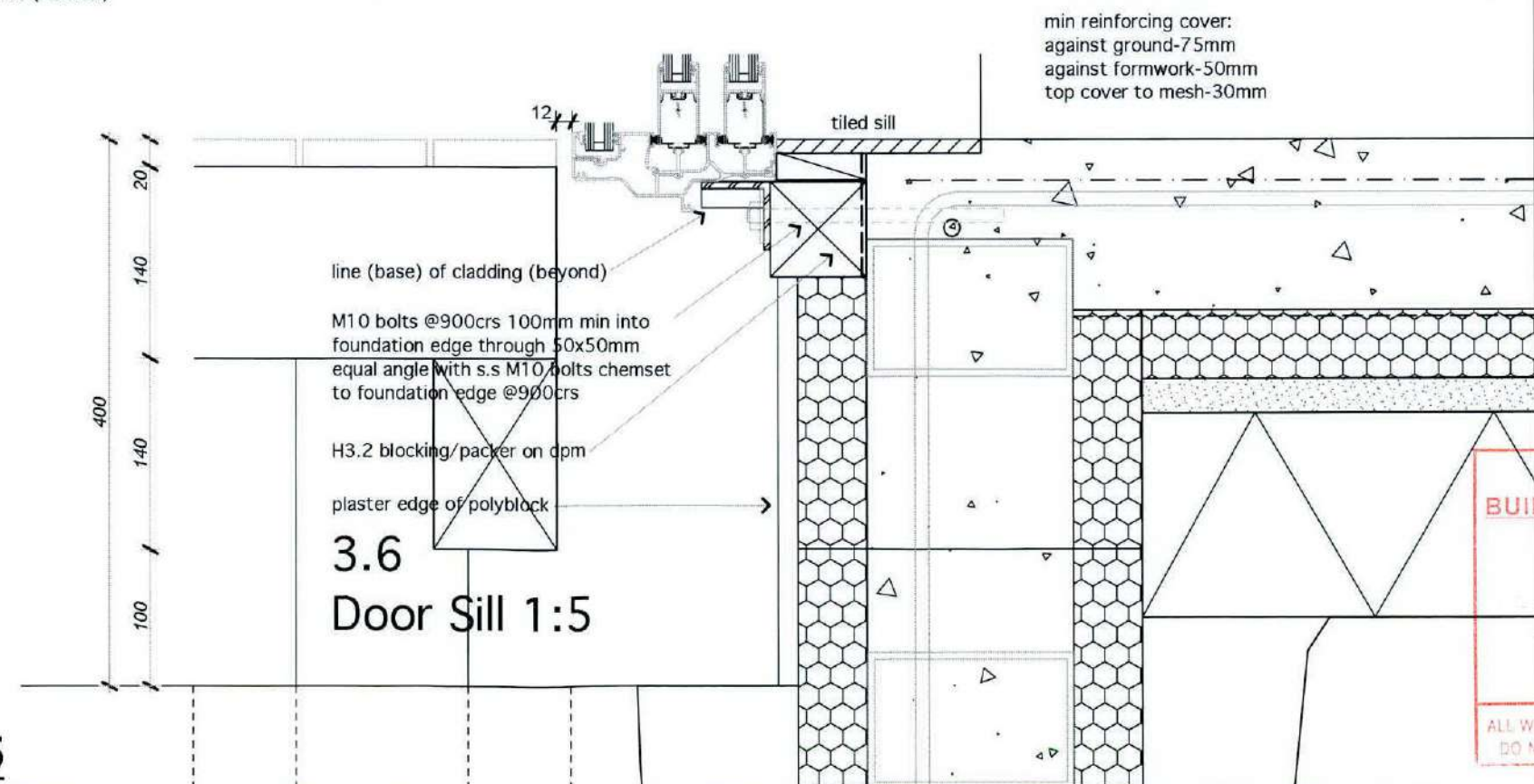


**3.4**  
Head 1:5

*note: insect screens to be installed-see client for details*



**3.5**  
Door Jamb 1:5



**3.6**  
Door Sill 1:5

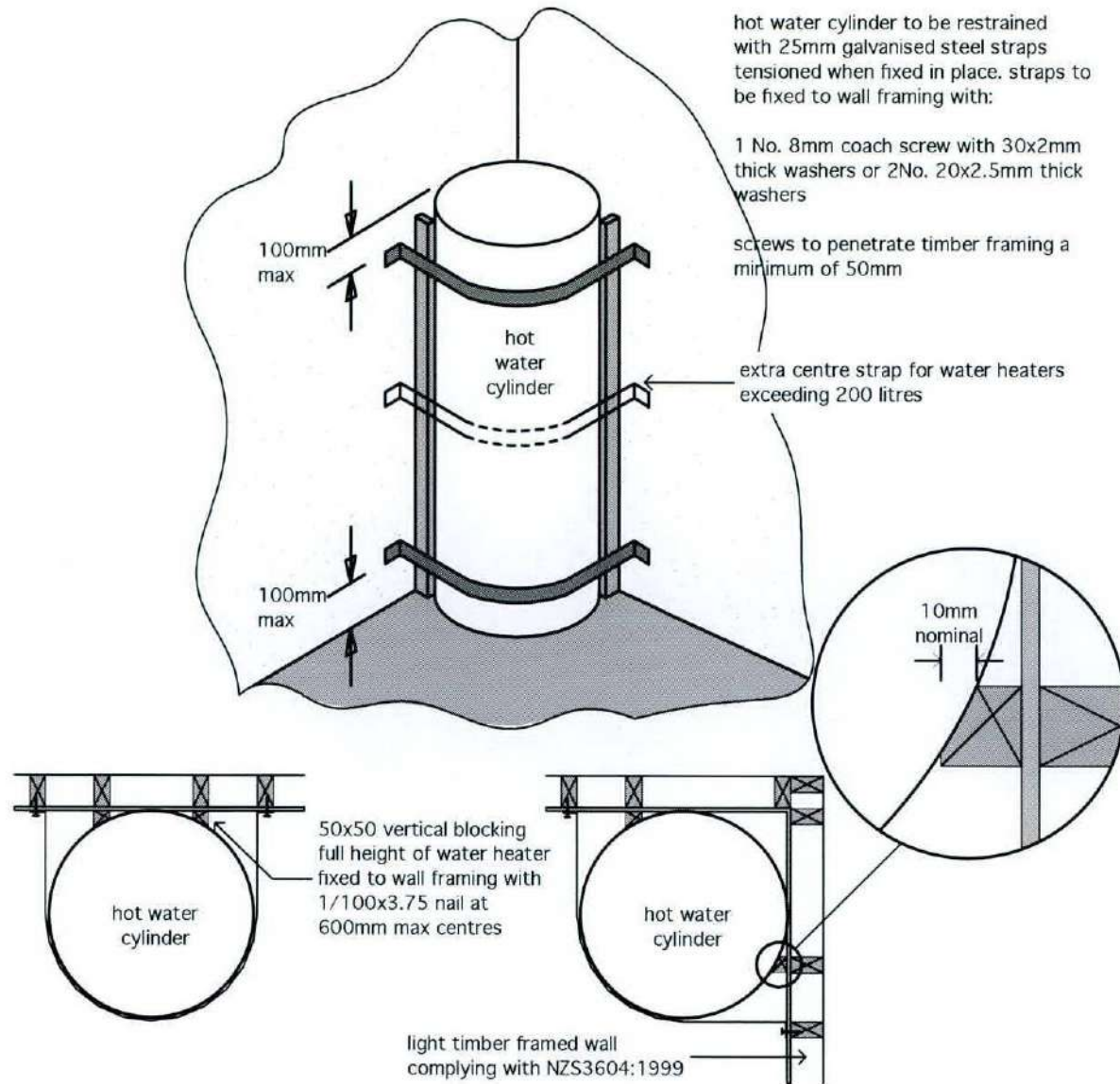
general notes:  
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wind zone - High  
earthquake zone - A  
corrosion zone -1

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RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer	<b>403</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		

4.1  
H.W.C restraint 1:10



general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone -1



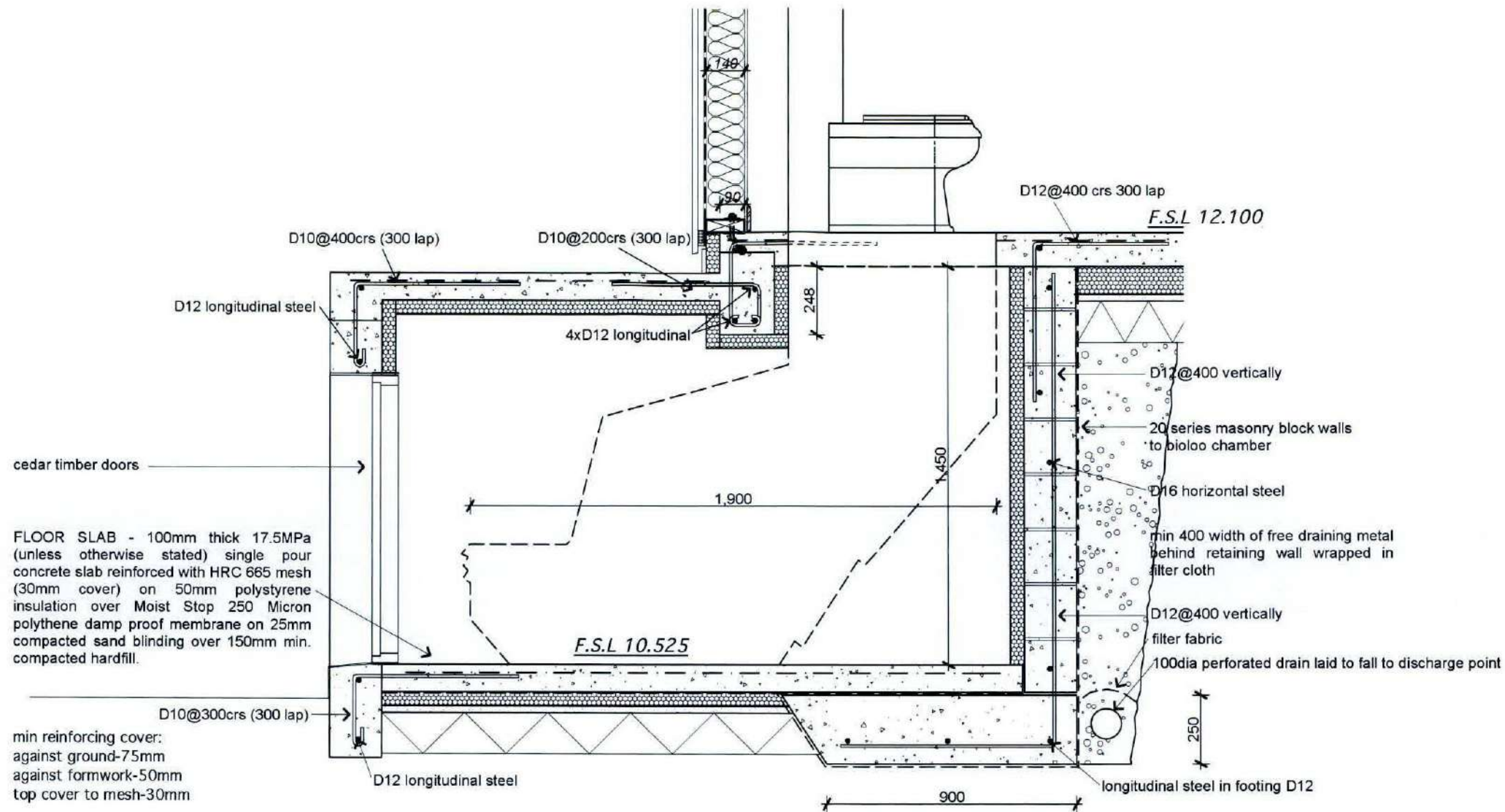
**GENERAL DETAILS 1:10**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer	404
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		
			PO BOX 1398, NELSON m. 021 811 931	

general notes:

do not scale from drawings.  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.

wind zone - High  
earthquake zone - A  
corrosion zone -1

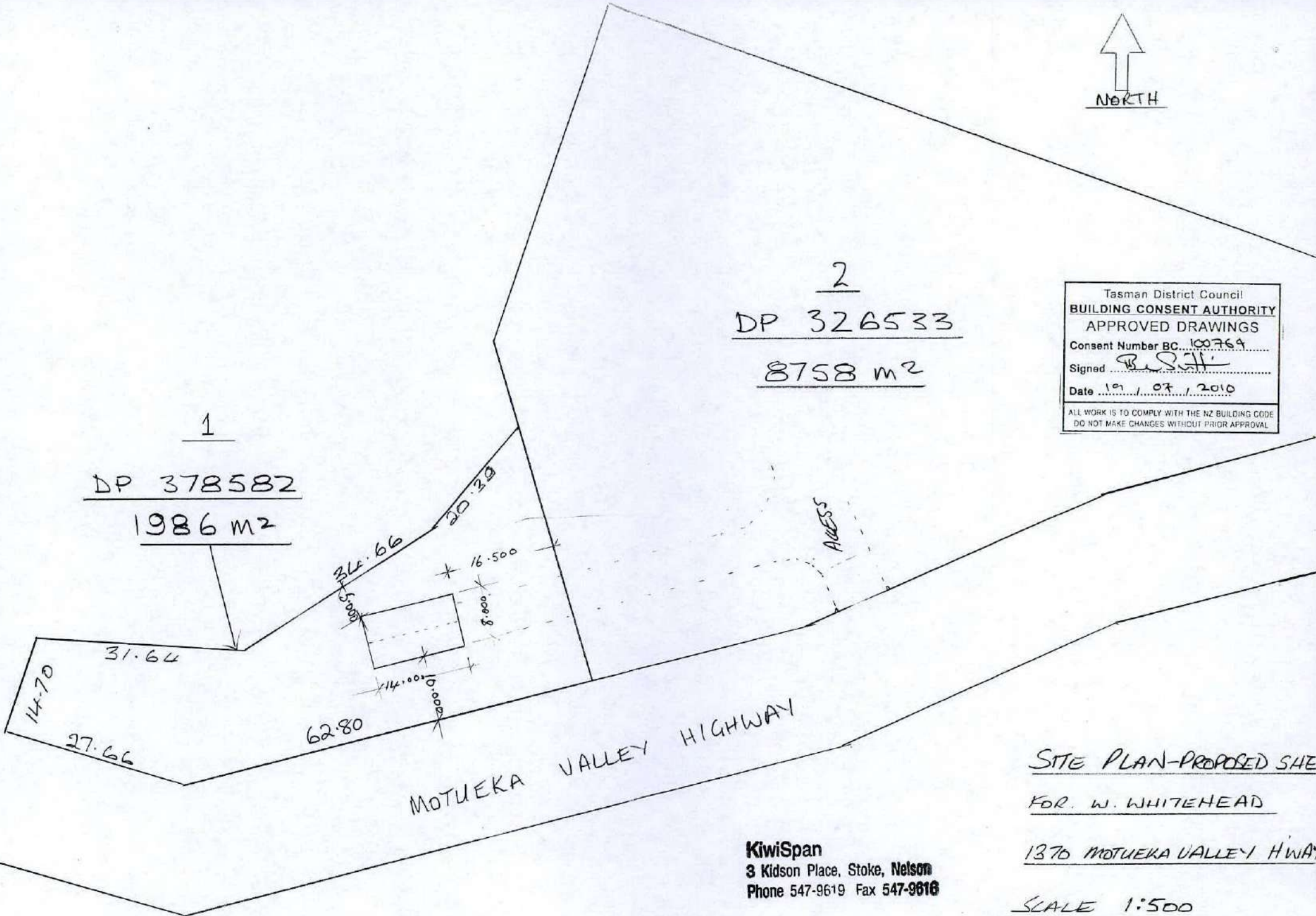
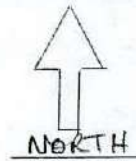


4.2  
Bioloo section  
1:10

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**BIO LOO SECTION 1:20**

RIVERFRONT HOUSE	#CAD Technician	-to be read in conjunction with all other drawings and specification	K D HETET LTD architectural designer P O BOX 1398, NELSON m. 021 811 931	<b>405</b>
1370 Motueka Valley Highway	17/03/11	-check all dimensions on site prior to construction -do not scale off drawings		



1  
DP 378582  
1986 m<sup>2</sup>

2  
DP 326533  
8758 m<sup>2</sup>

Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
APPROVED DRAWINGS  
Consent Number BC. 100769  
Signed B. Siff  
Date 19 / 07 / 2010  
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MOTUEKA VALLEY HIGHWAY

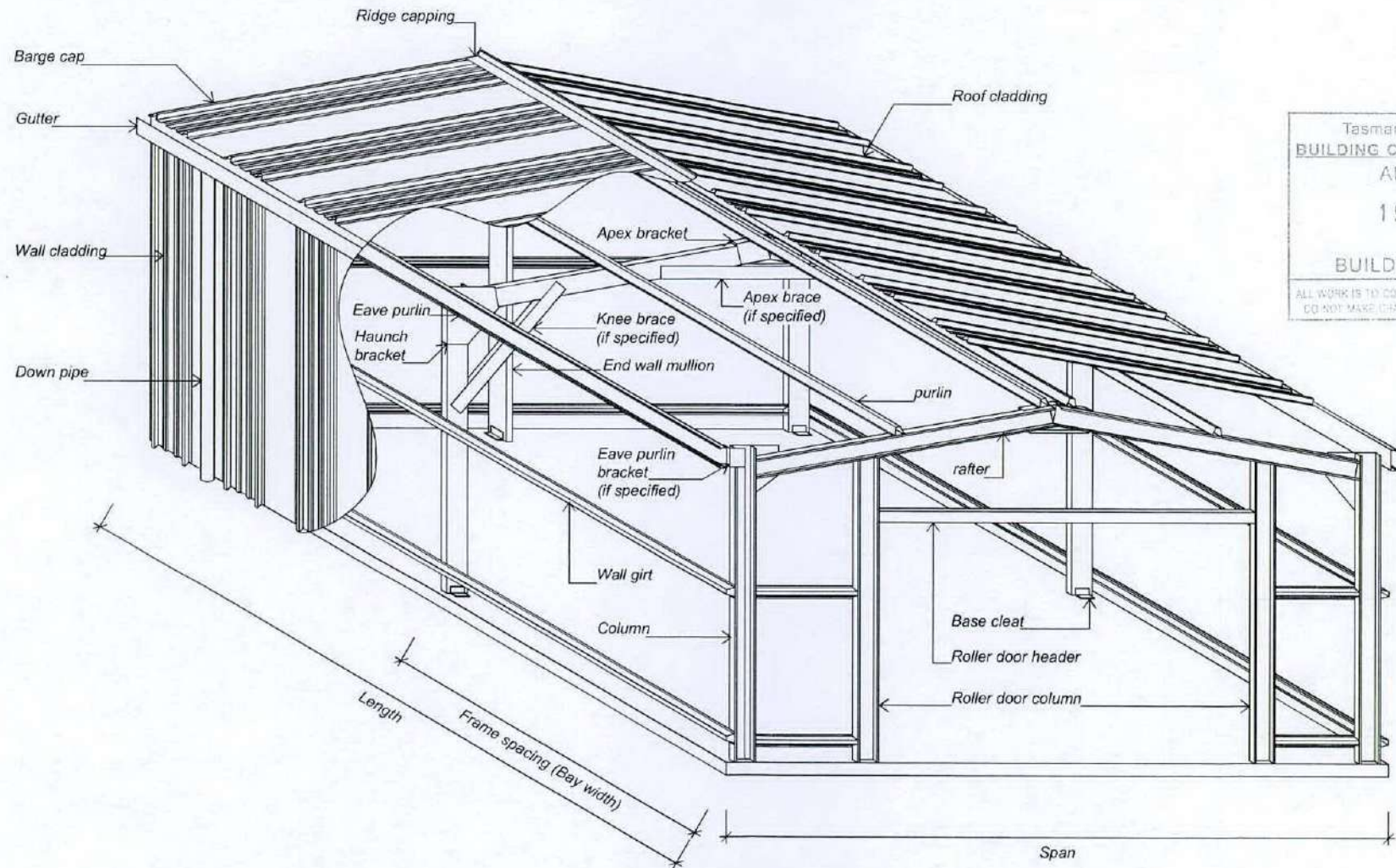
SITE PLAN-PROPOSED SHE

FOR W. WHITEHEAD

1370 MOTUEKA VALLEY HWAY

SCALE 1:500

**KiwiSpan**  
3 Kidson Place, Stoke, Nelson  
Phone 547-9619 Fax 547-9616



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 all measurements in millimeters unless  
 otherwise stated

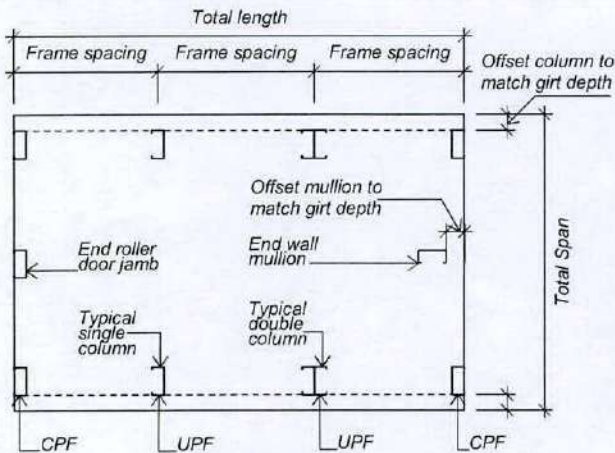
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**emc**  
 emc limited  
 structural & civil engineering  
 be, mipenz, cpeng, intpe

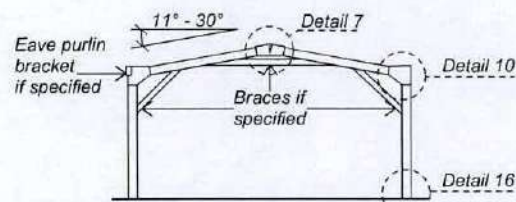
**STEEL FRAME BUILDING**

drawing no.  
**SB 01**  
 date: 13/03/06  
 original size  
**A3**

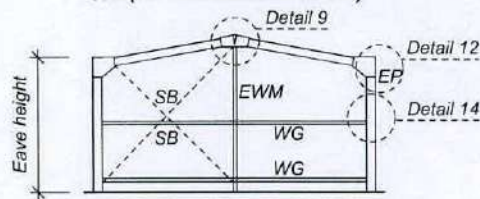
**KiwiSpan** .CO.NZ  
 Structures for the future



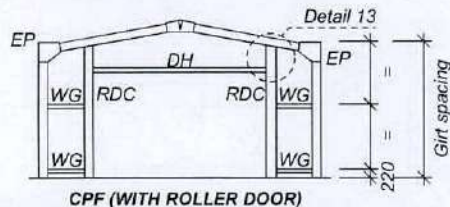
TYPICAL COLUMN LAYOUT



UPF (UNCLAD PORTAL FRAME)



CPF (CLAD PORTAL FRAME)

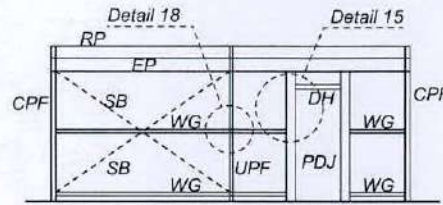


CPF (WITH ROLLER DOOR)

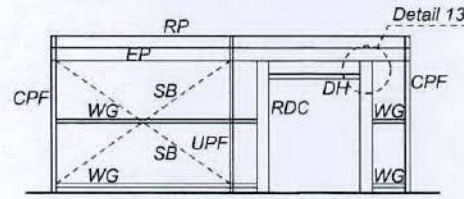
Diagrammatic only (not to scale)  
all measurements in millimeters unless otherwise stated

**Notes:**

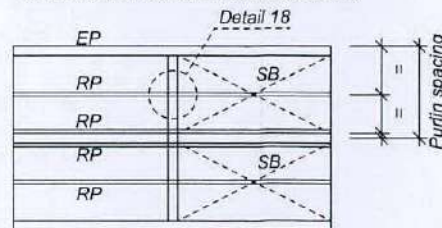
Building must be min 2 bays in length.  
If dominant opening is over 70% of span, portal frame must be same size as the unclad portal frame.  
If more than one wall of cladding is removed an engineer is to be consulted.  
Apex & Knee bracing when required are only on unclad portal frames.  
If side wall cladding & wall girts are removed all associated columns must be double (back to back), purlins & girts to be no more than 1200crs.  
Fly bracing when required, to first closest girt & purlin from eave then every second.  
Strap bracing notes see below.  
If bracing is in a dominant opening then to be included in adjacent bay or opposite wall of adjacent span.  
Strap brace shall be fixed to rafter / column.  
Purlins & girts shall be lapped a min of 10%.  
Roller doors & sliding doors may be located in either end walls or side side walls or a combination of both, the end wall mullion is not required under the apex if a door jamb is positioned each side of the door when the door is centrally located or if the door is offset against the end wall mullion.  
Doors & window sizes, positions, & quantities are illustrative only.  
1.0kpa Snow loading purlins / girts to be no more than 1200crs.



SIDE ELEVATION WITH PERSONAL DOOR



SIDE ELEVATION WITH ROLLER DOOR



PURLIN LAYOUT

Member Table	
Clad portal frame	C200/12
Unclad portal frame	C250/13
Apex brace	NONE
Knee brace	NONE
Strap brace	25x0.75
Fly brace	

**Bracing Notes**

When specified provide one braced bay then every 5th bay (except provide the min number of braced bay as below)  
25mm x 0.75mm (G550) Strap braces 4/12g teks each end UNO.  
50mm x 0.75mm (G550) Strap braces 6/12g teks each end UNO.

Wind Conditions	Low	Medium	High	Very High
Span up to 6m min. roof only				
Up to 7.5m	1	1	1	1
Up to 9.0m	1	1	1	2
Up to 12.0m	1	1	1	2
Up to 15.0m	1	1	2	2
Up to 18.0m	1	2	2	2
Up to 20.0m	2	2	2	3 or 2x16rod
Up to 24.0m	2	2	3 or 2x16rod	3 or 2x16rod
Up to 30.0m	2	2	3 or 2x16rod	2x16rod

Table denotes the min number of braced bays per building

Max Purlin Spacing	Purlin Spacing Used On This Building
Plumbdek cladding / T-rib	1.6
Custom orb / Corrugated	1.2
V.High & 1.0 Snow loading	1.2
	1.000

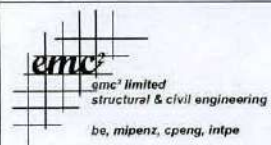
Max Girt Spacing	Girt Spacing Used On This Building
Plumbdek cladding / T-rib	1.7
Custom orb / Corrugated	1.5
Trimklad / Metrib	1.5
V.High & 1.0 Snow loading	1.2
	1.350

**KiwiSpan**  
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Index	
UPF	- Unclad portal frame
CPF	- Clad portal frame
EWM	- End wall mullion
EP	- Eave purlin
WG	- Wall girt
RP	- Roof purlin
DH	- Door header
RDC	- Roller door column
PDJ	- Personal door jamb
KB	- Knee brace
AB	- Apex bracket
FB	- Fly brace
SB	- Strap brace

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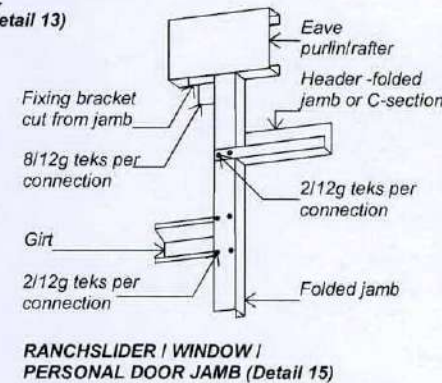
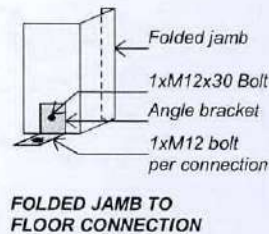
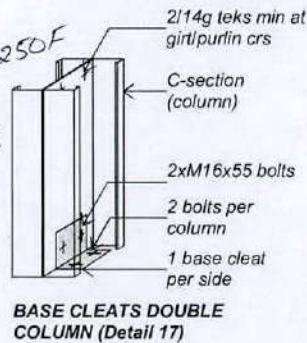
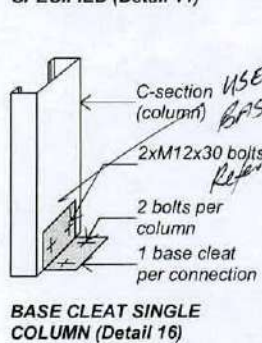
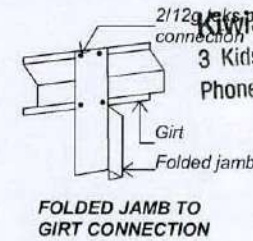
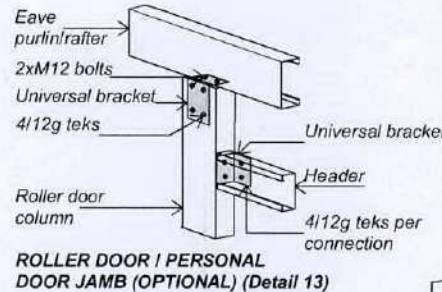
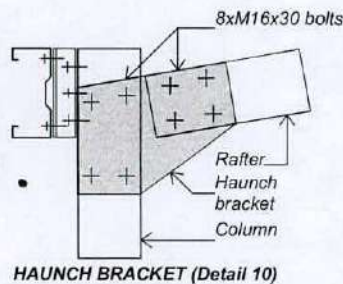
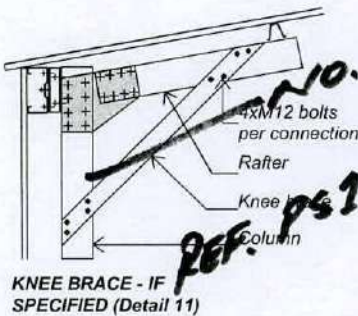
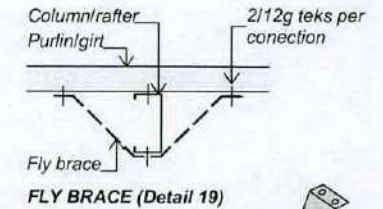
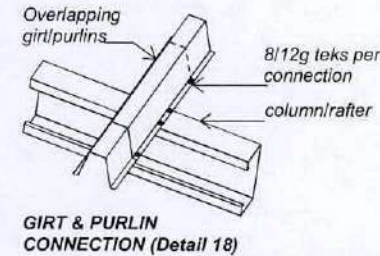
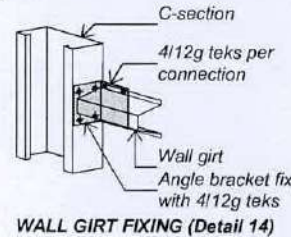
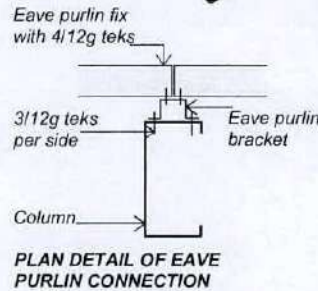
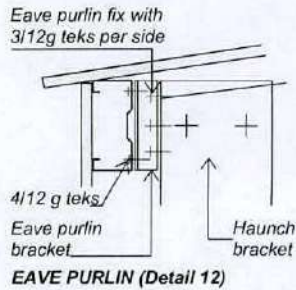
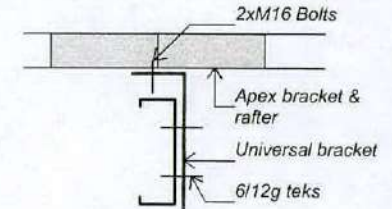
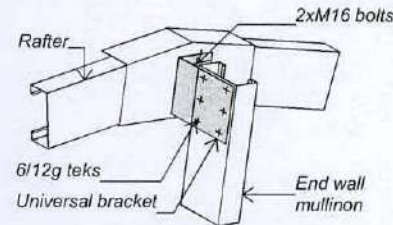
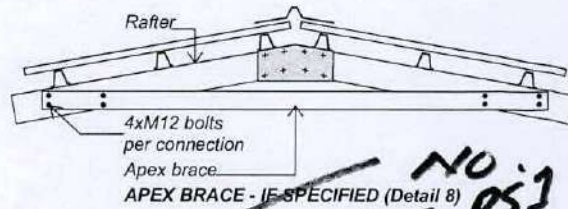
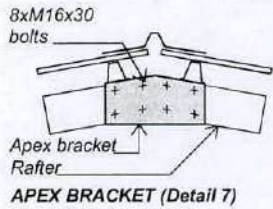
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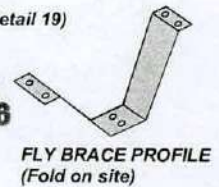
**STEEL FRAME LAYOUT SHEET**  
(To be used inconjunction with specification sheet)

drawing no.  
**SF 01**  
date:11/04/06  
original size  
**A3**



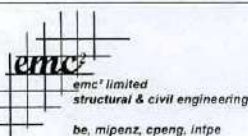


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**NOTES:**  
Cold formed C-sections shall comply with AS 4203:1992 & AS/NZS 1252:1996.  
This design covers the following site wind velocity conditions, low, medium, high, very high and ground snow loading to 1kpa.  
Structure to be maintained in a stable condition and not to overstress any part during construction.  
Any setting out dimensions shown on structural drawing to be checked by the contractor before construction.  
All dimensions are in millimeters unless otherwise stated.  
Tek screws and bolts to be installed as per manufactures instructions. Bolts to be fully tensioned by snug tightening then fully tensioned another 1/3 turn rotation of nut.  
Roof and wall cladding to fix as per manufactures instructions.  
Engineering responsibility only covers items shown in these drawings.

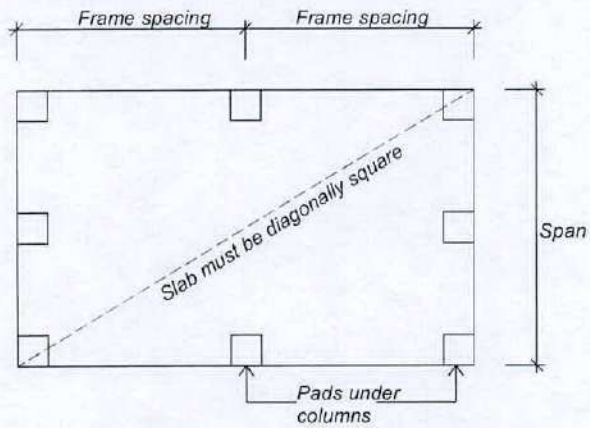
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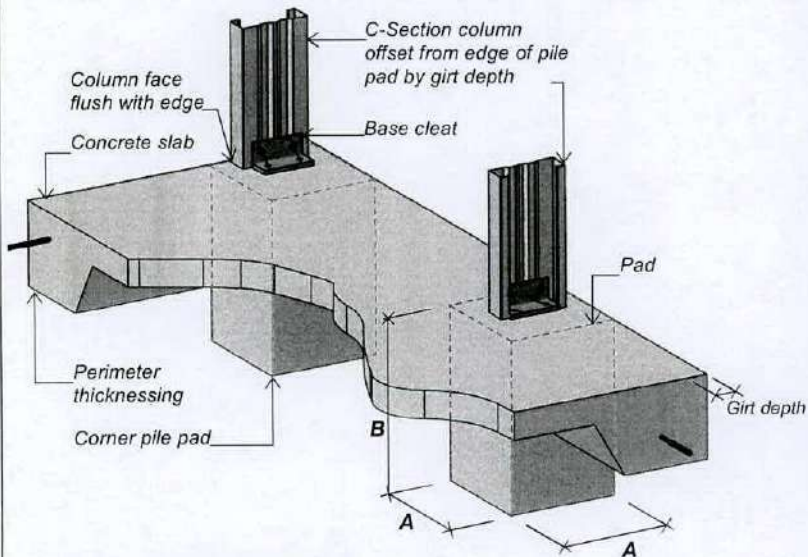
**BRACKET CONECTIONS**  
**C250**

drawing no. **BK 03**  
date: 13/03/06  
original size  
**A3**





**PAD LAYOUT WITH FLOOR SLAB**



**PADS WITH FLOOR**

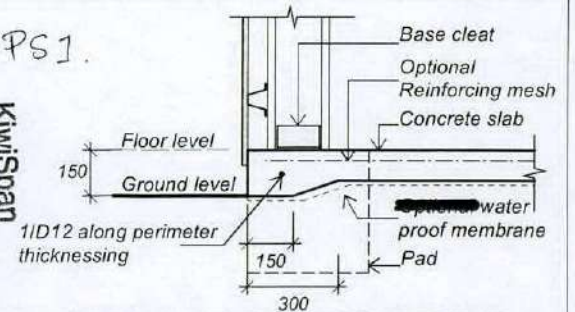
Refer. PS1.

Table 10 Square Pad & Footing		
C-Section	Min. Pad Size	
	A	B
C150/12	300sq mm	300 mm
C150/15	300sq mm	350 mm
C150/18	300sq mm	400 mm
C200/18	450sq mm	450 mm
C250/18	550sq mm	550 mm
C300/18	600sq mm	600 mm
C350/18	700sq mm	600 mm
C400/30	700sq mm	700 mm
2xC300/18	700sq mm	700 mm
2xC350/18	800sq mm	750 mm
2xC400/30	1000sq mm	750 mm

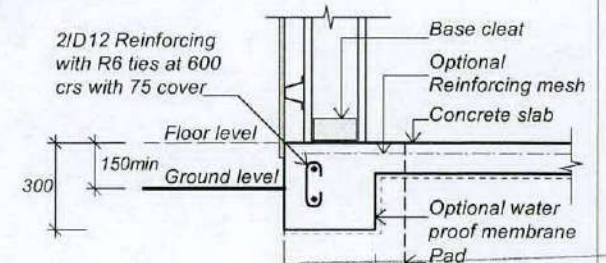
*Note: For expansive soils portal column footings shall be a minimum depth below ground level of 300mm for slightly expansive, 450mm for moderately expansive, and 600mm for highly expansive.*

**Notes:** Concrete work shall be in accordance with NZS 3109:1997 with a min concrete strength of 17.5mpa. Floor slab min thickness 100mm. Provide saw cuts at a maximum of 6m crs (3/4m for unreinforced slabs). Saw cuts should be 5mm wide x 1/4 slab depth and should be cut no later than the next day. Mesh reinforced slabs should use 665 mesh (or equivalent) for 100mm thick, 664 mesh for 125mm thick, and 663 mesh for 150mm thick, or use alternative such as fiber reinforcing. Foundation soil bearing pressures are assumed to have a minimum allowable bearing pressure of 100kpa. If foundation soils are soft an engineer shall be consulted. Fill must be compacted in layers of 150mm to a max of 600mm. A "free joint" (or use a proprietary dowel joint system) should be provided at a max of 20m crs. The concrete must be kept moist (or otherwise cured) for 7 days. Buildings may be constructed on slab within 7 days with due care not to over tighten Tru bolts.

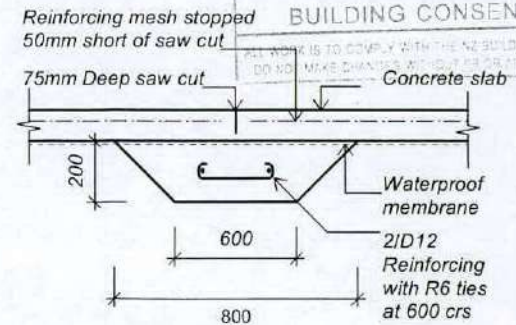
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 3 Kilsdon Place, Stoke, Nelson  
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**TYPICAL EDGE THICKENING (Non-loadbearing)**



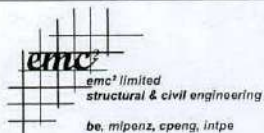
**HEAVY DUTY EDGE THICKENING (Loadbearing)**



**FREE JOINT**

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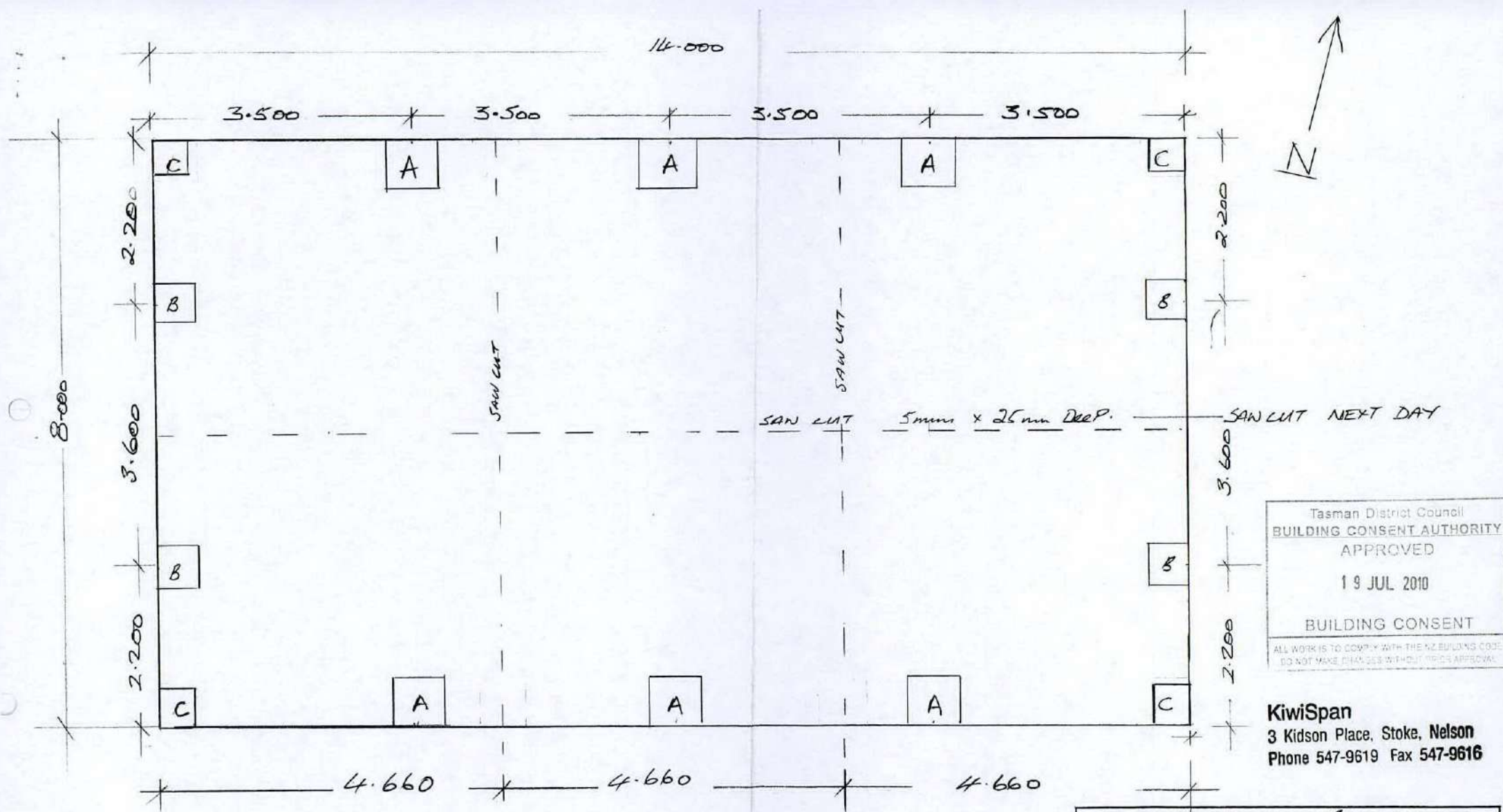
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**FOUNDATION DETAILS  
SQUARE PADS WITH FLOOR**

drawing no.  
**FO 01**  
 date: 02/05/06  
 original size  
**A3**

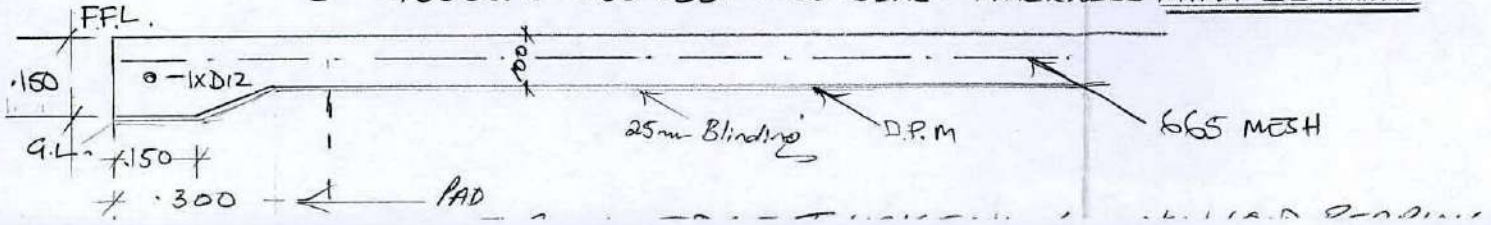




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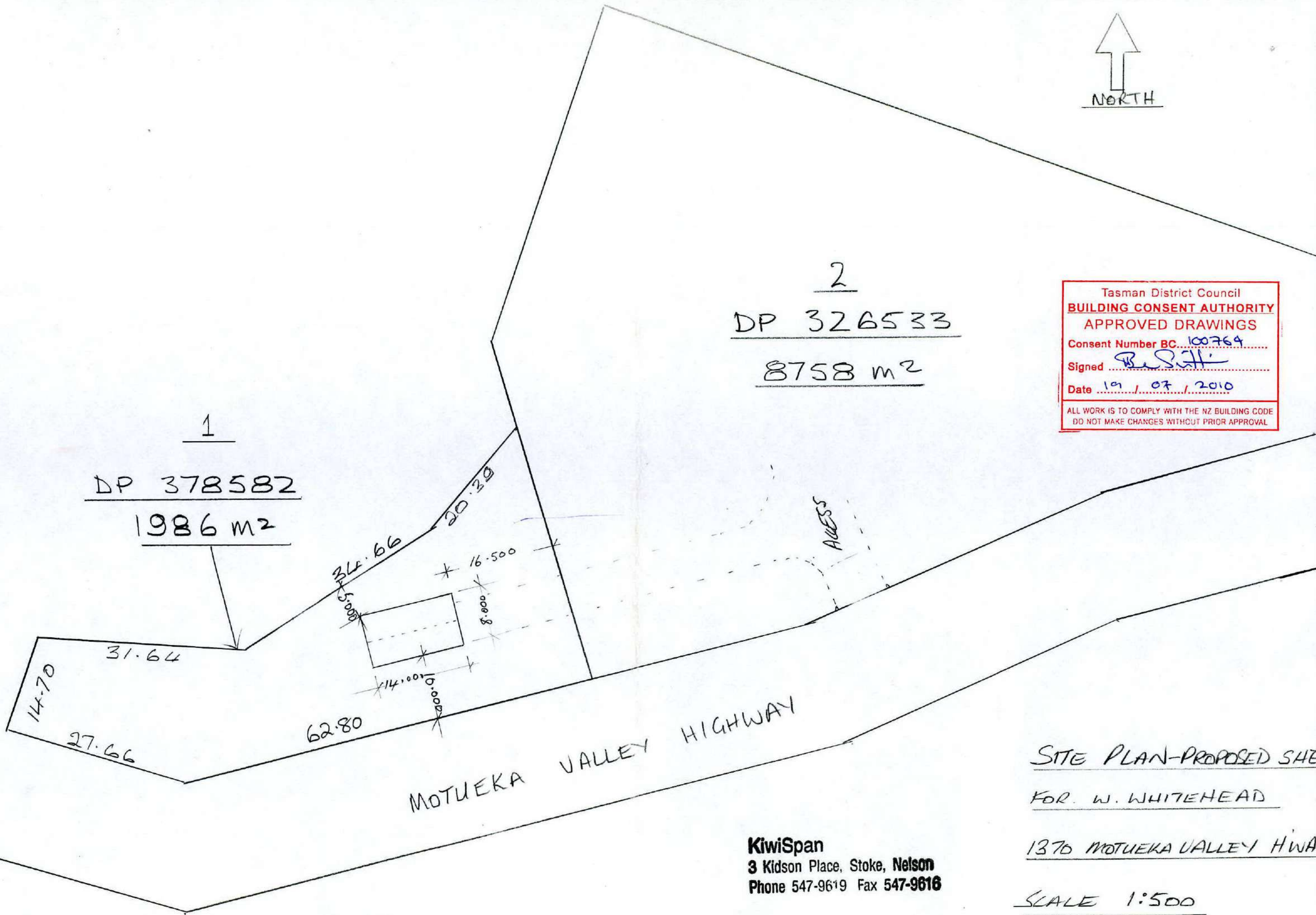
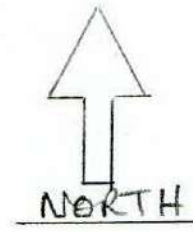
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 Phone 547-9619 Fax 547-9616

PILE PADS 'A' .700 SQ. x .600 DEEP INCL. SLAB THICKNESS (100mm)  
'B' .550 SQ. x .550 DEEP INCL. SLAB THICKNESS "  
'C' .450 SQ. x .450 DEEP INCL. SLAB THICKNESS MIN. 20 M.P.A.



**FOUNDATION & SLAB PLAN**  
 W. WHITEHEAD  
 1270 MOTUEKA VALLEY HIGHWAY  
 DP 378582  
 REVISION #1 25.06.10

SCALE 1:50



1  
DP 378582  
1986 m<sup>2</sup>

2  
DP 326533  
8758 m<sup>2</sup>

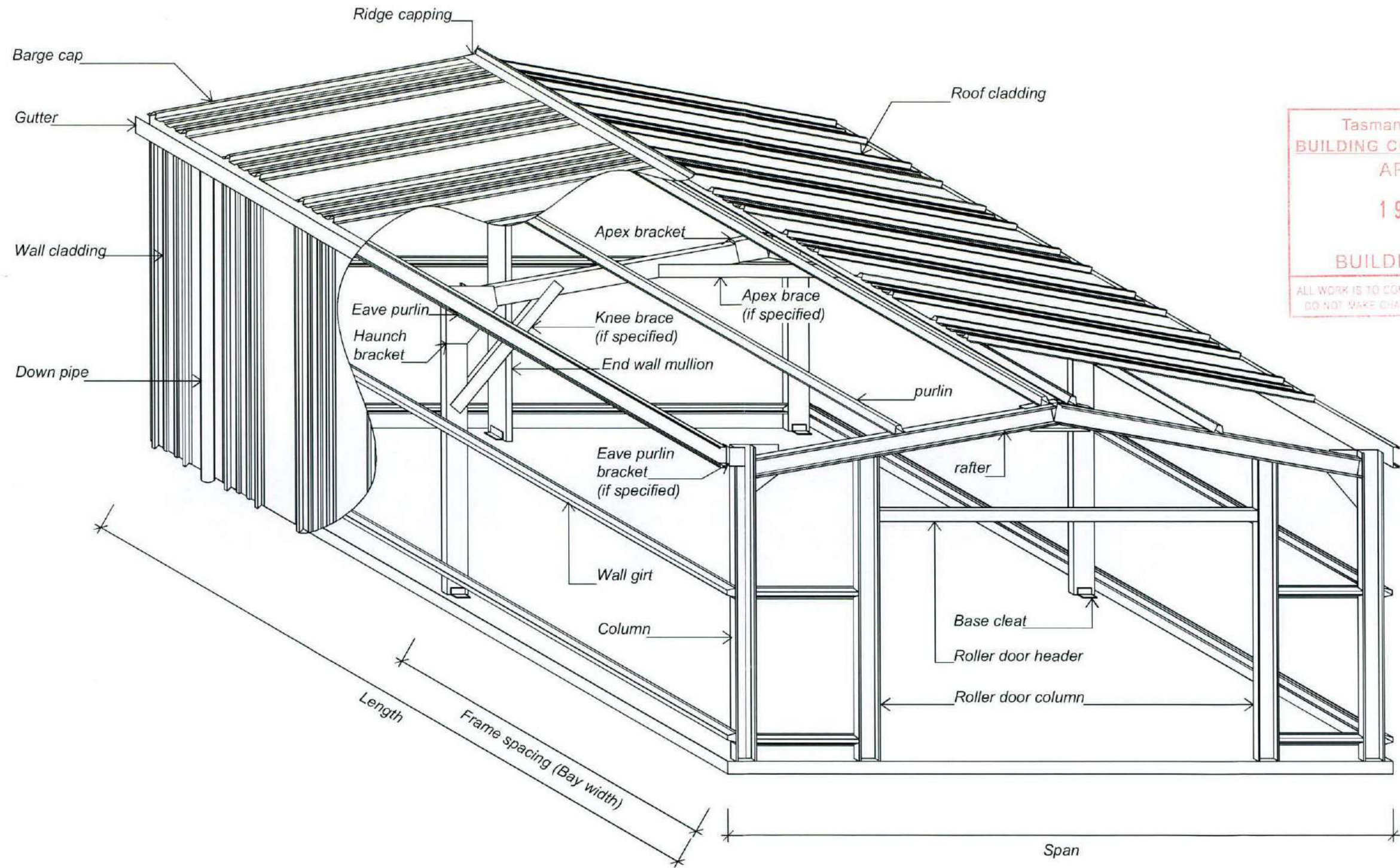
Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
**APPROVED DRAWINGS**  
Consent Number BC 100764  
Signed [Signature]  
Date 19 / 07 / 2010  
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DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

MOTUEKA VALLEY HIGHWAY

SITE PLAN-PROPOSED SHE  
FOR W. WHITEHEAD

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1376 MOTUEKA VALLEY HWAY  
SCALE 1:500




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*diagrammatic only (not to scale)*  
 all measurements in millimeters unless  
 otherwise stated


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**emc<sup>2</sup>**  
 emc<sup>2</sup> limited  
 structural & civil engineering  
 be, mipenz, cpeng, intpe

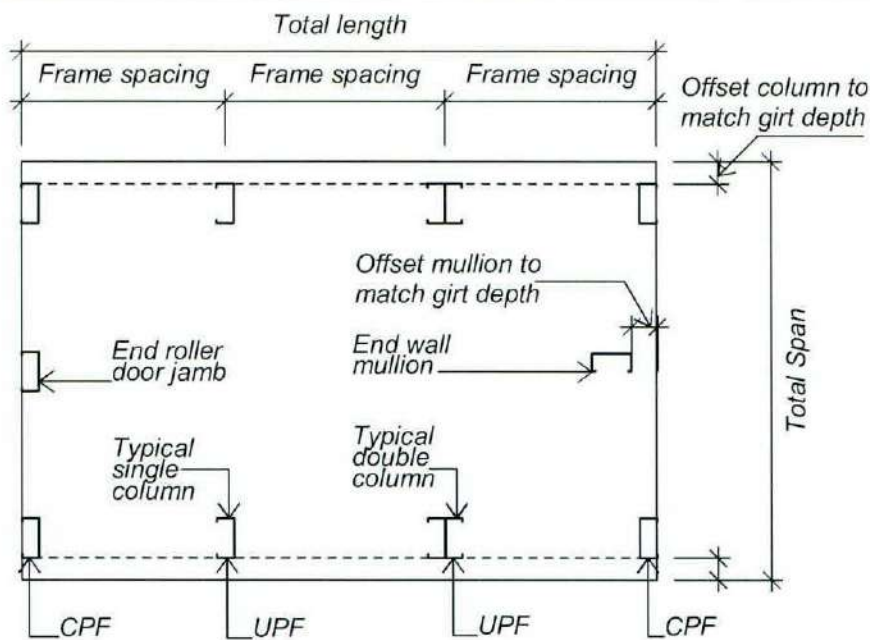


## STEEL FRAME BUILDING

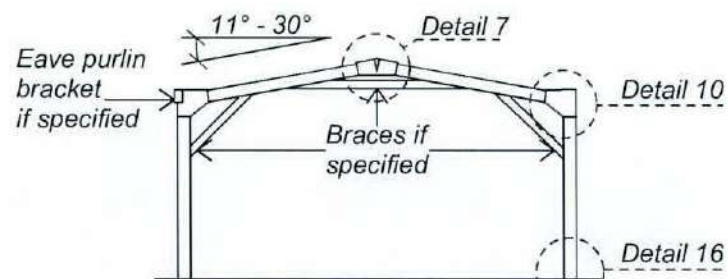
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**SB 01**  
 date: 13/03/06  
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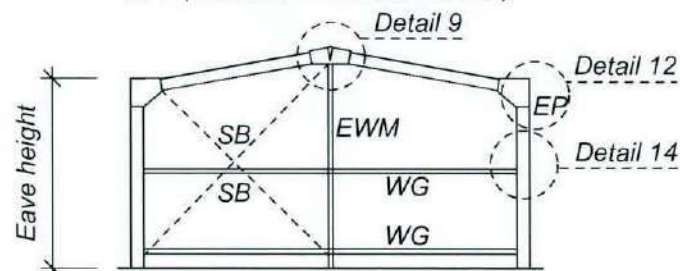
**KiwiSpan** .CO.NZ  
 Structures for the future



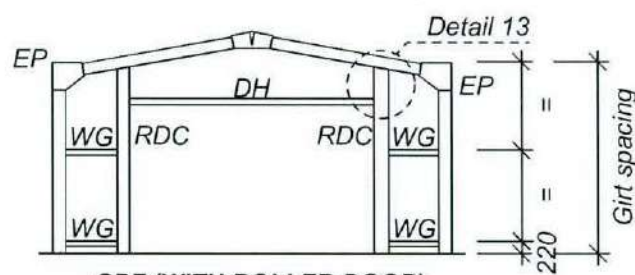
TYPICAL COLUMN LAYOUT



UPF (UNCLAD PORTAL FRAME)



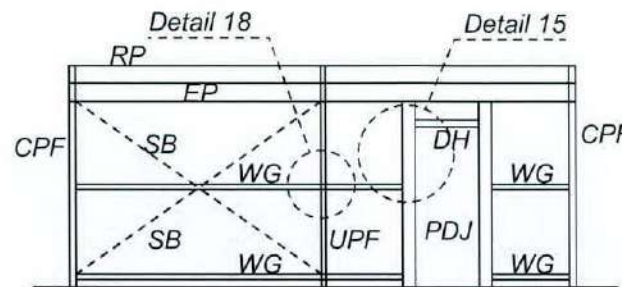
CPF (CLAD PORTAL FRAME)



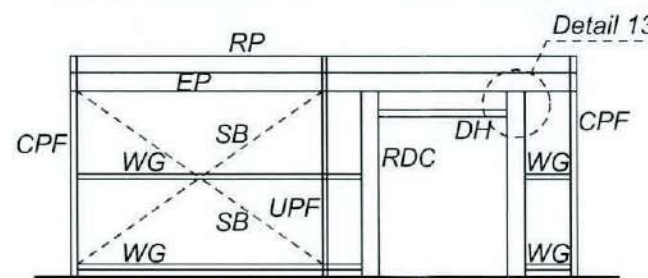
CPF (WITH ROLLER DOOR)

Diagrammatic only (not to scale)  
all measurements in millimeters unless otherwise stated

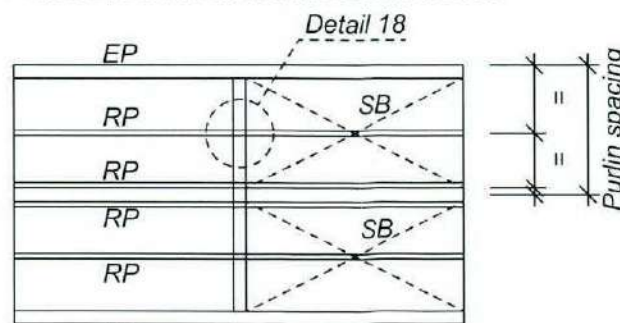
**Notes:**  
 Building must be min 2 bays in length.  
 If dominant opening is over 70% of span, portal frame must be same size as the unclad portal frame.  
 If more than one wall of cladding is removed an engineer is to be consulted.  
 Apex & Knee bracing when required are only on unclad portal frames.  
 If side wall cladding & wall girts are removed all associated columns must be double (back to back), purlins & girts to be no more than 1200crs.  
 Fly bracing when required, to first closest girt & purlin from eave then every second.  
 Strap bracing notes see below.  
 If bracing is in a dominant opening then to be included in adjacent bay or opposite wall of adjacent span.  
 Strap brace shall be fixed to rafter / column.  
 Purlins & girts shall be lapped a min of 10%.  
 Roller doors & sliding doors may be located in either end walls or side side walls or a combination of both, the end wall mullion is not required under the apex if a door jamb is positioned each side of the door when the door is centrally located or if the door is offset against the end wall mullion.  
 Doors & window sizes, positions, & quantities are illustrative only.  
 1.0kpa Snow loading purlins / girts to be no more than 1200crs.



SIDE ELEVATION WITH PERSONAL DOOR



SIDE ELEVATION WITH ROLLER DOOR



PURLIN LAYOUT

Member Table	
Clad portal frame	C200/12
Unclad portal frame	C250/13
Apex brace	NONE
Knee brace	NONE
Strap brace	25x075
Fly brace	✓

Bracing Notes				
When specified provide one braced bay then every 5th bay (except provide the min number of braced bay as below)				
25mm x 0.75mm (G550) Strap braces 4/12g teks each end UNO.				
50mm x 0.75mm (G550) Strap braces 6/12g teks each end UNO.				
Wind Conditions	Low	Medium	High	Very High
Span up to 6m min. roof only				
Up to 7.5m	1	1	1	1
Up to 9.0m	1	1	1	2
Up to 12.0m	1	1	1	2
Up to 15.0m	1	1	2	2
Up to 18.0m	1	2	2	2
Up to 20.0m	2	2	2	3 or 2x16rod
Up to 24.0m	2	2	3 or 2x16rod	3 or 2x16rod
Up to 30.0m	2	2	3 or 2x16rod	2x16rod

Table denotes the min number of braced bays per building

Max Purlin Spacing		Purlin Spacing Used On This Building
Plumbdek cladding / T-rib	1.6	1.000
Custom orb / Corrugated	1.2	
V.High & 1.0 Snow loading	1.2	

Max Girt Spacing		Girt Spacing Used On This Building
Plumbdek cladding / T-rib	1.7	1.350
Custom orb / Corrugated	1.5	
Trimklad / Metrib	1.5	
V.High & 1.0 Snow loading	1.2	

Index	
UPF	- Unclad portal frame
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AB	- Apex bracket
FB	- Fly brace
SB	- Strap brace

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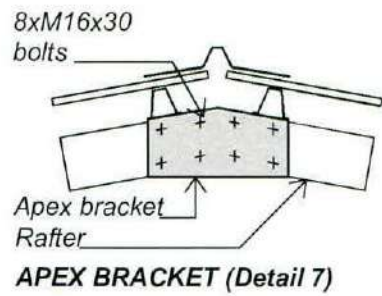
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structural & civil engineering  
be, mipenz, cpeng, intpe

## STEEL FRAME LAYOUT SHEET

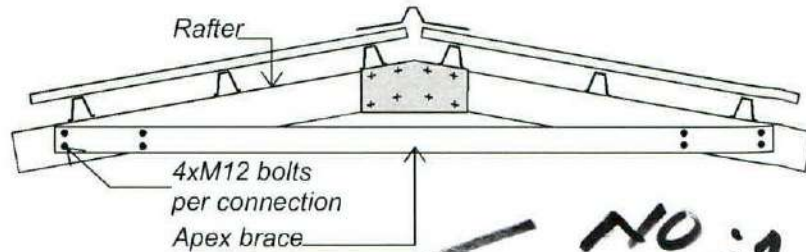
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drawing no.  
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date:11/04/06  
original size  
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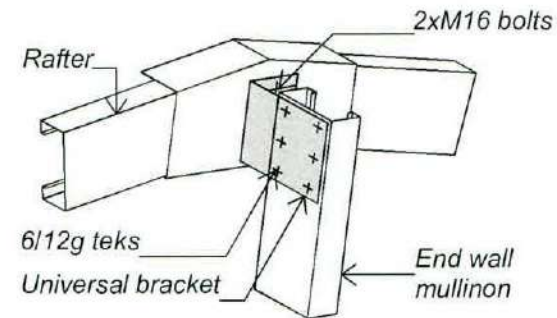
www. **KiwiSpan** .CO.NZ  
Structures for the future



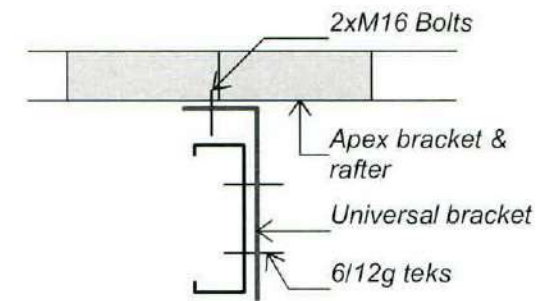
**APEX BRACKET (Detail 7)**



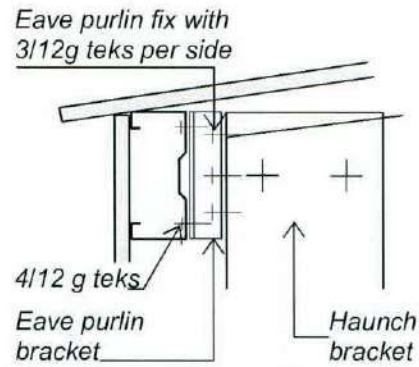
**APEX BRACE - IF SPECIFIED (Detail 8)**



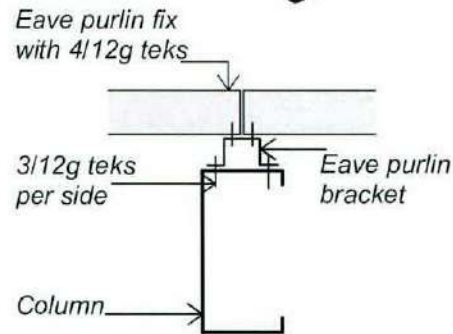
**MULLION CONNECTION (Detail 9)**



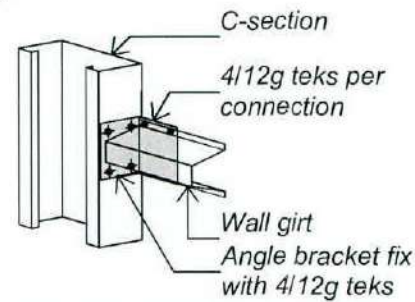
**PLAN DETAIL OF MULLION CONNECTION**



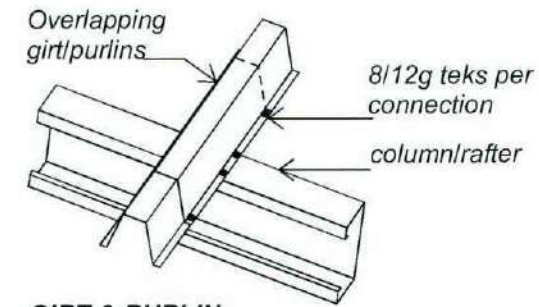
**EAVE PURLIN (Detail 12)**



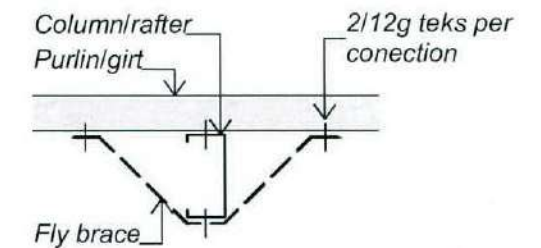
**PLAN DETAIL OF EAVE PURLIN CONNECTION**



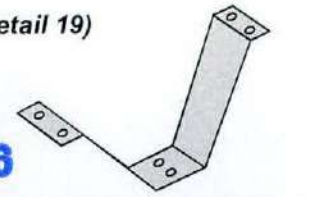
**WALL GIRT FIXING (Detail 14)**



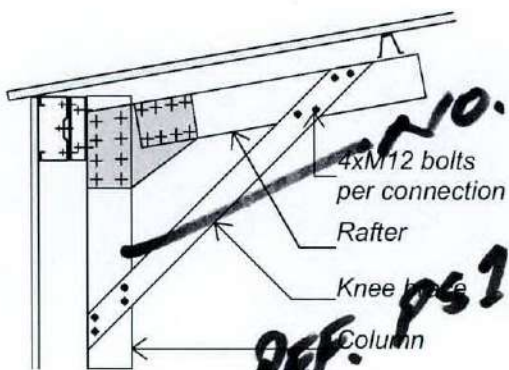
**GIRT & PURLIN CONNECTION (Detail 18)**



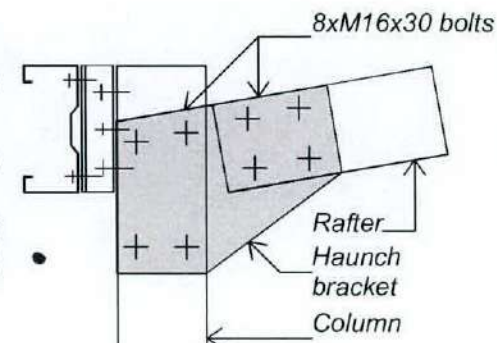
**FLY BRACE (Detail 19)**



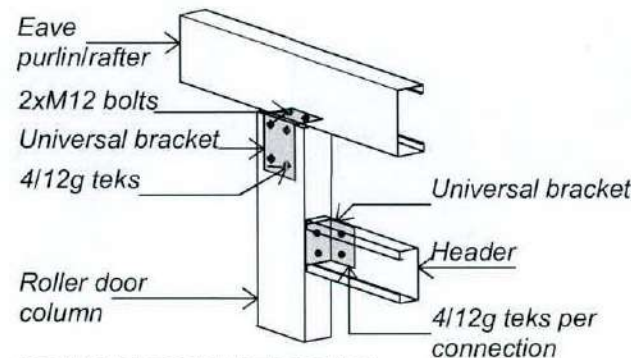
**FLY BRACE PROFILE (Fold on site)**



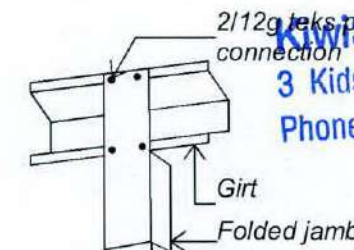
**KNEE BRACE - IF SPECIFIED (Detail 11)**



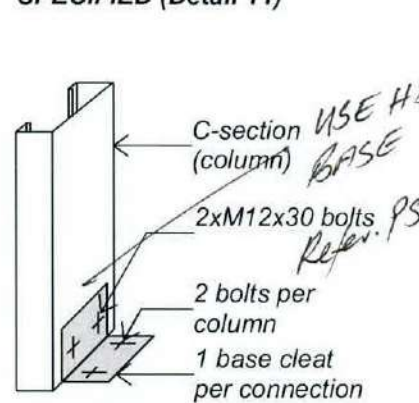
**HAUNCH BRACKET (Detail 10)**



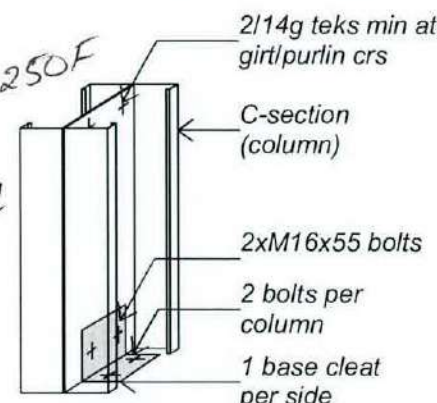
**ROLLER DOOR / PERSONAL DOOR JAMB (OPTIONAL) (Detail 13)**



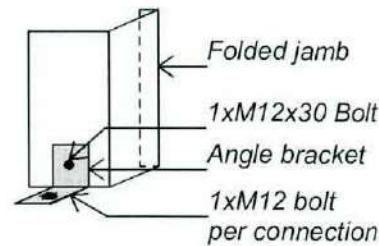
**FOLDED JAMB TO GIRT CONNECTION**



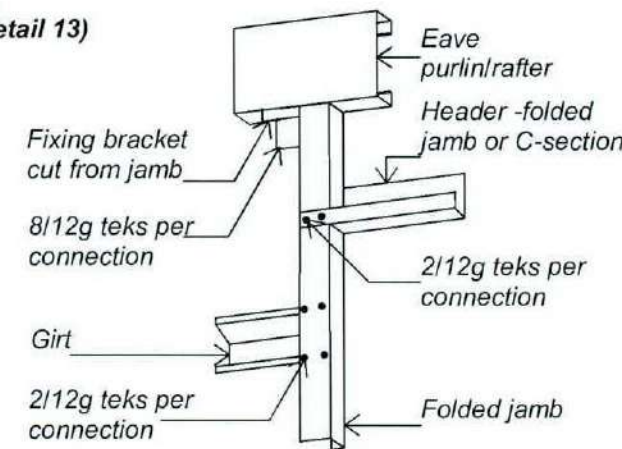
**BASE CLEAT SINGLE COLUMN (Detail 16)**



**BASE CLEATS DOUBLE COLUMN (Detail 17)**



**FOLDED JAMB TO FLOOR CONNECTION**



**RANCHSLIDER / WINDOW / PERSONAL DOOR JAMB (Detail 15)**

**KiwiSpan**  
3 Kidson Place, Stoke, Nelson  
Phone 547-9619 Fax 547-9616

**NOTES:**  
Cold formed C-sections shall comply with AS 4203:1992 & AS/NZS 1252:1999.  
This design covers the following site wind velocity conditions, low, medium, high, very high and ground snow loading to 1kpa.  
Structure to be maintained in a stable condition and not to overstress any part during construction.  
Any setting out dimensions shown on structural drawing to be check by the contractor before construction.  
All dimensions are in millimeters unless otherwise stated.  
Tek screws and bolts to be installed as per manufactures instructions. Bolts to be fully tensioned by snug tightening then fully tensioned another 1/3 turn rotation of nut.  
Roof and wall cladding to fix as per manufactures instructions.  
Engineering responsibility only covers items shown in these drawings.

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Stoke District Council  
BUILDING CONSENT AUTHORITY  
APPROVED  
12 JUL 2010  
BUILDING CONSENT

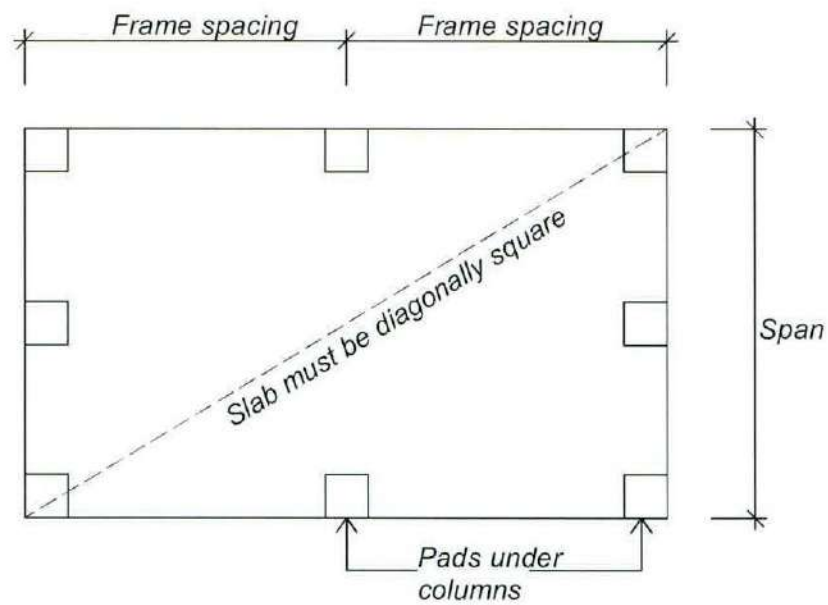
**emc**  
emc limited  
structural & civil engineering  
be, mipenz, cpeng, intpe

*[Handwritten signature]*

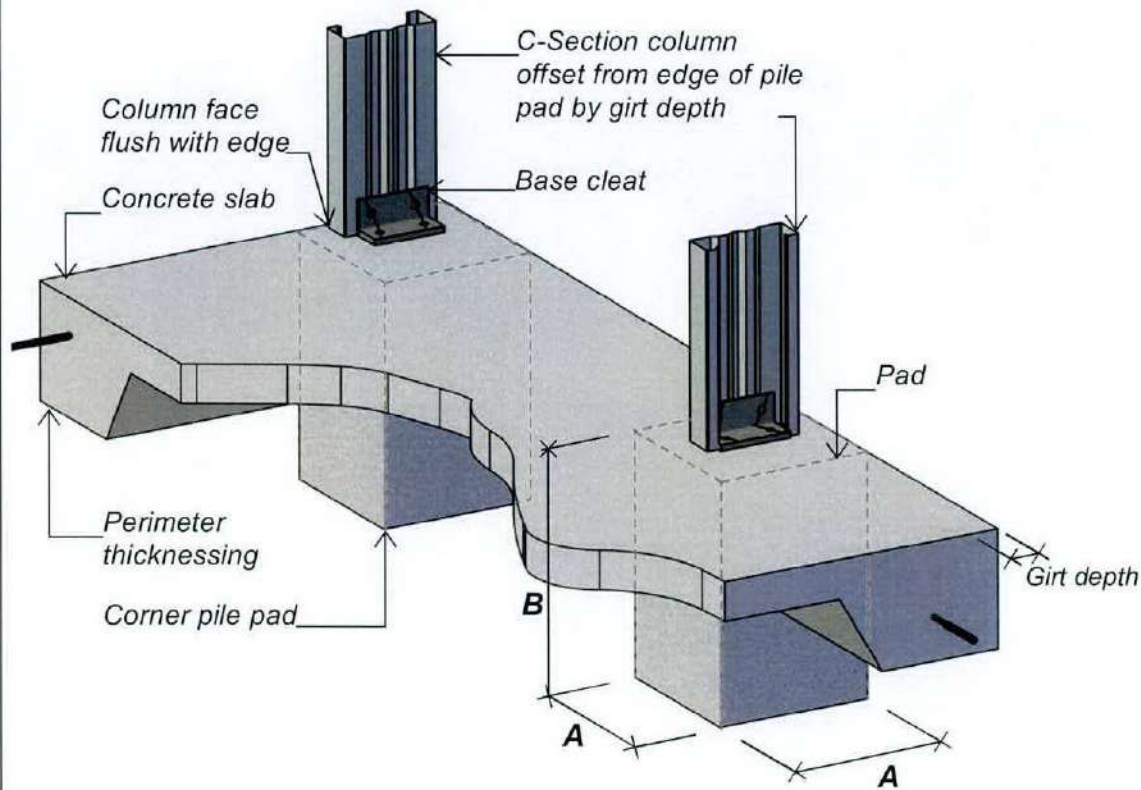
**BRACKET CONECTIONS  
C250**

drawing no.  
**BK 03**  
date: 13/03/06  
original size  
**A3**

**KiwiSpan** .CO.NZ  
Structures for the future



**PAD LAYOUT WITH FLOOR SLAB**



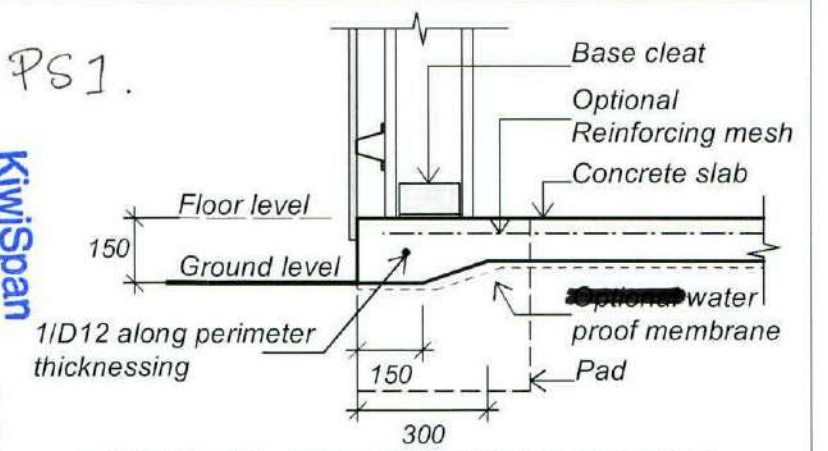
**PADS WITH FLOOR**

Refer. PS1.

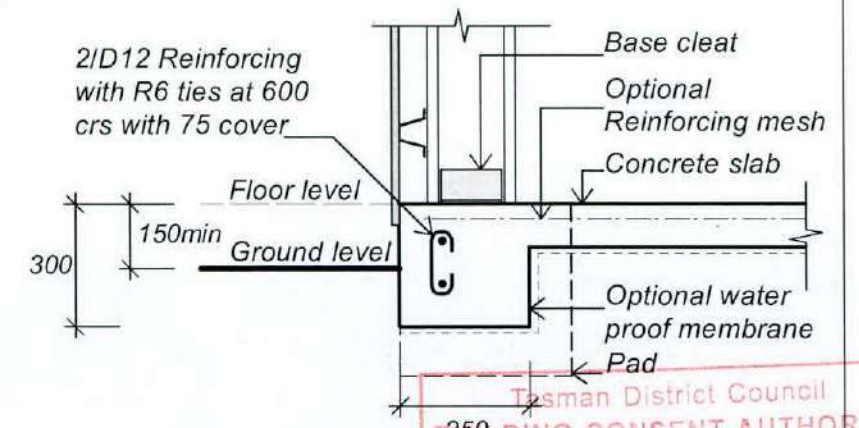
Table 10 Square Pad & Footing		
C-Section	Min. Pad Size	
	A	B
C150/12	300sq mm	300 mm
C150/15	300sq mm	350 mm
C150/18	300sq mm	400 mm
C200/18	450sq mm	450 mm
C250/18	550sq mm	550 mm
C300/18	600sq mm	600 mm
C350/18	700sq mm	600 mm
C400/30	700sq mm	700 mm
2xC300/18	700sq mm	700 mm
2xC350/18	800sq mm	750 mm
2xC400/30	1000sq mm	750 mm

*Note: For expansive soils portal column footings shall be a minimum depth below ground level of 300mm for slightly expansive, 450mm for moderately expansive, and 600mm for highly expansive.*

KiwiSpan  
 3 Kidson Place, Stoke, Nelson  
 Phone 547-9619 Fax 547-9616

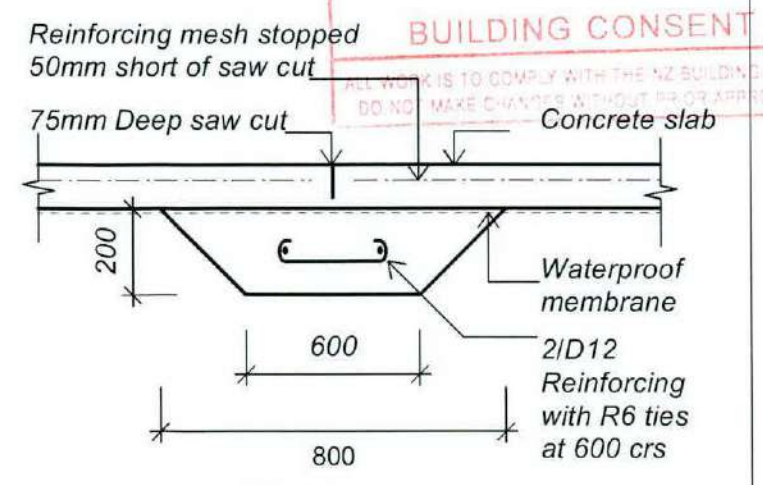


**TYPICAL EDGE THICKENING (Non-loadbearing)**



**HEAVY DUTY EDGE THICKENING (Loadbearing)**

**Notes:** Concrete work shall be in accordance with NZS 3109:1997 with a min concrete strength of 17.5mpa. Floor slab min thickness 100mm. Provide saw cuts at a maximum of 6m crs (3/4m for unreinforced slabs). Saw cuts should be 5mm wide x 1/4 slab depth and should be cut no later than the next day. Mesh reinforced slabs should use 665 mesh (or equivalent) for 100mm thick, 664 mesh for 125mm thick, and 663 mesh for 150mm thick, or use alternative such as fiber reinforcing. Foundation soil bearing pressures are assumed to have a minimum allowable bearing pressure of 100kpa. If foundation soils are soft an engineer shall be consulted. Fill must be compacted in layers of 150mm to a max of 600mm. A "free joint" (or use a proprietary dowel joint system) should be provided at a max of 20m crs. The concrete must be kept moist (or otherwise cured) for 7 days. Buildings may be constructed on slab within 7 days with due care not to over tighten Tru bolts.



**FREE JOINT**

Tasman District Council  
 BUILDING CONSENT AUTHORITY  
 APPROVED  
 PS 302/10  
 BUILDING CONSENT

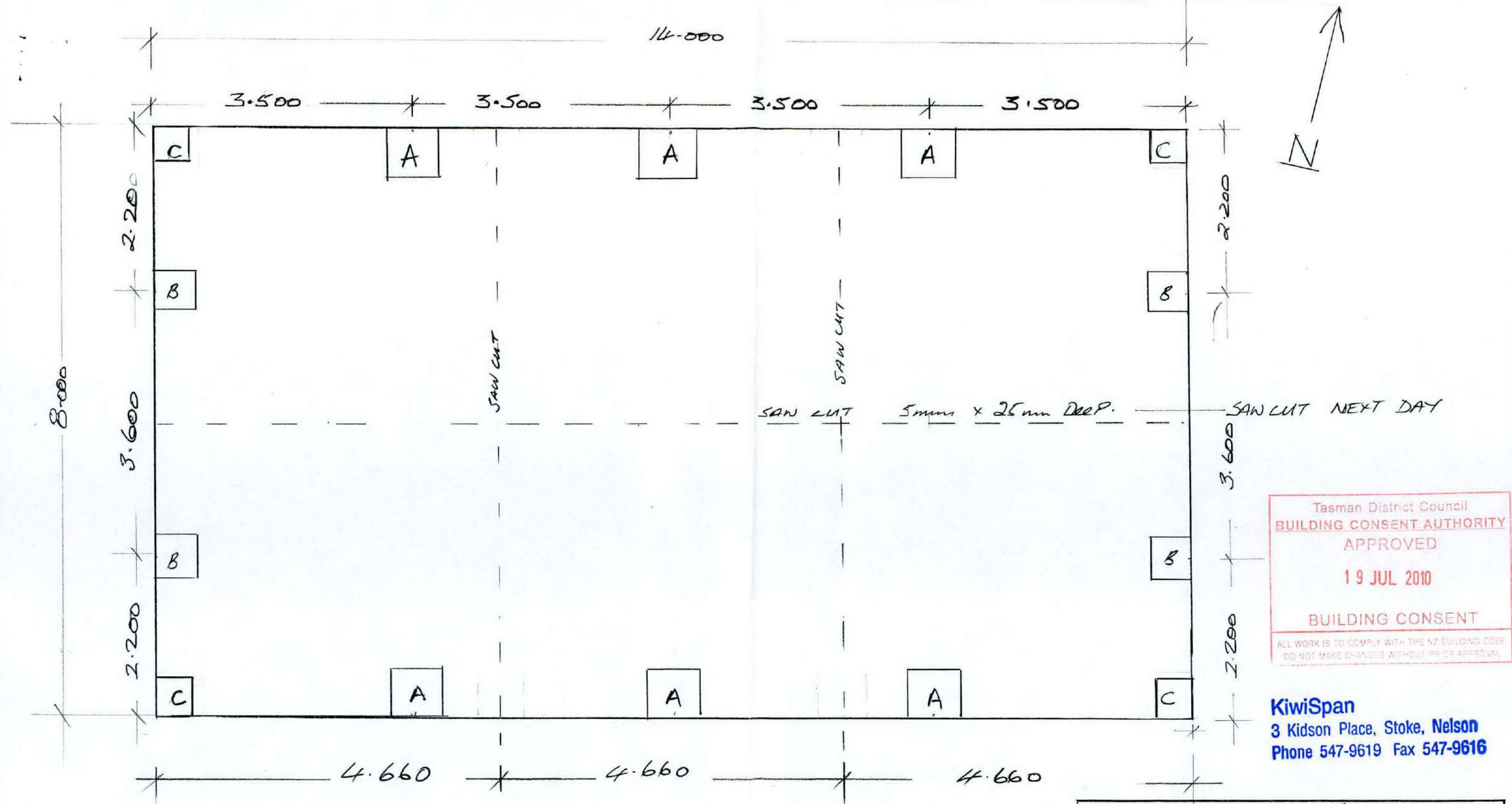
© copyright KIWISPAN N.I. LTD

emc<sup>2</sup> limited  
structural & civil engineering  
be, mipenz, cpeng, intpe

**FOUNDATION DETAILS  
SQUARE PADS WITH FLOOR**

drawing no.  
**FO 01**  
date: 02/05/06  
original size  
**A3**

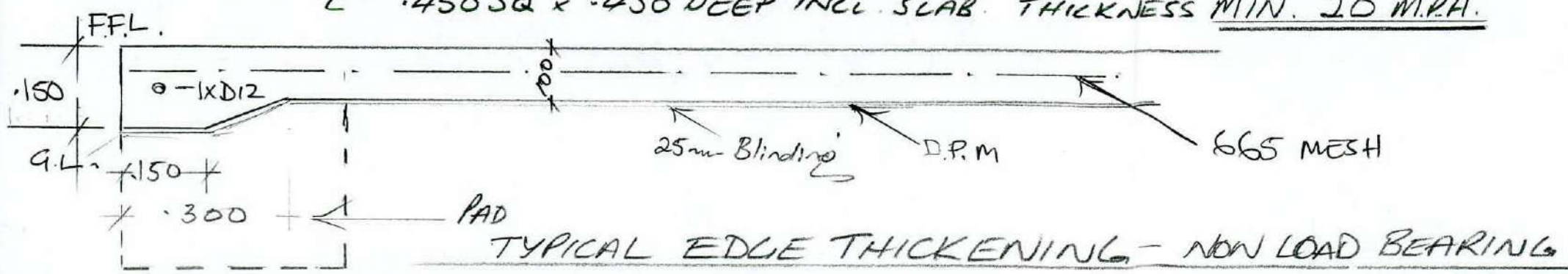
www. **KiwiSpan** .co.nz  
Structures for the future



Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
 APPROVED  
 19 JUL 2010  
 BUILDING CONSENT  
ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
 DO NOT MAKE CHANGES WITHOUT PR OR APPROVAL

**KiwiSpan**  
 3 Kidson Place, Stoke, Nelson  
 Phone 547-9619 Fax 547-9616

PILE PADS 'A' .700 SQ. x .600 DEEP INCL. SLAB THICKNESS (100mm)  
 'B' .550 SQ. x .550 DEEP INCL. SLAB THICKNESS "  
 'C' .450 SQ. x .450 DEEP INCL. SLAB THICKNESS MIN. 20 M.P.A.



**FOUNDATION & SLAB PLAN**  
 W. WHITEHEAD  
 1270 MOTUEKA VALLEY HIGHWAY  
 DP 378582  
 REVISION # 1 25.06.10

SCALE 1:50



B.C. No. ....  
 Building Regulation Clause(s) .....

**PRODUCER STATEMENT – PS1 – DESIGN**

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

Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
**APPROVED**  
**21 APR 2011**  
**BUILDING CONSENT**  
ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
 DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

ISSUED BY: ..... **W R Andrew Ltd** .....  
(Design Firm)

TO: ..... **W & M Whitehead** .....  
(Owner/Developer)

TO BE SUPPLIED TO: ..... **Tasman District Council** .....  
(Building Consent Authority)

IN RESPECT OF: ..... **New House – block retaining walls and suspended concrete slab to biolo** .....  
(Description of Building Work)

AT: ..... **1370 Motueka Valley Highway** .....  
 ..... **NGATIMOTI** .....  
(Address)

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

We have been engaged by the owner/developer referred to above to provide **structural engineering design**  
(Extent of Engagement)  
 ..... services in respect of the requirements of

Clause(s) ..... **B1** ..... of the Building Code for  
 All or  Part only (as specified in the attachment to this statement), of the proposed building work.

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

Compliance Documents issued by Department of Building & Housing ..... **B1/AS1 & VM1** .....  
(verification method/acceptable solution) OR

Alternative solution as per the attached schedule .....

The proposed building work covered by this producer statement is described on the drawings by **K D Hetet Ltd** titled **Riverfront House, 1370 Motueka Valley Highway** and numbered **sht 405** together with the specification and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

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

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

I, **Steven Geoffrey KING-TURNER** ..... am  CPEng ..... **142318** ..... #  
(Name of Design Professional)

Reg Arch ..... #

I am a member of:  IPENZ  NZIA and hold the following qualifications... **ME BE(civil) MIPENZ CPEng IntPE**

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

The Design Firm is a member of ACENZ  YES  NO

SIGNED BY **Steven King-Turner** ..... ON BEHALF OF **W R Andrew Ltd** .....  
(Design Firm)

Date **19-4-11** ..... (signature) .....

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

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

# W. R. ANDREW LTD

CONSULTING ENGINEERS

12 PARU PARU ROAD, PO BOX 7036, NELSON  
PHONE (03) 546 4565 FAX (03) 546 8575  
BILL 0274 369 508 STEVEN 027 247 3961  
EMAIL: wrandrewltd@xtra.co.nz

## Inspection Schedule

This schedule to be kept on site and signed by the inspecting Engineer at the time of each inspection. On completion of the project this schedule is to be returned to the Engineer and a Producer Statement of Construction Review can be issued. Please advise the Engineer at least 24 hrs before an inspection is required.

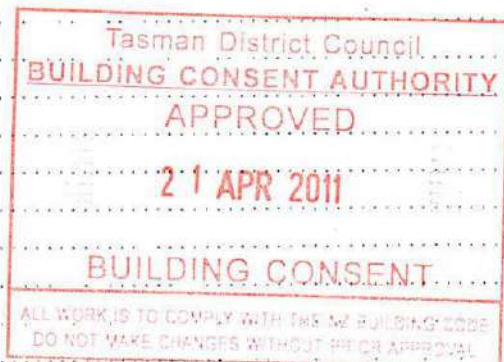
PROJECT: W & M Whitehead  
ADDRESS: 1370 Motueka Valley Highway

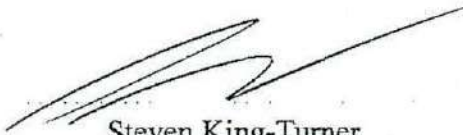
The following structural elements of this project require inspection by a suitably qualified Engineer or his representative during construction in order to ensure compliance with the New Zealand Standard Code of Practice under which they were designed. Such inspections are considered an integral part of the structural design process, and are carried out to ensure that the structure will perform adequately. Failure to notify the Engineer that an inspection listed below is required may in some circumstances limit the designers liability for subsequent problems. This is particularly applicable to inspections of foundations and reinforcing steel where verification of compliance with the structural design may not be possible after construction is complete.

Inspection Required

Inspected / Comments

Reinforcing to blockwall footing  
Reinforcing to blockwall  
Foundation beam req over bioho



  
Steven King-Turner  
ME BE(civil) NZCE MIPENZ CPEng IntPE

19-4-11  
Date



**PRODUCER STATEMENT - PS1**

**ISSUED BY:** emc2 limited  
*(Design Firm)*

**TO:** W.M. Whitehead  
*(Owner/Developer)*

**TO BE SUPPLIED TO:** Tasman District Council  
*(Territorial Authority)*

**IN RESPECT OF:** 8 mWide x 14 mLong x 4 mHigh Enclosed Building  
*(Description of Building Work)* with Region A7 Terrain Cat 2.5

**AT:** 1370 Motueka Valley Highway  
*(Address)*

**LOT** 2 **DPS** 326533 **SO**

We have been engaged by the owner/developer referred to above to provide **structural design** services in respect of the requirements of **Clause(s) B1** of the Building Code for

All or  Part only

Refer attached emc2 limited Member Schedule dated 22/06/2010  
Refer to KiwiSpan plan sheets & builders schedule (attached).  
Loadings are to AS/NZS 1170 in accordance with clauses 1.1 & 2.1 of Verification Method B1/VM1.

The design carried out by us has been prepared in accordance with:  
 Compliance Documents Issued by Department of Building & Housing **verification method B1/VM1**  
*(verification method /acceptable solutions)* or

Alternative solution as per attached schedule

The proposed work covered by this producer statement is described on the drawings titled prepared by **KiwiSpan Limited** titled **Steel Framed Building** and numbered **SB01 SF01 BK03 FO 01**

together with the specification, and other documents set out in the schedule attached to this statement.  
**On behalf of this Design Firm, and subject to:**  
(i) Site verification of the following design assumptions  
(ii) All proprietary products meeting their performance specification requirements;

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

I, **Eric MacLeod** am:  CPEng 165229 #  Reg Arch  
*(Name of Design Professional)*  
I am a Member of:  IPENZ  NZIA and hold the following qualifications **BE, MIPENZ, CPEng, INTPE**  
*(Professional Qualifications)*

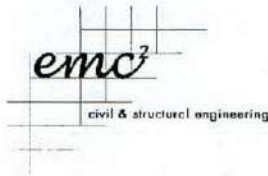
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000\*.  
The Design Firm is a member of ACENZ  YES  NO

**SIGNED BY** Eric MacLeod **ON BEHALF OF** emc2 limited  
*(Design Firm)*

**Date** 22 June 2010 *(Signature)*

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

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



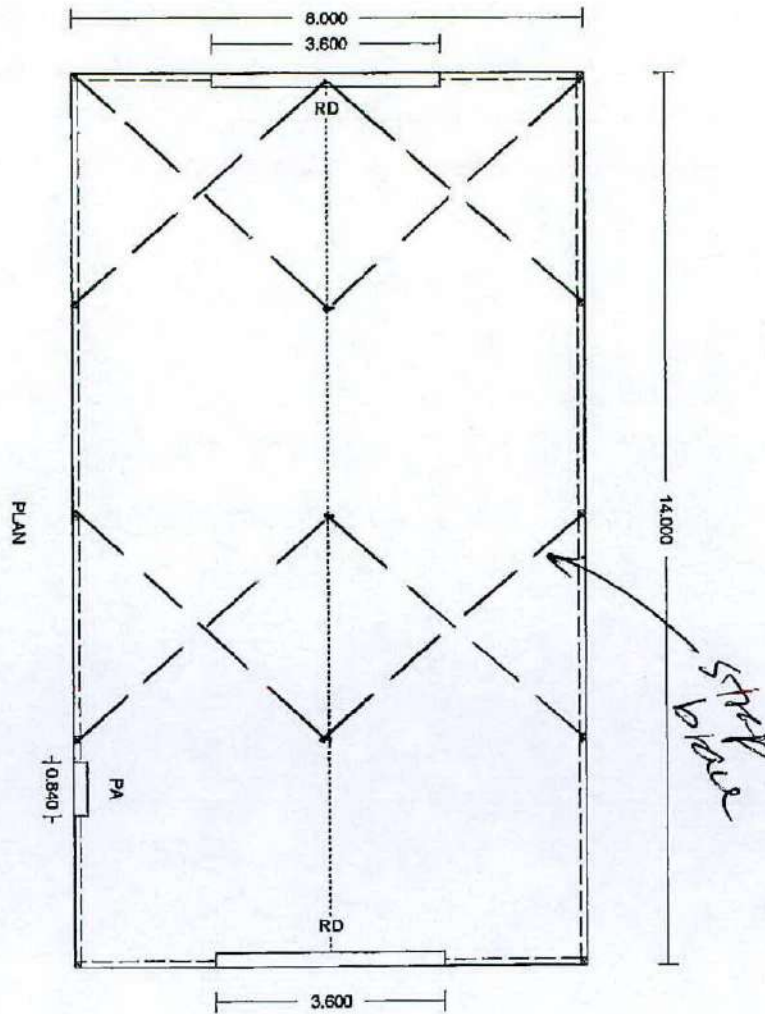
project **W.M. Whitehead**  
 description **1370 Motueka Valley Highway**  
 prepared by **em**  
 ref/dwgs **KiwiSpan Tasman**  
 po box 25 599, st heliers, auckland p 09 575 3094 f 09 575 3095 e eric@emc2td.co.nz

Client Code **KWTS**  
 project no. **111**  
 date **22/06/2010**  
 sheet

### Member Schedule

Location	Member	@
<b>Building</b>		
Internal Portals (Clear Span)	C250/13 HST (Use HD250F Base Cleat)	3.5 metre centres
Knee Brace	none	
Apex Brace	none	
End (Clad) Frame Portals	C200/12 HST	
Eaves Purlins	C150/15 HST	
Purlins	100 x 0.75 tophat lapped	1 metre centres max.
Girts	100 x 0.75 tophat lapped	1.35 metre centres max.
End Wall Mullions	none	
Roller Door Columns End	C250/18 HST	
Roller Door Columns Side	none	
Roof Bracing	25 x 0.75 (G550) strap bracing	2 bays
Side Wall Bracing	25 x 0.75 (G550) strap bracing	4 total braces
End Wall Bracing	none	
Internal Portal Footings	0.7 x 0.7 x 0.6 deep	Square
End (Clad) Frame Portal Ftgs	0.45 x 0.45 x 0.45 deep	Square
End Wall Mullion Footings	0.3 x 0.3 x 0.3 deep	Square
End R/D Column Ftgs	0.55 x 0.55 x 0.55 deep	Square
Slab	100 thick	



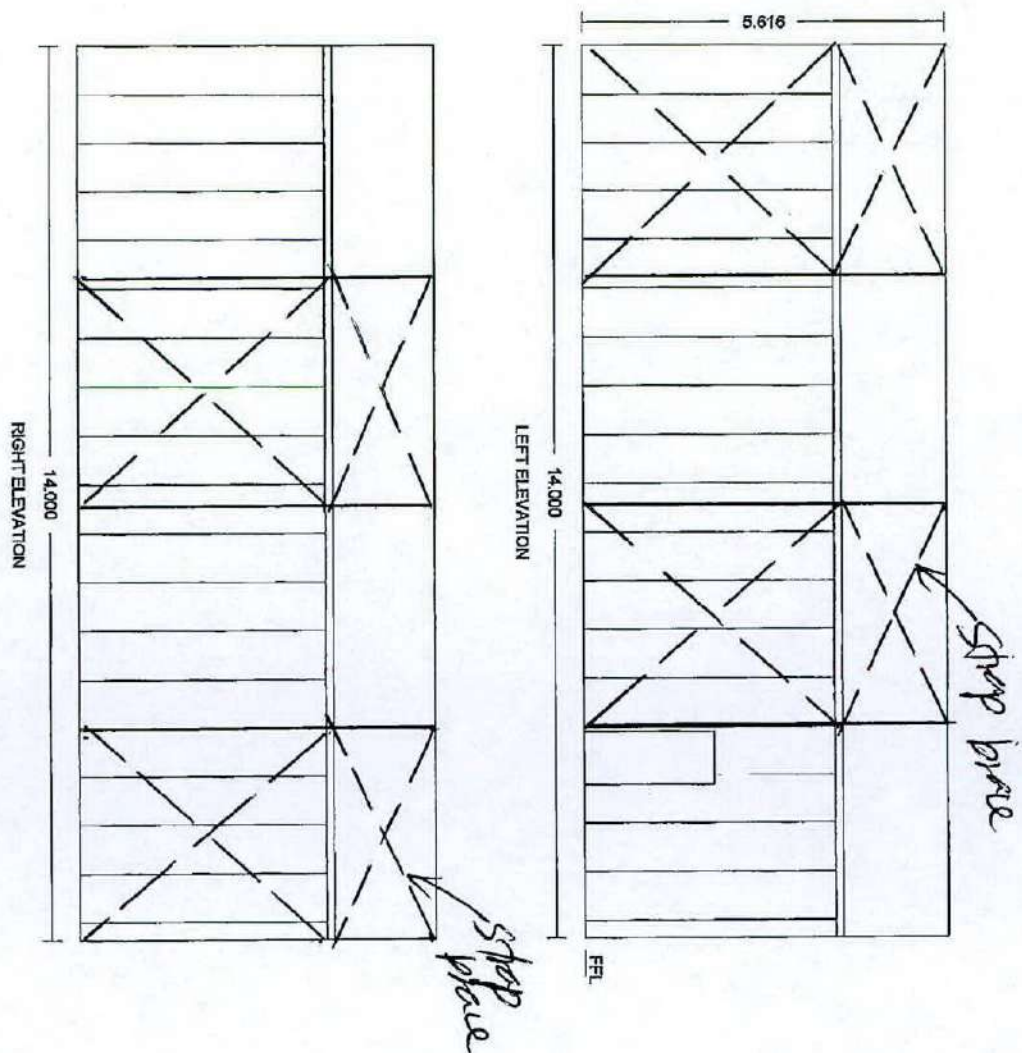


**W.M.C.**  
 structural & civil engineering  
 be, dipenz, cpeng, inrpe

PROPOSED 8,000x14,000x4,000 High Wind	
1370 Motueka Valley Highway Tasman District	
For W.Whitehead/M.Lowe	
Wall Colour - Colour Steel	Roof colour - Colour Steel
Barge Colour - Colour Steel Trim	Roller Door Colour - Colour Steel
Job No JaNZS140419122129 Quote No QaNZS1404191221873 Scale 1:100	
All Work To Be In Accordance With Accompanying Engineers Details	

**KiwiSpan Tasman**

Ph: 03 547 9692      3 Kilsen Place Nelson      Fax: 03 547 0615

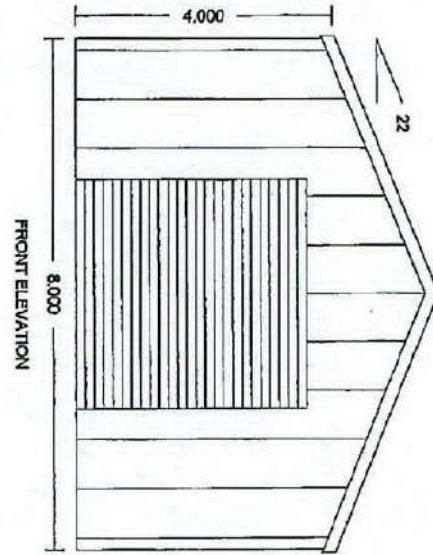
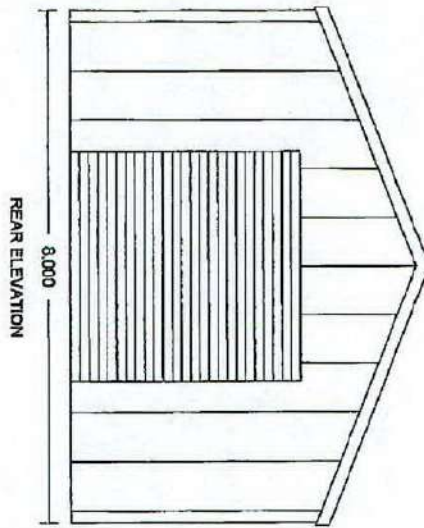



  
**EMI** Engineering
   
 structural & civil engineering
   
 Dr. Aipenz, CEng, Intpe

PROPOSED 8.000x14.000x4.000 High Wind	
1370 Motueka Valley Highway Tasman District	
For W.Whitehead/M.Lowe	
Wall Colour - Colour Steel	Roof colour - Colour Steel
Barge Colour - Colour Steel Trim	Roller Door Colour - Colour Steel
Job No JaNZS140419122128 Quote No QaNZS14041912221873 Scale 1:100	
All Work To Be In Accordance With Accompanying Engineers Details	

**KiwiSpan Tasman**

Ph: 03 547 0692      3 Kidson Place      Fax: 03 547 0610  
 Nelson



  
 Bruce Milpenz, CPEng, MEng  
 Structural & Civil Engineering  
 10/10/10

PROPOSED 8.000x14.000x4.000 High Wind	
1370 Motueka Valley Highway Tasman District	
For W.Whitehead/M.Low	
Wall Colour - Colour Steel	Roof colour - Colour Steel
Barge Colour - Colour Steel Trim	Roller Door Colour - Colour Steel
Job No JaNZS140419122126Quote No QaNZS1404191221873Scale 1:100	
All Work To Be In Accordance With Accompanying Engineers Details	

**KiwiSpan Tasman**

Ph: 03 547 9692      3 Kelson Place      Fax: 03 547 9516  
 Nelson

Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
 APPROVED  
**19 JUL 2010**  
**BUILDING CONSENT**  
 ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
 DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

**Kiwispan - Specification Sheet**  
**KiwiSpan Tasman**

**Client Details**

W. Whitehead M.Lowe  
 1370 Motueka Valley H/way  
 Home: x, Work: x  
 Ref No:

6/18/2010

**Council:**

8.000x14.000x4.000 High Wind  
 Wind Rating: High Wind  
 Length 14.000 Height 4.000  
 Width 8.000

**Site**

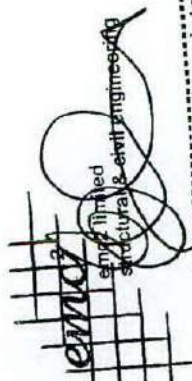
1370 Motueka Valley H/way, Tasman, x

Wall color: Colour Steel Downpipe color: PVC  
 Roof color: Colour Steel Roller door color: Colour Steel  
 Barge color: Colour Steel Trim Gutter color: Colour Steel Trim

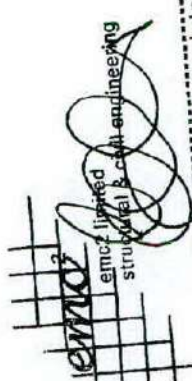
No	Description	Length	Qty	Color
<b>+ OVER 10m SPAN</b>				
1	If R/D in Gable End Check Mullions 10m+Span		2	
<b>+ Strap Brace Note</b>				
2	/Length By 30 or 100= Qty S/Bracing Rolls***		1	
<b>+ Trimclad Pallet</b>				
3	Pallet for Trimclad		1	
<b>+Ridge &amp; Gutter Note</b>				
4	Check Ridge & Gutter Lengths*****		1	
<b>Barge</b>				
5	B1 Std Barge CB (60/100 T/H) Girth:300	4.5800	4	Colour Steel T
<b>Corner Fasteners</b>				
6	Aluminum Rivets Painted 73 AS 4-4		52	Colour Steel T
<b>Corner Flashing</b>				
7	C2 Corner 75x75 3 Bend CB Girth:200	4.1000	4	Colour Steel T
<b>Door Parts</b>				
8	3.8h x 3.60w (DLO) Roller Door S2 CB	3.6000	2	Colour Steel
<b>Door Roller Base Cle</b>				
9	C200 Hold Down Bracket		4	
<b>Door Roller BaseFast</b>				
10	M12x30 Flanged Purlin Bolt & Nut		8	
11	12mm Dia x80 Galv Thru Bolt		8	
<b>Door Roller Column</b>				
12	C25018 Punched (18mm Holes)	4.6394	4	
<b>Door Roller Corner F</b>				
13	C14 R/D Corner S2/S3 CB Girth: 300	4.4394	4	Colour Steel T
14	Aluminum Rivets Painted 73 AS 4-4		60	Colour Steel T
<b>Door Roller Freight</b>				
15	Freight S2 Roller Door		2	
<b>Door Roller Head Bra</b>				
16	C200 Universal Bracket		4	
<b>Door Roller Head Fla</b>				
17	H3 R/D Header 20mm Rib CB Girth: 145	4.0500	2	Colour Steel T
<b>Door Roller HeadFast</b>				
18	14G 14x20mm Hex Tex Framing Screw		28	
19	M12x30 Flanged Purlin Bolt & Nut		8	
<b>Door Roller Header</b>				
20	C25013 Unpunched	3.5950	2	
21	100x0.75 Top Hat	3.5950	2	
<b>Door Roller Notes</b>				
22	S2 Roller Doors need C250 Frame & Header		2	
<b>Door Roller Parts</b>				
23	Tracks, Fitting Bag 4 Steel Frame (S2)		2	

*Handwritten signature and stamp:*  
 emc  
 emc (limited)  
 structural & civil engineers ltd  
 ..pipenz, cpeng, intpe

No	Description	Length	Qty	Color
<b>Door Roller Spacer</b>				
24	Spacer for Roller Door Tracks		36	
<b>Door Roller Spacer F</b>				
25	14G 14x20mm Hex Tex Framing Screw		8	
<b>Door Roller Top Brac</b>				
26	C150 Universal Bracket		8	
<b>Door Roller Top Fast</b>				
27	14G 14x20mm Hex Tex Framing Screw		48	
28	M12x30 Flanged Purlin Bolt & Nut		16	
<b>Eave Purlin Brackets</b>				
29	Eave Purlin Bracket (100mm Top Hats)		10	
<b>Eave Purlin Fastener</b>				
30	14G 14x20mm Hex Tex Framing Screw		150	
<b>Eaves Girts</b>				
31	C15015 Unpunched	3.5000	8	
<b>End Wall Girt Brkt</b>				
32	100/120mm Angle Bracket		16	
<b>End Wall Girt Fast</b>				
33	14G 14x20mm Hex Tex Framing Screw		192	
<b>End Wall Girts</b>				
34	100x0.75 Top Hat	1.8900	12	
<b>End Wall Sheets</b>				
35	Custom Orb 0.4 BMT CB	1.6800	2	Colour Steel
36	Custom Orb 0.4 BMT CB	1.9900	4	Colour Steel
37	Custom Orb 0.4 BMT CB	2.0700	2	Colour Steel
38	Custom Orb 0.4 BMT CB	4.3600	4	Colour Steel
39	Custom Orb 0.4 BMT CB	4.6700	4	Colour Steel
40	Custom Orb 0.4 BMT CB	4.9700	4	Colour Steel
41	Custom Orb 0.4 BMT CB	5.2800	2	Colour Steel
<b>Fly Brace</b>				
42	F3 Flybrace C250/C300 100mm+ Grt		12	
<b>Fly Brace Fasteners</b>				
43	14G 14x20mm Hex Tex Framing Screw		120	
<b>Gutter</b>				
44	Down Pipe 80mm 3.0m	2.4000	4	
45	Customline Gutter CB	6.0000	6	Colour Steel T
<b>Gutter Bracket Faste</b>				
46	Aluminum Rivets 73 AS 6-6		114	
<b>Gutter Brackets</b>				
47	Customline Gutter Int Bracket		38	
<b>Gutter Clip Fast</b>				
48	Aluminum Rivets 73 AS 6-6		12	
<b>Gutter DownPipe Clip</b>				
49	Down Pipe 80mm Clip		4	
<b>Gutter DownPipe Drop</b>				
50	Down Pipe Dropper 75mm PVC		2	
<b>Gutter Join Fastener</b>				
51	Aluminum Rivets Painted 73 AS 4-4		152	Colour Steel T
<b>Gutter S/End Fastene</b>				
52	Aluminum Rivets Painted 73 AS 4-4		24	Colour Steel T
<b>Gutter Stop End</b>				


  
 emd  
 emd limited  
 structural & civil engineers  
 be: mipenz, cpeng, intbe

No	Description	Length	Qty	Color
53	Customline Gutter Stop End LH - PVC		2	
54	Customline Gutter Stop End RH - PVC		2	
<b>PA Brackets</b>				
55	60mm Angle Bracket		2	
56	C100 Hold Down Bracket		2	
<b>PA Door</b>				
57	Personal Door Colour		1	Colour Steel
<b>PA Fasteners</b>				
58	14G 14x20mm Hex Tex Framing Screw		20	
59	12mm Dia x80 Galv Thru Bolt		2	
<b>PA Head Flashing</b>				
60	PADoor Internal Header ZA Girth: 150	1.0000	1	
<b>PA Header</b>				
61	J2 For 100mm Top Hat x 1.55mm	1.0000	1	
<b>PA Header Flashing</b>				
62	PADoor External Header >29mm CB Girth: 150	1.2000	1	
<b>PA Jamb</b>				
63	J2 For 100mm Top Hat x 1.55mm	2.7000	2	
<b>PA Side Flashing</b>				
64	PADoor Internal Door Jamb P1/2 ZA Girth: 150	2.2000	2	
65	PADoorInternalDoorJamb100mmP2/2ZA Girth: 150	2.2000	2	
<b>PS1 Fee</b>				
66	PS1 Fee (Eric Macleod)		1	
<b>Packing Sheet</b>				
67	Packing Sheet 4 Underside of Wall Cladding	2.0000	1	
<b>Portal Apex Brackets</b>				
68	Apex Bracket C200 @ 22deg		2	
69	Apex Bracket C250 @ 22deg		3	
<b>Portal Apex Fastener</b>				
70	M12x30 Flanged Purlin Bolt & Nut		16	
71	M16x35 Flanged Purlin Bolt & Nut		24	
<b>Portal Base Cleat Fa</b>				
72	M12x30 Flanged Purlin Bolt & Nut		8	
73	M16x35 Flanged Purlin Bolt & Nut		12	
74	12mm Dia x80 Galv Thru Bolt		8	
75	16mm Dia x100 Galv Thru Bolt		12	
<b>Portal Base Cleats</b>				
76	C200 Hold Down Bracket		4	
77	C250 Hold Down Bracket		6	
<b>Portal Columns</b>				
78	C20012 Punched (14mm Holes)	4.0000	4	
79	C25013 Punched (18mm Holes)	4.0000	6	
<b>Portal Haunch Bracke</b>				
80	Haunch Bracket C200 @ 22deg Left		2	
81	Haunch Bracket C200 @ 22deg Right		2	
82	Haunch Bracket C250 @ 22deg 6mm		6	
<b>Portal Haunch Fasten</b>				
83	M12x30 Flanged Purlin Bolt & Nut		40	
84	M16x35 Flanged Purlin Bolt & Nut		72	
<b>Portal Knee Brace</b>				


  
 emc2 llp  
 structural & civil engineering  
 be, mpenz, cpeng, intpe

→ Use HD250F ← \* \* \*

No	Description	Length	Qty	Color
85	G15012 Unpunched	1.9190	0	
<b>Portal Knee Brace Fa</b>				
86	M12x30 Flanged Purlin Bolt & Nut		48	
<b>Portal Knee Brace Sp</b>				
87	M12X28X8mm Thick Spacer		48	
<b>Portal Rafters</b>				
88	C20012 Punched (14mm Holes)	3.9002	4	
89	C25013 Punched (18mm Holes)	3.8306	6	
<b>Ridge Cap</b>				
90	R1 Ridge Cap Flashguard all deg CB	6.0000	3	Colour Steel
<b>Roof Purlin Fastening</b>				
91	14G 14x20mm Hex Tex Framing Screw		440	
<b>Roof Purlins</b>				
92	100x0.75 Top Hat	3.6750	16	
93	100x0.75 Top Hat	3.8500	16	
<b>Roof Sheet Fasteners</b>				
94	12G 14x45mm Hex TEK & Seal, Paint		1054	Colour Steel
<b>Roof Sheets</b>				
95	Custom Orb 0.4 BMT CB	4.3700	38	Colour Steel
<b>Roof Underlay</b>				
96	Fire Retardant Light Diffuser Foil 344 75m2		2	
97	Netting 75mm 100m2 Roll		2	
<b>Side Wall Girts</b>				
98	100x0.75 Top Hat	3.6750	12	
99	100x0.75 Top Hat	3.8500	12	
<b>Side Wall Sheets</b>				
100	Custom Orb 0.4 BMT CB	4.0500	37	Colour Steel
<b>Side/End Wall Girt F</b>				
101	14G 14x20mm Hex Tex Framing Screw		750	
<b>Side/End Wall Sheet</b>				
102	10G 16x16mm Hex TEK & Seal, Paint		1586	Colour Steel
<b>Silicone</b>				
103	Neutral Cure Silicone		1	
<b>Strap Brace</b>				
104	Strap Brace 25mm Tensioners		12	
<b>Strap Bracing</b>				
105	Strap Brace 25mm x 30m Roll	90.0000	1	
<b>Strap Bracing Note</b>				
106	/Lenght By 30 or 100= Qty S/Bracing Rolls***		12	
<b>Strap Fasteners</b>				
107	14G 14x20mm Hex Tex Framing Screw		240	

Can be removed with fixed base

emc2 limited  
structural & civil engineering  
be, mipemz, cpeng, intpe

+ Require cantilever base  
(Fire wall base cleat & fastening)

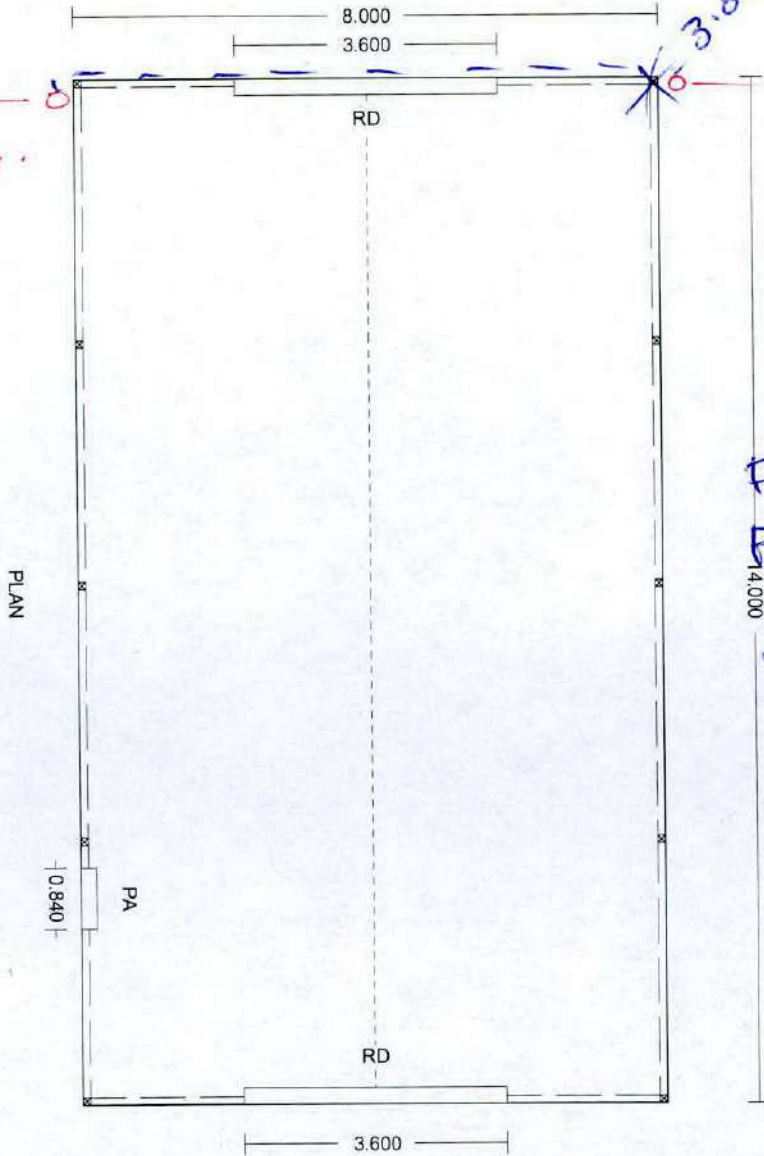
Tasman District Council  
BUILDING CONSENT AUTHORITY  
APPROVED

19 JUL 2010

BUILDING CONSENT

ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

800 DP  
to tank storage.



STORAGE TANK

800 DP  
To tank storage

Inspection  
Schedule.

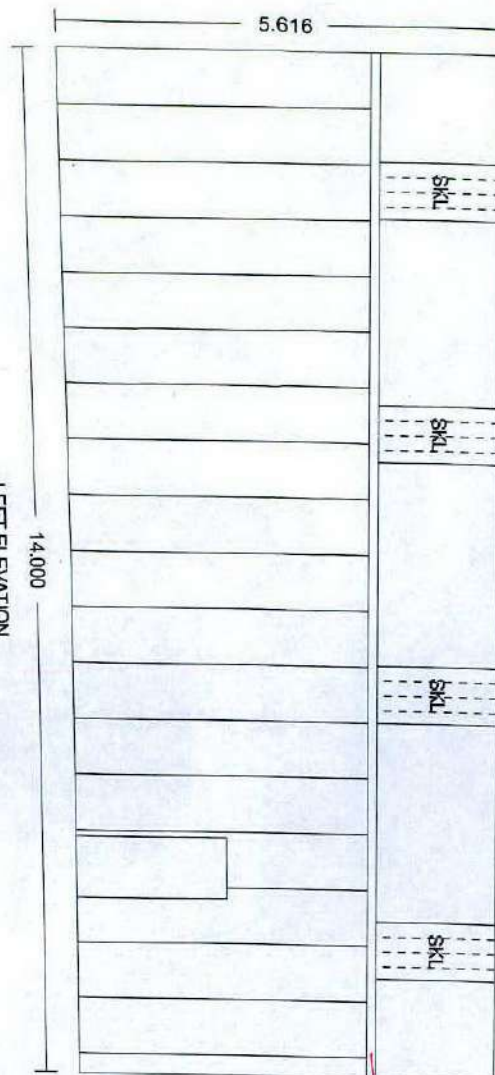
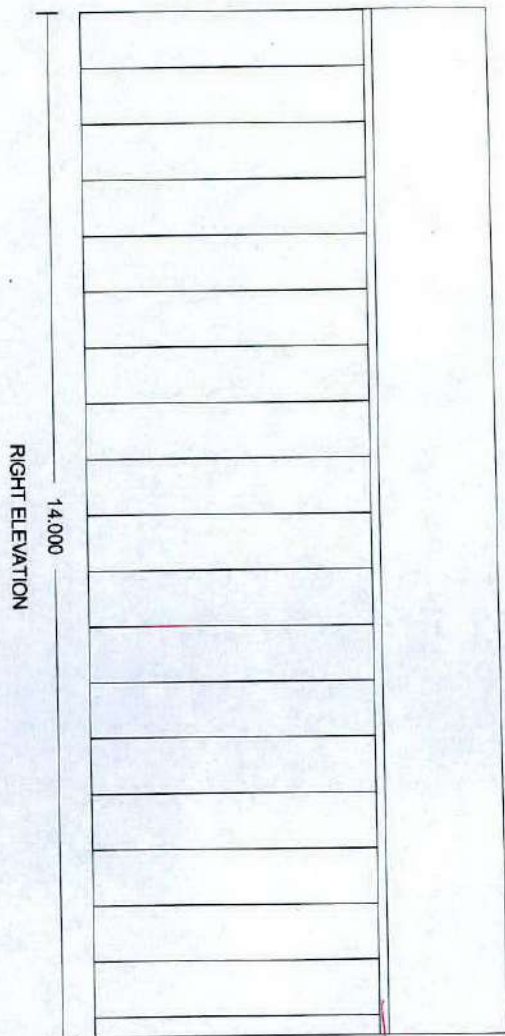
Foundation & floor  
prepwork. T.D.C.

P.S.A. by C.PENZ

PROPOSED 8.000x14.000x4.000 High Wind	
1370 Motueka Valley Highway Tasman District	
For W.Whitehead/M.Lowe	
Wall Colour - Colour Steel	Roof colour - Colour Steel
Barge Colour - Colour Steel Trim	Roller Door Colour - Colour Steel
Job No JaNZS140419122128 Quote No QaNZS14041912221873 Scale 1:100	
All Work To Be In Accordance With Accompanying Engineers Details	

**KiwiSpan Tasman**

Ph: 03 547 9692      3 Kidson Place Nelson      Fax: 03 547 9616



PROPOSED 8.000x14.000x4.000 High Wind	
1370 Motueka Valley Highway Tasman District	
For W.Whitehead/M.Lowe	
Wall Colour - Colour Steel	Roof colour - Colour Steel
Barge Colour - Colour Steel Trim	Roller Door Colour - Colour Steel
Job No JaNZS140419122128 Quote No QaNZS14041912221873 Scale 1:100	
All Work To Be In Accordance With Accompanying Engineers Details	

**KiwiSpan Tasman**

Ph: 03 547 9692      3 Kidson Place      Fax: 03 547 9616  
 Nelson



B.C. No. ....

Building Regulation Clause(s) .....

# PRODUCER STATEMENT – PS4 – CONSTRUCTION REVIEW

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

ISSUED BY: ..... **W R Andrew Ltd** .....  
*(Construction Review Firm)*

TO: ..... **W & M Whitehead** .....  
*(Owner/Developer)*

TO BE SUPPLIED TO: ..... **Tasman District Council** .....  
*(Building Consent Authority)*

IN RESPECT OF: ..... **New House – block retaining walls and suspended concrete slab to biolo** .....  
*(Description of Building Work)*

AT: ..... **1370 Motueka Valley Highway** .....  
..... **NGATIMOTI** .....  
*(Address)*

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

..... **W R Andrew Ltd** ..... has been engaged by **W & M Whitehead** .....  
*(Construction Review Firm)*

to provide OCM1  OCM2 OCM3 OCM4 OCM5 *(Engineering Categories)* or OOL1 OOL2 OOL3 OOL4 *(architectural categories)*

observation  or other ..... services

in respect of clause(s) **B1** ..... of the Building Code for the building work described in

documents relating to Building Consent No. .... and those relating to

Building Consent Amendment(s) Nos. .... issued during the

course of the works. We have sighted these Building Consents and the conditions attached to them.

Authorised instructions / variation(s) No. ....

or by the attached Schedule  have been issued during the course of the works.

On the basis of  this  these review(s) and information supplied by the contractor during the course of the works, I believe on reasonable grounds that  All  Part only of the building works have been completed in accordance with the relevant requirements of the Building Consents and Building Consent Amendments identified above, with respect to Clause(s) ..... **B1/AS1 & VM1** ..... of the Building Regulations.

**Steven Geoffrey King-Turner** ..... am  CPEng **142318** ..... #  
*(Name of Construction Review Professional)*

Reg Arch ..... #

I am a member of:  IPENZ  NZIA and hold the following qualifications **ME BE(civil) MIPENZ CPEng IntPE**.....

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

The Construction Review Firm is a member of ACENZ:  YES  NO

SIGNED BY **Steven King-Turner** ..... ON BEHALF OF **W R Andrew Ltd** .....  
*(Design Firm)*

Date **16-8-11** ..... (signature) .....

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

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



19280 523 01



01 September 2010



Peter Inwood  
Tasman District Council  
Private Bag 4  
Richmond 7015

Client Ref:

**Land Transfer Act 1952: Registration Confirmation Statement**

The dealing 8566878, lodged on 13/08/2010 has been registered.

The Computer Register(s) affected by the dealing are:

315582

Any plans deposited as a result of the registration of this dealing are listed below:

Area Manager

# MANUAL DEALING LODGEMENT FORM

NL

Landonline User ID: \_\_\_\_\_

LODGING FIRM: Tasman District Council

Private Individual: \_\_\_\_\_

Address: 189 Queen Street

Richmond

Nelson

ASSOCIATED FIRM: \_\_\_\_\_

Client Code / Ref: \_\_\_\_\_

Dealing/SUD Number:  
(LINZ use only)

Priority Barcode/Date Stamp  
(LINZ use only)

Plan Number Pre-Allocated or  
to be Deposited: \_\_\_\_\_

Rejected Dealing Number: \_\_\_\_\_

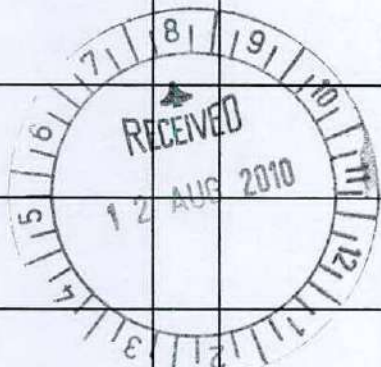
**C73 8566878.1 Building**

Cpy - 03/03, Pgs - 002, 12/08/10, 10:13

**Copies**  
**(inc. original)**

DocID: 212650947

Priority Order	CT Ref	Type of Instrument	Names of Parties	Document Fees	Resubmission	Notices	Priority Capture	FEES \$ GST INCLUSIVE
1	315582		Wendy Maree Whitehead	60.00		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">* TAX INVOICE *</p> <p style="text-align: center;">LAND INFORMATION NEW ZEALAND PRIVATE BAG CHRISTCHURCH GST 17-022-895</p> </div>		60.00
2								
3						30/08/10 13:36 50		
4						000000 #1347 HELEN		
5						LOLSALE 5461 \$90.00		
						CHEQUE \$90.00		



PAID

Land Information New Zealand Manual Dealing  
Lodgement Form

Fees Receipt and Tax Invoice

GST Registered Number 17-022-895

LINZ Form P005

Annotations (LINZ use only).

Fees \$45 shortfall

Original Signatures? \_\_\_\_\_

Subtotal **\$60.00**

Total for this dealing **\$60.00**

Less fees paid on Dealing # \_\_\_\_\_

Debit my Landonline account for  
(Only available for Landonline customers)

**or Cash / Cheque enclosed for**

(Only pay in cash if depositing in drop box at a LINZ processing centre)

**or Eft-pos payment due for**

(Eft-pos or \_\_\_\_\_ available if lodging the dealing in person at a LINZ processing centre)

**\$60.00**

b

**NOTIFICATION TO THE REGISTRAR-GENERAL OF LAND  
OF CONDITION UNDER SECTION 73 OF THE BUILDING ACT 2004**

*Section 73(1)(c) and 73(3) Building Act 2004*

Land Registration District(s)

**Nelson**

**C73 8566878.1 Building**

Cpy - 01/03, Pgs - 002, 12/08/10, 10:13



DocID: 212650947

Computer Register(s) of land on which building work is to be carried out

*Continue on Annexure Schedule(s), if required*

Unique identifier	All/Part	Legal description
315582		Lot 2 Deposited Plan 326533 and Lot 1 Deposited Plan 378582

Name of Building Consent Authority

**Tasman District Council**

Natural Hazard(s) affecting the land

*Continue on Annexure Schedule(s), if required*

Type of Hazard	Description of Hazard
Flooding	Land is prone to flooding.

Notification

The above Building Consent Authority, HEREBY NOTIFIES YOU THAT:

1. A Building Consent has been granted, affecting the land comprised in the above numbered computer register(s); and
2. The particulars of the natural hazard(s) on the land are set out above.

Dated this 4 day of August 2010

Signature

Signed by\* **GARY TIPLER - BUILDING CONTROL COORINDATOR**

*\*Insert name and designation of signatory in BLOCK letters (unless legibly printed):*

Duly authorised to execute this form for and on behalf of the above-named Building Consent Authority

In the matter of the Resource Management Act  
1991

and

In the matter of the application lodged by  
R S and J R Hadley

For a subdivision consent under the provisions of  
Section 105 of the aforesaid Act

## **PROPOSAL**

To subdivide Part Lot 1 DP 209 and DP 2329 to create Lots 1 and 2 as shown on resource consent application plan RM020650A.

## **DECISION**

Acting under authority delegated from the Council, I grant consent to the proposal under Section 105 of the Resource Management Act 1991, subject to the following conditions:

### **1. ESPLANADE STRIP AND ACCESS STRIP**

That the esplanade strip 10 metres wide and the access strip 10 metres wide as shown on the resource consent application plan be duly created.

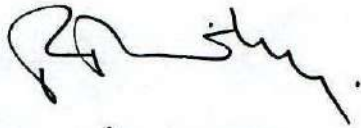
The esplanade strip is for the purposes of contributing to the protection of conservation values, to enable public access to and along the Motueka River and to enable public recreational use of the esplanade strip and the adjacent river.

For both the esplanade strip and the access strip all the prohibitions in Clause 2 of the Tenth Schedule apply. There is no provision for fencing or closing the strips.

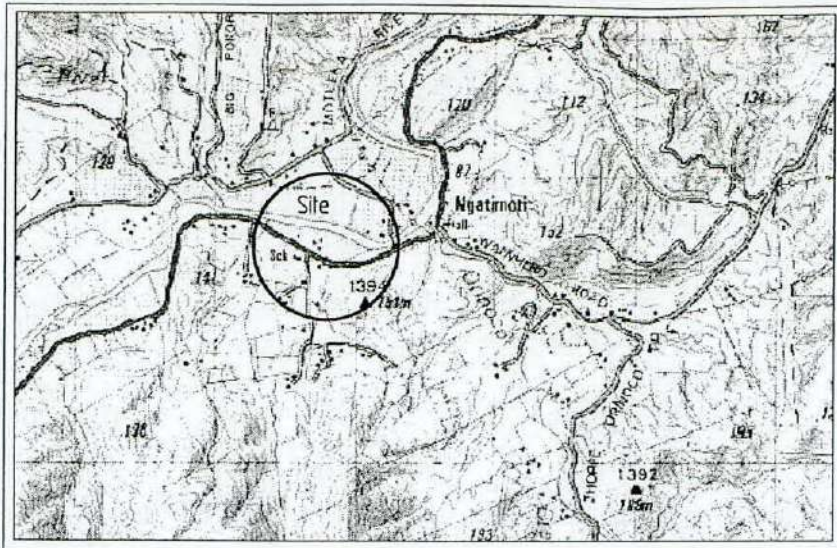
On receipt of the survey plan showing the above strips Council will pay \$750 plus GST to the applicant as reimbursement of survey costs of the access strip. In addition, Council will reimburse the legal cost of preparation and lodgement of the instruments creating the strips.

9. Overall, the proposal is not contrary to the policies and objectives of the District Plan, or Part II of the Act and with the conditions imposed the adverse effects on the environment are no more than minor.

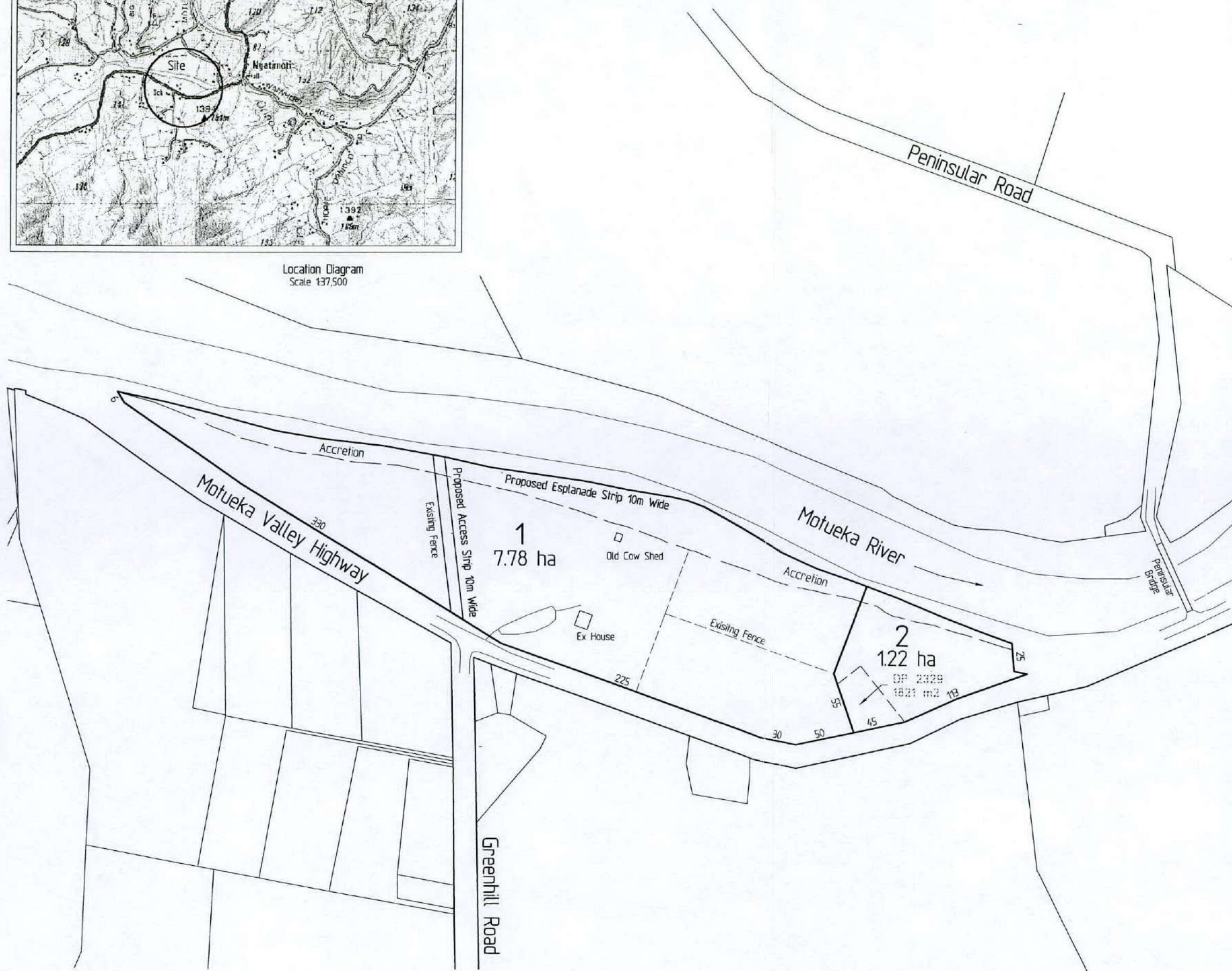
Dated at Richmond this 29<sup>th</sup> day of January 2003



R D Shirley  
Subdivision Officer



Location Diagram  
Scale 1:37,500



Warning 1

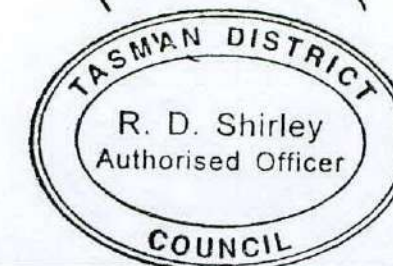
This Plan has been prepared for the purposes of a Resource Consent Application only. It is not a precise survey plan. As areas and dimensions are likely to vary upon survey this plan should not be attached to sale and purchase agreements without an appropriate condition to cover such variations.

NOTES

- (1) Verify all dimensions on site
- (2) Do not scale from drawing

Approved 29.1.03

*R. Shirley*

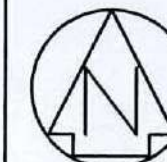


No.	Amendment	Date
-----	-----------	------

191A HIGH STREET  
PO BOX 423 MOTUEKA  
PHONE 03 528 4455  
FAX 03 528 4456



**NIKKEL SURVEYING LTD**  
MOTUEKA New Zealand  
SURVEYING PLANNING & ENGINEERING SERVICES



Design	APN
Drawn	APN
Checked	APN
Approved	APN
Date	October 2002

Job Title

RS & JR Hadley

Drawing Title

Resource Consent  
Application Plan

This Subdivision was approved as a \_\_\_\_\_ activity subject to the conditions noted in file:  
Approved this \_\_\_\_\_ day of \_\_\_\_\_ 20

LAND DISTRICT NELSON  
Survey Blk. & Dist. X  
NZMS 261 Sheet \_\_\_\_\_ Record Map No. \_\_\_\_\_

Lots 1 & 2 Being a Proposed Subdivision of  
Pt Lot 1 DP209 and DP2329

TERRITORIAL AUTHORITY TASMAN DISTRICT COUNCIL  
Surveyed by Nikkel Surveying Limited HAD-152  
Scale 1:2,500 Date October 2002

Subdivisions Officer

HAD-152.1 **RM 020650A**

25 July 2006

D Riddell  
 13 Stafford Avenue  
 Annesbrook  
 NELSON 7011

Dear Sir

**DECISION ON NON-NOTIFIED RESOURCE CONSENT APPLICATION NO. RM060423 –  
 TO RELOCATE A DWELLING TO A PROPERTY AT MOTUEKA VALLEY ROAD AND THEN  
 MAKE ALTERATIONS TO THE DWELLING**

Pursuant to Section 114 of the Resource Management Act 1991 ("the Act"), please find enclosed a copy of the Council's decision on your application for resource consent referred to above.

Section 357A of the Act provides you with the right to lodge an objection with the Council in respect of this decision and/or any associated conditions. Any such objection must be made in writing setting out the reasons for the objection and must be lodged with the Council, together with a fixed fee of \$125.00 (GST inclusive), within 15 working days of receiving this letter.

Please note that the processing period for this application was extended by 15 working days pursuant to Section 37(1) of the Act. The reason for this extension was to allow for adequate processing of the application.

At this stage the Council has not calculated the final costs of processing your application. Should the final costs exceed the deposit already paid, then as previously advised, you will be invoiced separately for these costs. Should the final costs be less than the deposit already paid then you will receive a refund.

You may commence your activity immediately unless you lodge an objection to this decision. However, it is important that you check the conditions of your consent carefully as some of them may require you to provide information and/or plans to the Council before you may commence your activity. In addition, in some cases you may also require other permits or building consents for your activity and these must be obtained before you can commence your activity.

Please note that under Section 125 of the Act, your consent will lapse in five years unless you have given effect to it before then.

Please feel free to contact me if you have any questions regarding any aspect of your consent or its conditions. My contact details are listed at the top of this letter.

Yours faithfully



Paul Gibson  
 Consent Planner, Land Use & Subdivision

**Main Office**

189 Queen Street  
 Private Bag 4  
 Richmond 7031  
 New Zealand  
 Tel (03) 543-8400  
 Fax (03) 543-9524

**Murchison  
 Service Centre**

92 Fairfax Street  
 Murchison 7191  
 Tel (03) 523-1013  
 Fax (03) 523-1012

**Motueka  
 Service Centre**

7 Hickmott Place  
 P.O. Box 123  
 Motueka 7161  
 Tel (03) 528-2022  
 Fax (03) 528-9751

**Golden Bay  
 Service Centre**

78 Commercial Street  
 P.O. Box 74  
 Takaka 7172  
 Tel (03) 525-0020  
 Fax (03) 525-9972

**RESOURCE CONSENT DECISION**

**Resource consent number:** RM060423

Pursuant to Section 104C of the Resource Management Act 1991 ("the Act"), the Tasman District Council ("the Council") hereby grants resource consent to:

*David John Riddell*  
(hereinafter referred to as "the Consent Holder")

**Activity authorised by this consent:** To relocate a dwelling to a property and then make alterations to the dwelling.

**Location details:**

Address of property: Motueka Valley Road  
Legal description: Lot 2 DP 326533  
Certificate of title: 107886  
Valuation number: 1928052301

This consent is issued subject to the following conditions:

**CONDITIONS**

**General Accordance**

- 1 The development shall be undertaken in general accordance with the documentation submitted with the application and with Appendices A-D, dated 1 May 2006 and attached to this consent. Notwithstanding the above, if there is any apparent conflict between the information submitted with the application and any conditions of this consent, the conditions shall prevail.

**Reinstatement**

- 2 Within six months of the issue of building consent, all repair works as specified in the application and the report entitled "House inspection report" prepared by Ian Marriott Design, dated 1 May 2006 and attached as Appendix D of this consent, shall be completed **and** a written statement from a suitably qualified and experienced person shall be provided to Council that all works required by the abovementioned report have been completed.

**Refundable Bond**

- 3 The consent holder shall enter into a cash bond of \$2,000.00 prior to issue of the building consent for the relocated dwelling. The bond shall be refundable when all remedial works required in this consent have been completed and the Code Compliance Certificate has been issued under the Building Act 1991.

**Minimum Floor Level**

- 4 The minimum floor level of the dwelling shall be RL 52.0 metres (assumed datum).

## **Understorey of the Dwelling**

- 5 That the lower 50 per cent of the understorey of the dwelling may be used for storage. The upper 50 per cent of the understorey of the dwelling may not be used for storage and shall remain clear of obstruction. The "understorey of the dwelling" means the portion of the building between the substructure of the dwelling floor and the natural ground level.
- 6 The subfloor and understorey of the dwelling shall either remain open or may be partially enclosed with lightweight latticework or trellis with a minimum of 50 per cent void space. The "subfloor and understorey of the dwelling" means the portion of the building between the floor level and the natural ground level.

### ***Advice Note:***

The dwelling is sited on land exposed to significant flood hazard in a major flood event. It is essential that floodwater be able to pass beneath the dwelling in a major event, so as not to affect the dwelling to any significant degree. The above conditions are required to mitigate potential flood hazard by limiting the obstruction to floodwaters caused by materials stored under the dwelling or enclosure of the understorey of the dwelling.

## **ADVICE NOTES**

### **Proposed Tasman Resource Management Plan**

- 1 Any matters not referred to in this application for resource consent or are otherwise covered in the consent conditions must comply with the relevant provisions of the Proposed Tasman Resource Management Plan or subsequent planning document, or further resource consent is required to be obtained.

### **Other Requirements**

- 2 This consent is a resource consent, not a building consent. A separate application and approval for building consent is required. The applicant shall meet the requirements of Council with regard to all Building and Health Bylaws, Regulations and Acts.

### **Monitoring**

- 3 Monitoring of the consent is required under Section 35 of the Resource Management Act 1991 and a deposit fee is payable at this time. Should monitoring costs exceed this initial fee, Council will recover this additional amount from the resource consent holder. Costs can be minimised by consistently complying with conditions and thereby reducing the frequency of Council visits.

### **Development Contributions**

- 4 Council will require the payment of a development contribution in accordance with Council's Development Contributions Policy under the Local Government Act 2002 for the development the subject of this resource consent. The Development Contributions Policy is found in the Long Term Council Community Plan (LTCCP) and the amount to be paid will be in accordance with the requirements which are current at the time the relevant development contribution is paid in full. A 5% discount is available if the payment is made prior to the uplifting of the building consent. Note that this is not a requirement under this resource consent but a development levy payable at the time of building consent.

## **REASONS FOR THE DECISION**

### **Background to Proposed Activity**

The proposal is to relocate a dwelling onto a site zoned Rural 1 within the Land Disturbance Area 1 and then make alterations to the dwelling in order to increase its floor area. The proposal requires a resource consent as it is a relocated dwelling and is within the Rural 1 Zone, on a site less than 12 hectares in area.

### **Proposed Tasman Resource Management Plan ("PTRMP") Rules Affected**

The activity authorised by this resource consent does not comply with Rules 17.4.2(a); 17.4.4(a); 17.4.4(b); 17.4.5(b); and 16.8.2(b) of the PTRMP and is deemed to be a restricted discretionary activity in accordance with Rule 17.4.6 of the PTRMP.

### **Principal Issues (Actual and Potential Effects on the Environment)**

The principal issue(s) associated with the proposed activity involve the actual and potential effects on the environment. For this application these were:

- (a) effects on the versatility of productive land;
- (b) effects on amenity and the rural character of the area;
- (c) cross-boundary effects;
- (d) on-site servicing effects;
- (e) traffic effects;
- (f) amenity effects relating to the relocation of the dwelling;
- (g) the potential for effect arising from natural hazards;
- (h) effects on cultural heritage.

The Council considers that the adverse effects of the activity on the environment will be no more than minor for the following reasons:

#### ***Effects on the Versatility of Productive Land***

- (a) A single dwelling can be sited in the Rural 1 Zone as a controlled activity, however as the allotment is below 12 hectares in area, the proposal becomes a restricted discretionary activity. However, it is considered that the dwelling is relatively small in comparison to many other dwellings in rural zones (being three bedroomed). Consequently, the residential curtilage rendered unavailable for productive use will be kept to a minimum.

#### ***Rural Amenity and Visual Effects***

- (b) The dwelling to be relocated is a soundly built, older-style house and is in good condition, and its appearance will be in keeping with dwellings that are within the immediate neighbourhood of the site to be relocated to. The proposed additions will complement the style of the dwelling.

#### ***Cross-boundary Effects***

- (c) The dwelling is not sited close to any orchards and exceeds the minimum setbacks specified in the zone. This is expected to mitigate any cross-boundary effects resulting from noise, dust, spray drift and other rural effects.

#### ***Location and Effects of On-site Servicing***

- (d) The site is considered to be sufficiently large to accommodate the required domestic wastewater treatment and disposal required. In any case, the proposal will need to comply with the relevant permitted activity rules for domestic wastewater disposal, or seek a further resource consent. Council's Consent Planner, Discharges has considered the application and confirms that wastewater

disposal at this property should be a permitted activity based on the further information provided from Ian Marriott Design that confirms there is no issue with the proximity of groundwater. The proposal shows that a 23,000 litre water tank is proposed, with the appropriate coupling specified in the Proposed Plan. Stormwater run-off is not considered to be an issue, as the site is large and will be able to contain all stormwater on the site.

#### ***Access and Traffic Safety***

- (e) The vehicle crossing is existing and is not proposed to be changed as a result of this application. Additional traffic onto the road as a result of the dwelling is not expected to adversely affect the efficiency or safety of the roading network.

#### ***Effects of Relocating the Dwelling***

- (f) The provision of a refundable bond is considered to be appropriate in order to ensure that the necessary reinstatement works will be completed.

#### ***Natural Hazards***

- (g) The condition relating to a minimum floor level for the dwelling was volunteered by the applicant. Council's Resource Scientist, Rivers & Coast has considered the application and confirms this is an appropriate floor level for the site and has recommended conditions that have been imposed on this consent.

#### ***Effects on Cultural Heritage***

- (h) Initially, the Motueka Iwi Resource Management Advisory Komiti had concerns about the proximity of the wastewater disposal field to the river and the potential effect on groundwater. However, upon receiving further information regarding the system they are now satisfied with the proposal.

#### **Relevant Statutory Provisions**

In considering this application, the Council has had regard to the matters outlined in Section 104 of the Act. In particular, the Council has had regard to the relevant provisions of the following planning documents:

- (a) the Tasman Regional Policy Statement (TRPS);
- (b) the Transitional District Plan;
- (c) the proposed Tasman Resource Management Plan (PTRMP).

Most of the objectives and policies contained within the TRPS are mirrored in the PTRMP. The activity is considered to be consistent with the relevant objectives and policies contained in Chapters 5 and 7 of the PTRMP.

#### **Part II Matters**

The Council has taken into account the relevant principles outlined in Sections 6, 7 and 8 of the Act and it is considered that granting this resource consent achieves the purpose of the Act as presented in Section 5.

### **Notification and Affected Parties**

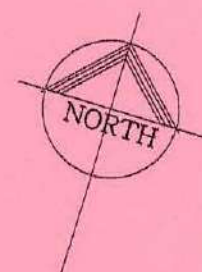
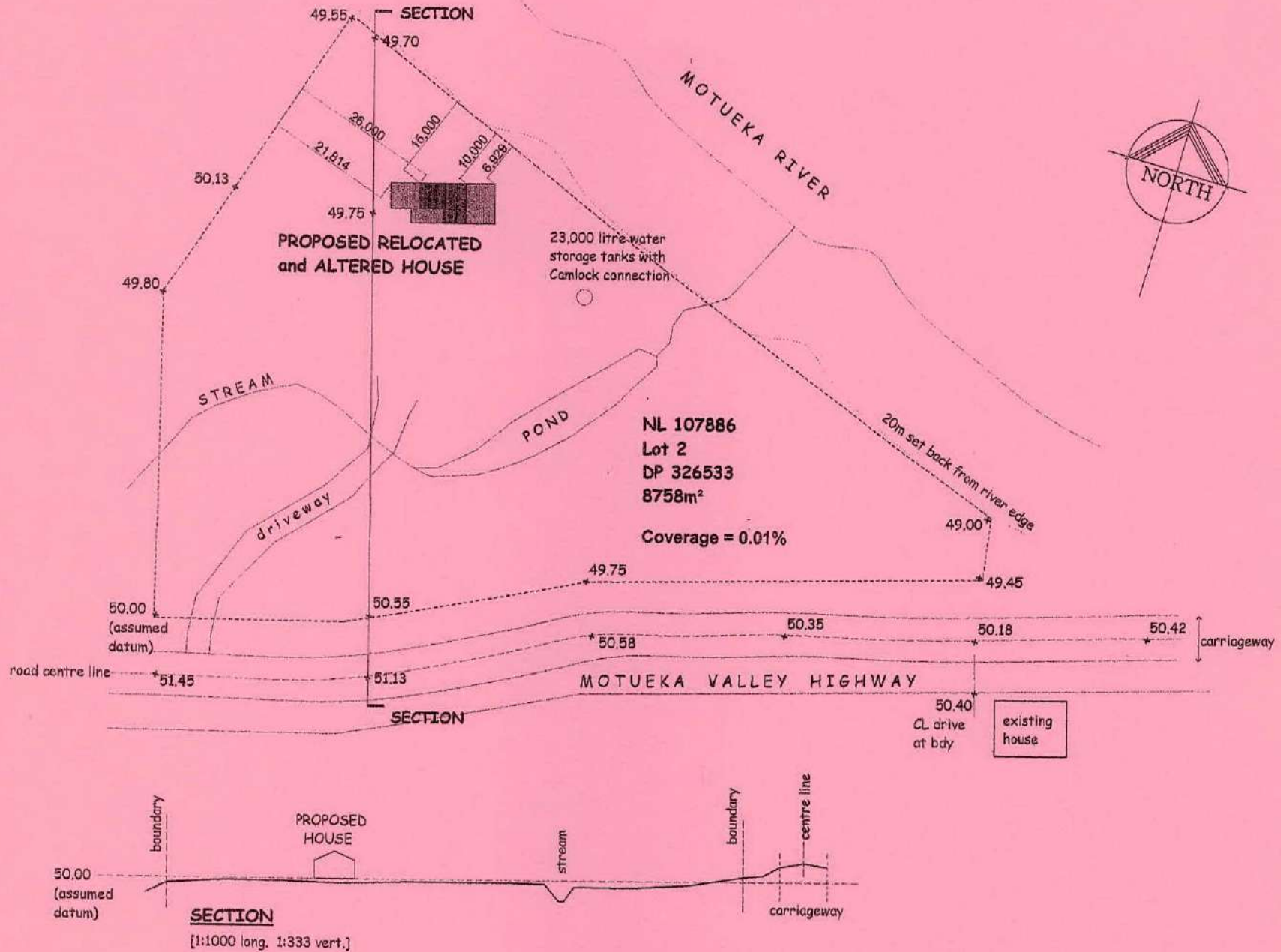
The adverse environmental effects of the activity are considered to be no more than minor. The Council's Co-ordinator Resource Consents has, under the authority delegated to him, decided that the provisions of Section 94(2) of the Act have been met and therefore the application has been processed without notification.

This consent is granted on **25 July 2006** under delegated authority from the Tasman District Council by:



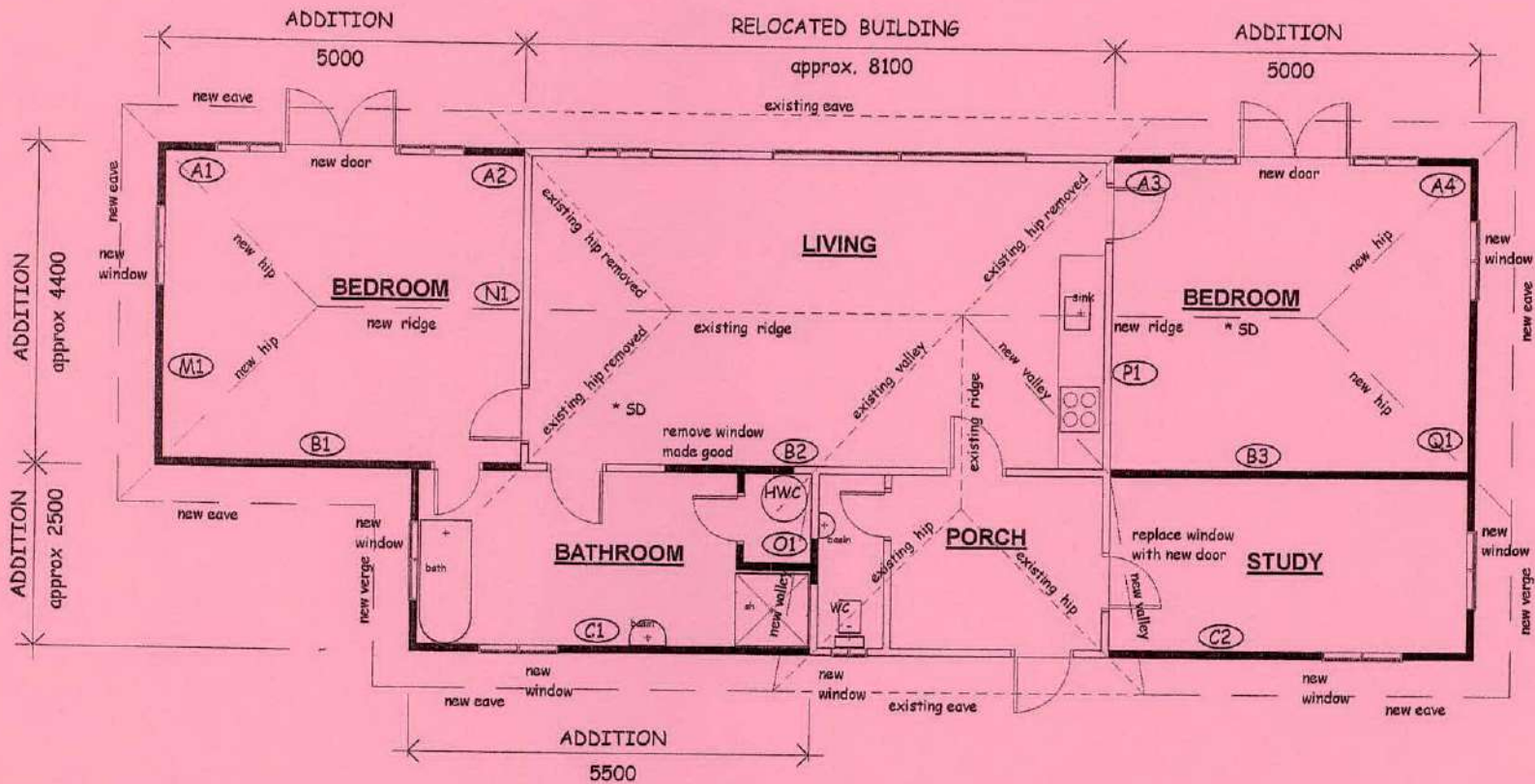
Paul Gibson  
**Consent Planner, Land Use & Subdivision**

APPENDIX A RM 060423 1 May 2006



<p><b>IAN MARRIOTT DESIGN</b></p> <p>10 Endeavour Street, NELSON Ph. (03) 545 6304 Fax (03) 545 6305 Email: ian.m@netaccess.co.nz</p>	<p>DRAWN: May 2006</p>	<p><b>SITE PLAN</b> 1:1000 <b>Relocated and Altered House</b> <b>for D Riddell</b> <b>MOTUEKA VALLEY HIGHWAY</b></p>	<p><b>1</b> of 5</p>
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APPENDIX B RM 060423 1 May 2006



**NOTES:**

- \* Floor plan layout indicative; confirm on site
- \* Make good any relocation damage to comply with the NZ Building Code, NZS 3604:1999 and other relevant standards and codes of practice, carried out in a safe manner by experienced tradesmen
- \* Ensure HWC is fitted with appropriate pressure and tempering valves and is fixed to wall framing with seismic restraint kit

\* SD = smoke detector

- existing walls relocated house
- existing walls removed
- new walls - 100 x 50 H1.2 stud frame (studs at 600, dwangs at 800 crs max)
- \* SD smoke detector
- (A1) bracing element

**IAN MARRIOTT DESIGN**  
 10 Endeavour Street, NELSON  
 Ph. (03) 545 8304  
 Fax (03) 545 8305  
 Email: ian.m@netaccess.co.nz

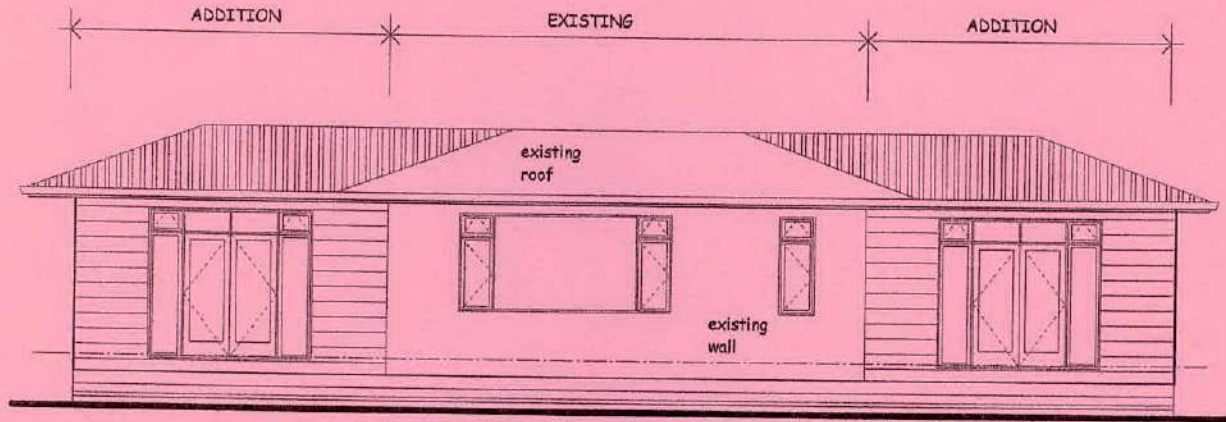
DRAWN: May 2006

**FLOOR PLAN LAYOUT 1:100**  
**Relocated and Altered House**  
**for D Riddell**  
**MOTUEKA VALLEY HIGHWAY**

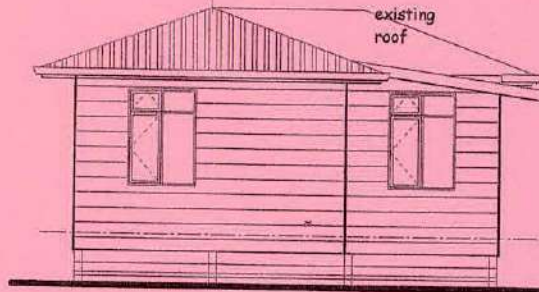
1 May 2006

RM 060423

APPENDIX C



NORTH ELEVATION

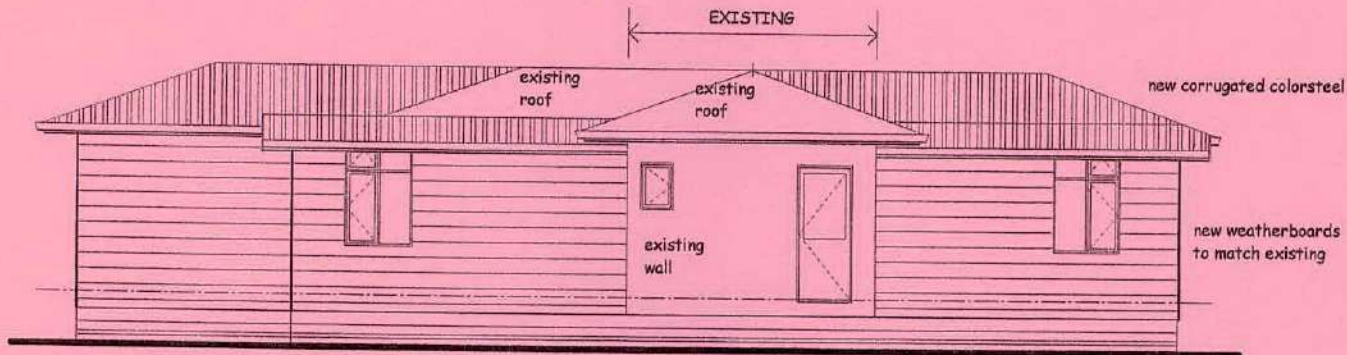


WEST ELEVATION



EAST ELEVATION

NOTE:  
FLOOR LEVEL TO BE  
DETERMINED BY TDC



SOUTH ELEVATION

**IAN MARRIOTT DESIGN**

10 Endeavour Street, NELSON  
Ph. (03) 545 6304  
Fax (03) 545 6305  
Email: ian.m@netaccess.co.nz

DRAWN: May 2006

**ELEVATIONS 1:125**  
**Relocated and Altered House**  
**for D Riddell**  
**MOTUEKA VALLEY HIGHWAY**

4

of 5

Appendix D  
RM 060423  
1 May 2006

IAN MARRIOTT DESIGN

10 Endeavour Street NELSON

Ph (03) 545 6304 Fax (03) 545 6305

1 May 2006

David Riddell  
13 Stafford Avenue  
NELSON

Re: Existing building at Parklands School, Motueka, to be relocated to  
Motueka Valley Highway, Ngatimoti,  
House inspection report

I undertook an inspection of the above building on the 1<sup>st</sup> May 2006, prior to the buildings' relocation.

**Inspection observations:**

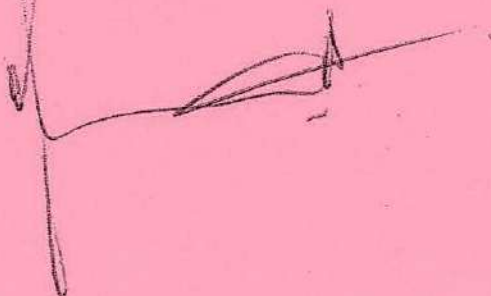
This building is the Parklands School 'dental clinic' although currently disused.

The building has rusticated weatherboard clad exterior walls, a painted corrugated iron roof and T&G timber floors over a timber framed piled foundation system.

The subfloor framing consists of 100 x 50 joists at nominally 600 centres over 100 x 75 bearers at nominally 1400 centres to piles at approx 1300 centres.

The building appeared to be in good condition, with no sign of significant deterioration and suitable for relocation,

Your faithfully  
Ian Marriott





22 February 2011

**FILE** 1928052301.

W Whitehead  
1370 Motueka Valley Highway  
RD 1  
Motueka 7196



Dear Sir/Madam

**DECISION ON NON-NOTIFIED RESOURCE CONSENT APPLICATION NO. RM110057 – TO CONSTRUCT A DWELLING AT 1370 MOTUEKA VALLEY ROAD, NGATIMOTI**

Pursuant to Section 114 of the Resource Management Act 1991 ("the Act"), please find enclosed a copy of the Council's decision on your application for resource consent referred to above.

Section 357A of the Act provides you with the right to lodge an objection with the Council in respect of this decision and/or any associated conditions. Any such objection must be made in writing setting out the reasons for the objection and must be lodged with the Council, together with a fixed fee of \$175.00 (GST inclusive), within 15 working days of receiving this letter.

At this stage the Council has not calculated the final costs of processing your application. Should the final costs exceed the deposit already paid, then as previously advised, you will be invoiced separately for these costs. Should the final costs be less than the deposit already paid, then you will receive a refund. Where the costs are equal to the deposit already paid, no further action is required. You will receive a letter shortly regarding the final costs of processing your application.

You may commence your activity immediately unless you lodge an objection to this decision. However, it is important that you check the conditions of your consent carefully as some of them may require you to provide information and/or plans to the Council before you may commence your activity. In addition, in some cases you may also require other permits or building consents for your activity and these must be obtained before you can commence your activity.

Please note that under Section 125 of the Act, your consent will lapse in 5 years unless you have given effect to it before then.

Please feel free to contact me if you have any questions regarding any aspect of your consent or its conditions. My contact details are listed at the top of this letter.

Yours faithfully

Ina Holst-Stoffregen  
**Consent Planner, Land**

## RESOURCE CONSENT DECISION

**Resource consent number:** RM110057

Pursuant to Section 104C of the Resource Management Act 1991 ("the Act"), the Tasman District Council ("the Council") hereby grants resource consent to:

***Wendy Maree Whitehead***

(hereinafter referred to as "the Consent Holder")

**Activity authorised by this consent:** To construct a dwelling in the flood plain in the Rural 1 Zone.

### Location details:

Address of property: 1370 Motueka Valley Road, Ngatimoti  
Legal description: Lot 2 DP 326533 and Lot 1 DP 378582  
Certificate of title: NL 315582  
Valuation number: 1928052301

Pursuant to Section 108 of the Act, this consent is issued subject to the following conditions:

### CONDITIONS

#### General

- 1 The proposed dwelling shall be generally in accordance with the application submitted, as shown on the attached plans marked RM110057(A-C) dated 23 February 2011. Where there is any apparent conflict between the information provided with the application and any condition of this consent, the conditions shall prevail.

#### Setbacks

- 2 The dwelling shall be set back 32 metres from the riverbank and 12 metres from the northern property boundary as shown on the attached plan RM110057(A) dated 22 February 2011 and as recommended in the flood report submitted with the application.

#### Minimum Floor Levels

- 3 The minimum finished floor level of the dwelling shall be in accordance with the recommendations made in the flood report submitted with the application, requiring the level of the building platform at the proposed building site to be 1.62 metres higher than the natural ground level.

#### Cultural Heritage

- 4 In the event of Maori archaeological sites (eg, shell midden, hangi or ovens, garden soils, pit depressions, occupation evidence, burials, taonga) or koiwi (human remains) being

uncovered, activities in the vicinity of the discovery shall cease. The Consent Holder shall then consult with the New Zealand Historic Places Trust's Central Regional Office (PO Box 19173, Wellington, telephone (04) 801 5088, fax (04) 802 5180), and shall not recommence works in the area of the discovery until the relevant Historic Places Trust approvals to damage, destroy or modify such sites have been obtained.

It should be noted that the discovery of any pre-1900 archaeological site (Maori or non-Maori) which is subject to the provisions of the Historic Places Act needs an application to the Historic Places Trust for an authority to damage, destroy or modify the site.

### **Wastewater**

- 5 Wastewater disposal for the dwelling shall be designed and installed to meet the permitted activity standard prescribed by Rule 36.1.4 of the Tasman Resource Management Plan.

### **Water Supply**

- 6 The quality of the water supply that is used for domestic purposes, and is sourced from a shallow well accessing groundwater on the property, shall be tested and if necessary treated by filtration and sterilisation to meet the prescribed New Zealand Standards for Drinking Water. The proposed rainwater tank shall be fitted with an appropriate camlock fitting for firefighting purposes.

### **Access**

- 7 On-site access to the proposed dwelling shall be formed to an all-weather metalled surface.

### **Colours**

- 8 The building shall be finished in colours and materials that are compatible with and sympathetic to the rural environment, avoiding the use of bold and/or dominant colours.

### **ADVICE NOTES**

- 1 This consent is issued pursuant to the Resource Management Act 1991 and the Tasman Resource Management Plan. It does not constitute building consent and if the project involves any form of building, consent should be sought pursuant to the Building Act 1991.
- 2 Monitoring of this resource consent will be undertaken by the Council, as provided for by Section 35 of the Act and a one-off fee has already been charged for this monitoring. Should monitoring costs exceed the initial fee, Council reserves the right to recover these additional costs from the Consent Holder. Costs can be minimised by consistently complying with conditions, thereby reducing the necessity and/or frequency of Council staff visits.
- 3 This resource consent only authorises the activity described above. Any matters or activities not referred to in this consent or covered by the conditions must either: 1) comply with all the criteria of a relevant permitted activity rule in the Tasman Resource Management Plan (TRMP); 2) be allowed by the Resource Management Act; or 3) be authorised by a separate resource consent.
- 4 This consent is granted to the abovementioned Consent Holder but Section 134 of the Act states that such land use consents "attach to the land" and accordingly may be enjoyed by any subsequent owners and occupiers of the land. Therefore, any reference to "Consent Holder" in the conditions shall mean the current owners and occupiers of the subject land. Any new owners or occupiers should therefore familiarise themselves with the conditions of

this consent, as there may be conditions that are required to be complied with on an ongoing basis.

- 5 The Consent Holder should note that this resource consent does not override any registered interest on the property title.
- 6 The Consent Holder is liable to pay a development contribution in accordance with the Development Contributions Policy found in the Long Term Council Community Plan (LTCCP). The amount to be paid will be in accordance with the requirements that are current at the time the relevant development contribution is paid.

Council will not issue a Code Compliance Certificate until all development contributions have been paid in accordance with Council's Development Contributions Policy under the Local Government Act 2002.

- 8 Stormwater is to be managed and disposed of on site and the discharge is to comply with Section 36.4 of the Tasman Resource Management Plan.
- 9 Amenity plantings around the site are encouraged to soften the effect of the development.

## **REASONS FOR THE DECISION**

### **Background to Proposed Activity**

The proposal lodged by W Whitehead seeks consent to construct a dwelling on land at 1370 Motueka Valley Road being land zoned Rural 1 that is 1.044 hectares in area. The site is located in the Motueka River flood plain and a flooding report has been submitted with the application which has also been assessed by the Council's resource scientist for flood risk. The site is suitable for the on-site disposal of wastewater and an appropriate design that meets Tasman Resource Management Plan standards will be undertaken. The water supply will consist of roof water collection, supported by a shallow well. This will also satisfy the firefighting requirements for dwellings in rural areas. The proposal requires a resource consent as it is within the Rural 1 Zone and on a site less than 12 hectares in area.

### **Tasman Resource Management Plan ("TRMP") Zoning, Area, and Rules Affected**

According to the TRMP the following apply to the subject property:

Zoning: Rural 1  
Area: Land Disturbance Area 1

The activity authorised by this resource consent does not comply with Permitted Activity Rule 17.5.3.1(c) (dwelling in Rural 1 Zone) or Controlled Activity Rule 17.5.3.2(c) (minimum of 12 hectares) of the TRMP and is deemed to be a Restricted Discretionary Activity in accordance with Rule 17.5.3.3 of the TRMP.

### **Principal Issues (Actual and Potential Effects on the Environment)**

The principal issues associated with the proposed activity involve the actual and potential effects on the environment. For this application these were:

- (a) using Rural 1 land for uses other than productive land use;
- (b) servicing, including the ability to provide on-site wastewater treatment and stormwater disposal;
- (c) visual and amenity effects (including reverse sensitivity effects);

- (d) building in the flood plain;
- (e) access to the site;
- (f) effects on cultural heritage.

I consider that the adverse effects of the activity on the environment will be no more than minor for the following reasons:

- (a) the existing size of the property limits land-based production and is not conducive to intensive horticulture or agricultural development. The use of the land to construct a dwelling will not affect the potential for the land to be used productively or as a lifestyle block;
- (b) on-site servicing can be provided for wastewater and water supply and stormwater will be managed and disposed of on site in compliance with Section 36.4 of the TRMP;
- (c) the house site is located in a position that is not easily visible from adjoining rural properties or the road and does not have an adverse effect on the rural landscape. The proposed dwelling will be compatible with the rural environment with the exterior finish covered by an appropriate condition. Existing and new amenity plantings will assist in softening the effect of the building on the environment. Given the generous setbacks from adjoining properties, it is unlikely that there be any adverse cross-boundary effects from adjoining rural land uses;
- (d) Council's Resource Scientist (Rivers & Coast) has considered the application and confirms the setbacks and minimum floor level for the site as recommended in the flood report submitted with the application;
- (e) there is an existing vehicle crossing into the site from the Motueka Valley Highway. This is not proposed to be changed as a result of this application. Additional traffic as a result of the dwelling is not expected to adversely affect the efficiency or safety of the roading network. The access to the dwelling will be required to be completed to engineering standards appropriate for the Rural 1 Zone;
- (f) Tiakina te Taiao has considered the application in relation to matters pertaining to cultural heritage. It considers that these matters will be addressed by following the accidental discovery condition attached to this consent as there are some sites of cultural significance in the vicinity.

### **Relevant Statutory Provisions**

In considering this application, I had regard to the matters outlined in Section 104 of the Act. In particular, I had regard to the relevant provisions of the following planning documents:

- (a) the Tasman Regional Policy Statement (TRPS);
- (b) the Tasman Resource Management Plan (TRMP).

Most of the objectives and policies contained within the TRPS are mirrored in the TRMP. The activity is considered to be consistent with the relevant objectives and policies contained in Chapters 5 (Site Amenity), 7 (Rural Environment Effects), 10 (Cultural Heritage) and 13 (Natural Hazards) of the TRMP.

## Part II Matters

I have taken into account the relevant principles outlined in Sections 6, 7 and 8 of the Act and it is considered that granting this resource consent achieves the purpose of the Act as presented in Section 5.

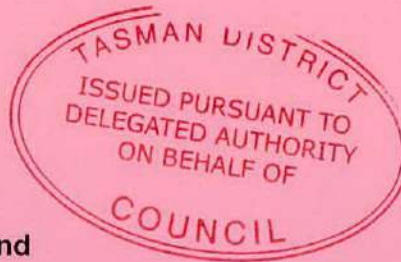
### Notification and Affected Parties

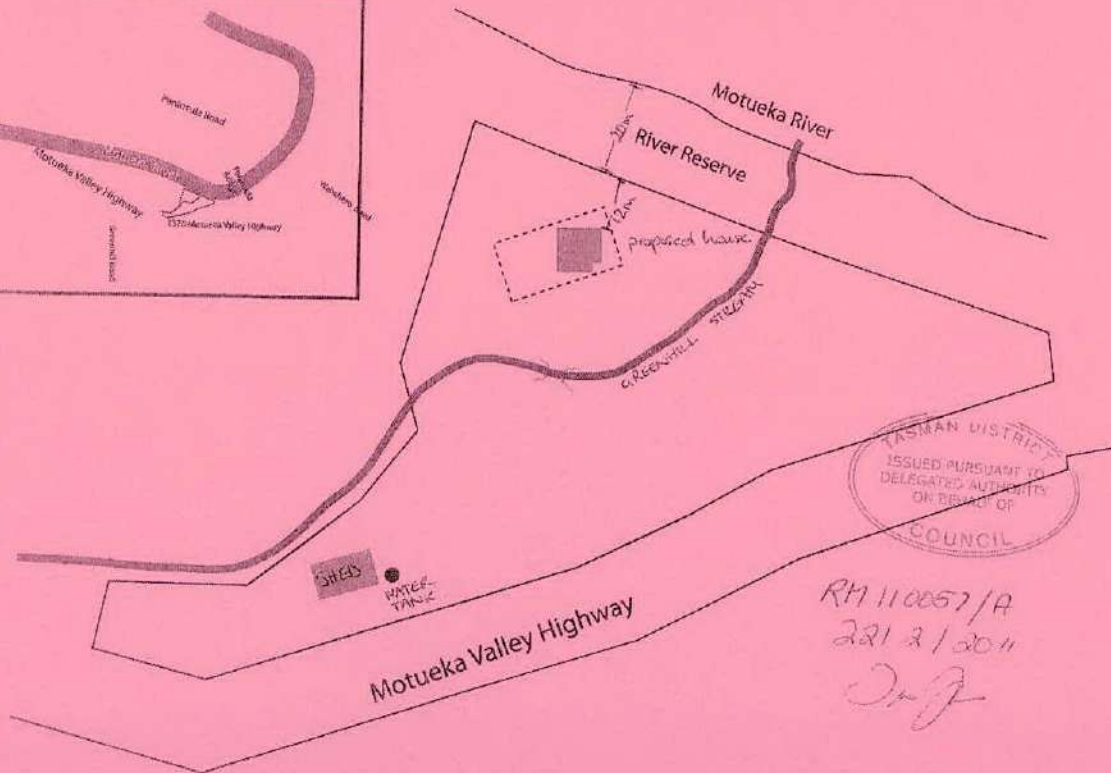
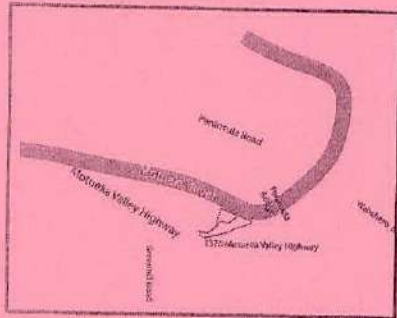
The adverse environmental effects of the activity are considered to be no more than minor. The Council's Resource Consents Manager has, under the authority delegated to him, decided that the provisions of Section 95 of the Act have been met and therefore the application has been processed without notification.

This consent is granted on 22 February 2011 under delegated authority from the Tasman District Council by:



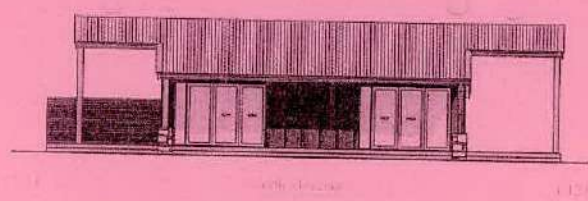
Ina Holst-Stoffregen  
Consent Planner, Land



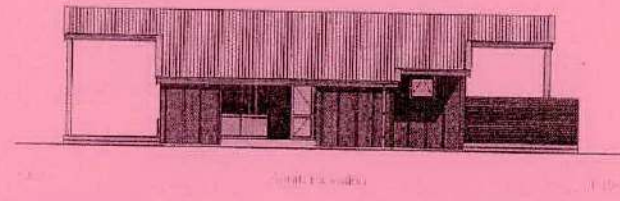


TASMAN DISTRICT  
ISSUED PURSUANT TO  
DELEGATED AUTHORITY  
ON BEHALF OF  
COUNCIL

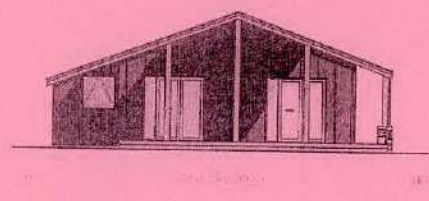
RM 110057/A  
22/2/2011  
DJF



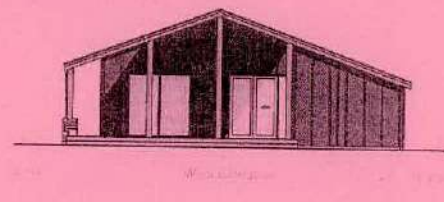
East Elevation



North Elevation



South Elevation



West Elevation

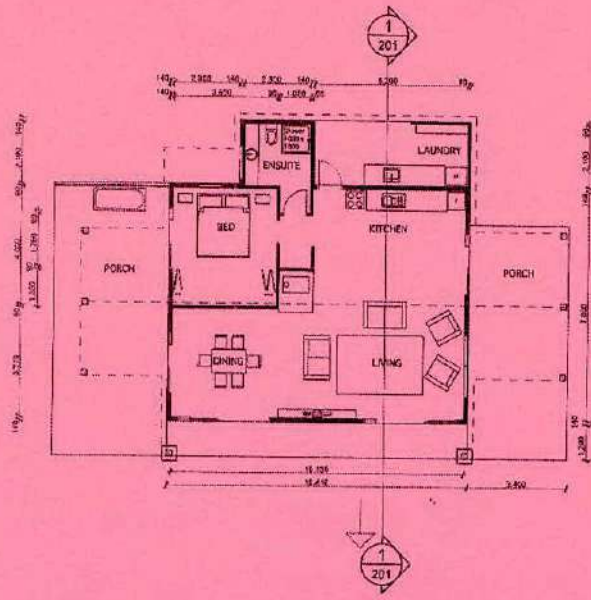
TASMAN DISTRICT  
ISSUED PURSUANT TO  
DELEGATED AUTHORITY  
ON BEHALF OF  
COUNCIL

RM 110057/B  
22/2/2011  
DJF

general notes:  
do not scale from drawings  
confirm all dimensions on site  
confirm any discrepancies with the  
designer prior to construction.  
use 2000 - High  
strength concrete - all  
concrete work

**East Elevation, North Elevation, South Elevation, West Elevation 1:100**

RIVERFRONT HOUSE 137 Motueka Valley Highway	#CAO Technician 13/12/10	-to be read in conjunction with all other drawings and specifications -check all dimensions on site prior to construction -do not scale off drawings	301
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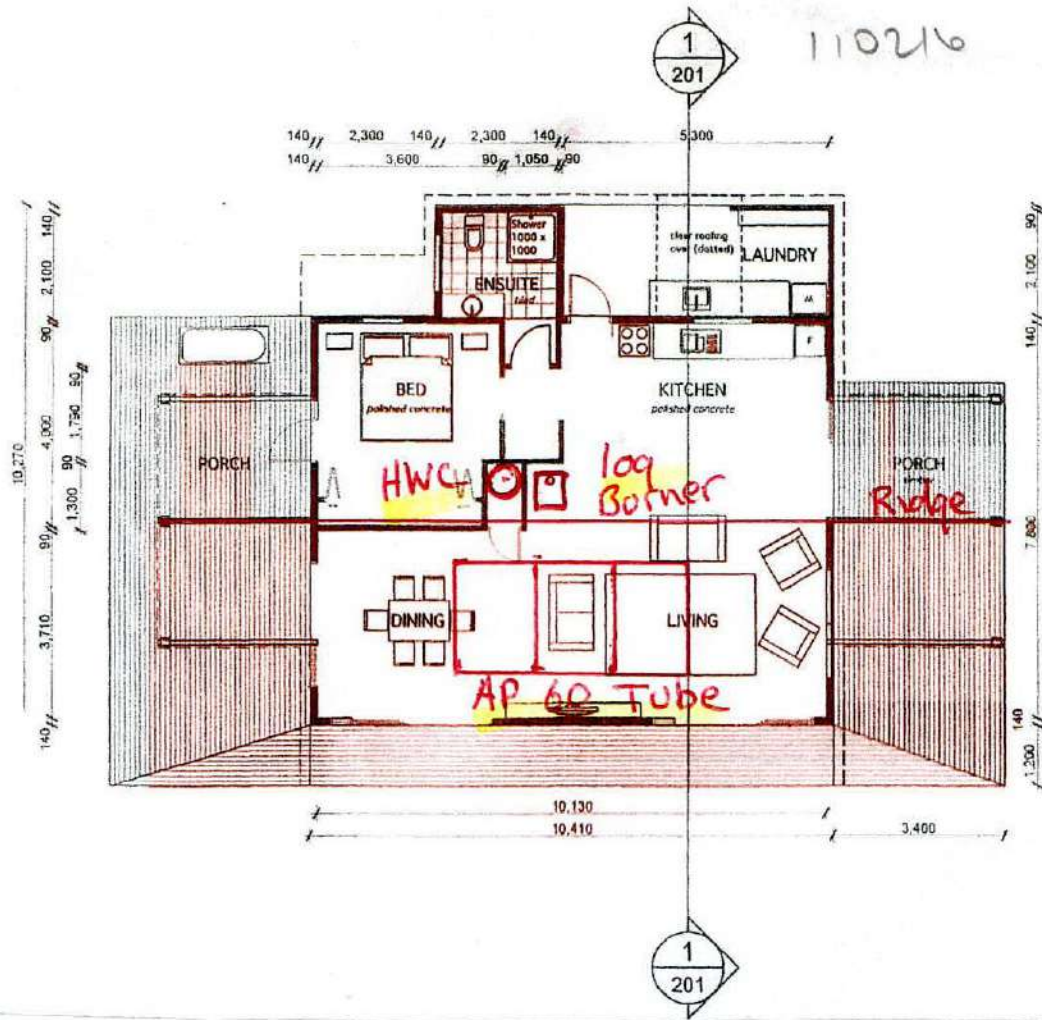


TOWN OF DISTRICT  
 ISSUED PURSUANT TO  
 DELEGATED AUTHORITY  
 ON BEHALF OF  
 COUNCIL  
 RM110057/C  
 22/2/2011  
*[Signature]*

GENERAL NOTES  
 Do not scale from drawings  
 Confirm all dimensions on site  
 Confirm any discrepancies with the  
 engineer prior to construction.  
 Wind zone - H-1  
 Seismic zone - R1  
 Flood zone - F1

**Ground Floor 1:100**

RIVERFRONT HOUSE	#CAD Technician	-to be used in conjunction with all other drawings and specifications -check all dimensions on site prior to construction -do not scale off drawings		<b>101</b>
137 Makara Valley Highway	18/12/10			



general notes:

do not scale from drawings. confirm all dimensions on site confirm any discrepancies with the designer prior to construction.

wind zone - High  
 earthquake zone - A  
 corrosion zone - 1

FLOOR PLAN NOTES

**Insulation**  
 walls - R3.6 pink batts  
 ceilings - R5.8 pink batts

**linings**  
 walls - 10mm gib  
 ceilings - 12mm grooved ply  
 gib aqualine to wet areas - see bracing plan (13mm ceilings, 10mm walls)

**stud sizes**  
 High wind zone  
 -exterior walls - Chemical Free Douglas fir 140x45 MSG8 at 480c/s  
 -studs <2.7m 90x45 at 480 max c/s  
 -studs <3.0m 90x70 at 600 max c/s  
 -studs <3.6m 90x90 at 400 max c/s  
 \*all wall framing to be MSG8/ VSG8  
 \*all external wall framing to be min H1.2 treated timber with H3.1 bottom plate  
 top plates: 140x45 + 190x35 No.1 framing

**lintels:** all lintels and beams to be MSG8-VSG8 and shall be preservative treated min 'H1.2' unless otherwise shown.

**recessed downlights:** \*refer to NZECP figure 1 for minimum clearances for recessed luminaires. all downlights to be CA rated

**wet area wall linings:** -Ardex Superflex to be applied over Gib Aqualine only  
 -pigmented sealer bottom coat and waterbourne enamel top coat to all wet areas, paint to comply with NZBC E3 3.1.2  
 -wet area wall linings finished with semi-gloss or gloss paint as per E3/AS1 3.1.2 walls (f).

\*vanity mirror units to be recessed into wall

\*shower to be proprietary acrylic unit

\*all dimensions are to framing unless otherwise stated

S = smoke alarms - domestic smoke alarm complying with any of the following standards, UL217, ULC-S531, AS3786 or BS5446 - Part 1

**Ground Floor 1:100**

RIVERFRONT HOUSE	<i>Whitehead.</i>	#CAD Technician	-to be read in conjunction with all other drawings and specification
1370 Motueka Valley Highway		27/01/11	-check all dimensions on site prior to construction -do not scale off drawings

Apricus **60** tube collector      1980 mm L x **4.485** mm W

Hwc - **409** litres      Medium pressure      **valve** vented

Roof pitch approx **20°** degrees      Roof profile- **corrugated Iron**

Daylight angle - Boundary shown - approx **?** metres      - **OK**

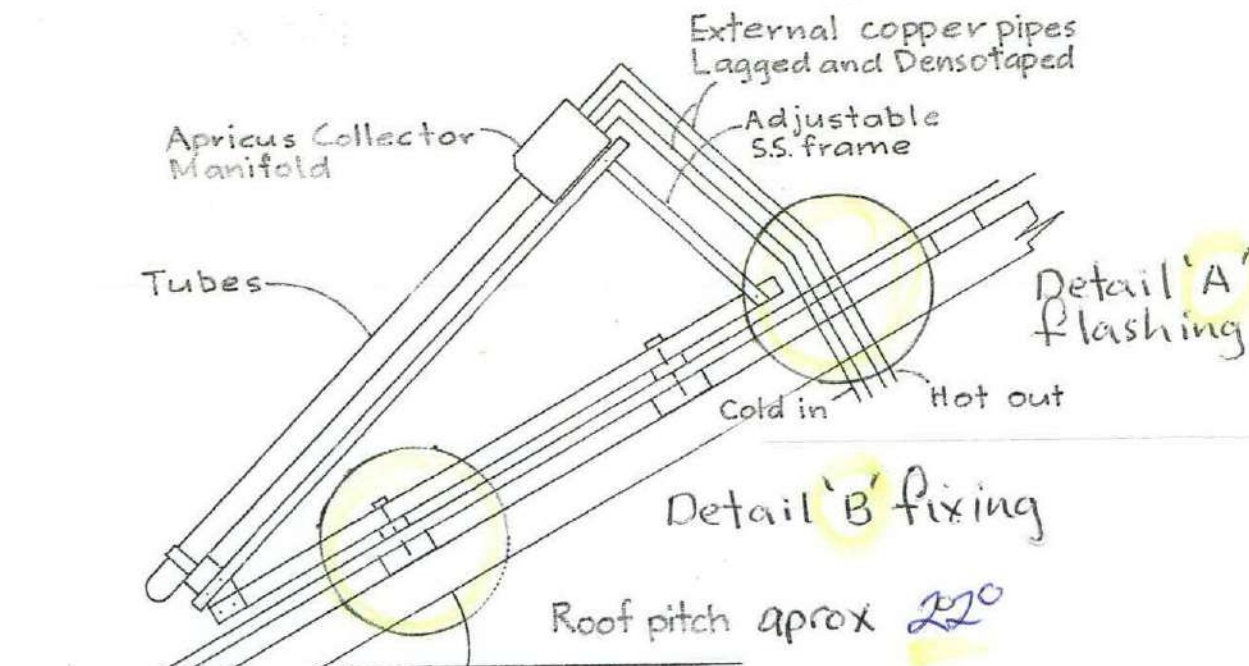
Windzone rating - **High**      corrosion zone **one.**

Smoke Alarms fitted as per code - sheet attached ✓

Owners name: **Wendy Whitehead.**

Address: **1370 Motueka Valley Highway**

 Cottage Plumbing & Solar Ltd  
 12 Windlesham Pl, Wakefield  
 Ph. 541-8760 Mobile 021-294-0202  
 Email: cottage@solarplumber.co.nz  
 www.solarplumber.co.nz



Apricus AP 60 tube Collector 189 Kg.

Loading 60 tube =  $\frac{4.485 \times 1980}{8.880 \text{ m}^2} = 189 \text{ Kg} = 21.2 \text{ Kg m}^2$

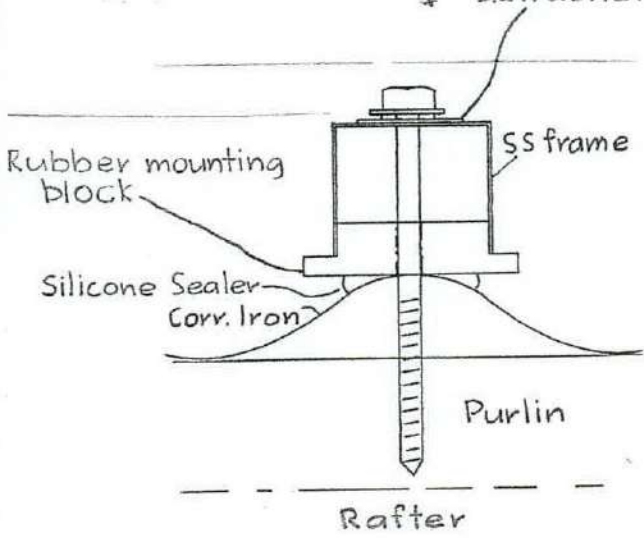
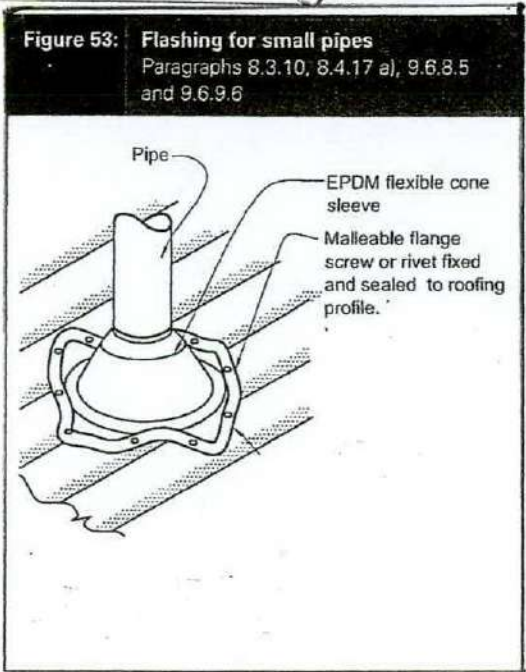
Spread 4/5 100 x 50 Truss @ 900mm Centre

2/3 75 x 50 Purlin @ 700mm Centre.

'A' flashing

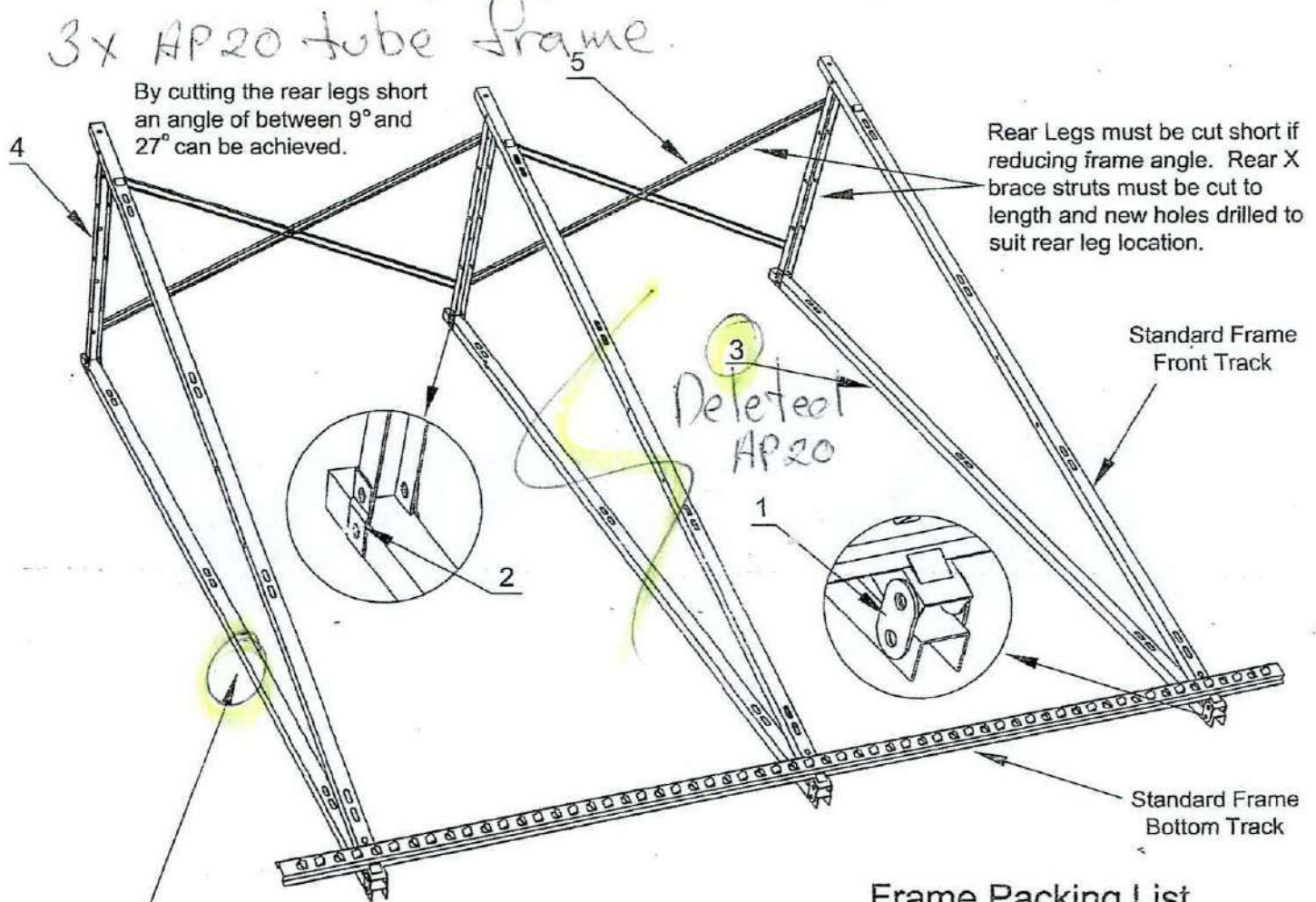
'B' fixing

18 x 14g x 100mm Teck Screw  
 Rubber Washer  
 + S.S washer



## AP Solar Collector Low Pitched Roof Frame Kit

The components contained in this package combine with the AP solar collector's standard frame to form the complete low pitched roof frame shown below.



Attachment to roof may be via roof attachment straps, rubber pads or round feet, depending on roof surface. Such components are supplied with standard frame.

18 x 149 x 100mm Tee K screw \*

Nuts and bolts are already attached to the appropriate components.

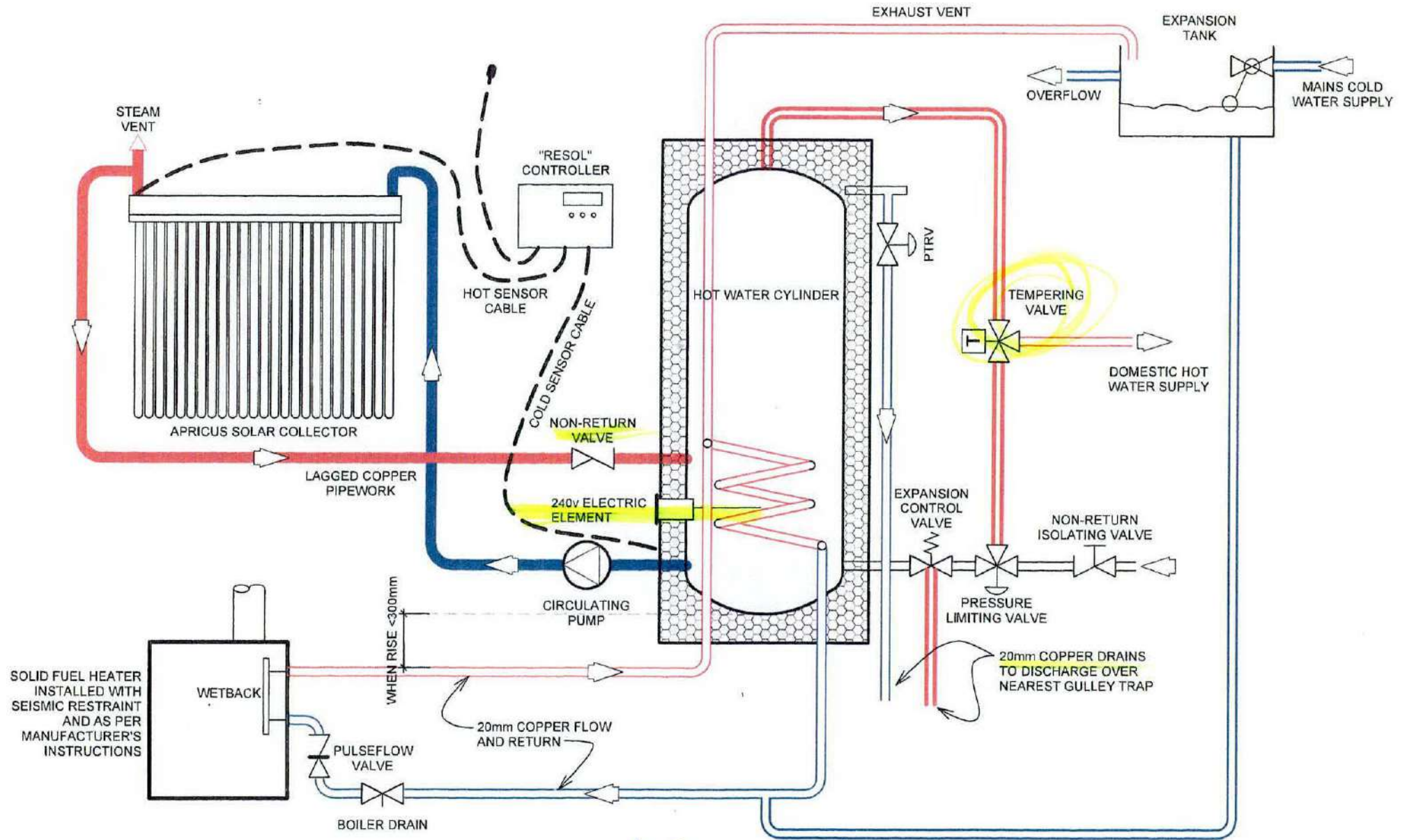
### Frame Packing List

Component Name	Component Quantities	
	10, 18 & 20 Tube	22 & 30 Tube
1. Front Connector	4	6
2. Rear Connector	4	6
3. Roof Track	2	3
4. Rear Leg	2	3
5. Rear X Brace	2	4
6. M8x50 Bolt	10	15
7. M8x40 Bolt	0	2
8. M8x20 Bolt	5	6
9. M8 Nut	25	38
10. Washer	25	38
11. Nut Lock	5	8
12. 12/14mm Spanner	1	1

#### SAFETY CONSIDERATIONS

- Wear gloves when handling frame components
- If installing on corrugated iron roofs, always use rubber pads, thus preventing direct contact between galvanised iron and stainless steel frame.
- Ensure roof attachment points are structurally sound
- Follow relevant safety regulations regarding working on

APRICUS SOLAR TUBES ELECTRIC BOOSTED STL... - VALVE VENTED



HWC 409 LITRES Med PRESSURE

**LEGIONELLA PROTECTION:**  
 NEW ZEALAND BUILDING CODE G12/AS2,  
 CLAUSE 3.5.1(b) - ELEMENT HEATED TO  
 60° CELCIUS ONCE PER DAY

Cottage Plumbing & Solar Ltd.  
 12 Windlesham Pl., Wakefield  
 Ph. 541-8760 Mobile 021-294-0202  
 Email: cottage@solarplumber.co.nz  
 www.solarplumber.co.nz



# Certificate of Approval

This certificate confirms that the company below complies with the following standard:

Company Name	<b>Apricus Solar Co. Ltd</b>
Company Other Name	<b>Apricus Australia Pty Ltd</b>
Client ID	<b>100633</b>
Certification Standard	<b>AS/NZS 2712-2007 : Solar and heat pump water heaters - Design and construction</b>
Scope of Certification	<b>Refer to Certification Schedule for details</b>
Type of Certification	<b>Product Conformance</b>

#### CERTIFICATE DATES:

Certification Review Date	<b>5/09/2007</b>
Certification Expiry Date	<b>21/12/2014</b>
Certificate Issue Date	<b>17/09/2007</b>
Certificate Last Update Date	<b>20/01/2010</b>

Please refer to Page 2 for Approved Sites

The use of the Accreditation Mark indicates accreditation by the Joint Accreditation System of Australia and New Zealand in respect to those activities covered by JAS-ANZ accreditation.

Refer to [www.jas-anz.com.au/register](http://www.jas-anz.com.au/register) for verification.

This certification remains valid until the above mentioned expiry date and subject to the organisation's continued compliance with the certification standard, and Global-Mark's Terms and Conditions.

This Certificate of Approval remains the property of Global-Mark Pty Ltd, Company Number: ACN. 108-087-654



Certification Manager

# Building Consent

Plans and specifications are attached to this application:

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

Clause	Means of Compliance
<input checked="" type="checkbox"/> B1 Structure	B1/AS1 NZS 3604
<input checked="" type="checkbox"/> B2 Durability	B2/AS2 AS/NZS 2712
<input checked="" type="checkbox"/> E2 External moisture	E2/AS1
<input checked="" type="checkbox"/> F7 Warning systems	F7/AS1
<input checked="" type="checkbox"/> G12 Water supplies	G12/AS2 AS/3500.2 AS/NZS 2712



### 4.1.12 Antifreeze function

#### OCF:

Antifreeze function  
Adjustment range: OFF / ON  
Factory setting: OFF

#### CFR:

Antifreeze temperature  
Adjustment range:  
-10 ... 10 °C  
Factory setting: 4,0 °C

114

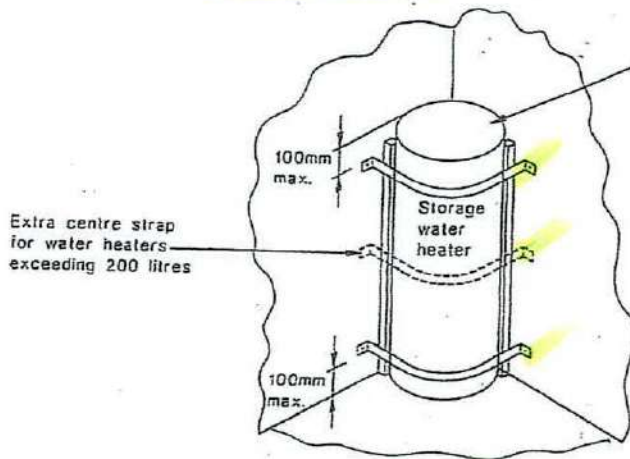


The antifreeze function activates the loading circuit between the collector and the store when the temperature falls below the adjusted antifreeze temperature. This will protect the fluid against freezing or coagulating. If the adjusted antifreeze temperature is exceeded by 1 °C, the loading circuit will be deactivated.

#### Please note:

Since this function uses the limited heat quantity of the store, the antifreeze function should be used in regions with few days of temperatures around the freezing point.

## Seismic Restraint of Water Heaters 90-360 Litres



Storage water heaters to be restrained with 25 x 1mm galvanised steel straps tensioned when fixed in place. Straps to be fixed to wall framing with:

- 1 No. 6mm coach screw with 30x2mm thick washer, or
- 2 No. 20x2.5mm thick washers.

Screws to penetrate timber framing a minimum of 50mm.

## Smoke Alarms in Houses

From 24 April 2003 Smoke Alarms must be installed in new homes and in existing homes when alterations are made.

They are required to be installed in the following rooms, and must be shown on floor plans accompanying Building Consent applications (plans not required for spaceheaters), and will be checked after consent issue by Council Inspectors at final inspection:

- all hallways and living areas
- bedrooms, OR within 3.0m of every sleeping space door, provided the alarms are audible to sleeping occupants on the other side of the closed doors.
- Smoke detectors must be fitted with a "hush facility". As a general guideline Council believes that all detectors that are placed in areas where false alarms may occur, such as adjacent kitchens, bathrooms or spaceheaters must have the "hush

Bc110216

Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
APPROVED  
21 APR 2011  
**BUILDING CONSENT**  
ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

**RECEIVED**  
21 MAR 2011  
TASMAN DISTRICT COUNCIL  
CUSTOMER SERVICES 3

# Apricus<sup>TM</sup>

SOLAR COLLECTORS

## **Solar Building Consent Application**

**Cottage Plumbing & Solar Ltd**

**switch**  
energy solutions  
at Solid Energy



The sun delivers  
the cleanest of all energy sources.  
It's inexhaustible and it's free.

**Apricus'**  
solar collectors are extremely effective,  
reliable and maintenance free.

Apricus solar collectors, available exclusively in New Zealand from Switch and our network of distributors, are efficient, reliable, environmentally friendly, and now very affordable.

Whether you're planning to build or wanting to increase the energy efficiency of your existing home, solar water heating today is a very practical alternative or supplement to electricity or gas.

### Apricus leads the way

Apricus solar collectors were the first to get New Zealand Solar Industry Association accreditation, the first evacuated tube system to earn compliance with Australasian Standard AS/NZS 2712, and the first to offer a 10-year manufacturers' warranty. Apricus is a world-leading solar equipment developer, experiencing very strong growth, with rapidly rising sales in the United States, Canada, Europe and Australia.

The patented Apricus evacuated tube is perfect for New Zealand conditions. The tough glass tubular design and high-efficiency heat pipe at the heart of an Apricus system provides greater annual output than comparable standard flat-plate units. Their rounded profile cuts down on reflection and gathers a greater proportion of each day's solar energy. And they continue to work in windy, colder conditions.

Evacuated tube technology has advanced rapidly over the 20 years since it was first developed and these collectors are fast becoming the default choice worldwide. This has meant an explosive increase in the production of tubes and other components, resulting in sharply lower costs to buyers.

At one time it was true this technology came at a cost, but this is no longer the case. Talk to Switch, to compare the output and performance of different systems, and discover just how competitive an Apricus system can be.

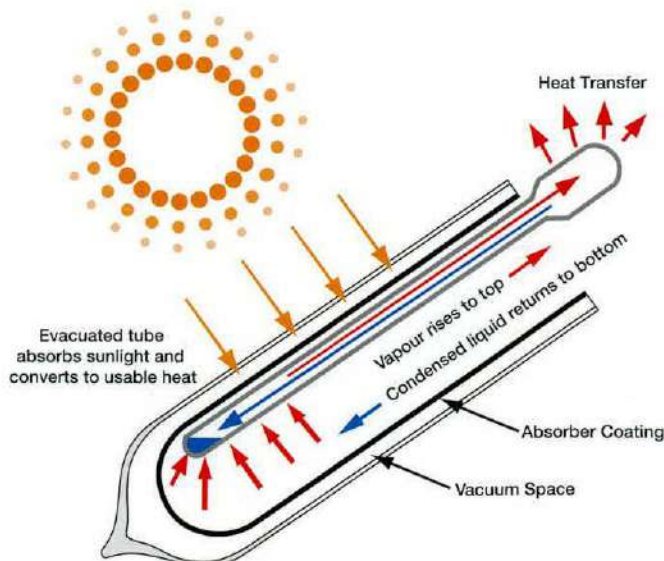
Unrivalled performance,  
full frost protection and the  
Apricus 10-year warranty.

### How Apricus tubes operate

Evacuated tubes' great advantage is their ability to trap and convert more of the sun's energy. They are best understood as a stretched version of the vacuum flasks we use to keep drinks hot or cold. They are great insulators. Energy passes into the transparent glass vacuum tube and is transferred to the water in the manifold, not lost back to the outside environment. Combined with the efficiency of the copper heat transfer pipe inside each tube, the Apricus solar collector delivers excellent heat output year-round.

Apricus evacuated tubes have no water running through them. This cuts down the weight on your roof, makes for a more straightforward installation and means the system is immune to frost damage. The only water in an Apricus system is a litre or so at any time passing inside the heavily insulated manifold at the top, gathering heat from each tube's copper heat pipe and delivering it to your home's hot water system. The heat pipes contain a non-toxic liquid which transfers the sun's energy as heat to the water in the system's manifold.

### The Apricus Evacuated Tube





Talk to **Switch** and  
discover just how competitive  
an **Apricus** system can be.

### Reliable and maintenance free

Apricus solar collectors are long-lasting, frost-protected and maintenance free. The water manifold is insulated with a blanket of glass wool and there is no water in the vacuum tubes which can freeze. This means there is no need for complicated anti-freeze heat-exchange systems.

Once your system is installed, you should never need to touch it again. The tubes' rounded profile means your home's normal cycles of rain and wind will keep the unit clean and functioning well.

### Apricus solar savings

Water heating takes 40% of the average New Zealand home's energy costs. Apricus solar systems can cut that cost in half. Fitted to an existing home or designed into a new building, the investment in Apricus technology makes sense. Designed into a new home, the savings generated would more than cover the finance cost.

And Apricus isn't just good for your pocket. Installing an Apricus system means you are contributing to New Zealand's drive for greater energy efficiency by cutting back your home's demand for reticulated energy such as electricity and gas. Apricus equipment has other environmental positives – it is primarily made of recyclable materials and arrives packaged in recycled cardboard.

### Which system will suit you?

Whether you're supplementing your home's existing hot water heating, aiming to use solar to heat your home as well as its water, or setting up a backpackers to shower large numbers of visitors every night, Switch's advisors can tailor a solution to suit your needs.

Apricus solar collectors are supplied in arrays of 20 or 30 tubes. All operate with low, medium or high-pressure water systems.

The Apricus 20 Collector makes sense for households of up to three people running a 180 litre hot water cylinder. The Apricus 30 suits larger families and a cylinder of about 300 litres. Households and commercial premises with high hot water needs typically install multiple sets of collectors and larger cylinders.

For homes with flat or gently sloping roofs, Switch supplies adjustable stainless steel framing to ensure your Apricus system makes the most of available solar energy.

APRICUS Specifications	Apricus 20	Apricus 30
Overall length	1980mm	1980mm
Overall width (excl. inlet/outlet pipe)	1496mm	2196mm
Overall height (inc. frame)	160mm	160mm
Manifold height	130mm	130mm
Gross area	2.7m <sup>2</sup>	4.07m <sup>2</sup>
Absorber area	1.6m <sup>2</sup> *	2.4m <sup>2</sup> *
Standard pressure rating	6 bar (85psi)	6 bar (85psi)
Fluid capacity	0.55 L	0.83 L
Recommended fluid flow rate	2-3L/min	2-3L/min
Collector efficiency	73%	73%

(results based on AP 20 model as tested by SPF Switzerland, C632LPEN, 22 March 2004)

\*Tubes are round and therefore absorption can occur from the sides as well as from directly above so a conservative calculation method is used: 1.72m x 47mm x number of tubes.

More information about Apricus can be found online at [www.apricus.com](http://www.apricus.com)

## The Switch range

Switch supplies a range of controllers which are the perfect complement for your Apricus solar collector.

These sophisticated digital controllers show the water temperature in your collector and cylinder and some even control the speed of water passing through the system. Some models also analyse performance. Our Deltasol E controller is suitable for use with integrated systems, such as a combined solar/boiler arrangement providing under-floor whole-home heating and hot water.

Look online at [www.switchenergy.co.nz](http://www.switchenergy.co.nz) to learn more about the Switch Controller range and how you can integrate other Switch products to radically reduce your home or commercial building's reliance on distributed energy networks.



Apricus' solar collectors are extremely effective, reliable and maintenance free.

The sun delivers the cleanest of all energy sources. It's inexhaustible and it's free.

Apricus solar systems can halve the cost of a home's water heating.

Talk to Switch and discover just how competitive an Apricus system can be.

Unrivalled performance, full frost protection and the Apricus 10-year warranty.

## Switch and Solid Energy

Switch is the exclusive New Zealand agent for Apricus equipment. An energy systems supplier and consultancy service, Switch is a Solid Energy New Zealand business, with access to the State Owned Enterprise's research and development expertise. Alongside Apricus equipment, Switch provides market leading heating equipment such as controllers, storage systems, and high-quality wood pellet boilers. Switch is continually evaluating equipment from around the world to assess its suitability for New Zealand conditions.

With an emphasis on renewable energy, Switch supplies equipment, provides advice and designs integrated heating systems for homes, businesses, schools and other public buildings. Switch complements Nature's Flame, Solid Energy's wood pellet fuel business.

To learn more about the Switch range, and to locate your nearest Switch representative, look online at [www.switchenergy.co.nz](http://www.switchenergy.co.nz)

### YOUR LOCAL SWITCH DISTRIBUTOR:

Contact Graham Dyce at  
**COTTAGE PLUMBING & SOLAR**  
Quotation and Installation  
Telephone: 03-541 8760 Mobile: 021 294 0202  
Email: [solarplumber@xtra.co.nz](mailto:solarplumber@xtra.co.nz)  
[www.apricus.com](http://www.apricus.com)

### APRICUS IS CERTIFIED BY:



Contact Switch: Phone 0800 765 431

Email: [info@switchenergy.co.nz](mailto:info@switchenergy.co.nz) Web: [www.switchenergy.co.nz](http://www.switchenergy.co.nz)

**Durability Statement for structural Cee-section and Top Hat galvanised steel products manufactured by Steel & Tube for use in Kiwispan Buildings**

21 July 2010

**(Based on HERA structural systems technical report SSTR-012)**

## Introduction

**The purpose of this Durability Statement is to give guidance in evaluating the durability and maintenance requirements for galvanised structural members used on Kiwispan structures.**

Acceptable Solution B2/AS1 Durability generally requires 50 years durability for load bearing structural sections, subject to normal maintenance.

Normal maintenance may include recoating interior and exterior protective coatings, which is only practical for unlined structures. For lined structures in situations that require maintenance to achieve 50-year durability in accordance with the attached table, it would be prudent to specify a shorter life span on the consent application, or to paint the steelwork with an appropriate system prior to erection.

The durability performance and maintenance requirements for profiled metal roofing and wall cladding are described in New Zealand Steel's "Specifiers and Builders Guide" November 2005. The lower end of cladding must be kept 35 mm clear of horizontal surfaces and contaminants such as dirt or wet vegetation.

## Durability

Along with external environment, major factors affecting the durability of galvanised steel members are building design and use. The following descriptions apply to the attached table:

### **a) Residential/Enclosed Dry**

Residential is defined as steelwork located in a dry internal environment that is lined with an effective thermal break between the external cladding and the structure (such as a fully enclosed office or a domestic house).

Enclosed Dry environment includes steelwork in an unlined structure without an effective thermal break in a dry, clean and well ventilated internal environment (such as garages and dry storage areas), but excludes steelwork that is lined without a thermal break.

### **b) Internal Moist**

The Enclosed Moist environment is defined as steelwork exposed to an internal environment that is modified by building design or use to create a more corrosive atmosphere.

Examples are structures without a damp proof floor covering, manufacturing areas that produce copious vapour, gaseous or particular discharge that will affect the galvanised coating, storage areas for wet product or areas within which internal combustion engines are continuously running. Extreme examples will require maintenance at an earlier stage than indicated on the attached table.

This category excludes swimming pools, which are subject to individual consideration

Within this building type there are two categories:

- **Damp**

Steelwork located in a damp internal environment where condensation may occur, and the structure is in an open sunny location (i.e. when the structure is exposed to the sun and not under any form of cover).

- **High humidity**

Steelwork located in an internal high humidity environment with some pollution, where the structure may be in a damp and shaded location (i.e. when the shed is under a tree and shaded from the sun).

**c) Open Front**

The open front environment is defined as steelwork located near permanent openings and near doors or windows that remain open under operating conditions, and may be exposed to the prevailing winds. Typical examples are structures such as open front lean-tos, gable structures closed in on three sides, or warehouses with large openings.

Within this building type there are two categories:

- **Protected**

Unlined structures with openings that are sheltered from the wind coming off the closest sea.

- **Open**

Unlined structures with openings that are exposed to the prevailing wind coming off the closest sea.

**d) Awning**

Steelwork that is exposed to the wind but is somewhat protected from the rain located in an open-sided structure, such as carports or structures closed in on one side only. The corrosion rate of this building type and that of "Open Front - Open" are identical.

The following table provides guidance on the time to first maintenance of the galvanized steelwork. The table cells have four colouring designations to achieve the 50 year design life. These colours correspond to the following guidance:

- White: No coating is required, as the Z275 galvanized coating will provide sufficient corrosion protection to reach the 50 year design life.
- Grey: Applying the coating system is left to the user's discretion as the Z275 galvanized coating may provide up to 50 years corrosion protection. However, if left uncoated, and rusting has started to appear, there should be no structural degradation of the steelwork for up to 6% steel thickness loss.
- Blue: A single application of the recommended coating system at the stated time to first maintenance or at onset of red rust must be applied to extend the durability performance to the required 50 years.
- Green: The coating must be applied on "new" galvanized steelwork and applied every 15 years to provide the required 50 years design life. If this coating is not applied in the beginning, red rust may appear within 5 years of its installation.

As with any other coating system, a regular maintenance wash to remove any corrosive deposits will have a positive effect on coating durability.

Table 5: Steel and Tube Durability Statement.



**Time to first maintenance for material to achieve 50 year durability requirement.**

Distance from the Sea	Location	Characterised by	Durability					
			Building Type					
			Residential/ Enclosed Dry	Internal Moist		Open Front		Awning
Damp	High Humidity	Protected		Open				
Within 200 metres from breaking surf	West Coast, South Island	Heavy salt deposits. Almost constant smell of salt spray in the air	50	5-10	-	-	-	-
Within 100 metres from breaking surf	West Coast, North Island		50	5-10	-	-	-	-
Within 50 metres from breaking surf	Other Coasts		50	5-10	-	-	-	-
200 metres up to 500 metres or more inland from breaking surf. In the immediate vicinity of calm salt water such as harbour foreshores.	West Coast, South Island	Medium Salt deposits. Frequent smell of salt in the air.	50	10-15	-	-	-	-
50 metres up to 500 metres or more inland from breaking surf. In the immediate vicinity of calm salt water such as harbour foreshores.	All other Coasts		50	25-35	5-10	-	-	-
500 metres to 1km from breaking surf. In the vicinity of calm salt water such as estuaries.	West Coast of both Islands and South Coast of South Island.	Little salt deposits. Occasional smell of salt in the air.	50	25-35	5-10	-	-	-
500 metres to 1km from breaking surf. In the vicinity of calm salt water such as estuaries.	East Coast of both Islands, South Coast of North Island and all harbours.		50	50	20-25	5-10	-	-
1km to 20km from salt water	West Coast of both Islands and South Coast of South Island.	Minor salt deposits. No smell of salt in the air.	50	30-40	10-15	5-10	-	-
1km to 5km from salt water	East Coast of both Islands, South Coast of North Island and all harbours.		50	50	25-35	10-15	5-10	5-10
20km to 50km from salt water	West Coast of both Islands and South Coast of South Island.	No marine influences	50	50	40-50	25-30	25-30	25-30
5km to 50km from salt water	East Coast of both Islands, South Coast of North Island and all harbours.		50	50	40-50	25-30	25-30	25-30
Inland more than 50km from salt water	Both Islands.		50	50	50	50	50	50

Note: Internal steelwork adjacent to openings may require more frequent maintenance than the rest of the structure.

## Maintenance Requirements

If there is no visible red or white rust, use the following surface preparation procedure:

1. Low-pressure fresh water wash up to 5000 psi with rotary head to Clause 4.2.5 of AS/NZS2312 to remove contaminants.
2. Let the steelwork dry.
3. Apply a single coat of acrylic elastomeric to achieve a 350µm dry film thickness.

If red or white rust is visible, use the following surface preparation procedure:

1. Power tool clean first then low-pressure fresh water wash up to 5000 psi with rotary head to Clause 4.2.5 AS/NZS2312 to remove contaminants.
2. Let the steelwork dry
3. Bristle brush power tool over the severe corroded areas only to St2 in accordance with AS 1627 Part 2
4. Apply two coats of acrylic elastomeric to achieve a 350µm dry film thickness.

Alternative coating systems are listed overleaf.

**In all cases, surfaces contaminated with oil or other deposits that may hinder paint adhesion must be cleaned with an appropriate product. The application of the coating system must be conducted by an experienced applicator in accordance with the coating manufacturers' requirements and AS/NZS2312.**

System	Surface Preparation	1 <sup>st</sup> Coat			2 <sup>nd</sup> Coat			3 <sup>rd</sup> Coat			Total nominal DFT <sup>3</sup> (microns)
		Type	PRN <sup>1</sup>	Nominal DFT <sup>2</sup> (microns)	Type	PRN <sup>1</sup>	Nominal DFT (microns)	Type	PRN <sup>1</sup>	Nominal DFT (microns)	
P1	Degrease, wash and dry	Acrylic dispersion paint <sup>4</sup>	-	40	Acrylic dispersion paint <sup>4</sup>	-	40	-	-	-	80
P2		Galvanized iron acrylic primer	-	40	Acrylic dispersion paint <sup>4</sup>	-	40	-	-	-	80
P3 <sup>5</sup>	Sweep Abrasive Blast	High build epoxy	C13	150	-	-	-	-	-	-	150
P4 <sup>5</sup>		Etch primer	C10	12	High build chlorinated rubber	C14	150	-	-	-	162
P5 <sup>5</sup>		Epoxy primer	C06	75	High build epoxy	C13	125	-	-	-	200
P6 <sup>5</sup>		Epoxy primer	C06	75	Two pack acrylic	C3	75	-	-	-	150
P8 <sup>5</sup>		Moisture-cured urethane primer	-	75	Moisture-cured urethane gloss	C40	75	-	-	-	150
P9 <sup>5</sup>		Polyamide cured epoxy primer	-	75	High build epoxy	C13	200	Acrylic 2-pack	C33	50	325
P10 <sup>5</sup>		Polyamide cured epoxy primer	-	75	High build epoxy	C13	200	Polyurethane gloss	C26	50	325
P11 <sup>5</sup>		Degrease, wash and dry	Etch primer	C10	12	Acrylic elastomeric	-	350	-	-	-

**Note:**

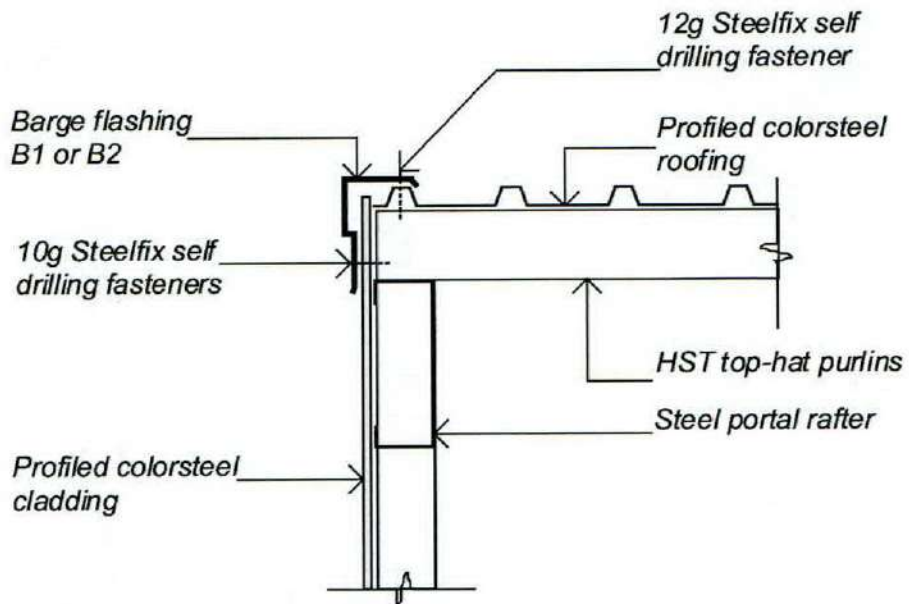
<sup>1</sup> PRN: Paint reference number as given in Appendix C of AS/NZS2312.

<sup>2</sup> DFT: coating dry film thickness.

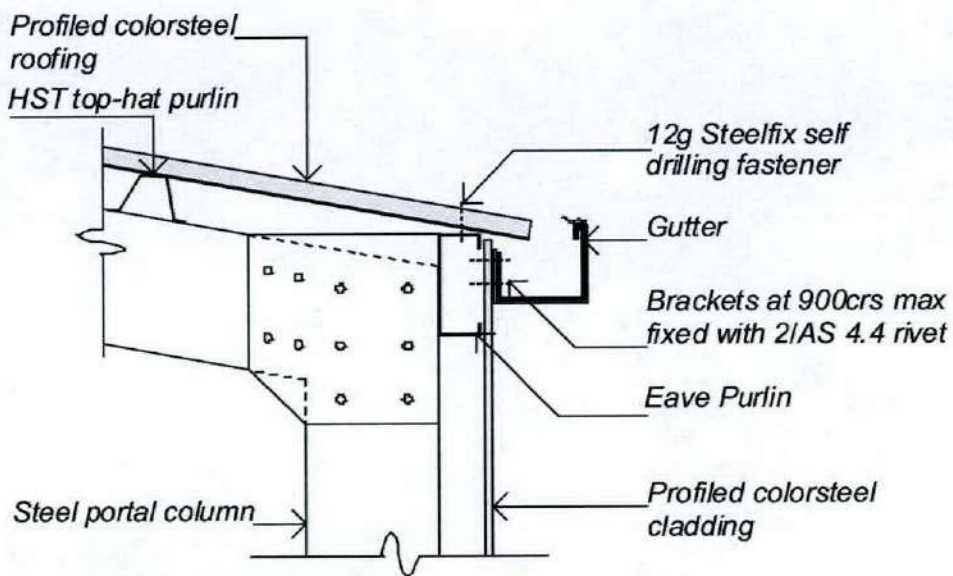
<sup>3</sup> The total nominal DFT does not include the galvanised zinc coating thickness.

<sup>4</sup> Contact the coating supplier for feedback on the appropriate acrylic paint for its intended use. For example, for internal high humidity locations it is recommended to use acrylic enamel at the specified nominal DFT.

<sup>5</sup> All P3 to P11 coatings must be applied by a professional coating applicator to achieve the required durability performance.



**BARGE FLASHING**



**GUTTER VERGE**

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**ROOF FLASHING**

drawing no.  
**FL 01**

date: 26-07-05

original size  
**A4**



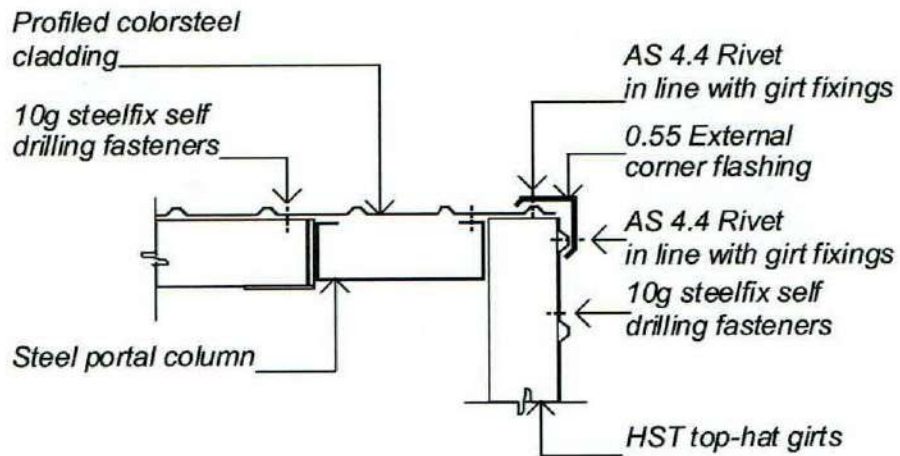
**KiwiSpan**

Building Consent Authority  
Structures for the future

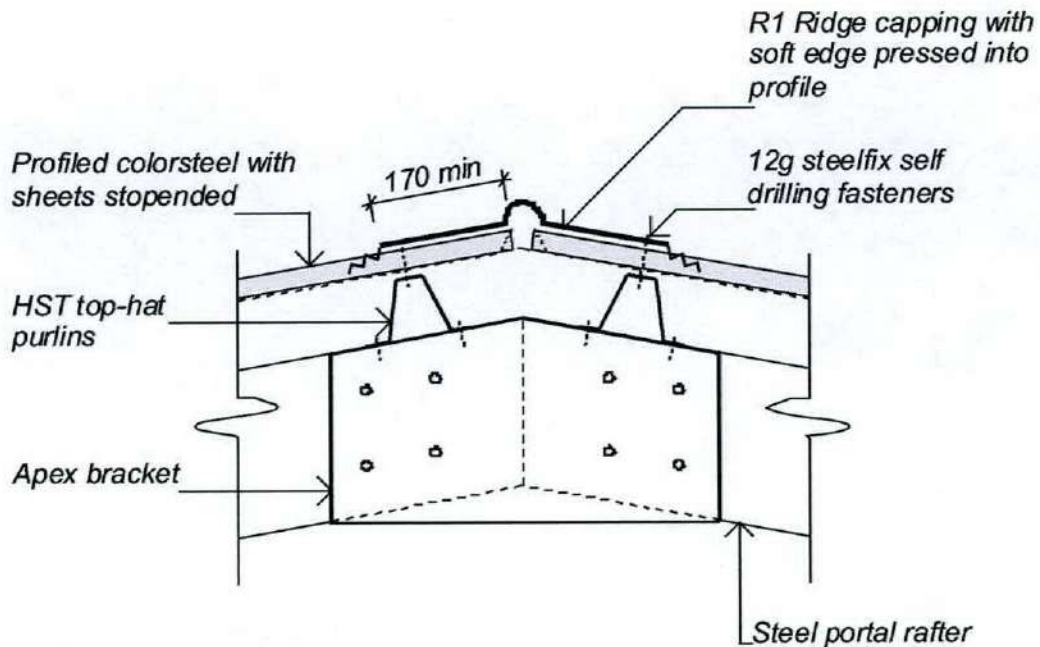
19 JUL 2010

**BUILDING CONSENT**

ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL



## EXTERNAL CORNER FLASHING



## RIDGE FLASHING

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**ROOF & WALL  
FLASHINGS**

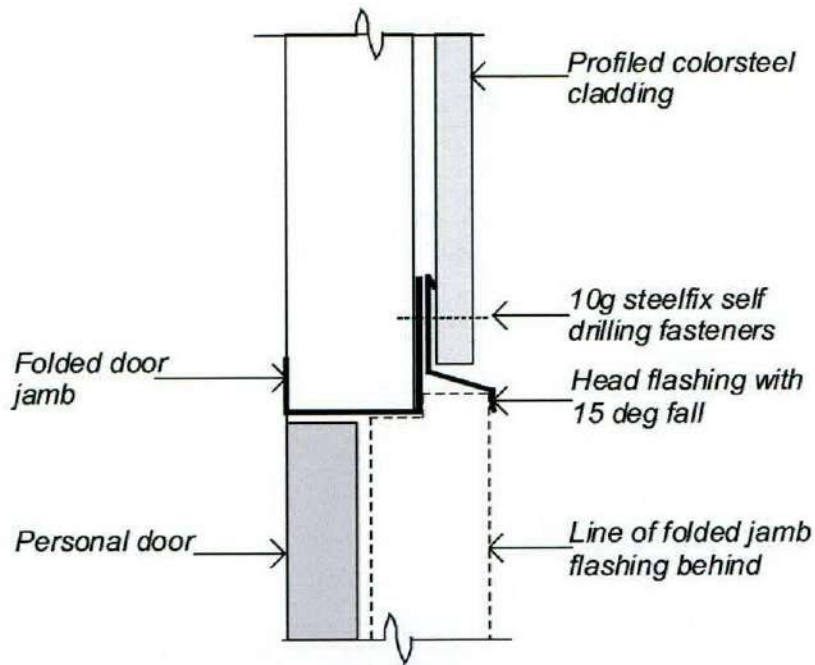
drawing no.  
**FL 02**

date: 26-07-05

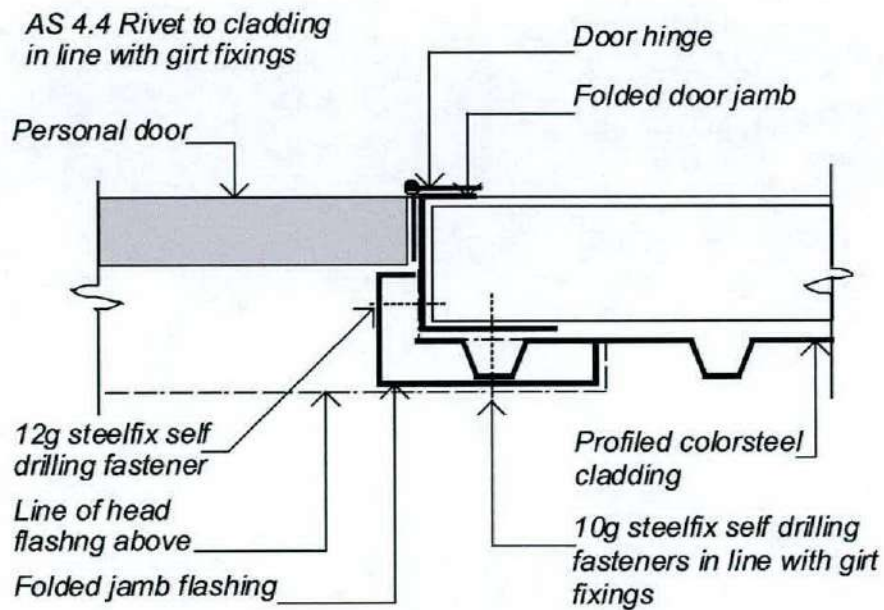
original size

**A4**

www. **KiwiSpan** .CO.NZ  
Structures for the future



**PERSONAL DOOR HEAD**



**PERSONAL DOOR JAMB**

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**PA DOOR  
FLASHINGS**

drawing no.  
**FL 04**

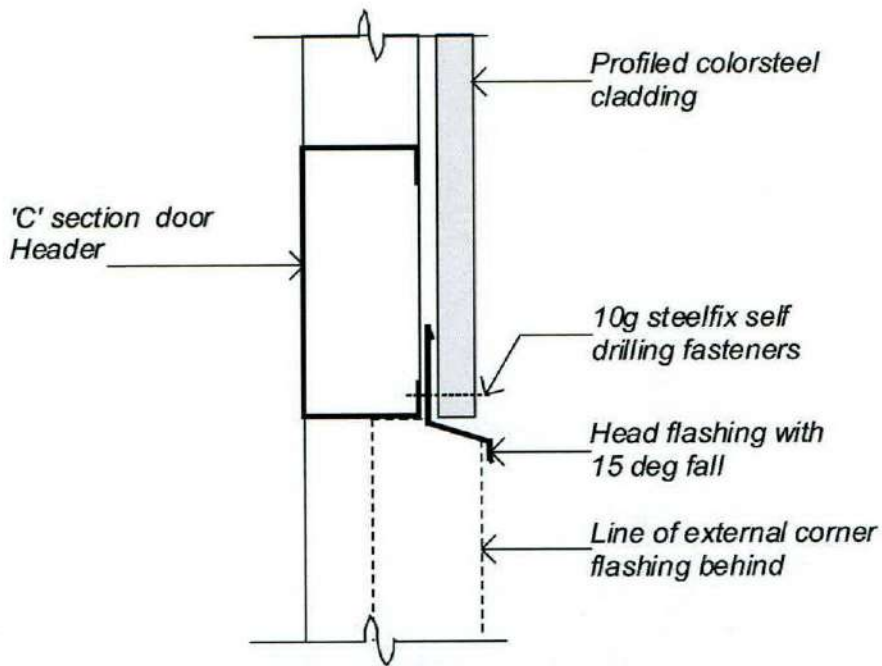
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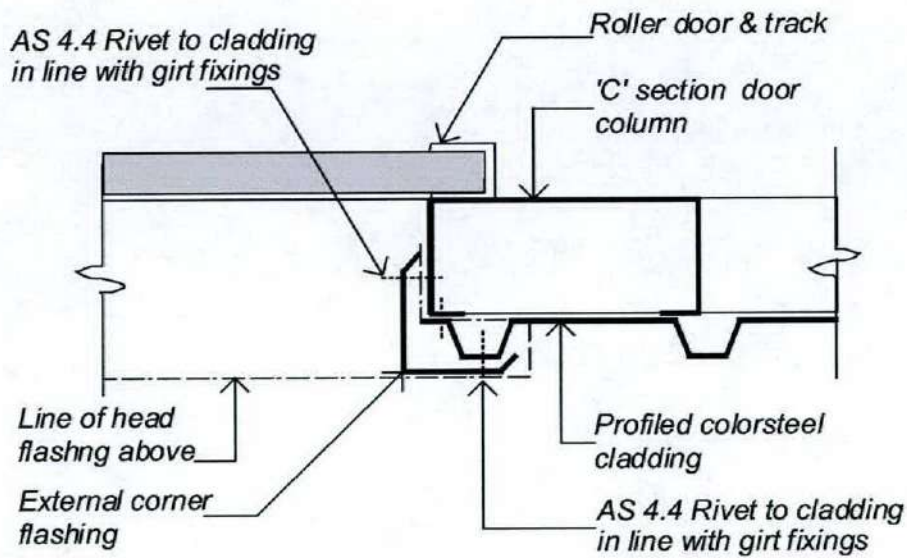
**A4**



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Structures for the future



**ROLLER DOOR HEAD**



**ROLLER DOOR JAMB**

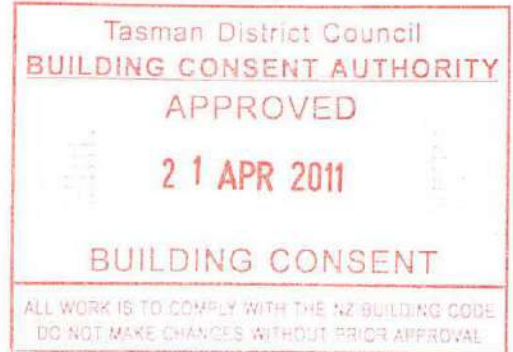
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<b>ROLLER DOOR FLASHINGS</b>	drawing no. <b>FL 05</b>	 <b>KiwiSpan</b> <small>Tasmanian District Council</small> <b>Structures for the future</b>
	date: 26-07-05	
	original size	
	<b>A4</b>	

BUILDING CONSENT AUTHORITY  
 APPROVED  
 19 JUL 2010  
 BUILDING CONSENT  
ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
 DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

①

110216



# SPECIFICATION

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

## NEW RESIDENCE

(project name)

## 1370 Motueka Valley Highway

(project address)

## Wendy Whitehead

(owners name)

Job Number: ~

Date: ~

## 1012 TABLE OF CONTENTS

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## 2323 TIMBER PILE FOUNDATIONS

### 1. GENERAL

This section relates to timber pile foundations and subfloor bracing supporting timber framed floor construction.

#### Related work

#### 1.1 RELATED SECTIONS

Refer to ~ for ~.

#### Documents

#### 1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B1/VM4	Structure Foundations
NZS 3109	Concrete construction
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604:1999	Timber framed buildings
NZS 3605	Timber piles and poles for use in buildings
NZS 3631	New Zealand timber grading rules
NZS 3640	Chemical preservation of round and sawn timber



#### Requirements

#### 1.4 CO-ORDINATION

Refer to all drawings and calculations to ensure details and fixings required are provided for in the installation of the piles and bracing work structure.

#### 1.5 DESIGN AND INSTALLATION

Design and installation of piling system to comply with NZS 3604.6 Foundations and subfloor framing, and to NZBC B1/VM4, Structure Foundations, 5.3 Timber piles.

#### Performance

#### 1.6 COMPLIANCE, VISUAL GRADING AND PROOF TESTING

The pile structure to comply with NZS 3605, Timber piles and poles for use in building, and meeting the requirements of clause 5.6.6.1(e).

- Ordinary piles are branded with a triangle brand.
- Anchor piles for residential piles to be visually branded "A".
- Construction piles and poles that require a high performance to be branded "H" for "high category".

#### 1.7 PROOF OF PRESERVATIVE TREATMENT

Provide evidence that the piles and poles have been treated to NZS 3640, H5.

## 2. PRODUCTS

#### Materials

#### 2.1 TIMBER PILES, ROUND

Radiata pine, treated H5 to NZS 3602, table 1A to design data assigned in NZS 3603, section 7 and complying with NZS 3605.4 Round or square house piles, for cross-section, length, straightness, grade, growth rings, durability, strength, and branding.

#### 2.2 TIMBER PILES, SQUARE

Radiata pine, treated H5 to NZS 3602, table 1A to design data assigned in NZS 3603, section 7 and complying with NZS 3605.4 Round or square house piles, for cross-section, length, straightness, grade, growth rings, durability, strength, and branding.

- 2.3 **TIMBER PILE BRACING**  
Species, grade, moisture content in service and level of treatment to NZS 3602, tables 1B and 1C and grading to NZS 3631.

**Components**

- 2.4 **CONCRETE**  
For pile footings 17.5 MPa ordinary grade concrete to NZS 3109, and NZS 3604, section 6.4.5.
- 2.5 **NAILS / WIRE DOGS**  
Stainless steel and or hot dipped galvanized steel to NZS 3604, table 6.5.2b and section 4 Durability, clause 4.4 and Table 4.3
- 2.6 **BOLTS AND SCREWS**  
Stainless steel and or hot dipped galvanized steel to NZS 3604, Section 4 Durability, clause 4.4 Steel fixings and fastenings.
- 2.7 **NAIL PLATES**  
Hot dipped galvanized steel toothed or nailed steel plates to NZS 3604, Section 4 Durability, clause 4.4 Steel fixings and fastenings, to the manufacturer's design for the particular locations shown on the drawings.
- 2.8 **PROPRIETARY CONNECTORS**  
Stainless steel, hot dipped galvanized steel or epoxy coated hot dipped galvanized steel to the manufacturer's design for the particular locations shown on the drawings.
- 2.9 **CORROSION RISKS**  
Use stainless steel fixings, connectors, etc in all zones, with the timber treatments CuAz (Preservative code 58) and ACQ (Preservative code 90).

**3. EXECUTION**

**Conditions**

- 3.1 **GENERALLY**  
Comply with NZS 3602 and NZS 3604 except as varied by this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry.
- 3.2 **EXCAVATION**  
Comply with NZS 3604 section 3 Site requirements, and section 6 Foundations and subfloor framing. Excavate for pile footings as detailed on the drawings.

**Application**

- 3.6 **INSTALL ROUND TIMBER PILES**  
Prepare, place, locate and secure to NZS 3604, section 6 Foundations and subfloor framing, and as detailed on the drawings. Cast piles in concrete footing as detailed.
- 3.7 **INSTALL SQUARE TIMBER PILES**  
Prepare, place, locate and secure to NZS 3604, section 6 Foundations and subfloor framing, and as detailed on the drawings. Cast piles in concrete footing as detailed.
- 3.8 **NOTCHES AND HOLES**  
Minimise notching and drilling of piles and poles within 300mm of the ground level.

- 3.9 **TREAT CUTS**  
Brush-treat timber piles and poles cut after treatment with preservative to NZS 3640 appendix B4.
- 3.10 **PILE BRACING**  
Brace piles to NZS 3604, sections 6.8, Braced pile systems. Refer to bracing plan for location of braces and to drawings for bracing details.

#### **Completion**

- 3.12 **LEAVE**  
Leave work to the standard required by following procedures.

#### **4. SELECTIONS**

- 4.1 **ORDINARY TIMBER PILES**  
Brand/type: RADIATA PINE "Triangle" branded  
Size: 125mm  
Treatment: H5
- 4.3 **ANCHOR TIMBER PILES**  
Brand/type: RADIATA PINE "A" branded  
Size: 125mm  
Treatment: H5  
Location: Refer to bracing plan
- 4.6 **SUB-FLOOR TIMBER BRACING**  
Species: Pinus Radiata  
Size: 90x90  
Treatment: H1.2  
Location: Refer to bracing plan

## **2361 STRIP FOOTINGS**

### **1. GENERAL**

This section relates to the supply and installation of concrete strip footings of non-specific design to NZS 3604 and NZS 4229, including;

- formwork, reinforcement, concrete mixes and the placing of concrete

### **1.2 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3121	Specification for water and aggregate for concrete
NZS 3604:1999	Timber framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4431	Code of practice for earth fill for residential development
AS/NZS 4671	Steel reinforcing materials

### **Requirements**

### **1.3 QUALIFICATIONS**

Concrete workers to be experienced, competent and familiar in the fabrication and erection of formwork and with the materials and the techniques specified.

### **1.4 QUALITY RECORDS**

Do not place concrete/grout until all excavations, formwork/blockwork and reinforcing have been inspected and passed by the Building Consent Authority.

## **2. PRODUCTS**

### **2.1 NORMAL CONCRETE**

Normal concrete 17.5, 20 or 25 MPa grade (refer to SELECTIONS), maximum aggregate size 19mm ready-mixed to NZS 3104. Retain delivery docket listing mix and despatch details.

Mass concrete 10 MPa grade.

### **2.2 REINFORCEMENT**

To AS/NZS 4671 deformed mild steel except for ties in plain round mild steel and as detailed. Grade 300E deformed, other than for ties and stirrups, unless shown otherwise on the drawings

### **2.3 TYING WIRE**

Mild drawn steel wire not less than 1.2mm diameter.

### **2.4 WATER**

To NZS 3121. Water from a local authority water supply is acceptable.

### **2.5 SPACERS AND CHAIRS**

Precast concrete or purpose made moulded PVC.

## **3. EXECUTION**

### **3.1 STORAGE**

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 **SOIL BEARING**  
To NZS 3604 **3 Site Requirements.**  
All soil bearing surfaces of footings shall be horizontal and may be stepped to accommodate variations in cleared ground level. Bearing shall be upon solid bottom in undisturbed good ground to NZS 3604, or firm fill with a "Statement Of Suitability...." to NZS 4431.
- 3.3 **DEPTH OF FOOTINGS**  
As shown on drawings with minimum depth of footings below cleared ground level:  
To NZS 3604 **3 4.2.**  
- 200mm.  
To NZS 4229 **3.3.2.**  
- 150mm in firm rock.  
- 400mm in clay (except expansive).  
- 300mm in other material (subject to any limitations in the "Statement Of Suitability...." to NZS 4431)
- 3.4 **STEPPED FOOTINGS**  
Footings can be stepped for uneven sites with the following requirements:  
- minimum vertical step in footings 600mm  
- stepped walls overlapped minimum 450mm vertically and horizontally
- 3.5 **MASS CONCRETE SUB FOOTING**  
Where good ground is greater than 600mm deep, 10 MPa mass unreinforced concrete can be used to fill up from the good ground to the 600mm depth. Refer to SELECTIONS for minimum dimensions.
- 3.6 **BLINDING CONCRETE SUB FOOTING**  
For footings made of reinforced concrete masonry lay the blocks on a level blinding of 17.5 MPa unreinforced concrete with a minimum thickness of 60mm and a minimum width of the masonry unit plus 110mm.
- 3.7 **WIDTH OF FOOTINGS**  
Footing to be centred on foundation wall above. Refer to drawings or SELECTIONS for minimum dimensions.
- 3.8 **FORMWORK**  
Use 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. Water blast to clean formwork. Keep formwork wet before concrete is placed.
- 3.9 **REINFORCEMENT**  
Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109. Do not rebend bars. Where rebending is approved, use a purpose built tool, proper preparation and preheating.  
Longitudinal reinforcing, refer to SELECTIONS for size and quantity, and for 2 bars or greater, tied together with R6 stirrups @ 600mm centres minimum.  
With stepped footings, at least 50% of the lower footing reinforcement shall be turned up the step to a minimum of 450mm beyond the rebar intersection, and at least 50% of the upper footing reinforcement shall be carry on into the lower foundation wall to a minimum of 450mm (350 with hook) beyond the rebar intersection.
- 3.10 **REINFORCING LAPS**  
Tie all lapping bars to each other.

Minimum reinforcing laps schedule NZS 3604: Table 6.5

<b>BAR TYPE</b>	<b>MINIMUM LAP DIAMETERS</b>
Deformed	30 diameters (40 for NZS 4229 6.6.3)
Plain round (with hooks)	40 diameters
Plain round (no hooks)	60 diameters

- 3.11 **STARTER BARS**  
Vertical starter reinforcement to match vertical wall reinforcement in size, type, location and spacing. Starters to penetrate foundation wall by 600mm minimum, and in the footing to be bent through 90° and tied to longitudinal reinforcing.
- 3.12 **COVER**  
Minimum cover 75mm.
- 3.13 **OPENINGS**  
Footings to be continues under openings unless shown otherwise.
- 3.14 **PUMPING CONCRETE**  
Set up and supervise pump operation, placing and compaction of the mix to, NZS 3109: **7.4 Handling and placing** and **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 **STRIKE FORMWORK**  
Strike formwork without damaging or overloading structure to NZS 3109. Do not remove formwork before the following minimum periods under average temperature conditions:
- 12 hours:                    Sides of beams, walls and columns
- Completion**
- 3.16 **PROGRESSIVE CLEANING**  
Clean off concrete spills as they occur, making good any damage at the same time.
- 3.17 **FINAL CLEANING**  
Clean down exposed walls and remove waste material from adjoining surfaces at completion.
- 3.18 **REMOVE**  
Remove from the site materials not used.
- 4. SELECTIONS**
- 4.1 **CONCRETE**  
Normal concrete: 17.5 MPa
- 4.2 **MASS CONCRETE SUB FOOTING**  
Width:                    to match footing width  
Minimum height: 50 mm
- 4.3 **FOOTING SIZE AND REINFORCING**  
The following are minimum requirements.  
See drawings  
Stirrups:                    R6 ties @ 600mm centres minimum

## 3100 CONCRETE GENERAL

### 1. GENERAL

This section deals with general matters relating to all aspects of concrete work.

#### 1.1 RELATED SECTIONS

Refer to 3111 FORMWORK FOR CONCRETE for formwork  
Refer to 3112 REINFORCEMENT FOR CONCRETE for reinforcement  
Refer to 3121 CONCRETE PLACEMENT for concrete placing  
Refer to 3124 FINISHES TO WET CONCRETE for concrete finishing  
Refer to 3129 CONCRETE PRODUCTION for concrete production

#### Documents

#### 1.2 DOCUMENTS REFERRED TO

Documents referred to in the above sections are:

AS 1366.3	Rigid cellular plastics for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
AS/NZS 1554.3	Structural steel welding - Welding of reinforcing steel
AS/NZS 2269	Plywood - Structural - Specifications
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction *
NZS 3112.1	Methods of test for concrete - Tests relating to fresh concrete
NZS 3113	Chemical admixtures for concrete
NZS 3114	Specification for concrete surface finishes
NZS 3121	Specification for water and aggregate for concrete
NZS 3122	Specification for Portland and blended cements (General and special purpose)
NZS 3125	Specification for Portland-limestone filler cement
NZS 3604:1999	Timber framed buildings
NZS 3631	New Zealand timber grading rules
AS/NZS 4357	Structural laminated veneer lumber
AS/NZS 4671	Steel reinforcing materials
AS/NZS ISO 9001	Quality management systems - Requirements
	Alkali aggregate reaction (Cement and Concrete Association)
	<b>* A copy of NZS 3109 Concrete construction, must be held on site.</b>

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.

#### Requirements

#### 1.4 QUALIFICATIONS

Workers to be experienced, competent and familiar in the fabrication and erection of formwork and with the materials and the techniques specified.

#### 1.5 INSPECTIONS

Refer to SELECTIONS for type of inspection.

#### Requirements

#### 1.6 RECORDS

Make and keep record of mix, time, date and location of each pour and make available on request together with delivery dockets. Cross reference delivery dockets in pour records.

#### 1.7 PRODUCER STATEMENTS

Provide Producer Statements where required by the Building Consent Authority and where required by this specification.

#### Performance

1.8

#### TESTING, ON SITE

Carry out sampling and concrete acceptance tests during construction to NZS 3109: section 9, Concrete acceptance tests during construction, noting that concrete may be rejected for:

- Non-compliance with this specification.
- Non-compliance with NZS 3109, section 9, Concrete acceptance tests during construction.
- Showing by appearance when in place that it does not comply with this specification, especially in respect of surface finish, segregation, or low density and which cannot acceptably be made good.

Conduct 7 day strength tests. After a 7 day test result of less than 60% of the specified strength, concrete placement to stop until it is shown the suspect concrete complies with the specification. Make all test records available.

1.10

#### CONTROL TESTS

Carry out slump tests, yield tests and air content tests to NZS 3112.1, sections 4, 5, and 9 respectively and evaluate to NZS 3104: section 2.15, Control tests and their evaluation, keeping a record of all tests at the plant and making them available on request.

1.11

#### STRENGTH TESTS

Carry out to NZS 3112.2, section 10 and evaluate to NZS 3104: section 2.15, Control tests and their evaluation, keeping a record of all tests at the plant and making them available on request.

## 3123A **AQURON®** EXPOSED CONCRETE FLOOR TREATMENTS

### 1. **GENERAL**

This section relates to **AQURON®** Concrete Treatments providing curing, surface hardening, anti-dusting, sheen enhancement for new concrete floors that will be left "EXPOSED" as the final finish.

### 1.2 **MANUFACTURER'S DOCUMENTS**

Manufacturer's and supplier's documents relating to work in this section are:

Manufacturer's literature, MSD sheets, and technical data for **AQURON®** products are available from:

New Zealand Distributor:

Markham Distributing Ltd

Head Office

PO Box 3364

43 Niven St

Napier 4142

Email: [sales@markhamdistributing.co.nz](mailto:sales@markhamdistributing.co.nz)

Telephone: 06 842 2248

Facsimile: 06 842 2240

Freephone: 0800 693 694

Concrete Protection Systems Ltd

Box 17170 Karori, Wellington

145 Karori Road, Wellington

Email: [cpsl@christieflooring.co.nz](mailto:cpsl@christieflooring.co.nz)  
[sales@markhamdistributing.co.nz](mailto:sales@markhamdistributing.co.nz)

Telephone: 04 476 4000

Facsimile: 04 476 4045

### **Requirements**

### 1.3 **QUALIFICATIONS**

Application to be carried out by an **AQURON®** approved applicator strictly in accordance with manufacturer's recommendations. For approved applicators contact:

Markham Distributing Ltd or Concrete Protection Systems Ltd. Refer to 1.2 for contact details.

### 1.4 **WARRANTIES AND GUARANTEES**

Warrant this work under normal environmental and use conditions against failure. Warranty period is subject to confirmation of project and due compliance by related trades where applicable. Refer to the general section 1237 **WARRANTIES** for details of when completed warranties must be submitted.

### 1.5 **NO SUBSTITUTIONS**

Substitutions are not permitted to any specified **AQURON®** products or associated components.

## 2. **PRODUCTS**

### **Materials**

### 2.1 **AQURON®** WAREHOUSE SYSTEM FOR EXPOSED CONCRETE FLOORS

**AQURON® 1000™** deep penetrating, non toxic waterborne solution which forms an insoluble calcium silicate gel within the concrete matrix. Complete curing assistance and durability enhancement for new exposed concrete floors.

2.2 **AQURON® SUPERGRIND SYSTEM FOR DIAMOND GROUND FLOORS**  
**AQURON®1000™** deep penetrating, non toxic waterborne solution which forms an insoluble calcium silicate gel within the concrete matrix. Curing assistance and durability enhancement for exposed concrete floors. Minimises aggregate pop-outs and pit marks which may occur during grinding.

2.3 **CRETEPOLISH MAX SHEEN ENHANCEMENT AND STAIN RESISTANCE**  
Water based, metal cross-linked, synthetic polymer polish which provides immediate initial sheen enhancement and stain resistance to **AQURON®** treated surfaces.

### 3. **EXECUTION**

#### **Conditions**

#### 3.1 **TECHNIQUE DISCUSSION**

Before application, arrange a meeting to confirm the application timing and procedure.

#### **Application - new concrete (0 - 24hrs)**

#### 3.2 **AQURON® WAREHOUSE SYSTEM FOR EXPOSED FLOORS**

Once power trowelling has been completed to produce a dense, burnished finish, apply **AQURON®1000™**, spray applied to the surface to fresh concrete as soon as the surface is formed enough to walk on. Apply at a rate to satisfy the absorbency of the concrete.

For concrete surfaces that require immediate sheen enhancement, wet scrub the surface, and depending on the surface finish or porosity, a light application of **CRETEPOLISH MAX** may be applied.

#### 3.3 **AQURON® SUPERGRIND SYSTEM FOR DIAMOND GROUND FLOORS**

Once power trowelling has been completed to produce a dense, burnished finish, apply **AQURON®1000™**, spray applied to the surface. Leave **AQURON®1000™** between 7-28 days to cure before commencing diamond grinding and honing techniques.

The final polished appearance can then be further enhanced by applying **CRETEPOLISH MAX**.

#### **Application - aged concrete**

#### 3.4 **PREPARATION OF EXISTING CONCRETE**

Ensure the surface to be treated is clean, free of dirt, water, or any residues of sodium silicates, acrylic curing compounds, tilt slab release agents, paint adhesives, existing floor preparations, plasterboard sanding dust, plaster and other coatings.

#### **Completion**

#### 3.5 **LEAVE TO REQUIRED STANDARD FOR FOLLOWING PROCEDURES**

Leave adjacent materials, fittings and finishes clean and to the standard required by following procedures.

#### 3.6 **REMOVE RUBBISH**

Remove debris, unused materials and elements from carrying out this part of the work from the site.

#### 3.7 **AFTER AQURON APPLICATION**

Ensure treated surface are protected from rubber tyres, grease, oils, clay and spills, as surface can stain until **CRETEPOLISH MAX** stain resistance is applied. Any spills that occur should be degreased and scrubbed clean immediately to ensure staining is minimized.

## **3811 PREFABRICATED STRUCTURAL TIMBER FRAMING**

### **1. GENERAL**

This section relates to the manufacture, supply and erection, of prefabricated:

- timber trusses
- timber frames

#### **1.1 RELATED SECTIONS**

Refer to Masterspec Standard 3821 TIMBER FRAMING for general timber framing and installation of prefabricated timber framing.

#### **1.2 ABBREVIATIONS**

The following abbreviations are used throughout this part of the specification:

FTMA                      Frame and Truss Manufacturers Association of New Zealand Inc.

#### **Documents**

#### **1.3 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

NZBC B1/VM1	Structure
AS/NZS 1170	Structural Design Actions
NZS 1170.5	Structural Design Actions - Earthquake actions - New Zealand
AS 1397	Steel sheet and strip - Hot-dip zinc-coated or aluminium/zinc-coated
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604:1999	Timber framed buildings
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 4680	Hot-dip galvanised (zinc) coatings on fabricated ferrous articles
FTMA	Good practice guidelines

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.

#### **Requirements**

#### **1.5 QUALIFICATIONS**

Fabricators to be experienced competent workers, familiar with the materials and the techniques specified.

Fabrication companies to be members of the Frame and truss manufacturers association of New Zealand and accredited by the connector plate manufacturers.

#### **1.6 LAYOUT DRAWINGS**

Provide a layout drawing with each element identified by with a unique identifier. Provide details of specific design bracing requirements

#### **1.7 PRODUCER STATEMENT**

Provide a signed producer statement showing the manufacturers details, date of manufacture and layout details of the elements.

#### **1.8 SPECIFIC DESIGNS**

Supply all the necessary drawings, calculation and other descriptive information to confirm the structural design of each element. Submit, together with a producer statement signed by a chartered professional engineer, before commencing fabrication.

#### **1.9 DESIGN CRITERIA**

Frames and trusses to, NZBC B1/VM1, AS/NZS 1170, NZS 1170.5 and NZS 3603.

### **2. PRODUCTS**

#### **Materials**

- 2.1 **TRUSSES NOT EXPOSED**  
Structural grade timber to NZS 3602, gauged, maximum moisture content of 20%, treated to NZS 3640 hazard class H1.2 and identified with its unique identifier.
- 2.2 **TRUSSES EXPOSED**  
Timber bandsawn/dry dressed and identified with its unique identifier. Treatment to suit species and location, to NZS 3602, refer SELECTIONS.
- 2.3 **FRAMES NOT EXPOSED**  
Structural grade timber to NZS 3602, gauged, maximum moisture content of 20%, treated to NZS 3640 hazard class H1.2 and identified with its unique identifier.
- 2.4 **FRAMES EXPOSED**  
Timber bandsawn/dry dressed and identified with its unique identifier. Treatment to suit species and location, to NZS 3602, refer SELECTIONS.

### **Accessories**

- 2.5 **STEEL CONNECTOR PLATES**  
0.8mm to 2.0mm thick steel sheet, hot-dip galvanized to AS 1397, and punched to form a toothed connector or nail on connector. Can be epoxy coated for increased durability.
- 2.6 **STAINLESS STEEL CONNECTOR PLATES**  
0.9mm to 2.0mm thick 304 or 316 stainless steel sheet, punched to form a nail on connector.
- 2.7 **GALVANIZED STRUCTURAL BRACKETS**  
>3mm thick steel plate brackets, hot-dip galvanized to AS/NZS 4680, with hot-dip galvanised bolts/screws and washers.
- 2.8 **STAINLESS STEEL STRUCTURAL BRACKETS**  
>3mm thick, 304 or 316 stainless steel plate brackets with stainless steel bolts/screws and washers.
- 2.9 **CORROSION RISKS**  
Use stainless steel fixings, connectors, etc in all zones, with the timber treatments CuAz (Preservative code 58) and ACQ (Preservative code 90).

## **3. EXECUTION**

### **Conditions**

- 3.1 **COMPLY**  
Comply with current standards, code requirements and the FTMA Good practice guidelines in the design and fabrication of trusses and frames.
- 3.2 **DELIVER, HANDLE AND STORE TRUSSES AND FRAMES**  
Deliver, handle and store frames and trusses so no structural damage occurs, corners and edges are not damaged, or surfaces marked or stained. Follow manufacturer's requirements. Handle all frames and trusses with nylon strops or similar to prevent damage. Store under cover and clear of the ground, to keep dry prior to installation.

### **Assembly**

- 3.3 **DIMENSIONS, NOT EXPOSED ELEMENTS**  
Each member calculated length  $\pm$  3mm. Width and thickness to gauging tolerances. Each overall joint within  $\pm$  3mm of correct outside profile (including camber allowance).
- 3.4 **DIMENSIONS, EXPOSED ELEMENTS**  
Each member calculated length  $\pm$  1mm width and thickness to gauging tolerances. Each overall joint within  $\pm$  3mm of correct outside profile (including camber allowance). Joint thickness and width difference between members 1mm maximum. Plate location within

half of the manufacturer's tolerances plus a rotation of no more than 1mm in 100mm off reference line.

3.5 INSPECTION

Request inspection when timber for exposed trusses and frames is ready for cutting prior to fabrication.

3.6 FABRICATION

Factory fabricate to FTMA Good Practice Guidelines. Build camber into all elements to accommodate normal deflection under load. Lay up members accurately with all joints tight fitting. Mechanically press plates to manufacturer's tolerances, fully and flat over their whole area into the members forming the joint.

**Application**

3.7 TRUSS ERECTION

Lift, place and fix trusses without overstressing or deformation. Use temporary supports as needed without causing damage. Fix trusses to wall plates and beams to manufacturer's requirements, but no less than NZS 3604, section 10, Roof framing and in particular section 10.2.2, Roof trusses. Fit and fix bracing as detailed and to NZS 3604: section 10.2.2, Roof trusses and section 10.3, Systems to resist horizontal loads. Ensure all trusses are correctly located, plumb and true to line and face.

3.8 FRAME ERECTION

Lift, place and fix frames without overstressing or deformation. Use temporary bracing and supports as needed without causing damage. Fix frames to floor or base plates and other walls or columns to manufacturer's requirements, but no less than NZS 3604, section 8, Walls and in particular section 8.7, Plates. Fit and fix bracing as detailed and to NZS 3604: section 5, Bracing Design and section 8.3, Systems to resist horizontal loads. Ensure all frames are correctly located, plumb and true to line and face.

3.9 FIT CONNECTORS AND FIXINGS

Fit connectors and fixings to obtain full bearing over all contact surfaces and full development of the required loading capacity for that particular joint and in accordance with the manufacturer's requirements or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

3.10 DPC TO TIMBER

Lay DPC between all timber frames and concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier. For LOSP treated timber use only a DPC specifically suitable with LOSP treatment.

3.11 TIGHTEN BOLTS

Check and tighten all fixing bolts after erection is completed.

**Completion**

3.12 REPLACE

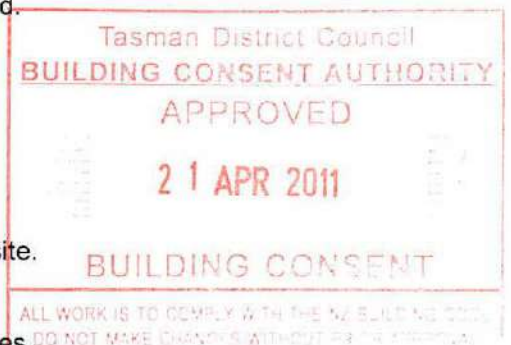
Replace or repair damaged elements.

3.13 REMOVE

Remove debris, unused materials and elements from the site.

3.14 LEAVE

Leave work to the standard required by following procedures.



## 4221 TIMBER BOARD CLADDING

### 1. GENERAL

This section relates to the supply and fixing of timber cladding:

- weatherboards
- shiplap
- board and batten

#### Related work

### 1.1 RELATED SECTIONS

Refer to 4161 WRAPS, UNDERLAYS AND DPC for wraps, underlays, foils and DPC.

#### Documents

### 1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC E2/AS1	External Moisture
NZS 3602	Timber and wood-based products for use in building
NZS 3604:1999	Timber framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring
BRANZ	Bulletin 465 Domestic flashing installation
BRANZ	Bulletin 467 Principles of flashing design

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

### 1.4 FIXINGS, WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604.

### 1.5 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations.

## 2. PRODUCTS

#### Materials

### 2.1 BUILDING WRAPS AND UNDERLAYS

Refer to 4161 WRAPS, UNDERLAYS AND DPC section

### 2.2 EXTERIOR CAVITY WALL BATTENS

Radiata pine battens, minimum 20mm thickness, width and height to match timber framing studs. To NZS 3602, table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

### 2.3 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Perforated uPVC, aluminium or stainless steel trays with upstands. Upstand one side 10mm and the other 75mm. Length and width to suit cavity.

### 2.4 WEATHERBOARDS

Profile (unless detailed otherwise) to NZS 3617, species and grading to NZS 3602, treated to NZS 3602, table 2, reference 2A.1, Requirements for wood-based building components to achieve a 15-year durability performance. Weatherboards in long lengths, with all knots excluded.

- 2.6 **COVER BOARDS, BOXED CORNERS AND SCRIBERS**  
To profiles as detailed, with species and grading to NZS 3602, but with all knots excluded. To NZS 3602, table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance.

### **Components**

- 2.8 **NAILS, GALVANIZED**  
60mm x 2.8mm and 75mm x 3.15mm galvanized steel.
- 2.9 **NAILS, STAINLESS STEEL**  
60mm x 2.8mm and 75mm x 3.15mm stainless steel.
- 2.10 **FLASHINGS**  
Material, grade and colour as detailed and scheduled and to NZBC E2/AS1; table 21: Compatibility of materials in contact and table 22: Compatibility of materials subject to run-off. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.
- 2.11 **SHARKS TOOTH FLASHING**  
PVC compressible flashing strip.
- 2.12 **SOAKERS, ALUMINIUM/ZINC COATED STEEL**  
Machine folded aluminium/zinc coated steel sheet to profile of weatherboard and mitred corner joints.
- 2.13 **SOAKERS, COPPER**  
Machine folded half-hard copper sheet to profile of weatherboard and mitred corner joints.

### **Finishes**

- 2.14 **PRIMER**  
Water borne acrylic or solvent borne oil-alkyd primer to suit the timber and proposed painting system.
- 2.15 **SEMI-TRANSPARENT STAIN**  
Water borne acrylic stain, solvent borne semi-transparent oil stain, or solvent-borne semi-transparent oil-alkyd stain to suit the timber.

## **3. EXECUTION**

### **Conditions**

- 3.1 **GENERALLY**  
Execution to NZBC E2/AS1: 3.0 Weathertightness risk factors, and 9.0 Wall claddings, 9.1.8 Drained cavities.
- 3.2 **STORAGE**  
Take delivery of timber, dry, unmarked and undamaged. Store on site, laid flat and true under cover.
- 3.3 **SUBSTRATE**  
Before starting fixing ensure that the substrate conforms with NZS 3604, section 2, table 2.1 Timber framing tolerances and the requirements of NZS 3604, sections 6 and 11 governing support for timber board cladding.
- 3.4 **MOISTURE CONTENT**  
Immediately before starting fixing, test the moisture content of the boards. Use an electrical moisture meter to test 5% of boards, but not less than 10 boards in the centre of the length. Do not start fixing until 90% of the values obtained are within the range in NZS 3602 table 4, Allowable moisture content (%) at time of installation or in the case of framing timber at time of enclosure.

### **Application - preparation**

#### **3.5 PRIMING AND SEALING**

If not pre-finished before delivery, coat all faces and edges immediately the block stack is opened. Then fillet stack, laid flat and true, until fixed. Keep dry and undamaged. Coat to suit the paint system specified in painting sections. Allow to re-coat if exposed for more than one month before the final coating is applied.

#### **3.6 FIX WRAPS AND UNDERLAYS**

Refer to 4161 WRAPS, UNDERLAYS AND DPC section

#### **3.7 INSTALL DRAINED CAVITY**

20mm minimum thickness drained cavity to NZBC E2/AS1: 9.0 Wall claddings, where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs over the building wrap. Seal the top of the cavity and install cavity closer/vermin-proofing at base. Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

#### **3.8 PENETRATIONS**

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:

- 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).

#### **3.9 SET-OUT**

Using laser or mechanical devices set-out the overlap boards to ensure dimension to exposed face in line of weather is constant and that boards remain horizontal/vertical. Use a string line to set out all nailing that will be visible in the finished work. Align all nailing accurately in straight lines.

### **Application - fixing**

#### **3.10 FIXING, PAINT FINISH**

Prime all cut ends before fixing. Drill all fixings located within 25mm of board ends. Punch all fixings.

#### **3.11 FIXING, CLEAR FINISH**

Coat all cut ends before fixing. Drill all fixings located within 25mm of board ends. Finish fixings flush.

#### **3.12 FIXING BEVEL BACK WEATHERBOARDS**

Nail weatherboards to every fixing point with one nail just clear of the lap. Butt end joints, mitre external corners and scribe internal corners. Back flash internal corners. Fit soakers to end joints and external corners, nailed under lap. Random stagger end joints across adjacent boards.

#### **3.13 FIXING RUSTICATED WEATHERBOARDS**

Adjust vertical set-out to provide a 2mm expansion gap between successive boards. Nail weatherboards to every fixing point with one nail just clear of the lap. Butt end joints and fit nailed soakers under each end joint. Random stagger butt joints on adjacent boards. Scribe and back flash internal corners. Fit cover boards and scribes to all openings. Mitre external corners and fit nailed soakers under each corner. Fit corner boxes and scribes to external corners.

#### **3.14 FIXING VERTICAL SHIPLAP WEATHERBOARDS**

Adjust horizontal set-out to ensure there is a 2mm expansion gap between successive boards. Using full length boards only, clenched nail tongue to every fixing point (nogs at

480mm centres). Nail other side of board just clear of lap. Line nails horizontally across the boards.

3.15 **FIXING BOARD AND BATTEN**

Using full length boards only, nail at the centre of the board width (nogs at 480mm centres). Nail the batten with a single fixing through the gap between boards at every fixing point.

3.16 **INSTALL FLASHINGS**

Install flashings, covers and soakers as detailed on the drawings and to BRANZ Bulletins 465 and 467.

3.17 **COMPLETE**

Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

**Completion**

3.18 **REPLACE**

Replace all damaged or marked elements.

3.19 **LEAVE**

Leave work to the standard required for following procedures.

3.20 **REMOVE**

Remove all debris, unused materials and elements from the site.

## 4521 ALUMINIUM WINDOWS AND DOORS

### 1. GENERAL

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

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

#### Related work

### 1.1 RELATED SECTIONS

Refer to glazing sections for glass types

#### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
AS/NZS 1170.2	Structural design actions - Wind loads
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1734	Aluminium and aluminium alloys - flat sheets, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
AAMA 2604.05	Performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
NZS 3604:1999	Timber framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
NZS 4211	Performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4284	Testing of building facades
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
WANZ	Window installation system - An Alternative Solution for the installation of windows and doors
WANZ	Powder Coating Quality Assurance System (PQAS)
WANZ	SFA 3503-03:2005 Anodising Standard
US Federal Specification	
TT-S-001543A	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
TT-S-00230C	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)
BRANZ BU 337	Protecting 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.

### 1.4 ABBREVIATIONS AND TERMS

PVF <sup>2</sup>	Polyvinylidene Fluoride
SLS	Serviceability limit state
ULS	Ultimate limit state
WANZ	Windows Association of Zealand
PQAS	Powder Coating Quality Assurance System

#### Requirements

- 1.6 **QUALIFICATIONS**  
Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.
- 1.7 **SHOP DRAWINGS AND INSTALLATION DETAILS**  
Shop drawings to show the general arrangement of the aluminium joining including, but not be limited to:  
Construction details (minimum scale 1:5) showing the interface between joinery elements and the building structure including: -
- Jointing details and method of fixing between individual elements and between this installation and adjacent work
  - Interaction between claddings and linings
  - Flashing details
  - Sealants and air seals
  - Non standard fixing details including bracketing

And where required the following:

- Design calculations
- Producer Statement in the form PS1 Producer Statement Design
- Rebate sizes
- Dimensions of all typical elements and of any special sizes and shapes
- Provision for the exclusion and/or drainage of moisture
- Provision for adjustment of fixings to ensure true alignment of windows and doors
- Sealant types and full size sections of all sealants and backing rods
- Provision for thermal movement
- Provision for seismic movement and movement under wind loads
- Sequence of installation
- Glazing specification and details

Where requested provide the following additional information

- Information of Professional Indemnity Insurance held by the person proving the shop drawings

Refer to the general section 1235 SHOP DRAWINGS for the requirements for submission and review and the provision of final shop drawings.

Complete shop drawing review before commencing fabrication.

### **Warranties**

- 1.8 **WARRANTY - MANUFACTURER/SUPPLIER**  
Provide a material manufacturer/supplier warranty:  
5 years:                      For fabrication

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

- 1.9 **WARRANTY - INSTALLER**  
Provide an installer/appliator warranty:  
2 years:                      For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

### **Performance**

- 1.10 **PERFORMANCE - WIND**  
Construct windows, exterior doors and frames to withstand design wind pressures to NZS 3604.

- 1.11 **SPECIFIC DESIGN**  
The windows, doors, their installation and all fixings to comply with NZS 4211. Refer to SELECTIONS for ULS and SLS
- 1.12 **SEISMIC SUB-FRAMES**  
Where required units to have seismic sub-frames. Refer to NZS 1170.5. Refer to SELECTIONS for requirements
- 1.13 **AIR INFILTRATION**  
To NZS 4211 section 8 Air infiltration
- 1.14 **PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS**  
The structural and weather-tight performance of the completed joinery, the glazing and infill panels is the responsibility of the window manufacturer.

### **Finishes**

- 1.15 **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.
- 1.16 **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 **WINDOWS**  
Refer to SELECTIONS for type and finish.
- 2.2 **DOORS**  
Refer to SELECTIONS for type and finish.
- 2.3 **ALUMINIUM EXTRUSIONS**  
Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.
- 2.4 **ALUMINIUM SHEET AND STRIP**  
Complying with AS/NZS 1734 of suitable thickness. Rolled for anodising or powder coating.  
Alloy designation: 5251 - H16 or 5005 - H16
- 2.5 **STAINLESS STEEL SHEET AND STRIP**  
Type: 316 austenitic steel  
Finish grade: 2B (satin lustre)
- 2.6 **REVEALS - TIMBER PAINTED**  
Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.
- 2.7 **REVEALS - ALUMINIUM**  
Aluminium reveals fitted to frame via thermal break.
- 2.8 **REVEALS - PVC**  
Prefinished PVC reveals grooved for wall linings.

- 2.9 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 cavity systems**

- 2.14 WANZ CAVITY CLOSER  
Flashing device to close the cavity above the window or door unit to direct water that occasionally penetrates the wall cladding into the cavity spaces adjacent to the window.
- 2.15 WANZ SUPPORT BAR  
Extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit.

**Components**

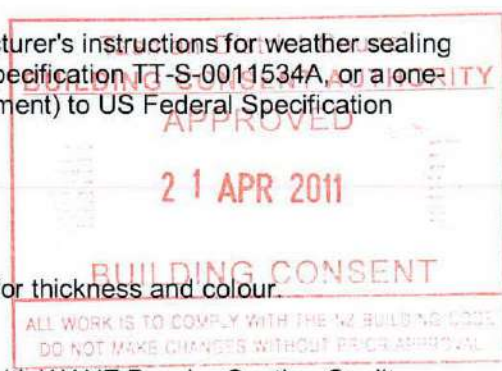
- 2.16 GLAZING GASKETS  
Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.
- 2.17 HARDWARE AND FURNITURE  
Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable window hardware able to be keyed alike.
- 2.18 SAFETY STAYS  
Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Table 2, Acceptable opening sizes for barriers.

**Structural glazing sealants**

- 2.19 POINTING SEALANT  
Building sealant or approved equivalent with not less than a  $\pm 40\%$  movement factor complying with US Federal Specification TT-S-001543A.
- 2.20 STRUCTURAL SEALANT  
Provide in structural sealant joints for movement. Follow recommendations of the structural sealant manufacturer. Use in conjunction with compatible silicone rubber spacers and gaskets or double-sided expanded cellular glazing tapes.
- 2.21 WEATHERING SEALANT  
Building sealant used in accordance with manufacturer's instructions for weather sealing glass to glass joints complying with US Federal Specification TT-S-001534A, or a one-part polyurethane medium modulus ( $\pm 25\%$  movement) to US Federal Specification TT-S-00230C.

**Finishes**

- 2.22 ANODISED ALUMINIUM  
To WANZ SFA 3503-03. Refer to SELECTIONS for thickness and colour.
- 2.23 POWDER COATED ALUMINIUM  
Polyester powder organic coating in accordance with WANZ Powder Coating Quality Assurance System and AS 3715.
- 2.24 POWDER COATED ALUMINIUM - HIGH PERFORMANCE  
PVF<sup>2</sup> fluoropolymer powder coating in accordance with AAMA 2604.05 and WANZ Powder Coating Quality Assurance System.



### **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/m<sup>2</sup> complying with AS/NZS 4680.
- 3.11 **TIMBER / PVC REVEALS**  
Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces.

#### **Assembly**

- 3.12 **FABRICATION**  
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.

**Installation - windows and doors**

- 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 EXTERIOR WALL OPENINGS**  
Confirm that exterior 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 to NZBC E2/AS1:9.1.5 Building wrap to wall openings.
- claddings neatly finished off 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 **INSTALLATION CAVITY CONSTRUCTION**  
Install to WANZ Installation System details and drawings including WANZ cavity closers, support bars and support angles

- 3.20 **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 30mm minimum at each end.

- 3.21 **COMPLETE AIR SEAL**  
To NZBC E2/AS1:9.1.6 Air seals. 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 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

- 3.22 **FIX HARDWARE**  
Fix all sash and door hardware and furniture as scheduled.

**Application - jointing and sealing**

- 3.27 **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.

- 3.28      **PREPARE**  
Ensure joints are dry. Remove loose material, dust and grease.
- 3.29      **PREPARE JOINTS**  
Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary.
- 3.30      **PREPARATION**  
Mask adjoining surfaces which would be difficult to clean if smeared with sealant.
- 3.31      **BACKING**  
Insert polyethylene rod or tape back-up behind joints being pointed with sealant.
- 3.32      **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.
- 3.33      **POINTING, BEAD**  
Tool sealant to form a smooth, flat bead.
- 3.34      **POINTING, FILLET**  
Tool sealant to form a smooth fillet with a profile and dimensions required by the sealant manufacturer.
- 3.35      **FINISHING**  
Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.

**Completion - cleaning**

- 3.36      **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.
- 3.37      **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.
- 3.38      **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.
- 3.39      **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**

- 3.40      **REPLACE**  
Replace damaged, cracked or marked elements.
- 3.41      **PROTECTION**  
Protect finishes against damage from adjacent and following work.
- 3.42      **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.

- 3.43 **LEAVE**  
Leave work to the standard required for following procedures.
- 3.44 **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.
- 3.45 **MANIFESTATIONS**  
Apply manifestations to comply with NZS 4223.3, 303.1 Manifestations.

## 4711 THERMAL INSULATION

### 1. GENERAL

This section relates to materials installed, laid, hung or fitted as thermal insulation to the building fabric.

#### 1.1 RELATED WORK

Refer to 4721 ACOUSTIC INSULATION for acoustic insulation.

Refer to 4161 WRAPS, UNDERLAYS AND DPC for building wraps, roofing underlays, foils and films.

Refer to roofing sections for roofing underlays.

#### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

BIB	Building Insulation Blanket (term used by some manufacturers)
NZEC	New Zealand Electrical Code of Practice
EPS	Expanded polystyrene sheets

#### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC H1/AS1	Energy efficiency
NZS 4218 2004	Energy efficiency - Small building envelope
NZS 4220	Code of practice for energy conservation in non-residential buildings
NZS 4243.1	Energy efficiency - Large buildings - Building thermal envelope
NZS 4246	Energy efficiency - Installing insulation in residential buildings
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
HSE Act	Health and Safety in Employment Act
NZEC 54	Code of practice for electrical installations of recessed luminaires and auxiliary equipment

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents related to this section are:

LATITUDE INSULATION NZ

Manufacturer/supplier contact details

Company: **LATITUDE WOOL INSULATION**

Web: **LATITUDEINULATION.COM**

#### Requirements

#### 1.5 QUALIFICATIONS

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

### 2. PRODUCTS

#### Materials

#### 2.5 WOOL FIBRE THERMAL BLANKET/ROLL

Wool fibres bonded with a polymer fibre to form a flexible blanket roll.

- 2.8 CELLULAR POLYSTYRENE INSULATION  
Proprietary expanded polystyrene (EPS) foam board.
- 2.10 REFLECTIVE / FIRE RETARDANT / PERFORATED FOIL  
Refer to 4161 WRAPS, UNDERLAYS AND DPC for reflective foil, reflective fire retardant foil, perforated reflective foil and for perforated reflective fire resistant foil.

### **Components**

- 2.12 WIRE NETTING  
Refer to 4161 WRAPS, UNDERLAYS AND DPC for wire netting used to support the insulation.
- 2.13 NAILS  
Galvanized steel clouts, 25mm gauge.
- 2.14 STAPLES  
Stainless steel gauge and length to suit application and to manufacturer's requirements.
- 2.15 SCREWS, POLYESTER BLANKET  
Specially coated self drilling screws with embossed or profiled washer system suitable to cover oversize predrilled holes.
- 2.16 STRAPPING TAPES  
Proprietary plastic strapping tape, stapled over framing to retain insulation in unlined wall, ceiling and underfloor locations.
- 2.17 ADHESIVE TAPE  
Adhesive tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers.

## **3. EXECUTION**

### **Conditions**

- 3.1 DELIVERY  
Keep insulation dry in transit. Take delivery of insulation dry and undamaged and store in a location that protects them from the weather and damage. Reject all damaged materials.
- 3.2 STORAGE  
Accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, puncturing and damage to edges of sheet materials. Do not use damaged sheets.
- 3.3 HANDLING  
Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.
- 3.4 HAZARD MANAGEMENT  
Comply with HSE Act and take all safety precautions necessary to reduce potential hazards.
- 3.5 INSPECTION  
Before starting installation of blankets and pads, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, netting, wraps, building papers and vapour barriers are in place.

### **Application**

- 3.6 **INSTALL INSULATION - GENERAL**  
Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246. Install in large buildings to NZS 4243.1 and NZS 4220. Allow insulation to re-loft/relax prior to installation. Do not cover vents and cut around all recessed light fittings and metal flues to the safety requirements of NZECP 54. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.
- 3.7 **INSTALL INSULATION - CLEARANCE**  
Ensure a minimum 25mm clearance is maintained between the insulation and any non rigid roofing underlay.
- 3.10 **STRAPPING TAPE**  
Lay at right angles across the framing at a minimum of 400mm centres, staple tape to each framing member with stainless steel staples.
- 3.12 **FIX VAPOUR BARRIER**  
Fit and fix between insulation and lining with joints lapped and sealed with pressure-sensitive tape.
- 3.13 **ADHESIVE TAPES**  
Fully seal all laps and all penetrations with adhesive tape.
- 3.17 **FIT WOOL INSULATING BLANKET/ROLL**  
Hang between studs stapled to top plate, drop, tear at required length and staple to bottom of nog, repeating process down the wall. Leave no gaps and maintain full thickness of blanket over the whole of the installation. Lay at right angles to ceiling joists allowing the blanket to sag into the cavities. Tear around rafters/struts and again drop into cavities. Lay between purlins with a snug fit and staple if necessary to hold position. Install recessed light fittings for new buildings to comply with clearances in NZS 4246, figure 1. For retrofit installations a clearance of 150mm shall be made unless specified otherwise on the light fitting.
- 3.20 **FIT EPS INSULATION - UNDER CONCRETE FLOORS**  
Lay EPS on damp proof membrane before pouring the concrete floor slab.
- 3.21 **ELECTRIC HOT WATER CYLINDER WRAP**  
Install to NZS 4246 and to the wrap manufacturer's instructions.
- Completion**
- 3.22 **CLEAN UP**  
Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.
- 3.24 **CHECK WALL WRAPS AND ROOF UNDERLAYS**  
Ensure these are dry, clean, undamaged and free of debris before being covered.
- 3.25 **CHECK VAPOUR BARRIERS**  
Ensure these form one homogeneous sheet vapour barrier and remain as such throughout the ensuing construction process.
- 3.26 **LEAVE**  
Leave work to the standard required by following procedures.
- 3.27 **REMOVE**  
Remove debris, unused materials and elements from the site.

Tasman District Council  
**BUILDING CONSENT AUTHORITY**  
**APPROVED**  
**21 APR 2011**  
**BUILDING CONSENT**  
ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

## 4821 FLASHINGS

### 1. GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

#### Documents

#### 1.1 DOCUMENTS

Documents referred to in this section are:

Code of practice	NZ metal roof and wall cladding
NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604:1999	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.

#### Requirements

#### 1.2 QUALIFICATIONS

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

#### 1.3 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

#### Standards of performance

#### 1.4 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. Clause 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to B2/AS1 Table 1: Durability Requirements of Nominated Building Elements and NZBC E2/AS1 Table 20 Material selection.

#### 1.5 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1 Table 20 to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1 table 21 and 22.

#### 1.6 DESIGN

For flashings where there are no specific details or drawings, provide a full size mock up of the flashing to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation.

### 2. PRODUCTS

#### 2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC External Moisture E2/AS1 Clause 4.0. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings. Fabricate flashings from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm.

2.2 **FIXINGS**  
Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME<sup>®</sup> steel products. Use only low carbon non-conductive sealing washers.

2.3 **JOINTS - SEALANTS**  
Neutral curing silicone rubber sealant that is acetic acid free with low resistance to compression and be-able to withstand large temperature variations.

2.4 **JOINTS - SOLDER**  
Eutectic solder of 60% tin/40% lead using a suitable proprietary flux.

### 3. **EXECUTION**

#### **Conditions**

3.1 **DELIVERY**  
Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 **STORAGE**  
Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 **HANDLING**  
Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 **SUBSTRATE**  
Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 **PROTECT**  
Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 **CONFIRM LAYOUT**  
Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 **CO-ORDINATE INSTALLATION**  
Co-ordinate installation of flashings with associated trades.

#### **Application**

3.8 **INSTALLATION**  
Install flashings in accordance with NZ Metal Roof and Wall Cladding Code of Practice and in compliance with NZBC E2/AS1 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 10° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

Form hem on vertical upstands of hidden flashings to prevent capillary action. Refer to NZBC E2/AS1 Table 7 for general dimensions of flashings.

3.9 **FIXINGS**  
Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZ Metal Roof and Wall Cladding Code of Practice for details.

3.11 JOINTING - SOLDER

Solder joints in galvanized steel and non-ferrous metals when specified with lead/tin solder. Clean joint ensuring it is dry and free of grease immediately prior to applying a proprietary flux. Lap the flashing 25mm in the direction of the water flow and fasten the lap with rivets or screws at 50mm centres. Completely sweat the joint to avoid leaving any flux residue. Wash down the joint to remove any trace of flux.

3.12 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

**Completion**

3.13 PROTECT

Protect new work from damage.

3.14 REPLACE

Replace all damaged or marked elements.

3.15 LEAVE

Leave work to the standard required for following procedures.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

## 5113G GIB® PLASTERBOARD LININGS

### 1. 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
- superior finish quality systems
- bracing systems
- fire rated garage boundary wall systems
- wet area systems

### 1.1 RELATED SECTIONS

Refer to 5171G GIB® PLASTERBOARD FIRE & SOUND LININGS for performance wall linings

### 1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

AWCINZ Association of Wall and Ceiling Industries New Zealand

### Documents

### 1.3 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC E2/AS1	External moisture
AS 1397	Steel sheet and strip - hot-dipped, zinc-coated, or aluminium/zinc-coated
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604:1999	Timber framed buildings
AS/NZS 4600	Cold-formed steel structures
BRANZ 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.

### 1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section are:

GIB® Site Guide (Jan 2010)
GIB Ultraline® Plus lining system (February 2006)
GIB® Noise Control Systems (March 2006)
GIB Sound Barrier® Noise control system for Floors (July 2002)
GIB Aqualine® Wet Area Systems (March 2007)
GIB® Ezybrace™ Systems (April 2009)
GIB® Residential Garage Boundary Walls (March 2009)
GIB® Rondo™ Metal Ceiling Batten Systems
GIB-Cove®
GIB® Goldline™ Platinum Tape-on Trims
GIB® UltraFlex high impact corner mould
BRANZ Appraisal 294 (2009) - GIB® Ezybrace™ Systems
BRANZ Appraisal 427 - GIB Aqualine® Wet Area Systems

Copies of the above literature are available at

Web: [www.gib.co.nz](http://www.gib.co.nz)

Telephone: 0800 100 442

### Requirements

### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

- 1.6 **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  
- Certified Business member of AWCINZ.

### **Performance**

- 1.7 **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.
- 1.8 **FIRE RATING REQUIREMENTS**  
Provide the GIB® fire resistant rated garage boundary wall systems. Refer to SELECTIONS for system/FRR.
- 1.9 **SOUND INSULATION REQUIREMENTS**  
Provide the GIB® Noise Control Systems. Refer to SELECTIONS for system/STC. Include for forming and treating of perimeters of openings and penetrations in the elements to ensure the specified performance. Ensure absence of adjoining flanking paths.
- 1.10 **BRACING REQUIREMENTS**  
Provide braced wall systems using GIB® Ezybrace™ Systems (April 2009) to meet the requirements of NZS 3604 when tested to BRANZ Technical paper P21. Refer to drawings for location and type.

## **2. PRODUCTS**

### **Materials**

- 2.1 **GIB® PLASTERBOARD**  
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 Wideline® plasterboard  
GIB Ultraliner® and/or GIB® Ultraliner PLUS high quality surface plasterboard  
GIB Fyreliner® fire resistant plasterboard  
GIB Braceline® & GIB® Noiseline dual purpose wall bracing & noise control plasterboard  
GIB Aqualiner® wet area plasterboard  
GIB Toughrock® Aqua Impact Resistant Gypsum lining  
GIB Sound Barrier® Timber - Acoustic Overlay for Floors

- 2.2 **CORNICE**  
GIB-Cove® plasterboard cornice. Refer to SELECTIONS for profile and size.

### **Components**

- 2.3 **CEILING BATTENS**  
GIB® Rondo™ metal ceiling battens, batten joiners and perimeter channel.
- 2.4 **SCREWS**  
GIB® Grabber™ drywall screws.
- 2.5 **NAILS**  
GIB® Nails (gold passivated).  
Size: 30mm, 40mm

- 2.6 METAL ANGLE TRIMS  
GIB® galvanized steel slim angle trims.
- 2.7 CONTROL JOINTS  
GIB® Rondo™ P35 control joints.  
GIB® Goldline™ tape-on trims
- 2.8 TAPE ON TRIMS AND EDGES  
GIB® Goldline™ tape-on trims  
GIB® UltraFlex high impact corner mould.

### Accessories

- 2.9 ADHESIVE  
Timber frame and/or steel frame:  
GIBFix® One ultra low VOC water based wallboard adhesive  
GIBFix® All-Bond solvent based wallboard adhesive
- 2.10 JOINTING COMPOUND  
Bedding compound: GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®  
Finishing compound: GIB ProMix® All Purpose GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB® Topcoat  
Cove: GIB-Cove® Bond
- 2.11 JOINTING TAPE  
GIB® paper jointing tape.
- 2.12 ACOUSTIC SEALANT  
GIB Soundseal® ultra low VOC water based highly flexible acoustic sealant.
- 2.13 GAP FILLER  
GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler
- 2.14 MOULD RESISTANT SEALANT  
GIB® Aquaseal ultra low VOC mould resistant water based silicone sealant

## 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 (Jan 2010).
- 3.2 LEVELS OF PLASTERBOARD FINISH  
Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.
- 3.3 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE  
Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

**Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified 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 **AS/NZS 2589**.

- 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 (Jan 2010).
- 3.5 **TIMBER FRAME MOISTURE CONTENT**  
Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to NZBC E2/AS1 and GIB® Site Guide (Jan 2010).
- 3.6 **METAL FRAMING**  
Metal framing, to which gypsum lining is fixed, shall comply with AS 1397 or AS/NZS 4600, as applicable. Where adhesion of gypsum linings is required, surfaces shall be free of oil, grease, dust and other foreign materials. Refer to the metal framing manufacturers specifications where high density gypsum linings (>800 kg/m<sup>3</sup>) such as GIB Braceline® and GIB Noiseline® are specified for fixing to light gauge steel framing.
- 3.7 **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.

### **Application**

- 3.8 **INSTALL CEILING BATTENS**  
Install to GIB® Rondo™ Ceiling Batten Systems.
- 3.9 **LINING WALLS AND CEILINGS GENERALLY**  
Form to GIB® Site Guide (Jan 2010). Ensure bulk insulation thickness shall not exceed that of the wall framing.
- 3.10 **BOARD ORIENTATION**  
Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.
- 3.11 **FORM NOISE CONTROL SYSTEMS**  
Form to GIB® Noise Control Systems.
- 3.12 **FORM WET AREA SYSTEMS**  
Form to GIB Aqualine® Wet Area Systems.
- 3.13 **FORM BRACING SYSTEMS**  
Form to GIB® Ezybrace™ Systems (April 2009).
- 3.14 **FORM CONTROL JOINTS**  
Form control joints to GIB® Site Guide.
- 3.15 **INSTALL COVES**  
Install to GIB-Cove® literature using GIB-Cove® Bond.
- 3.16 **INSTALL TAPE-ON TRIMS**  
Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

### **Finishing**

- 3.17 **FINISHING GENERALLY**  
To GIB® Site Guide (Jan 2010) and AS/NZS 2589.

### **Completion**

- 3.18 **REPLACE**  
Replace damaged sheets or elements.
- 3.19 **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.
- 3.20 **REMOVE**  
Remove debris, unused materials and elements from the site.
- 3.21 **LEAVE**  
Leave work to the standard required by following procedures.

#### 4. SELECTIONS

##### Plasterboard

##### 4.1 STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
~	GIB® Standard plasterboard	10mm	4
~	GIB® Standard plasterboard	13mm	
~	GIB Aqualine® plasterboard	10mm	
~	GIB Aqualine® plasterboard	13mm	
~	GIB Ultraline® plasterboard	10mm	
~	GIB Ultraline® PLUS plasterboard	13mm	
~	GIB Toughrock® Aqua	13mm	

##### 4.2 STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
~	GIB® Standard plasterboard	13mm	4
~	GIB Aqualine® plasterboard	13mm	
~	GIB Ultraline® PLUS plasterboard	13mm	

##### 4.3 SOUND RATED SYSTEMS

Refer to GIB® Noise Control Systems

Location	Plasterboard type / Lining requirements	STC / System specification	Finish Level
~	~	~	~

##### 4.4 FIRE RATED SYSTEMS

Refer to GIB® Residential Garage Boundary Walls.

Location / Type	Plasterboard type / Lining requirements	FRR / System specification	Finish Level
~	~	~	~

##### 4.5 BRACING SYSTEMS

Refer to GIB® Ezybrace™ Systems. For bracing element location refer to drawn documentation.

##### Accessories

##### 4.6 CORNICE

Size/brand/type: REFER DWGS

##### 4.7 CEILING BATTENS

Brand/type: GIB® Rondo™ Ceiling battens

## 7545 UNDERFLOOR HEATING

### 1. GENERAL

This section relates to the supply and installation of a Hydronic Underfloor Heating (UFH) system for domestic or commercial applications.

#### 1.1 RELATED WORK

Refer to 7211 GAS SYSTEM UTILITY NETWORK for piped gas supply  
Refer to 7212 GAS SYSTEM LPG CYLINDERS for cylinder gas supply  
Refer to electrical section/s for electric power supply and water heating system for underfloor heating.  
Refer to 3111 FORMWORK FOR CONCRETE for insulation under concrete slabs.  
Refer to hot and cold water system sections for water heaters.

#### 1.2 ABBREVIATIONS

The following abbreviations are used in this specification.

UFH Underfloor Heating

#### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2	Durability
NZBC G10	Piped services
NZBC G11	Gas as an energy source
NZBC G12	Water supplies
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
NZS 3500.4	Plumbing and drainage - Heated water systems
BS EN 1264	Floor heating - Systems and components
BS 7291	Thermoplastic pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings
Gas (Safety and Measurement) Regulations 2010	
Electricity (Safety) Regulations 2010	
Plumbers, Gasfitters and Drainlayers Act 2006	

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.

#### Requirements

#### 1.5 ACCREDITED INSTALLERS

Installers shall be accredited by the proprietary UFH manufacturer. The installer is responsible to insure any equipment connected to the controls and supplied by others is suitable for the purpose and installed to manufactures requirements.

#### 1.6 QUALIFICATIONS

Plumbers to be certified installers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

#### 1.7 MAINTENANCE MANUAL

Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

#### Documentation

#### 1.8 LAYOUT DRAWINGS

Provide drawing to owner for review before installation takes place.

- 1.9 AS-BUILT DOCUMENTS  
Provide as-built information to the owner within 10 working days of practical completion, including:  
Photographs recording actual layout.  
Drawings showing the as built layout.

### **Warranties**

- 1.10 WARRANTY  
Warrant this part of the work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 5 years

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

### **Performance**

- 1.11 GENERAL INSPECTIONS  
Inspection of the work to take place at each of the stages as scheduled. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.
- 1.12 FINAL INSPECTION AND TEST  
Submit the work for inspection and test and prove to the satisfaction of the network utility operator that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

Testing should be at the time of completion. Confirm this timing before carrying out any tests. Test and demonstrate the system according to piping manufacturer's specifications.

## **2. PRODUCTS**

### **Materials**

- 2.1 PIPEWORK  
To BS 7291, AS/NZS 2492, NZBC B2 Durability, NZBC G10 Piped services, NZBC G12 Water supplies. Refer to the SELECTIONS for pipe type and size.
- 2.2 CONTROLS  
Controls include water temperature controls, boiler controls and air temperature controls. Refer to SELECTIONS for type.
- 2.3 INSULATION - SOLID CONCRETE FLOOR  
Polystyrene under slab. Refer to SELECTIONS for thickness.
- 2.4 INSULATION - OVERLAY FLOOR SYSTEM  
Proprietary combined insulation and pipe fixing system. Refer to SELECTIONS for type.

### **Components**

- 2.5 MANIFOLD  
Thermostatically controlled multi-valve manifold to control the temperature of the water and control the flow rate to the various zones. The manifold is available in a range of sizes. Refer to SELECTIONS for port arrangement.
- 2.6 PUMPING UNIT  
Pump to take heated water from the primary boiler and inject the water down to the required temperature for the UFH. Refer to SELECTIONS for type.

- 2.7 **MIXING VALVE**  
Mixing valve to mix the 80°C water from the boiler with the cooler water from the return of the floor heating circuits. Refer to SELECTIONS for type.
- 2.8 **THERMOSTATS**  
Programmable thermostats complete with setback temperature reduction mode. Refer to manufacturer for options to use in wet areas. Refer to SELECTIONS for type and location.
- 2.9 **HEAT SOURCE**  
Refer to SELECTIONS for type.

### **Finishes**

- 2.10 **FLOOR COVERING**  
Refer to SELECTIONS for type of floor covering.

## **3. EXECUTION**

### **Conditions**

- 3.1 **GENERALLY**  
To NZS 3500.4, BS EN 1264, NZBC B2 Durability, NZBC G10 Piped services, NZBC G11 Gas as an energy source, NZBC G12 Water supplies. Confirm suitability of heat source, concrete/screed, insulation, floor finishes with the manufacturer before installation of the UFH system.
- 3.2 **INSTALLATION**  
Ensure the area for installation remains dry and weathertight by incorporating a damp-proof membrane in the floor slab. Lay insulation to the total area of the installation, with edge insulation on all internal and external wall lines. If the floor construction is a two part slab with the walls already in place edge insulation is required around the walls to prevent heat loss up the walls.
- 3.3 **INSULATION - OVERLAY SYSTEM**  
Confirm suitable insulation material and thickness with UFH manufacturer.

### **Application**

- 3.4 **HEAT SOURCE**  
Confirm suitability of the heat source with the UFH system, before connecting it to the UFH installation. Comply with NZS 3500.4 and Electricity (Safety) Regulations 2010. When using a gas heat source comply with Gas (Safety and Measurement) Regulations 2010.
- 3.5 **PIPEWORK LAYOUT**  
Lay pipes to provide an even spread of heat and a relatively even surface temperature across the area to UFH manufacturer's recommendations. Lay pipes to the layout pattern recommended by the manufacturer and approved by the owner. Insure the layout allows for increased heat required against colder exterior surfaces (perimeter zone).
- 3.6 **INSTALL PIPEWORK - TIED TO REINFORCEMENT**  
Pipework to be cable tied to the concrete mesh. Lay pipes in a continuous length from the manifold in the pre-designed configuration. Connections must not be made in the area to be concreted. Pipes start and finish at the manifold position. Run pipes to the corresponding port on the manifold. Do not cross pipes over in the floor. Allow for pressure testing of the pipework to 600kpa. Leave at this pressure until concrete is cured.
- 3.7 **INSTALL PIPEWORK - OVERLAY SYSTEM**  
Pipework fixed onto the insulation board to manufacturer's recommendations. Lay pipes in a continuous length from the manifold in the pre-designed configuration. Connections must not be made in the area to be screeded. Pipes start and finish at the manifold

position. Pipes must run to the corresponding port on the manifold. Do not cross pipes over in the floor. Allow for pressure testing of the pipework to 600kpa. Leave at this pressure until concrete is cured.

### 3.8 SCREED - OVERLAY SYSTEM

Install screed as specified under 3129 CONCRETE PRODUCTION to provide a minimum thickness of 45mm above the crown of the water heating pipework. For a one pour slab use 40mm chairs to support the mesh. Refer to manufacturer's requirements.

Lay the screed as soon as possible after laying the pipe circuits and completion of a pressure test. Leave the system pressurised throughout the screeding and curing process. Allow the screed to cure in accordance with manufacturer's instructions. Lay the screed in good contact with the pipes without any air pockets.

### 3.9 CONDUIT SLEEVING

Sleeve all flow pipes with conduit sleeving where the pipe enters and returns from concrete for the first metre to manufacturer's requirements. Sleeve across construction joints in floor.

### 3.10 FILLING AND PRESSURE TESTING

Pressure test the system with water to ensure all joints are watertight and no damage has occurred to the pipe during installation.

### 3.11 CONNECT TO HEAT SOURCE

Install pump and manifold when wall finishes are completed. Connect heat source to pump pack using recommended pipe and fittings to manufacturer's installation instructions.

## Finishing

### 3.12 INITIAL START UP

The start up procedure following installation to be done to BS EN 1264 and to UFH manufacturer's requirements.

## Completion

### 3.13 COMMISSIONING

Commission the UFH system. Pipes flushed and refilled with the use of an inhibitor. Following the initial start up period commission the system with all floor coverings laid to ensure the system can be correctly balanced. Ensure the complete central heating system, including radiators if present, is working to required operational temperature. Adjust each circuit slowly via the valves on the manifold to ensure an even flow and heat up is achieved.

### 3.14 FLOOR FINISHES

Run the system for two weeks before the floor covering is finally laid. Use adhesive suitable for temperatures up to 40°C.

### 3.15 REPLACE

Replace damaged or marked elements.

### 3.16 LEAVE

Leave work to the standard required by following the UFH system manufacturer's recommended procedures.

### 3.17 REMOVE

Remove debris, unused materials and elements from the site.



## 7701 ELECTRICAL BASIC

### 1. GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- security system
- complete with componentry
- electrically-powered fittings

### 1.1 RELATED WORK

Refer to ~ for ~.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

CFL	compact fluorescent lamp
ELV	extra low voltage
GLS	general lighting service
IP	international protection classification
LCD	liquid crystal display
LED	light emitting diode
MCB	miniature circuit breaker
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
RCBO	residual current-operated circuit breaker with over current protection
RCCB	residual current-operated circuit breakers
RCD	residual current device
SIA	security integration architecture
TPS	tough plastic sheathed

### Documents

### 1.3 DOCUMENTS REFERRED TO

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F6/AS1	Lighting for emergency
NZBC F7/AS1	Warning systems
NZBC G4/AS1	Ventilation
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 1768	Lightning protection
AS 1670.6	Fire detection, warning, control and intercom systems - System design, installation and commissioning - Smoke alarms
AS 2293.1	Emergency escape lighting and exit signs for buildings - System design, installation and operation
AS 2293.3	Emergency escape lighting and exit signs for buildings - Emergency escape luminaires and exit signs
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification-general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses

AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth-leakage devices)
AS/NZS 3350.1	Safety of household and similar electrical appliances - General requirements
AS/NZS 3439.3	Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
AS 3786	Smoke alarms
NZS 4301.1	Intruder alarm systems - systems installed in clients premises
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
NZIECP	NZ Electrical Codes of Practice
NZIECP 54	NZ Electrical Codes of Practice for the installation of recessed luminaires and auxiliary equipment (available at <a href="http://www.energysafety.govt.nz">www.energysafety.govt.nz</a> )
IEC 61643	Components for low voltage surge protection devices

Electricity (Safety) Regulations 2010

### Warranties

- 1.5 **WARRANTY**  
Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.  
1 year: Warranty period

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

### Requirements

- 1.6 **COMPLY**  
Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.
- 1.7 **QUALIFICATIONS**  
Carry out work under the supervision of an electrical licensed supervisor.
- 1.8 **QUALIFICATIONS - SECURITY SYSTEM**  
Installation by an installer licensed under the Private Investigators and Security Guards Act. Installation of all security equipment to comply with NZS 4301 Intruder alarm system - systems installed in client's premises.
- 1.9 **SAFETY OF INSTALLATION - DESIGN BY ELECTRICAL ENGINEER**  
Before installation work commences obtain from the electrical engineer a declaration of conformity. The declaration of conformity is to comply with the Electrical (Safety) Regulations (2010), regulations 57 and 58.
- 1.10 **SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN**  
Before installation work commences provide a declaration of conformity. The declaration of conformity is to comply with the Electrical (Safety) Regulations (2010), regulations 57 and 58. It must be signed by the designer of the installation.
- 1.11 **CERTIFICATE OF COMPLIANCE**  
Supply a certificate of compliance to the owner, as required by the Electricity (Safety) Regulations (2010) regulation 67, within 20 days of completion as required by regulation 69.  
- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.  
- Arrange for an inspector to inspect as required by regulation 70.

## 2. PRODUCTS

### 2.1 MAINS SUPPLY, SINGLE PHASE

Tough plastic sheathed neutral screened cable to AS/NZS 4961 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

### 2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm<sup>2</sup>, and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.

Lighting circuits:	Domestic:	1.5mm <sup>2</sup> on 10 amp MCBs
Lighting circuits:	Commercial:	1.5mm <sup>2</sup> on 16 amp MCBs
Power circuits:		2.5mm <sup>2</sup> on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
		2.5mm <sup>2</sup> on 16 amp MCBs for domestic insulated construction, or filled cavity
		2.5mm <sup>2</sup> on 20 amp MCBs for unenclosed or unfilled cavity construction
		2.5mm <sup>2</sup> on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Hot water cylinder circuits:	Single phase:	2.5mm <sup>2</sup> on 20 amp MCBs
Range/oven/hob circuits:	Single phase:	6mm <sup>2</sup> on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C.

### 2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

### 2.4 DISTRIBUTION BOARD

Flush surface mount boards manufactured to AS/NZS 3439.3 and installed in accordance with AS/NZS 3000. Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

### 2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with AS/NZS 3190. MCBs to 4.5kA or 6kA rated.

### 2.6 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

### 2.7 SWITCH UNITS

Single pole switches to be 16 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.

### 2.8 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

### 2.9 SWITCHED SOCKET UNITS

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3100, AS/NZS 3112 and AS/NZS 3113, single or multi gang as detailed.

- 2.10 **SMOKE ALARMS**  
Type 1 domestic smoke alarm to NZBC F7/AS1. 1.2 **Descriptions of alarm systems.**  
Alarm to AS 3786. A wired 230 volt ionised smoke detector type.
- 2.11 **SURGE PROTECTION**  
Protection for the homes appliances with IEC 61643 Class II surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class III surge protection to switched socket outlets.
- 2.12 **CEILING ROSES**  
White plastic mounting base with screwed cover, manufactured to AS/NZS 3113.  
Terminal type. Cylindrical section TPS for suspended fittings.
- 2.13 **BATTEN HOLDERS**  
Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.
- 2.14 **DOOR BELL SYSTEM**  
Complete with transformer for mounting on distribution board.
- 2.15 **LIGHT FITTINGS**  
Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.95 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 230v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise.
- 2.16 **EMERGENCY LIGHT FITTINGS**  
Emergency escape lighting and exit signs for buildings to AS 2293.3. Exit, recessed, ceiling or wall mounted. Refer to SELECTIONS.
- 2.17 **SPACE HEATERS**  
Fixed wired room heaters radiant or convector, and compliant with AS/NZS 3350.1.  
Flush or surface mount, fitted with safety cut-outs.
- 2.18 **EXHAUST FANS**  
Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with AS/NZS 3350.1.
- 2.19 **HEATED TOWEL RAILS**  
Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 3350.1, scratch resistant powdercoated or chrome finish.
- 2.20 **OUTDOOR SWITCHES & SOCKETS**  
Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches to IP56 minimum, and sockets to IP53 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

### **Electrical Automation System**

- 2.21 **ELECTRICAL AUTOMATION SYSTEM**  
Electrical automation system designed to enable if required:
- Lighting - automated control and dimming timer control.
  - Heating including heated towel rails and ventilation systems.
  - Security - programmable to simulate lights and other devices to give appearance home is occupied - ability to interface with security system and smoke detectors to activate lights.
  - Energy efficiency - automatically switch circuits off when not required or on during low tariff times.
  - Appliances.
  - Spa pools.
  - Irrigation systems.

## **Security System**

- 2.22 **CONTROL PANEL**  
Control panel system with a minimum of one installer code, one master code, 6 zones minimum and 6 user codes. The installer to select codes to suit installation.
- 2.23 **DETECTORS**  
There are two main types of detectors:  
- Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.  
- Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.
- 2.24 **AUDIBLE DEVICES**  
Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95dB.  
  
External siren can be either a stainless steel design or have hardened plastic casing. Both designs to be fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.
- 2.25 **CABLING**  
Security alarm wiring to NZS 4301.1 for installation.  
Security alarm wiring to NZS/AS 1125 for cables.  
Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm<sup>2</sup>.
- 2.26 **PERIPHERALS**  
Fit anti-tamper devices to detectors, control panels and equipment housings, programmed to give a tamper indication when the system is unset and a tamper alarm when the system is set.  
  
Standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen, to match the style of the wiring accessories in diameter, colour and aesthetics.
- 2.27 **COMMUNICATIONS**  
Digital dialler to be built into the PCB of all control panels, with the options for both monitoring and remote dial in windows based software. Digital dialler to comply with all the industry standard communication formats including contact I.D and SIA, and NZ Telepermit certification.  
  
Remote software able to upload / download programming changes and or history events and change status of the security alarm with the ability to be turned off if required.
- 3. EXECUTION**
- 3.1 **MAIN SUPPLY**  
Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.
- 3.2 **METER BOX**  
Fit to meter box manufacturer's and Electricity Retailer's requirements. Recess into external wall in sheltered area and flash to weatherproof to NZBC E2/AS1 fig 69. Arrange for meter installation and connection.
- 3.3 **DISTRIBUTION BOARD**  
Fit to AS/NZS 3000 and board manufacturer's requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.
- 3.4 **CIRCUIT PROTECTION**  
Install MCBs at distribution board to AS/NZS3000 to protect each final sub circuit.

- 3.5 **EARTH BONDS**  
Bond together and to earth all plumbing fittings not adequately isolated, to AS/NZS 3000, the Electricity (Safety) Regulations 2010 and the fitting manufacturer's requirements.
- 3.6 **MAIN EARTH**  
Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.
- 3.7 **EARTH LEAKAGE PROTECTION**  
Install RCD protection to AS/NZS 3000.
- 3.8 **DOMESTIC INSTALLATIONS**  
Install 30mA RCD protection at the distribution board for all final sub circuits to control socket outlets and lighting except for fixed or stationary cooking equipment, to AS/NZS 3000.
- 3.9 **HIGH RISK AREA INSTALLATIONS**  
Install 30mA RCDs at the distribution board for areas not covered in Domestic installations, or using fixed wired RCD protected socket outlets in areas that may represent increased risk of electric shock to the user:
- Wet areas: bathrooms, laundries, kitchens.
  - Near pools and water features.
  - Where intended for use with cleaning equipment.
  - Hand-held tools subject to movement in use, i.e. work-shops, garages.
- 3.10 **SET-OUT**  
The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.
- 3.11 **CABLING**  
Install wiring systems to AS/NZS 3000. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.
- 3.12 **CABLING CIRCUITS**  
Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.
- 3.13 **WALL BOXES**  
Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.
- 3.14 **SWITCH AND SOCKET UNITS**  
Fit all single and double switch units, all sockets to the following heights (to the centre of the unit) unless shown otherwise on the drawings.
- |               |                          |
|---------------|--------------------------|
| Switch Units: | 1000mm                   |
| Socket Units: | 150mm above work benches |
|               | 400mm elsewhere          |
- Mount light switches and switch socket outlets vertically and socket units horizontally. Label all switch units that control electrical equipment or special lighting circuits by colour filled engraving on the switch. Use proprietary engraved switch mechanisms where applicable.

- 3.15 **ISOLATING SWITCHES**  
Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.
- 3.16 **LIGHT FITTINGS**  
Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer's requirements. Install recessed fittings to NZECP 54.
- 3.17 **EXTRA LOW VOLTAGE LIGHTING**  
Use electronic transformers for ELV lamps, one transformer per lamp. Locate to manufacturer's requirements and as close as practicable to the lamp. Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation, to NZECP 54.
- 3.18 **EMERGENCY LIGHTING**  
Emergency escape lighting and exit signs for buildings to AS 2293.1 and NZBC F6/AS1. Fit emergency light fittings to manufacturer's specifications. Refer to plans for position of fittings.
- 3.19 **ELECTRIC HOT WATER SYSTEM**  
Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.
- 3.20 **SPACE HEATERS**  
Install to the heater manufacturer's requirements, and to AS/NZS 3000. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance, or otherwise connect to a control switch located adjacent to the heater and a remote thermostat.
- 3.21 **SMOKE ALARMS**  
Install Type 1 domestic smoke alarm system to NZBC F7/AS1 3.1 **Domestic smoke alarms**, AS 1670.6 and to the alarm manufacturer's requirements. Fit neatly and without damage to the surrounding finish.
- 3.22 **SURGE PROTECTION**  
Install surge protection devices to manufacturer's requirements and in accordance with AS/NZS 3000 and AS/NZS 1768. When fitting IEC 61643 Class II protection at the switchboard, protect the device by a dedicated MCB.
- 3.23 **ELECTRIC POWERED FITTINGS AND EQUIPMENT**  
Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.
- 3.24 **BATHROOM ELECTRICAL FIXTURES**  
Install all electrical fixtures. Connect the following bathroom and toilet electrical items:  
 - Heated towel rails: Install to manufacturers requirements and installed in accordance with AS/NZS 3000 and the NZBC G9/AS1  
 - Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.  
 - Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.
- 3.25 **OUTDOOR/EXTERIOR SERVICES**  
Install all wiring systems in accordance with AS/NZS 3000 and in accordance with the manufacturer's recommendations:

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches to IP56, and sockets to IP53 as a minimum. Install to manufacturer's specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

3.26 ELECTRICAL AUTOMATION SYSTEM

Fit distribution cabinet in wall, cut-out to finish flush with the wall surface, or surface mounted. Configure installation to manufacturer's instructions. Provide adequate user training and operating manual to the owner.

3.27 LABELLING

Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

**Security System**

3.28 SECURITY SYSTEM

Install to the system manufacturer's requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to NZS 4301.3 Intruder alarm system. All 230v mains power connections to the security panel are to be in accordance with AS/NZS 3000. The 230V power is to be switched using a dedicated single gang Isolator switch or similar.

3.29 COMPLETION

Leave installation operating correctly, with equipment clean and operational.



Refer to Rockcote manual for cavity details

Exterior cladding, Rockcote or similar approved coating, refer to coating manuals

40mm or 60mm polystyrene. Position framing to suit

uPVC starter strip, forming a drip edge to be mechanically fixed to ties

Typical timber stud wall as per NZS 3604 H3.1 treated

Bottom plate fixing to slab in accordance NZS 3604 DPC under bottom plate

Floor slab, mesh in accordance with NZS 3604 with 30mm top cover

UNPAVED GROUND

225 min.

75 min.

100

100-300mm min. Hardfill with no fines

Superform POLY Block Units

D.P.M.

2/D12 with D10@600 centres floor starters, 600 into floor

Nuplex tanking, stone chip with protection sheet below ground level lap 50mm behind exterior cladding

475 (varies, 300 min.)

\*Min. depth = 150mm (2 storey)  
\*Min. depth = 100mm (single storey)

Continuous approved foam bond under to level first course

Chalkline

10MPa Site Concrete

\*Min. width = 450mm (2 storey)  
\*Min. width = 300mm (single storey)

## FOUNDATION/SLAB DETAIL

1:10

**NOTES:** All details indicate minimum reinforcement requirements  
Refer to SF6 Foundation for Paved Ground

### DESIGN ASSUMPTIONS

- maximum span of roof = 12.0m
- maximum wall height 5.0m (2 storey)  
3.0m (single storey)
- ground bearing of 300kPa in accordance with NZS 3604
- well drained soil conditions in accordance with NZBC

Tasman District Council  
BUILDING CONSENT AUTHORITY

APPROVED

21 APR 2011

BUILDING CONSENT

ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE  
DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL



POWELL FENWICK  
CONSULTANTS LIMITED

Your quality engineering partner

SUPERFORM POLY BLOCK  
FOOTING  
ROCKCOTE OVER TIMBER  
FRAMING - OPTION 1  
(FOR UNPAVED GROUND OUTSIDE)



© 2005

SF7

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



**GIB® Wall Bracing Calculation Sheet A**

single storey

V03/09

**Job Details**

Name Wendy Whitehead  
 Street and Number 1370 Motueka Valley Highway  
 Lot and DP Number Lot2 DP326533  
 City/Town/District Motueka  
 Designer K D Hetet  
 Company Name K D Hetet Ltd  
 Date 1/03/2011



Select GIB® Lining Option

10 mm GIB® Plasterboard

**Building Specification**

Number of storeys single  
 Floor Loading 2kPa  
 Foundation Type slab

**Single Floor**  
 Cladding Weight light  
 Roof Weight light  
 Room in Roof Space no  
 Roof Pitch (degrees) 20  
 Roof height above eaves (m) 2.1  
 Building height to apex (m) 5.4  
 Ground to lower floor level (m) 0.2

**Complete Single Floor Column only**

15  
 1.0  
 3.0  
 2.4  
 10.0  
 10.0  
 200



Stud Height (m) 2.7  
 Building Length (m) 10.4  
 Building Width (m) 10.2  
 Building Plan Area (m2) 102

**Building Location**

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

**Earthquake Zone**  
 A

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

**Bracing Units required for Wind**

Demand W (BU)			Walls
along	slab	0	single 738

**Bracing Units required for Earthquake**

Demand along / across E (BU)	
Walls	single