

6		SERVICES	
Complete for all projects with new installations or alteration of plumbing or drainage services ☐			
☒	a	Plumbing and Drainage Plan 1:100 / 1:50) showing: <i>Note: if you have supplied drainage details for surface water disposal on the site plan, no drainage plan is required.</i> - Sizes of pipe work and drains - Fixtures and fittings, hot water system(s) - If the building is more than one storey with sanitary fittings on upper floors, provide an isometric layout showing wastes, pipes and falls - Drainage layout with inspection bends and junctions indicated for both sewer and stormwater - Any other drainage on site including council mains and retaining wall field drains - Ventilation of sanitary rooms - Calculations for sizing of down pipes - Gully traps including overflow relief gullies	☒
7		STRUCTURAL	
Complete for all projects incorporating specific structural design			
☒	a	Structural Calculations If any design work required the services of a structural engineer, attach 2 copies of the calculations with this. The calculations must be prefaced with information explaining the design philosophy and justification of assumptions and methodologies used in analysis	☒
☐	b	Expert Opinion (Producer Statements) If this application for consent relies on any expert opinion including producer statements certifying compliance with the New Zealand Building Code, a copy must be attached with this application. (Note all structural producer statements are required to have accompanying calculations.)	☒
8		SPECIFICATIONS	
Complete for all applications			
<i>Note: the specification must be specific to the project and cover all aspects of the proposed work</i>			
☒	a	Specification: General - Elements of structure (size, spacing, timber treatment) - Finish or fixings to meet durability requirements - Plumbing and drainage materials and design that installation is to comply with - Wet area surfaces - Ventilation systems - Flooring slip resistance for access routes - Glazing - Type of smoke detectors (including existing smoke detectors where they will remain)	☒
☒	b	External Claddings For each of the following claddings provide details of the product name, manufacturer, maintenance requirements and warranties offered - Building wraps - Wall claddings - Roof claddings - Membranes (roof and decks) - Tanking - Joinery	☒

9		DEMOLITION / REMOVAL	☐
Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings.			
☐	a	Means of Barricading the Site Provide details of temporary barriers, gates which swing inwards or other means of restricting public access to the area	☐
☐	b	Proposed Tipping Location for Demolition Materials (address/landfill)	☐
☐	c	Hazardous Building Material Provide safety plan detailing the safe handling and disposal of hazardous materials	☐
☐	d	Site Management Plan Covering Management to control silt runoff, noise and dust	☐
☐	e	Proposed Destination for Relocate Building	☐
☐	f	Access To and From the Site (including use of kerb crossings)	☐
☐	g	Specify Termination of Existing Services • Water • Sewer • Stormwater	☐
☐	h	Details About the Building such as: Number of storeys, type of materials the building is constructed (Photographs of the building would be useful)	☐
		Note: You will need to contact the relevant service authorities specified below to advise them of the extent of your work: Electricity, gas, drainage, water, transport, telecommunications, cable television or any other services that may be affected. Transportation of Relocated Building You will be required to contact and provide details to Councils Transportation and Traffic Department.	☐
10		OTHER APPROVALS	
Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings.			
☐		Please check Territorial Authority regarding the requirement for other approvals required and fees payable. These may include: • Consents under the Resource Management Act • Approvals under bylaws including earthworks, vehicle crossings, road openings and water connections. Show the location of swimming or spa pools on the property and describe how compliance with the Fencing of Swimming Pools Act will be achieved.	☐

The issue of a building consent does not relieve the owner of any duty or responsibility under any other Act.



COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952



R. W. Muir
Registrar-General
of Land

Search Copy

Identifier **658768**
Land Registration District **Wellington**
Date Issued **21 April 2015**

Prior References
657176

Estate Fee Simple
Area 467 square metres more or less
Legal Description Lot 24 Deposited Plan 476550

Proprietors
V J Limited

Interests

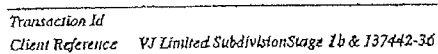
9099897.6 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 1.10.2012 at 11:53 am
Land Covenant in Easement Instrument 9099897.7 - 1.10.2012 at 11:53 am
9099897.8 Encumbrance to Charles Fleming Retirement Village Limited - 1.10.2012 at 11:53 am
9851253.13 Mortgage to Westpac New Zealand Limited - 14.11.2014 at 4:04 pm
9897467.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 21.4.2015 at 11:17 am
10268001.1 Variation of Consent Notice 9897467.1 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm
10268001.2 Variation of Consent Notice 9099897.6 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm

Transaction Id
Client Reference VJ Limited Subdivision Stage 7b & 137442-36

Search Copy Dated 5/02/16 2:05 pm Page 1 of 2
Register Only

[Handwritten signatures and initials]

658768



Search Copy Dated 5/02/16 2:05 pm, Page 2 of 2
Register Only

2:05 pm, Page 2 of 2
Register Only

00 20



Memorandum from licensed building practitioner: Certificate of design work

Section 45 and section 30C, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING	
Street address:	25 MAHIA LANE
Suburb:	
Town/City:	WAIKANA E
Postcode:	

THE OWNER(S)	
Name(s):	ADAM THOMSON (AR THOMSON FAMILY TRUST)
Mailing address:	4 TARAKI WAI
Suburb:	
PO Box/Private Bag:	
Town/City:	PAPAKURA WAI.
Postcode:	
Phone number:	027 427 9820
Email address:	

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies ☒

- ☐ **sole** designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design work myself – no other person will be providing any additional memoranda for the project
- ☐ **lead** designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and **no other** person will be providing any additional memoranda for the project
- ☒ **lead** designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the **other** designers will provide their own memorandum relating to their specific RBW design
- ☐ **specialist** designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

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

I BILL FRANCIS carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☒ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
All RBW design work relating to B1 ☐		☐ Carried out ☐ Supervised	
Foundations and subfloor framing ☐	<u>RIB-RAFT BY ENGINEER</u>	☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☒ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work ☒ Carried out ☐ Supervised	If appropriate, specify references
Walls ☒	90445 TIMBER FRAMING	☒ Carried out ☐ Supervised	PG 3.
Roof ☒	TRUSS DESIGN BY OTHERS	☐ Carried out ☒ Supervised	PG 4
Columns and beams ☒	STEEL COLUMN & BEAM	☒ Carried out ☐ Supervised	PG 3
Bracing ☒	STEEL BRACING	☒ Carried out ☐ Supervised	PG 7.
Other ☐		☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☐ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2			
All RBW design work relating to E2 ☐		☐ Carried out ☐ Supervised	
Damp proofing ☒	DPM TO UNDERSIDE OF SLAB DPC TO UNDERSIDE OF EXTERIOR WALK	☒ Carried out ☐ Supervised	PL 4
Roof cladding or roof cladding system ☒	PRESSURE METAL TILES	☒ Carried out ☐ Supervised	PL 4
Ventilation system (for example, subfloor or cavity) ☒	VENTED CAVITY BEHIND CLADDING	☒ Carried out ☐ Supervised	PL 5
Wall cladding or wall cladding system ☒	BRICK VENEER	☒ Carried out ☐ Supervised	PL 5
Waterproofing ☐		☐ Carried out ☐ Supervised	
Other ☐		☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☐ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
FIRE SAFETY SYSTEMS - C1 - C6			
Emergency warning systems Evacuation and fire service operation systems ☒ Suppression or control systems Other	<i>Smoke detectors</i>	☒ Carried out ☐ Supervised	<i>Ref 3.</i>
Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.			

WAIVERS AND MODIFICATIONS	
Waivers or modifications of the Building Code are required. ☐ Yes ☐ No	
If Yes, provide details of the waivers or modifications below:	
Clause	Waiver/modification required
List relevant clause numbers of building code	Specify nature of waiver or modification of building code required

ISSUED BY	
Name and contact details of the licensed building practitioner who is licensed to carry out or supervise design work that is restricted building work.	
Name: <u>BILL FRANCIS</u>	LBP or Registration number: <u>111338</u>
The practitioner is a: ☒ Design LBP ☐ Registered architect ☐ Chartered professional engineer	
Design Entity or Company (optional):	
Mailing address (if different from below):	
Street address/Registered office:	
Suburb:	Town/City: <u>PAPAKURA</u>
PO Box/Private Bag: <u>65</u>	Postcode:
Phone number: <u>04 2961248</u>	Mobile:
After hours:	Fax:
Email address:	Website:

DECLARATION	
I <u>BILL FRANCIS</u> LBP, state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW: • Complies with the building code, or • Complies with the building code subject to any waiver or modification of the building code recorded on this form	
Signature:	<u>[Signature]</u>
Date:	<u>4/7/2016</u>

1642

8 October 2013

Rita O'Brien
Subdivision Engineer
Kapiti Coast District Council
Private Bag 60601
PARAPARAUMU 5254

Dear Rita

DESIGN REPORT, PARATA ST BLOCK WAIKANAЕ NORTH

Our client is planning the subdivision of Lot 3 DP 454080 in the Waikanae North Development Zone. The exact layout of the proposed subdivision is shown on the attached scheme plan numbered 1642-10B. We have inspected the site for its suitability for subdivision with respect to geotechnical issues, foundations, access and stormwater management. This report has been prepared solely for the purposes of the subdivision and the information supplied should not be used for any other purpose other than assessing the suitability of the land for subdivision.

The site is bounded on the East by State Highway 1 and the West by the newly formed Parata St extension. It falls to the west by about 5 m from SH1 to Parata St. It is gently graded and there are no significant land stability issues. 31 additional lots will be created by the subdivision. Lots 1 to 12 are about 1,000 m² whilst lots 13 to 32 are 450 to 500 m².

Stormwater and Groundwater

The principles of the stormwater management plan are as follows:

- 1) In the design of Stage 1 the Q100 design flow of 0.682 m³/sec was allowed for in the sizing of the attenuation pond. The corresponding flow for the Q10 is 0.428 m³/sec. The above flows were based on the assumption that 15 % of the developed area would be impervious. This allowed for all of the roads in the development and 25 m² per lot. The current design shows an impervious area of 13% of the total being 2880 m² of road and 25 m² x 32 lots = 800 m² giving a total impervious area of 3680m² with the total lot area 27,700 m².
- 2) The above flows for the attenuation allowed 25 m² per lot of paving. A consent notice will be required for each lot to control this.

- 3) Individual households are expected to have sufficient stormwater attenuation tanks to provide hydraulic neutrality. The specific design of these will be carried out in accordance with KCDC requirements once the size of each house is known. These attenuation tanks can provide attenuation and also the necessary storage for rainwater to comply with Plan Change 75. Soakage pits are not recommended as the groundwater in the area is already an issue and this does not need exacerbating. The on site soils are clay and provide no soakage capability.
- 4) Each lot will be provided with a discharge point to take overflow from the attenuation tanks. Lots 1, 2, 3, 4, 5, 6 and 13 will discharge through a subsoil drain in the swale immediately north of the new access road between lots 1 and 13. Lots 7 to 12 will each have an individual connection to the subsoil drain in the swale servicing the access road. Lots 13 to 32 will have individual connections to the existing swale on the western side that services Parata St.

The road servicing lots 25 to 32 will be lowered some 300 mm below the lots. A perforated pipe will run under the road to provide subsoil drainage. The lowered road will also act as a drainage path for any overland flow in extreme storms that comes from the east across SH 1. This overland flow currently causes inundation on these lots. The capacity of the lowered road is about 4 m³/sec. The likely design flow will be considerable less than this. The current design flow from the catchment on the eastern side of SH1 that causes the surface water is 7.96 m³/sec. 5 m³/sec of this is already being diverted down the overflow swale immediately to the south of this. Another portion is already being diverted down the east side of SH1. Therefore it is likely that the surface flows into this area will be about 1 m³/sec as compared to a capacity of 4 m³/sec.

Bridge Access

Access to service lots 25 to 32 will be provided by 2 different methods. A 2 lane bridge will be provided over the overflow swale immediately south of lot 25. This will be sized to ensure that it is flood free in a Q100 event. A culvert will be provided at the north side of lot 32 where the access road crosses the swale between the block and Parata St. The culvert will be sized for the Q10 storm with no overtopping whilst the Q100 storm can pass over the lane with a depth of up to 200 mm as allowed by clause 4.3.4.2 of the SDPR. In a Q100 event where the water may be flowing in this manner the residents of the lane still have flood free access over the bridge which is a maximum of 120 m away from lot 32.

Foundations

90 scala penetrometer tests were carried out on the site. 11 test pits were also excavated. The scala probes extended between 500 and 1800 mm and the test pits went to about 1800 mm. The location of the tests is shown on the attached plan. Tests 1 to 11 were in the road to assist with the design of that whilst the remainder were in the lots to be subdivided. The larger lots, 1 to 12 contain either 3 or 4 tests whilst the smaller lots, 13 to 31 only contain 2 tests except for lot 15 that contains 4 tests. The results from the tests in lots 13 to 31 show a reasonable level of consistency and it was not considered necessary to carry out the additional 30 tests to gain more knowledge of the soil conditions. The results are attached as a table at the end of this report.

The soils typically comprise topsoil overlying deposited clays and gravels. The surfaces of the lots 1 to 12 and the eastern portions of lots 17 to 23 are wet as there is currently very little drainage. This is caused because there is a layer of clay over most of the site immediately below the topsoil. These lots will be provided with subsoil drainage during the development. NZS 3604: 1999 Timber Framed Buildings requires that the number of blows per 75 mm be greater than 3 at a depth of 600 mm or less for the soils to be classified as good ground not requiring specific design. The tests show that the founding levels could be at 600 mm depth for piles on some of the lots whereas others may need to be founded at depths of up to 1200 mm. It is our professional opinion that a house can be constructed on all lots using conventional foundations such as piles or concrete slabs.

We would recommend that the foundations are subject to specific design because:

- 1) The exact location of the house on each lot is not known and may not correlate to the location of the tests.
- 2) Lots 1 to 12 have a gentle slope from east to west that may require some excavation and or filling to create a level building platform.
- 3) The variability of founding depths across all 32 lots is such that it is not possible to certify a consistent depth for all lots.
- 4) Groundwater may need to be controlled in the foundations of some lots particularly if using a concrete slab on grade.

Pavement Design

Typically the road surface will be about 300 mm below the existing ground level. The pavement will be founded about 600 mm below the existing ground. At that depth the penetrometer shows a result of at least 25 mm per blow as per fig. 3.1 of NZS 4404:2010. This equates to a CBR reading of approx. 9.5. Therefore as per the mechanistic design process a pavement thickness of 200 could be acceptable. However the KCDC requirement for a minimum pavement thickness of 300 mm is the governing condition. Care will be taken during the excavation for the pavement to ensure that any unsuitable material is excavated to waste.

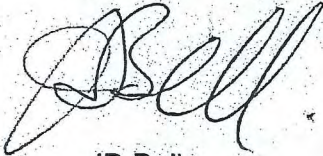
Waste water

The sanitary sewer reticulates from an existing manhole in the existing 150dia SS line at the northern end of the lane (asset ID: 20120920115607) and at a manhole in the centre of the site (WSM00311). The extensions to the mains will follow the natural grade of the land at between 0.8% and 1.0% at depths of 1.2-2.0m along the rear lanes.

The additional design flows from the development are 1.0 litres /sec at WSM0031 and 0.4 litres/sec at asset ID: 20120920115607. The design flow from the catchments east of SH1 is 82.6 litres/sec. The design flow at the critical section downstream of this is 84.03 litres/sec in the 375 mm dia PVC pipe (asset ID 20120411085708). The capacity of this sewer is 105 litres/sec. Therefore there is spare capacity of 22.4 litres/sec.

We trust that the above plan addresses the issues relating to the overall management of stormwater on the development. Please contact the writer if you have any queries.

Yours faithfully
LANDLINK LTD



JD Bell
Engineer

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	23	24
Depth																					
100																					
200				2																	
300	3	4		3				3		3	5						6	2	2		
400	4	3		5	4	2		2	2	3	5	2	2	2	9	3	3	1	2		
500	R	5	4	5	5	2	3	4	1	5	R	5	3	6	3	4	2	2	3	3	3
600		6	6	4	4	1	7	4	2	R		R	3	R	2	4	6	7	6	3	4
700		7	R	3	R	3	7	4	3				7		5	R	4	R	9	5	R
800		8		3		3	6	5	3				R		7		6		7	4	
900		R		R		6	6	5	6						R		8		R	4	
1000						R	9	5	5								R			5	
1100							9	6	6											R	
1200							8	4	6												
1300							R	4	6												
1400								4	5												
1500								R	9												
1600									R												
1700																					
1800																					
1900																					
2000																					
2100																					

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Depth																					
100																					
200																					
300																					
400											4	4			2						
500								2	5		4	3	6	4	3	3	2	2		3	3
600		3	3	7	5	2	10	R	5	2	6	4	4	3	2	3	2	5	3	2	6
700	3	2	2	7	5	3	R		9	6	6	4	3	2	3	4	3	6	2	2	4
800	2	4	R	5	4	6			R	R	6	5	5	2	2	3	3	6	5	3	4
900	1	R		6	5	4					6	6	R	4	2	4	4	5	6	4	5
1000	1			12	5	4					7	6		5	3	6	5	5	6	6	7
1100	4			9	4	5					10	7		6	3	7	6	5	6	8	7
1200	3			5	4	5					8	R		R	5	R	8	4	5	8	7
1300	4			11	6	9					R				R		R	5	6	8	9
1400	R			R	6	7												8	8	8	8
1500					7	7												7	8	7	6
1600					9	R												7	9	7	6
1700					R													6	8	8	8
1800																		6	8	6	7
1900																		7	8	7	6
2000																		6	8		
2100																		7			

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
Depth																					
100																					
200																					
300																					
400	4	8		2			1	2		2	3	2		4							
500	4	6	3	2	4	2	3	3	1	2	4	3		3	2	2					
600	3	4	5	2	3	6	2	4	3	3	4	2		4	3	1				1	
700	5	4	4	5	5	4	4	4	2	3	3	2	3	3	4	2			2	2	3
800	5	7	5	8	5	7	1	R	2	5	5	4	3	4	6	2	2	5	3	2	8
900	6	7	6	8	R	6	4		5	R	6	6	6	8	7	2	6	2	3	3	R
1000	5	6	6	8		R	8		4		4	6	7	6	7	4	5	2	4	4	
1100	10	10	11	11			12		7		9	4	9	6	6	5	7	6	5	4	
1200	R	14	12	10			11		7		6	4	9	8	7	7	8	5	10	5	
1300		10	R	10			10		6		6	4	8	5	8	7	9	8	R	7	
1400		9		R			8		12		7	4	10	6	11	5	8	7		9	
1500		10					10				R	10	9	9		4	13	7		9	
1600		5					9					R	13	R		4		7		10	
1700		5														7		7		13	
1800		6														13		7		R	
1900		8																9			
2000		10																			

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	67	68	69	70	71	72	73	74	75	76	78	79	80	81	82	83	84	85	86	87	88
Depth																					
100																					
200																					
300													2	2	4	4		4	4	4	2
400				3					2		9	2	3	3	3	2	4	4	8	2	3
500	3			4				6	3	3	R	3	7	2	6	1	2	8	R	2	3
600	1	2	6	3	4		4	6	4	5		2	3	3	R	2	6	8		2	3
700	2	3	R	10	5	4	4	R	2	6		3	3	7		4	R	8		4	1
800	2	2		8	5	9	3		3	10		3	4	9		4		5		8	2
900	4	4		4	6	8	5		5	7		3	3	R		R		4		8	3
1000	4	3		5	6	7	6		4	6		2	4					6		R	R
1100	4	2		4	4	7	8		4	R		3	R					R			
1200	6	6		4	4	5	9		10			11									
1300	7	5		5	4	3	R		12			R									
1400	9	5		4	7	3			10												
1500	9	7		5	R	4			10												
1600	10	9		6		6			9												
1700	10	12		6		7			13												
1800		18		7		12															
1900						R															
2000																					

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	89	90	91	92	93
Depth					
100					
200					
300	2				2
400	5	1	3		3
500	2	3	3	2	3
600	2	5	4	3	4
700	1	4	6	2	5
800	2	1	R	5	15
900	1	2		3	R
1000	4	2		2	
1100	5	7		6	
1200	5	5		7	
1300	5	7		3	
1400	4	7		4	
1500	6	8		R	
1600	R	R			
1700					
1800					
1900					
2000					

Test Pits Parata Street Block Waikanae North

Pit No	94	95	96	97	98	99	100	101	102	103	104
Depth											
100	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
200											
300											
400	Grey Brown Clay Gravels	Yellow Clay	Yellow Grey Clay	Clay	Yellow Brown Clay	Yellow Brown Clay	Yellow Brown Clay	Yellow Clay	Brown Clay	Yellow Brown Clay	Clay
500										Gravels	Brown gravels
600		Clayey Gravels		Brown Gravels stained	Grey Clay				Gravels	Grey Clay very hard	
700								Grey Gravels	Grey Clay		
800	Grey clay		Grey Clay Gravels								
900		Yellow Clay		Grey Gravels merged on slope with clay below	Dark Brown Clay			Yellow Clay			
1000											
1100		Brown Clay Gravels	Sandy Silty Clay minor organics, soft					Grey Gravels very tight			
1200	Grey Gravels										
1300		Grey Gravels		Grey clay very tight							
1400					Sandy Gravels	Gravels		Grey Clay	Gravels very tight		
1500								Grey Gravels			
1600									Grey Clay tight		
1700								Grey Clay			
1800			Sandy Gravels								
1900											

13 November 2014

Rita O'Brien
Subdivision Engineer
Kapiti Coast District Council
Private Bag 60601
PARAPARAUMU 5254

Dear Rita

RM130101 - FOUNDATIONS ROADING AND AS BUILT EARTHWORKS

An original engineering report was provided in October 2013, followed by an update report on 8 November 2013 and finally a report titled "Revisions to Engineering Design VJ Ltd" dated 21 May 2014. This as-built report describes the completed works and notes the changes to the design which have occurred since then.

Copies of all as built drawings are separately appended to this report as part of the overall 224 application.

A Traffic Audit has been prepared by Statham Consulting Limited and is also appended.

Geotechnical and Earthworks

Apart from Roading works, the only significant earthworks were those relating to the general section filling required to provide building platforms 300mm above the Q100 flood levels adjacent to affected properties. This work was undertaken generally in accordance with the design documents to provide flood free building platforms 300 above the estimated Q100 levels. This material was to a maximum depth of 300mm and utilised silty sandy gravel with a predominance of topsoil excavated from the adjoining roads. This material is compacted but is not intended to meet the criteria for engineered fill under NZS 4431, and is not intended to provide the required founding under NZS 3604.

Previously undertaken penetrometer results and test pits are appended. The soils over the extent of the residential lots typically comprise topsoil overlying deposited clays and gravels. The surfaces of the lots 1 to 12 and the eastern portions of lots 17 to 23 are wet as there is currently very little drainage. This is caused because there is a layer of clay over most of the site immediately below the topsoil. NZS 3604: 1999 Timber Framed Buildings requires that the number of blows per 75 mm be greater than 3 at a depth of 600 mm or less for the soils to be classified as good ground not requiring specific design. The tests show that the founding levels could be at 600 mm depth for piles on some of the lots whereas others may need to be founded at depths of up to 1200 mm. It is our professional opinion that a house can be constructed on all lots using conventional foundations such as piles or concrete slabs. We would recommend that the foundations are subject to specific design because

1. The exact location of the house on each lot is not known and may not correlate to the location of the tests.

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2. Lots 1 to 12 have a gentle slope from east to west that may require some excavation and filling to create a level building platform.

3. The variability of founding depths across all 31 lots is such that it is not possible to certify a consistent depth for all lots.

4. Groundwater may need to be controlled in the foundations of some lots particularly if using a concrete slab on grade.

or

Roading

Prior to construction a series of penetrometer tests were undertaken along the length of the proposed road system, to confirm design. These are appended to the Samcon report attached.

The Roding earthworks initially assumed a pavement structure consisting of 150mm layers each of AP65 hardfill, and M4 Basecourse over a prepared and compacted subgrade. An initial Geotechnical investigation including Penetrometer testing which is attached, tended to reinforce this original design.

Apart from minor alterations, the roading has been constructed in accordance with the geometry and levels indicated on the Approved Design. The main exceptions are where changes to levels have been required as a result of remedial works.

Modifications have been made to the subsoil drainage in Mahia Lane North. The original location was under the kerb and channel on the eastern side of the lane, however after the need for substantial remediation works this was shifted to the western side. The subgrade was sloped towards the drain to ensure proper drainage of the sub-base.

An additional subsoil drain has been installed beneath Mahia Lane south, from chainage 180 to 215 to drain a spring encountered beneath the road formation. This discharges into the overflow swale.

During the course of construction ground conditions were encountered in various locations which dictated that the design be modified. In consultation with Graeme Walker of Samcon Ltd, Landlink prepared revisions to the road construction as follows:

PARATA BLOCK REMEDIAL WORK

LOCATION	TREATMENT	DETAILS
Mahia Lane South:		
Ch 10-120	Place grid and cloth. Possible additional layer of metal. Digout for 2 areas of trees roots.	Generally place Tri-Ax 160 Geogrid over Bidim A19 with additional 100mm of hardfill under the specified pavement structure. Locally, Remove Tree Roots, excavate 200 and Provide additional 300 Hardfill to match level over geogrid
Ch 120-152	Excavate unsuitable dispose onsite, place grid and cloth, Import, place and compact hardfill.	Excavate additional 200 and place Tri-Ax 160 Geogrid over Bidim A19. Place 200 additional hardfill under specified pavement structure.
Ch 153 - 210 (Extra depth as specified by Graeme Walker)	Excavate unsuitable to depth of 900mm dispose onsite, import, place and compact Boulders, Hardfill, GAP 65 and M4 basecourse. Grid and cloth not necessary with this treatment	Over-excavate 900 and reconstruct with 400 boulders, 450 compacted hardfill and additional 50mm AP65.

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Mahia Lane North:		
Ch 17 to Ch 20	Excavate unsuitable dispose onsite, import, place and compact boulders and hardfill.	Over excavate 2m placing 1.3m boulders and 400 compacted hardfill before placing specified pavement structure
Ch 20 to 145	Excavate unsuitable dispose onsite import place and compact boulders/ hardfill.	Excavate additional 600 and place 600 boulders plus 400 compacted hardfill under specified pavement structure.
Ch 145 to 170	Excavate unsuitable dispose onsite import place and compact hardfill.	Excavate additional 300 and place 300 compacted hardfill under specified pavement structure.

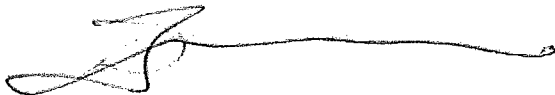
Access

Individual entrances have not been built during the main construction works. The proposed design can be found on 1641-123E which shows the detail required where an accessway must pass through a stormwater swale. This crossing is awaiting approval by KCDC.

The purpose of such is to standardise the appearance in the development and provide an engineered solution which maintains swale grade and stormwater flow, whilst easing the grade separation through the swale.

A consent notice will require each lot to have a crossing constructed to follow this design.

Yours faithfully
LANDLINK LTD



DJ Munro
 Project Engineer

Encl.

1. Culvert Foundation PS4 and Report (Samcon)
2. Samcon Road Design and Construction Report
3. Samcon Remediation email
4. Preliminary Test Results

APPENDIX 4
PRELIMINARY TEST RESULTS

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm

Test no	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	23	24
Depth																					
100				2																	
200				3				3		3	5						6	2	2		
300	3	4		5	4	2		2	2	3	5	2	2	2	9	3	3	1	2		
400	4	3		5	5	2		4	1	5	R	5	3	6	3	4	2	2	3	3	
500	R	5	4	5	4	1	3	4	2	R		R	3	R	2	4	6	7	6	3	3
600		6	6	4	4	3	7	4	2				7		5	R	4	R	9	5	4
700		7	R	3	R	3	7	4	3				R		7		6		7	4	R
800		8		3		3	6	5	3						R		8		7	4	
900		R		R		6	6	5	6						R		8		R	4	
1000						R	9	5	5								R			5	
1100							9	6	6											R	
1200							8	4	6												
1300							R	4	6												
1400								4	5												
1500								R	9												
1600									R												
1700																					
1800																					
1900																					
2000																					

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Test no																					
Depth																					
100																					
200																					
300																					
400																					
500											4	4			2						
600		3	3	7	5	2	10	2	5	2	4	3	6	4	3	3	2	2		3	3
700	3	2	2	7	5	3	R	R	5	6	6	4	4	3	2	3	2	5	3	2	6
800	2	4	R	5	4	6			9	6	6	4	3	2	3	4	3	6	2	2	4
900	1	R		6	5	4			R	R	6	5	5	2	2	3	3	6	5	3	4
1000	1			12	5	4					7	6		4	2	4	4	5	6	4	5
1100	4			9	4	5					10	7		5	3	6	5	5	6	6	7
1200	3			5	4	5					8	R		6	5	R	6	4	5	8	7
1300	4			11	6	9					R			R	5		R	5	6	8	9
1400	R			R	6	7												8	8	8	8
1500					7	7												7	8	7	6
1600					9	R												7	9	7	6
1700					R													6	8	8	8
1800																		6	8	6	7
1900																		7	8	7	6
2000																		6	8		

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm

Test no	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
Depth																					
100																					
200																					
300																					
400	4	8		2			1	2		2	3	2		4							
500	4	6	3	2	4	2	3	3	1	2	4	3		3	2	2					
600	3	4	5	2	3	6	2	4	3	3	4	2		4	3	1				1	
700	5	4	4	5	5	4	4	4	2	3	3	2	3	3	4	2			2	2	3
800	5	7	5	8	5	7	1	R	2	5	5	4	3	4	6	2	2	5	3	2	8
900	6	7	6	8	R	6	4		5	R	6	6	6	8	7	2	6	2	3	3	R
1000	5	6	6	8		R	8		4		4	6	7	6	7	4	5	2	4	4	
1100	10	10	11	11			12		7		9	4	9	6	6	5	7	6	5	4	
1200	R	14	12	10			11		7		6	4	9	8	7	7	8	5	10	5	
1300		10	R	10			10		6		6	4	8	5	8	7	9	8	R	7	
1400		9		R			8		12		7	4	10	6	11	5	8	7		9	
1500		10					10				R	10	9	9		4	13	7		9	
1600		5					9					R	13	R		4		7		10	
1700		5														7		7		13	
1800		6														13		7		R	
1900		8																9			
2000		10																			

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm	67	68	69	70	71	72	73	74	75	76	78	79	80	81	82	83	84	85	86	87	88
Test no																					
Depth																					
100																					
200																					
300																					
400				3					2		9	2	2	2	4		4	4	4	2	2
500	3			4				6	3	3	R	3	3	3	3	2	4	4	8	2	3
600	1	2	6	3	4		4	6	4	5		2	3	2	6	1	2	8	R	2	3
700	2	3	R	10	5	4	4	R	2	6		3	3	3	R	2	6	8		2	3
800	2	2		8	5	9	3		3	10		3	4	9		4	R	5		8	1
900	4	4		4	6	8	5		5	7		3	3	R		R		4		8	2
1000	4	3		5	6	7	6		4	6		2	4					4		8	3
1100	4	2		4	4	7	8		4	R		3	R					6		R	R
1200	6	6		4	4	5	9		10			11						R			
1300	7	5		5	4	3	R		12			R									
1400	9	5		4	7	3			10												
1500	9	7		5	R	4			10												
1600	10	9		6		6			9												
1700	10	12		6		7			13												
1800		18		7		12															
1900						R															
2000																					

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm

Test no	89	90	91	92	93
Depth					
100					
200					
300	2				2
400	5	1	3		3
500	2	3	3	2	3
600	2	5	4	3	4
700	1	4	6	2	5
800	2	1	R	5	15
900	1	2		3	R
1000	4	2		2	
1100	5	7		6	
1200	5	5		7	
1300	5	7		3	
1400	4	7		4	
1500	6	8		R	
1600	R	R			
1700					
1800					
1900					
2000					

Test Pits – Parata Street Block, Waikanae North

Depth	Pit Number										
	94	95	96	97	98	99	100	101	102	103	104
100	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
200											
300											
400	Grey Brown Clay Gravels	Yellow Clay	Yellow Grey Clay	Clay	Yellow Brown Clay			Yellow Clay	Brown Clay	Yellow Brown Clay	Clay
500				Brown Gravels stained						Gravels	Brown gravels
600		Clayey Gravels			Grey Clay			Grey Gravels	Gravels		
700						Yellow Brown Clay	Yellow Brown Clay			Grey Clay very hard	
800	Grey clay		Grey Clay Gravels								
900		Yellow Clay		Grey Gravels merged on slope with clay below				Yellow Clay	Grey Clay		
1000					Dark Brown Clay						
1100		Brown Clay Gravels	Sandy Silty Clay minor organics, soft					Grey Gravels very tight			
1200	Grey Gravels			Grey clay very tight							
1300		Grey Gravels			Sandy Gravels	Gravels		Grey Clay	Gravels very tight		
1400								Grey Gravels	Grey Clay tight		
1500								Grey Clay			
1600											
1700											
1800											
1900			Sandy Gravels								

20 March 2015

RM130101 - SUBDIVISION OF LOT 3 DP 454080

ON SITE ATTENUATION REQUIREMENTS FOR RESIDENTIAL LOTS

Introduction

The concept of hydraulic neutrality of stormwater is a key feature of land development on the Kapiti Coast. Hydraulic neutrality requires that each lot is managed so that the total stormwater flow discharging from the site is no more than the original flow which left the site before it was developed.

The conditions relating to this subdivision are those detailed in its Resource Consent, RM130101 as well as the over-riding conditions and constraints placed on all developments by the Kapiti Coast District Council (KCDC).

In this instance the key requirements are:

1. Site attenuation is required to be designed for a Q100 storm event.
2. Site outflows are to be constrained to the pre-development Q100 and Q10 flows in the respective storm events.
3. Maximum impermeable areas are stipulated in the Waikanae North Design Guide, being section D.10.1-1 of the KCDC District Plan. These include the allowed site coverage for houses in the various precincts, and are detailed further in the examples shown below.
4. Detailed design is required for all components (with supporting calculations).
5. Provision must be made for effective operation and maintenance.

Indicative Design

Attenuation of stormwater can be achieved in a number of ways, summarised as follows:

1. **Sink it:** holds stormwater and slowly infiltrates it into the ground
2. **Slow it:** holds stormwater flow and slowly releases it to the sewer system
3. **Reuse it:** holds stormwater and uses it to meet non-potable water demands
4. **Move it:** directs water flows to a downstream area of storage.

In this development, the 'sink it' option is not likely to be successful because ground conditions are typically of low permeability, however this may be subject to specific site testing. The 'slow it' and 'reuse it' options are the most likely options to be available to landowners, and to assist, the developer has provided for the equivalent of 25m² of paved (impermeable) surface attenuation off-site (in an attenuation pond). This is therefore a 'move it' method for a small part of the attenuation requirement.

The Council recommend using their 'On-site Detention Tank Design' calculator which helps to define the size of an attenuation tank. The attached calculations use this calculator as a base, with modifications made to allow for the specific stormwater conditions that apply to this subdivision. In any given situation, over-attenuation can be

provided for additional paving they might wish to create above that which has been accommodated off site (25m²). Each development will need to calculate their individual tank sizing based on lot area, house size and impervious area. We note that the water re use standard in the District Plan requires a minimum tank size of 10,000 litres (unless a grey water reuse option is used).

Each individual site will need to prepare a Stormwater Design Report (SDR) to show how their lot will achieve hydraulic neutrality. The SDR will be need to be supported by calculations as summarised below, and appended to this report.

We have prepared 'indicative design calculations' for each precinct type in this subdivision. Lot sizes are approximate as they vary slightly, but we have chosen two lot sizes that demonstrate the requirements over a likely range of sizes.

In utilising the OSD calculator, the relevant rainfall depths for the respective storm events as assessed by Tonkin and Taylor in their report "Waikanae North Stage 2 Stormwater Modelling" dated October 2013 have been referenced. Attenuation volumes have been based on a Q100 event of 171.80 mm, with outfall constrained of a Q10 event of 115.00 mm. The provision for an impermeable area of 25m² has been modelled as "pre-development runoff", and none of the remaining garden or lawn area is assumed to be captured by the attenuation tank.

Precinct 2, example lot 1060m²

Lot size = 1062 m²

a) Building Only

Buildings at 40% coverage (D.1.2.1)	= 425m ²
Required tank size	= 7,750 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice size	= 42mm
Peak Discharge	= 3.6 l/s

b) Maximum Development

Maximum impermeable area (from design guide) of 50% = 531m²

Additional paved area to be attenuated = 531 - 425 = 106 - 25 (allowance)
m² = 81 m²/lot

Required tank size	= 9,090 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice size	= 45mm
Peak Discharge	= 4.2 l/s

The above figures are in addition to the minimum storage requirements under the District Plan

Precinct 4, example lot 601m²

Lot size = 601 m² Approx

a) Building Only

Buildings at 50% coverage (D.1.2.1)	= 301m ²
Required tank size	= 5,490 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice Size	= 36 mm
Peak Discharge	= 2.7 l/s

b) Maximum Development

Maximum impermeable area (from design guide) of 70% = 421m²

Additional paved area to be attenuated = 421-301 = 120 - 25 (allowance)
m² = 95 m²/lot

Required tank size	= 7,070 litres
Outlet Orifice Size	= 40 mm
Peak Discharge	= 3.4 l/s

This level of storage could be reduced by using permeable pavements, or ground soakage to supplement the attenuation.

The above figures are in addition to the minimum storage requirements under the District Plan.

APPENDIX OSD CALCULATIONS

20 March 2015

RM130101 - SUBDIVISION OF LOT 3 DP 454080

ON SITE ATTENUATION REQUIREMENTS FOR RESIDENTIAL LOTS

Introduction

The concept of hydraulic neutrality of stormwater is a key feature of land development on the Kapiti Coast. Hydraulic neutrality requires that each lot is managed so that the total stormwater flow discharging from the site is no more than the original flow which left the site before it was developed.

The conditions relating to this subdivision are those detailed in its Resource Consent, RM130101 as well as the over-riding conditions and constraints placed on all developments by the Kapiti Coast District Council (KCDC).

In this instance the key requirements are:

1. Site attenuation is required to be designed for a Q100 storm event.
2. Site outflows are to be constrained to the pre-development Q100 and Q10 flows in the respective storm events.
3. Maximum impermeable areas are stipulated in the Waikanae North Design Guide, being section D.10.1-1 of the KCDC District Plan. These include the allowed site coverage for houses in the various precincts, and are detailed further in the examples shown below.
4. Detailed design is required for all components (with supporting calculations).
5. Provision must be made for effective operation and maintenance.

Indicative Design

Attenuation of stormwater can be achieved in a number of ways, summarised as follows:

1. **Sink it:** holds stormwater and slowly infiltrates it into the ground
2. **Slow it:** holds stormwater flow and slowly releases it to the sewer system
3. **Reuse it:** holds stormwater and uses it to meet non-potable water demands
4. **Move it:** directs water flows to a downstream area of storage.

In this development, the 'sink it' option is not likely to be successful because ground conditions are typically of low permeability, however this may be subject to specific site testing. The 'slow it' and 'reuse it' options are the most likely options to be available to landowners, and to assist, the developer has provided for the equivalent of 25m² of paved (impermeable) surface attenuation off-site (in an attenuation pond). This is therefore a 'move it' method for a small part of the attenuation requirement.

The Council recommend using their 'On-site Detention Tank Design' calculator which helps to define the size of an attenuation tank. The attached calculations use this calculator as a base, with modifications made to allow for the specific stormwater conditions that apply to this subdivision. In any given situation, over-attenuation can be

provided for additional paving they might wish to create above that which has been accommodated off site (25m²). Each development will need to calculate their individual tank sizing based on lot area, house size and impervious area. We note that the water reuse standard in the District Plan requires a minimum tank size of 10,000 litres (unless a grey water reuse option is used).

Each individual site will need to prepare a Stormwater Design Report (SDR) to show how their lot will achieve hydraulic neutrality. The SDR will be need to be supported by calculations as summarised below, and appended to this report.

We have prepared 'indicative design calculations' for each precinct type in this subdivision. Lot sizes are approximate as they vary slightly, but we have chosen two lot sizes that demonstrate the requirements over a likely range of sizes.

In utilising the OSD calculator, the relevant rainfall depths for the respective storm events as assessed by Tonkin and Taylor in their report "Waikanae North Stage 2 Stormwater Modelling" dated October 2013 have been referenced. Attenuation volumes have been based on a Q100 event of 171.80 mm, with outfall constrained at a Q10 event of 115.00 mm. The provision for an impermeable area of 25m² has been modelled as "pre-development runoff", and none of the remaining garden or lawn area is assumed to be captured by the attenuation tank.

Precinct 2, example lot 1060m²

Lot size = 1062 m²

a) Building Only

Buildings at 40% coverage (D.1.2.1)	= 425m ²
Required tank size	= 7,750 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice size	= 42mm
Peak Discharge	= 3.6 l/s

b) Maximum Development

Maximum impermeable area (from design guide) of 50% = 531m²

Additional paved area to be attenuated = 531 - 425 = 106 - 25 (allowance)
m² = 81 m²/lot

Required tank size	= 9,090 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice size	= 45mm
Peak Discharge	= 4.2 l/s

The above figures are in addition to the minimum storage requirements under the District Plan

Precinct 4, example lot 601m²

Lot size = 601 m² Approx

a) Building Only

Buildings at 50% coverage (D.1.2.1)	= 301m ²
Required tank size	= 5,490 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice Size	= 36 mm
Peak Discharge	= 2.7 l/s

b) Maximum Development

Maximum impermeable area (from design guide) of 70% = 421m²

Additional paved area to be attenuated = 421-301 = 120 - 25 (allowance)
m² = 95 m²/lot

Required tank size	= 7,070 litres
Outlet Orifice Size	= 40 mm
Peak Discharge	= 3.4 l/s

The above figures are in addition to the minimum storage requirements under the District Plan

The above figures could be reduced by using permeable pavements, ground soakage or grey-water re-use ('slow it, sink it or reuse it') to supplement the attenuation ('move it'). As an example the attenuation volume for a house in precinct 4 could be reduced by around 30% if permeable paving systems are used and by around 55% if a grey water re-use system is used.

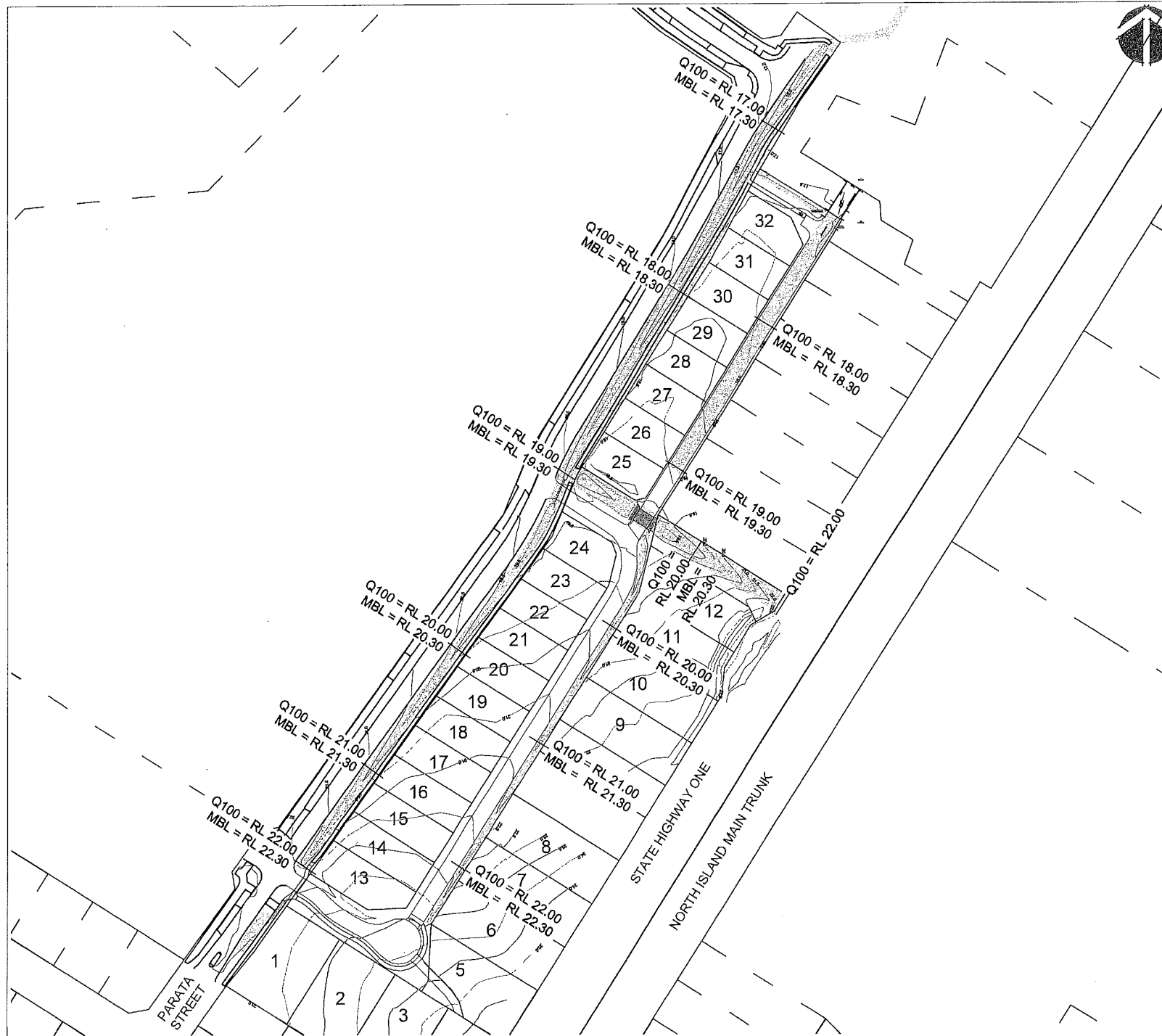
APPENDIX OSD CALCULATIONS

STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN				23-Mar-15																																																																																																																																																																																				
100 YEAR ARI STORM with 10 YEAR ARI STORM OUTLET																																																																																																																																																																																								
1062m2 Lot with 40% site coverage.																																																																																																																																																																																								
ADDRESS	Waikanae North Project - Parata Block	Calcs By	DJM																																																																																																																																																																																					
NAME		Date	23-Mar-15																																																																																																																																																																																					
PHONE																																																																																																																																																																																								
DATA Depth of Tank 1.5 m 10 Year Isohyet Value 115 mm 100 Year Isohyet Value 171.8 mm Time of Concentration 10 min. (10,15,20,30,60) Area (m²) 'C' CA (m²) Site Area 1062 1. EXISTING SITE COVERAGE Existing Roof 0 0.9 0.0 Existing Paved 25 0.85 21.3 Existing Garden 1037 0.35 363.0 TOTAL Existing Area 1062 384.2 2. PROPOSED DEVELOPMENT Additional/Reduced Roof 424.8 0.9 382.3 Additional/Reduced Paved 0.85 0.0 Additional/Reduced Lawn/Garden -424.8 0.35 -148.7 TOTAL Addition Area (should be zero) 0 233.6 3. REMAINING UNDRAINED AREA (Not routed thru detention tank after development) Undrained Roof Area (Normally Zero) 0 0.9 0.0 Undrained Paved Area (Normally Zero) 0 0.85 0.0 Undrained Lawn/Garden Area 612.2 0.35 214.3 TOTAL Extg Not to Tank Area 612.2 214.3																																																																																																																																																																																								
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STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN				23-Mar-15	
100 YEAR ARI STORM with 10 YEAR ARI STORM OUTLET					
1062m2 Lot with 70% impermeable cover (design guide maximum).					
ADDRESS		Waikanae North Project - Parata Block		Calcs By	
NAME		DJM		NOTE: Only fill in the blue (unprotected) cells	
PHONE		Date			
23-Mar-15					
DATA					
Depth of Tank		1.5 m			
10 Year Isoheyt Value		115 mm			
100 Year Isoheyt Value		171.8 mm			
Time of Concentration		10 min. (10,15,20,30,60)			
Site Area		1062		CA (m²)	
1. EXISTING SITE COVERAGE					
Existing Roof		0		0.0	
Existing Paved		25		21.3	
Existing Garden		1037		363.0	
TOTAL Existing Area		1062		384.2	
2. PROPOSED DEVELOPMENT					
Additional/Reduced Roof		424.8		382.3	
Additional/Reduced Paved		81.2		69.0	
Additional/Reduced Lawn/Garden		-506		-177.1	
TOTAL Addition Area (should be zero)		0		274.2	
3. REMAINING UNDRAINED AREA					
Undrained Roof Area (Normally Zero)		0		0.0	
Undrained Paved Area (Normally Zero)		0		0.0	
Undrained Lawn/Garden Area		531		185.9	
TOTAL Extg Not to Tank Area		531		185.9	
CONTROL DATA					
Existing 'C'		0.36		('CA'extg/Site Area)	
Developed 'CA' to OSD tank		473 (m²)		('CA'extg+'CA'adds-'CA'undr)	
Additional Area		0 (m²)		('A'add)	
0.00		0		0	
RUNOFF DATA					
for 10 year		for 100 year		Rainfall Intensities (mm)	
Intensity I		75.9 mm/hr		113.4 mm/hr	
Allowable Qmax whole site		8.11		12.11	
Lost Flows		3.92		5.86	
Allowable Qmax from tanks =		4.2 l/s		6.25 l/s	
Allowable Qave from tanks =		2.7 l/s		4.1 l/s (Qmax * 0.65)	
Orifice Calculation - PROTECTED DO NOT ENTER ANY FIGURES					
d=		45.1 mm		1.5	
Q100 outflow=		5.4 for h=		1.5	
Q100ave		3.5		0.8961456	
Q=		4.2 for h in Q10		0.8961456	
Qave		2.7 Q10		0.8961456	
STORAGE (10 year)					
time (min)	depth (mm)	inflow (l)	outflow (l)	storage (l)	inflow='CA'dev*depth outflow=Qave*time diff=inflow-outflow
10	12.7	5978	1633	4346	
15	16.1	7609	2449	5160	
20	18.4	8696	3265	5431	
30	21.9	10326	4898	5428	
60	29.9	14130	9795	4335	
120	40.3	19022	19591	0	
180	52.9	25000	29386	0	
240	58.7	27717	39181	0	
300	64.4	30435	48977	0	
360	69.0	32609	58772	0	
420	73.6	34783	68568	0	
480	78.2	36957	78363	0	
540	81.7	38587	88158	0	
600	86.3	40761	97954	0	
660	89.7	42391	107749	0	
720	93.2	44022	117521	0	
				Max=	5431
STORAGE (100 year)					
time (min)	depth (mm)	inflow 100 yr (l)	outflow 100 yr (l)	Storage (100 yr) (l)	
10	18.9	8931	2112	6819	
15	24.1	11367	3168	8199	
20	27.5	12991	4224	8766	
30	32.6	15426	6336	9090	
60	44.7	21110	12673	8437	
120	60.1	28417	25346	3071	
180	79.0	37348	38019	0	
240	87.6	41407	50692	0	
300	96.2	45467	63365	0	
360	103.1	48715	76038	0	
420	110.0	51962	88710	0	
480	116.8	55210	101383	0	
540	122.0	57646	114056	0	
600	128.9	60893	126729	0	
660	134.0	63329	139402	0	
720	139.2	65765	152075	0	
				Max=	9090
SUMMARY					
Tank Volume		9090.0 litres			
100 Year Max Discharge		5.4 l/s			
10 Year Max Discharge		4.2 l/s			
Orifice Diameter		45 mm			

STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN				23-Mar-15	
100 YEAR ARI STORM with 10 YEAR ARI STORM OUTLET					
601m2 Lot with 50% site coverage.					
ADDRESS NAME PHONE		Calcs By Date		DJM 23-Mar-15	
Waikanae North Project - Parata Block					
				NOTE: Only fill in the blue (unprotected) cells	
DATA				NOTE	
Depth of Tank				A "#DIV/0!" message appearing in a cell means that data has been entered incorrectly	
10 Year Isoheyt Value					
100 Year Isoheyt Value					
Time of Concentration					
Area (m²) 'C'				CA (m²)	
Site Area					
1. EXISTING SITE COVERAGE					
Existing Roof					
Existing Paved					
Existing Garden					
TOTAL Existing Area					
2. PROPOSED DEVELOPMENT					
Additional/Reduced Roof					
Additional/Reduced Paved					
Additional/Reduced Lawn/Garden					
TOTAL Addition Area (should be zero)					
3. REMAINING UNDRAINED AREA					
Undrained Roof Area (Normally Zero)					
Undrained Paved Area (Normally Zero)					
Undrained Lawn/Garden Area					
TOTAL Extg Not to Tank Area					
CONTROL DATA					
Existing 'C'					
Developed 'CA' to OSD tank					
Additional Area					
0.00 0 0					
RUNOFF DATA					
for 10 year for 100 year					
Intensity I					
Allowable Qmax whole site					
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Orifice Calculation - PROTECTED DO NOT ENTER ANY FIGURES					
d=					
Q100 outflow=					
Q100ave					
Q=					
Qave					
Rainfall Intensities (mm)					
MIN Normalised 10 Yr(mm/hr) 100 Yr(mm/hr)					
10 0.11 75.9 113.4					
15 0.14 64.4 96.2					
20 0.16 55.2 82.5					
30 0.19 43.7 65.3					
60 0.26 29.9 44.7					
120 0.35 20.1 30.1					
180 0.46 17.6 26.3					
240 0.51 14.7 21.9					
300 0.56 12.9 19.2					
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480 0.68 9.8 14.6					
540 0.71 9.1 13.6					
600 0.75 8.6 12.9					
660 0.78 8.2 12.2					
720 0.81 7.8 11.6					
STORAGE (10 year)					
time depth inflow outflow storage					
(min) (mm) (l) (l) (l)					
10 12.7 3690 1041 2649					
15 16.1 4696 1561 3136					
20 18.4 5367 2081 3286					
30 21.9 6374 3122 3252					
60 29.9 8722 6243 2478					
120 40.3 11741 12487 0					
180 52.9 15431 18730 0					
240 58.7 17108 24974 0					
300 64.4 18785 31217 0					
360 69.0 20127 37460 0					
420 73.6 21469 43704 0					
480 78.2 22811 49947 0					
540 81.7 23817 56191 0					
600 86.3 25159 62434 0					
660 89.7 26165 68677 0					
720 93.2 27172 74906 0					
Max= 3286					
STORAGE (100 year)					
time depth inflow 100 yr outflow Storage (100 yr)					
(min) (mm) (l) (l) (l)					
10 18.9 5513 1345 4168					
15 24.1 7016 2017 4999					
20 27.5 8018 2689 5329					
30 32.6 9522 4034 5488					
60 44.7 13030 8068 4962					
120 60.1 17540 16136 1404					
180 79.0 23052 24204 0					
240 87.6 25558 32272 0					
300 96.2 28064 40340 0					
360 103.1 30068 48408 0					
420 110.0 32073 56477 0					
480 116.8 34078 64545 0					
540 122.0 35581 72613 0					
600 128.9 37586 80681 0					
660 134.0 39089 88749 0					
720 139.2 40592 96817 0					
Max= 5488					
SUMMARY					
Tank Volume					
100 Year Max Discharge					
10 Year Max Discharge					
Orifice Diameter					
5490.0 litres					
3.4 l/s					
2.7 l/s					
36 mm					

STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN				23-Mar-15																																																																																																																																																																																														
100 YEAR ARI STORM with 10 YEAR ARI STORM OUTLET																																																																																																																																																																																																		
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NOTE: The sum of the existing areas must equal the 'Site Area'																																																																																																																																																																																																		
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- NOTES:**
- Coordinates in terms of NZTM
 - Height datum is Mean Sea Level Wellington Datum 1953
 - Origin of levels is KDCG WBM 049 (NS473433.42, E1774260.84, 25.43)
 - Easements, covenants and other legal instruments may not be represented on this plan
 - Not all public and private drainage is necessarily shown
 - Features shown are diagrammatic and may not be to scale
 - Earthworks were undertaken between December 2013 and November 2014
 - Minimum Build Level (MBL) = Q100 + 300mm
 - Contour Interval is 0.5m

KEY:

Q100 Flood Hazard

B	MBL levels added	MC	05/03/15
Issue	Revision	Name	Date



Mahara House ~ 3 Ngaio Road ~ PO Box 370 ~ Waikanae 5250
 www.landlink.co.nz ~ contactus@landlink.co.nz ~ P 04 902 8161

Client

VJ Limited

Title

RM130101
 As-Built Plan - Flood Hazard

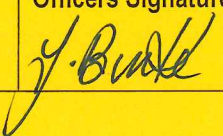
Project

Parata Street Block,
 Waikanae North Development Zone

Approved	PT	
Checked	DM	
Drawn	BA	21-11-2014
Designed	-	
Surveyed	-	
Scale	1:750 @ A1	1:1500 @ A3

Drawing Number: 1642-945 **Issue:** B

Building Consent Number: BC 160529.

Other Provisions				
	Yes	No	Action reqd	Actioned
Does the building straddle Title/crosslease boundary		✓	Section 77 required	
Existing Resource Consent?	✓		RM 160138	
Resource Consent Required?		✓	Apply Section 37 and advise Plan Vetting Team	
Section 72 Required?		✓	Advise Plan Vetting Team and send letters out	\$ 367
Section 221 Consent Notice	✓		Advise Plan Vetting Team	
DIF Required?		✓	Advise Plan Vetting Team and send letter out	
Calculate DIF Fees				Amount
			2 nd Comm / Ind Floor area X \$13.31	
			Non-residential 0.002 X area	
Invoice codes	RM		Water Supply	
	RM		Sewage	
	RM79		Community Facilities	
	RM		Roads	
	RM		Flood Mitigation	
	RM		Reserves	
Send DIF letter out			TOTAL	
Additional Comments * ALL WORK TO BE IN ACCORDANCE WITH SEC 221 CONSENT NOTICE IMPOSED UNDER RM130101 * * ALL WORK TO BE IN ACCORDANCE WITH RM160138 *				
Decision: (tick item which applies) ☒ Application complies with District Plan requirements ☐ Application does not comply with District Plan – BC to be issued subject to s37				
Officers Name:		Officers Signature: 		Date: 29.7.16

PLANNING PROCESSING CHECKSHEET

Building Consent Number: BC160529



Duty Planner Pre-Check

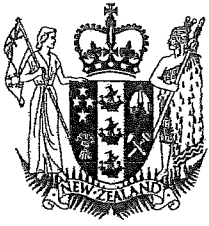
Date:	Planner Name (print):	Signature:
RC Identified : ☐ Yes	Applicant Contacted: Email ☐ or Phone ☐	Date:

Property Information

Property Address:	25 Mahia Lane, Waikanae		
Legal Description:	Lot 24 DP 476550.		
Planning Zone:	Waik North.		
Building Project:	New dwelling.		
	Yes	No	Action Req'd
Certificate of Title	✓		
Easements		✓	
Section 221	✓		Include copy

District Plan Items to Check

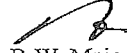
	Yes	No	Action Req'd	Actioned
Heritage Register		✓		
Eco-site/Native Veg		✓		
Flood Hazards		✓		
Min Floor Level		✓		
Coastal Hazards		✓		
Relocatable / No build		✓		
Other Hazards		✓		
EQ Faults		✓		
Airport Zones		✓		
45dba / Acoustic Rept		✓		
	Complies?		Action Req'd	Actioned
Yards (+water bodies)		✓	Rm 160138 Neighbours Approval??	
HIRB	✓			
Max Height	✓			
Site Coverage	✓			
Accessory Buildings <60m²	/			
Permeable Surface	✓			
Earthworks	/			
Water Tank / Siting	✓✓			
Parking	✓			
Retaining Walls	/			
Designations	/			
Licences	/			



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



Search Copy


R. W. Muir
Registrar-General
of Land

Identifier **658768**
Land Registration District **Wellington**
Date Issued 21 April 2015

Prior References

657176

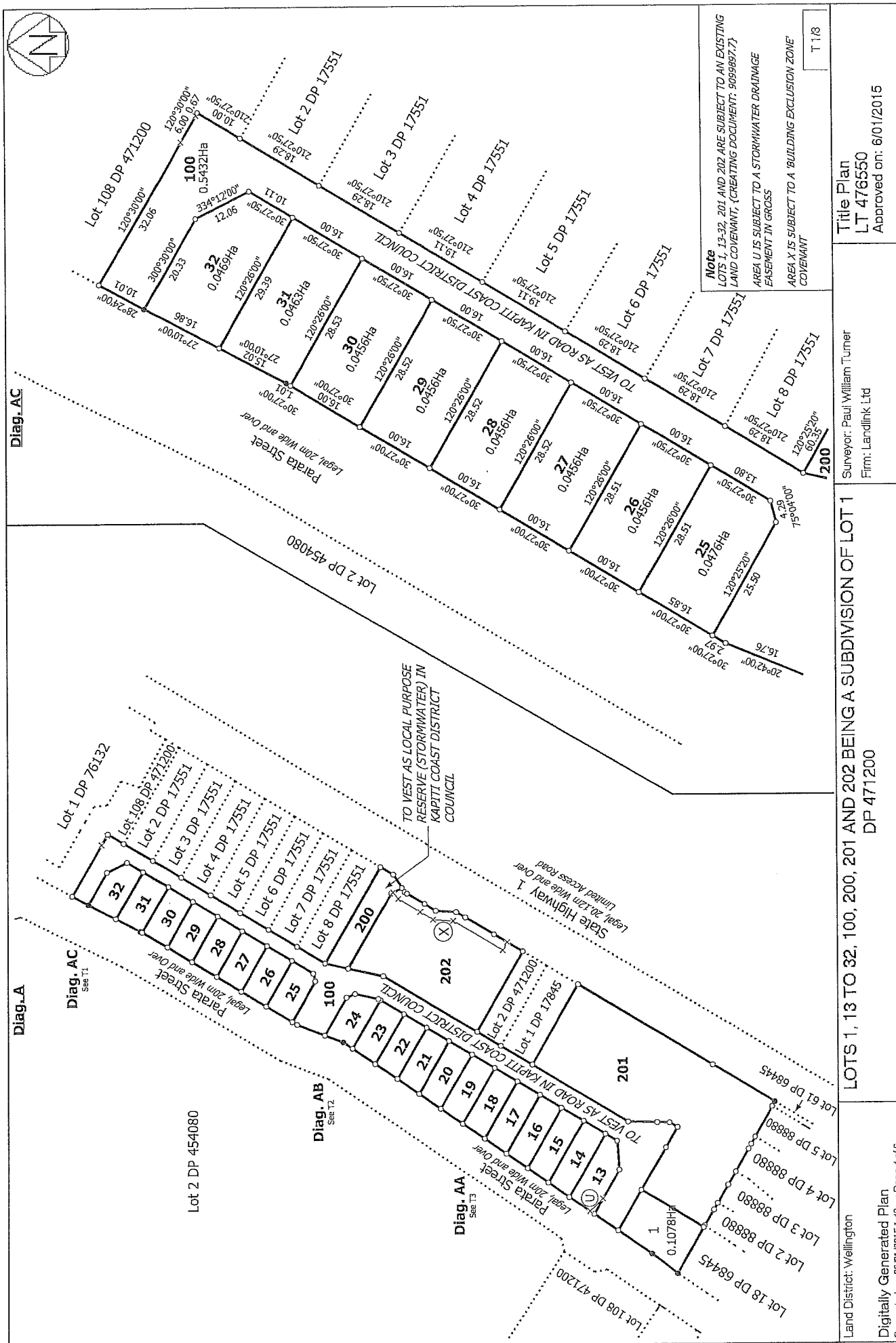
Estate	Fee Simple
Area	467 square metres more or less
Legal Description	Lot 24 Deposited Plan 476550

Proprietors

V J Limited

Interests

9099897.6 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 1.10.2012 at 11:53 am
Land Covenant in Easement Instrument 9099897.7 - 1.10.2012 at 11:53 am
9099897.8 Encumbrance to Charles Fleming Retirement Village Limited - 1.10.2012 at 11:53 am
9851253.13 Mortgage to Westpac New Zealand Limited - 14.11.2014 at 4:04 pm
9897467.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 21.4.2015 at 11:17 am
10268001.1 Variation of Consent Notice 9897467.1 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm
10268001.2 Variation of Consent Notice 9099897.6 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm



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

**IN THE MATTER OF A PLAN LODGED FOR
DEPOSIT UNDER NUMBER 476550
AND RESOURCE CONSENT NO. RM 130101**

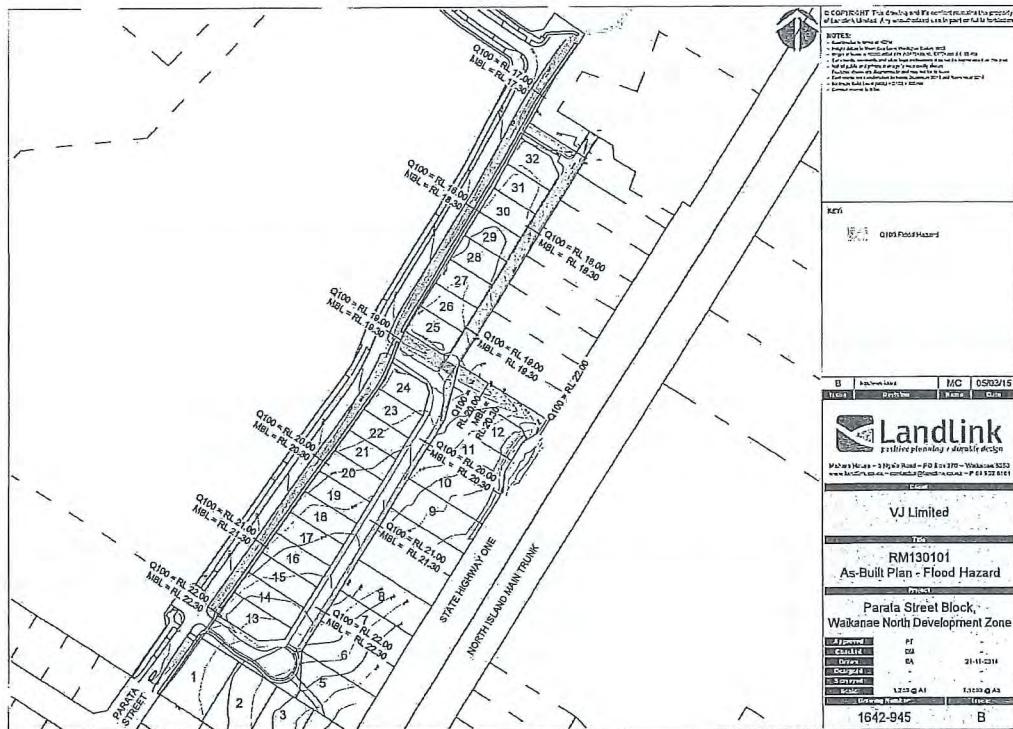
(BEING THE SUBDIVISION OF LOT 1 DP 471200),
AT 19, 27 and 53 State Highway One, Waikanae (Parata Street and Mahia Lane)
FOR V J Limited

The Regional Regulatory Titles Officer at Wellington

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

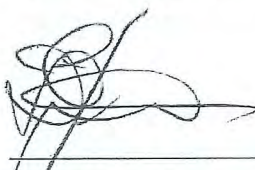
1. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the following documents:
 - The Design Report for Parata St Block Waikanae North dated 8 October 2013 and prepared by J D Bell of Landlink; and
 - The report on Foundations, Roading and As Built Earthworks dated 13 November 2014 and prepared by D J Munro of Landlink;which were submitted to Council in relation to application No. RM130101. Copies of the above documents are available from file RM130101 in Council's Office at any time the office is open to the public and are also stored electronically under e-docs reference nos. 555006 and 555011 respectively.
2. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: The owner of the land has ongoing responsibility for the construction and subsequent management and maintenance of any on site stormwater disposal system to meet the performance standards given in the certified stormwater disposal design as set out in the document entitled "*RM130101 – Subdivision of Lot 3 DP 454080 On site attenuation requirements for residential lots*" dated 20 March 2015. This document is stored by Kapiti Coast District Council on file RM130101 and also electronically under e-docs reference no. 555036. The Tank Calculator referred to in the above report is also stored electronically under e-docs no. 555042. Both documents are available in Council's office at any time the office is open to the public.
3. With respect to Lots 201 and 202: It is the ongoing responsibility of the landowner to protect and maintain any existing and proposed flow paths and natural drainage paths unless otherwise certified by Council's Development Engineer. One method of compliance with this requirement is the construction and maintenance of any vehicular access across any stormwater swale in general accordance with the design shown on Landlink Plan number 1642-E2-150 issue A. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555609 and is available at any time the office is open to the public.

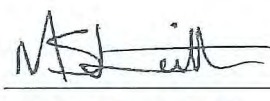
4. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: All residential buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum build level as shown on the Flood Hazard map prepared by Landlink Limited and identified as Drawing Number 1642-945 Issue B. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555529 and is available at any time the office is open to the public. For ease of identification, an image of the Flood Hazard map is set out below:



5. With respect to Lot 202: The following are prohibited within area "X" as shown on DP 476550 unless otherwise approved by the Kapiti Coast District Council Stormwater Engineer:
- The construction of any buildings or other works other than decks supported on poles;
 - The erection of any fences;
 - Earthworks of any nature;
 - Any other activity that may disturb the satisfactory operation of the secondary overflow path and/or bund area which lies within area "X" on DP 476550.

Issued in respect of application No. RM 130101 on this 17th day of April, 2015.


David Wayne Gair
AUTHORISED OFFICER


Monique Sarah Leith
AUTHORISED OFFICER

**VARIATION TO CONSENT NOTICE
PURSUANT TO SECTION 221(3)
OF THE RESOURCE MANAGEMENT ACT 1991**

IN THE MATTER OF DPs 454080 and 476550

**FOR LOT 3 DP 454080 and Lots 201 and 202 DP 476550;
CTs 658777 and 658778
At Mahia Lane,
For VJ Limited**

To: the Regional Regulatory Titles Officer at Wellington

Please be advised that pursuant to Section 221(3) of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that, in relation to Lot 3 DP 454080 only, it has consented to a variation of the following consent notice conditions from the consent notices dated 9 August 2012 for DP 454080:

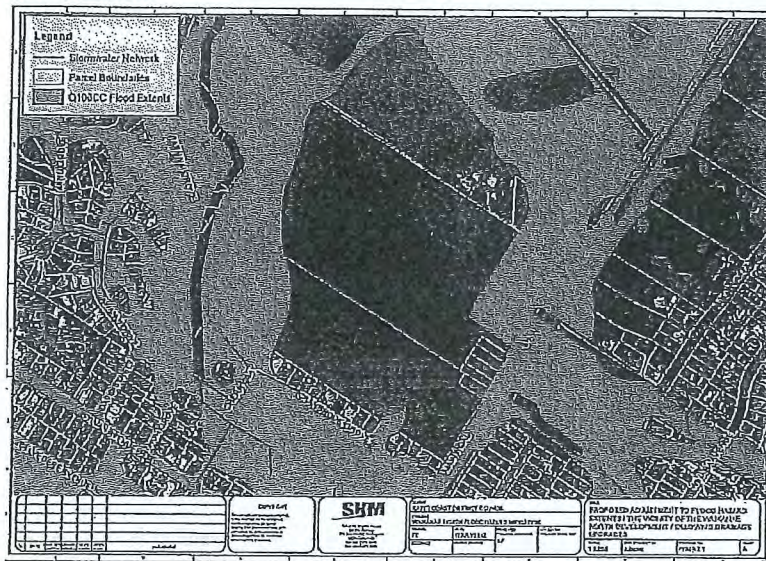
1. With respect to Lots 2, 3, 5 and 107: Foundation design and construction for any new building or addition or alterations to a building shall take into account:
 - The findings and recommendations within the document prepared by Landlink Limited, dated 24 May, 2012 and entitled "Statement of Professional Opinion as to Suitability of Land for Building Construction" together with associated documents which were submitted to Council in relation to application No. RM100229; and
 - The requirements and intent of the report entitled "Waikanae Plan Change Application, Assessment of Environmental Effects – Geotechnical" dated August 2006.

Copies of the above documents are available in the Kapiti Coast District Council Office at any time the office is open to the public.

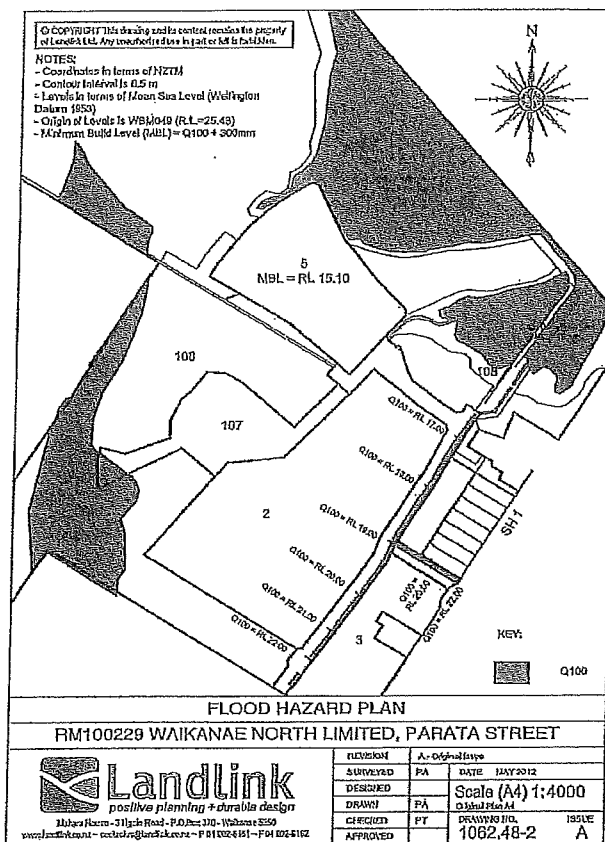
2. With respect to Lots 3 and 5: Any stormwater disposal design related to any development on the land must incorporate provision for and be constructed to the following design criteria to the satisfaction of the Kapiti Coast District Council:
 - provide all roads and vehicle carriageways with a primary system designed to convey the Q10 rainfall event and with a secondary overflow system designed to convey the Q100 rainfall event;
 - include appropriate control structures to ensure the stormwater discharging from lots 3 and 5 meet the parameters specified in the stormwater disposal designed approved under Condition 26;
 - protect and maintain existing overflow and natural drainage paths, unless otherwise altered during stage 1 as approved by the Kapiti Coast District Council Stormwater Engineer; and
 - be verified through hydraulic modelling by a suitably qualified hydrologist or hydraulic modelling specialist, and may be subject to peer review at the consent holder's expense.

It shall be the ongoing responsibility of the owner of the land to maintain any on site system so that it continues to meet the above performance standard as it applied at the time of approval.

4. With respect to Lots 3 and 107: Any habitable buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum recommended building level, which is 300 millimetres above the modelled 1 in 100 year return period flood level (Q100) as determined by the Kapiti Coast District Council at the time of the construction of the relevant building. Details of the recommended build levels can be obtained by consultation with Kapiti Coast District Council Stormwater Engineer and are, at the date of issue of this consent notice, related to the flood risk shown on the Waikanae north Flood Hazard Mitigation plan prepared by SKM, dated 17 July, 2012 and entitled "Proposed Adjustment to Flood Hazard Extent in the Vicinity of the Waikanae Both Development following Drainage Updates", a copy of which is replicated below for purposes of identification:



Furthermore, the current modelled Q100 levels are, at the date of issue of this consent notice, recorded on Landlink Flood Hazard Plan number 1062.48-2 Issue A, a copy of which is replicated below for purposed of identification:



Note: The above plans are held on Kapiti Coast District Council file RM100029 and are available from Council's office at any time the office is open to the public.

The owners of Lot 3 DP 454080; VJ Limited and the Kapiti Coast District Council hereby agree to change the above so that it reads as follows:

1. With respect to Lots 2, 5 and 107: Foundation design and construction for any new building or addition or alterations to a building shall take into account:
 - The findings and recommendations within the document prepared by Landlink Limited, dated 24 May, 2012 and entitled "Statement of Professional Opinion as to Suitability of Land for Building Construction" together with associated documents which were submitted to Council in relation to application No. RM100229; and
 - The requirements and intent of the report entitled "Waikanae Plan Change Application, Assessment of Environmental Effects – Geotechnical" dated August 2006.

Copies of the above documents are available in the Kapiti Coast District Council Office at any time the office is open to the public.

2. With respect to Lot 5: Any stormwater disposal design related to any development on the land must incorporate provision for and be constructed to the following design criteria to the satisfaction of the Kapiti Coast District Council:
 - provide all roads and vehicle carriageways with a primary system designed to convey the Q10 rainfall event and with a secondary overflow system designed to convey the Q100 rainfall event;

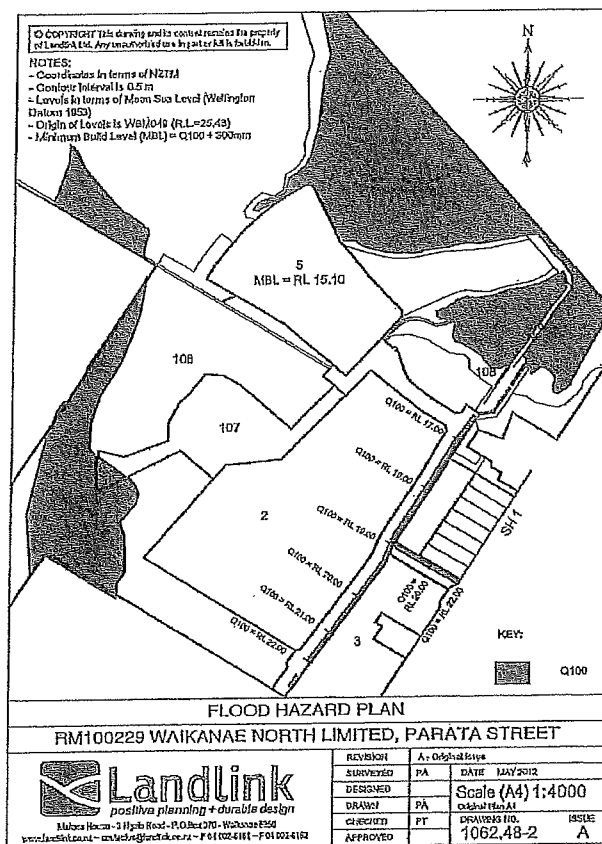
- include appropriate control structures to ensure the stormwater discharging from lots 3 and 5 meet the parameters specified in the stormwater disposal designed approved under Condition 26;
- protect and maintain existing overflow and natural drainage paths, unless otherwise altered during stage 1 as approved by the Kapiti Coast District Council Stormwater Engineer; and
- be verified through hydraulic modelling by a suitably qualified hydrologist or hydraulic modelling specialist, and may be subject to peer review at the consent holder's expense.

It shall be the ongoing responsibility of the owner of the land to maintain any on site system so that it continues to meet the above performance standard as it applied at the time of approval.

4. With respect to Lot 107: Any habitable buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum recommended building level, which is 300 millimetres above the modelled 1 in 100 year return period flood level (Q100) as determined by the Kapiti Coast District Council at the time of the construction of the relevant building. Details of the recommended build levels can be obtained by consultation with Kapiti Coast District Council Stormwater Engineer and are, at the date of issue of this consent notice, related to the flood risk shown on the Waikanae north Flood Hazard Mitigation plan prepared by SKM, dated 17 July, 2012 and entitled "Proposed Adjustment to Flood Hazard Extent in the Vicinity of the Waikanae Both Development following Drainage Updates", a copy of which is replicated below for purposes of identification:



Furthermore, the current modelled Q100 levels are, at the date of issue of this consent notice, recorded on Landlink Flood Hazard Plan number 1062.48-2 Issue A, a copy of which is replicated below for purposes of identification:



Note: The above plans are held on Kapiti Coast District Council file RM100029 and are available from Council's office at any time the office is open to the public.

Please be advised that pursuant to Section 221(3) of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that, in relation to Lot 3 DP 454080 and Lots 201 and 202 DP 476550 only, it has consented to a variation of the following consent notice conditions from the consent notices dated 9 August 2012 for DP 454080 and 17 April 2015 for DP 476550:

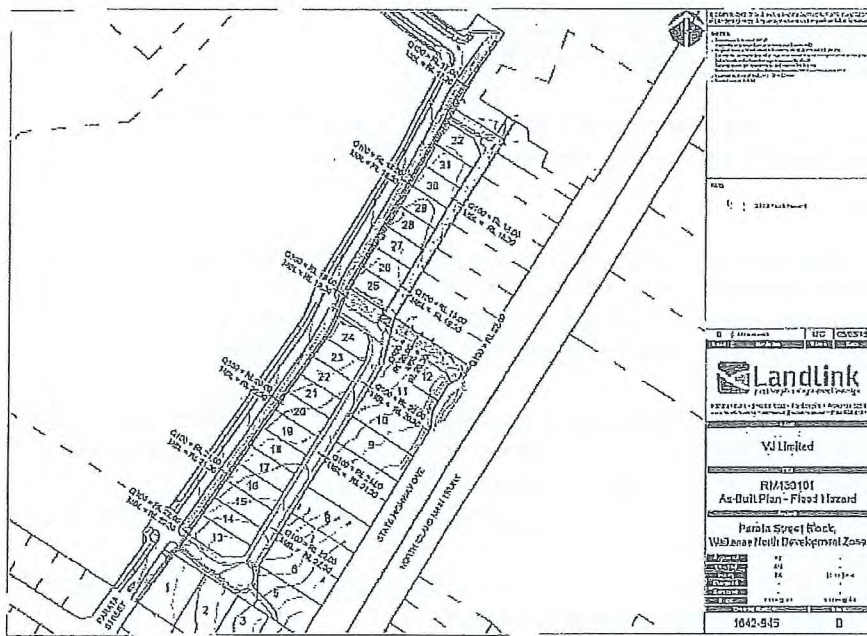
1. With respect to Lots 1, 13 to 32 and Lots 201 and 202: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the following documents:
 - The Design Report for Parata St Block Waikanae north dated 8 October 2013 and prepared by J D Bell of Landlink; and
 - The report on Foundations, Roading and As Built Earthworks dated 13 November 2014 and prepared by DJ Munro of Landlink Limited

which were submitted to Council in relation to application No. RM130101. Copies of the above documents are available from file RM130101 in Council's Office at any time the office is open to the public and are also stored electronically under e-docs reference nos. 555006 and 555011 respectively.

2. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: The owner of the land has an ongoing responsibility for the construction and subsequent management and maintenance

of any on site stormwater disposal system to meet the performance standards given in the certified stormwater disposal design as set out in the document entitled "RM130101 – Subdivision of Lot 3 DP 454080 On site attenuation requirements for residential lots" dated 20 March 2015. This document is stored by Kapiti Coast District Council on file RM130101 and also electronically under e-docs reference no. 555042. Both documents are available in Council's office at any time the office is open to the public.

3. With respect to Lot 201 and 202: It is the ongoing responsibility of the landowner to protect and maintain any existing and proposed flow paths and natural drainage paths unless otherwise certified by Council's Development Engineer. One method of compliance with this requirement is the construction and maintenance of any vehicular access across any stormwater swale in general accordance with the design shown on Landlink Plan number 1642-E2-150 issue A. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555609 and is available at any time the office is open to the public.
4. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: All residential buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum build level as shown on the Flood Hazard map prepared by Landlink Limited and identified as Drawing Number 1642-945 issue B. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555529 and is available at any time the office is open to the public. For ease of identification, an image of the Flood Hazard map is set out below:



5. With respect to Lot 202: the following are prohibited within area "X" as shown on DP 476550 unless otherwise approved by the Kapiti Coast District Council Stormwater Engineer:
 - The construction of an buildings or other works other than decks supported on poles;
 - The erection of any fences;
 - Earthworks of any nature'
 - Any other activity that may disturb the satisfactory operation of the secondary overflow

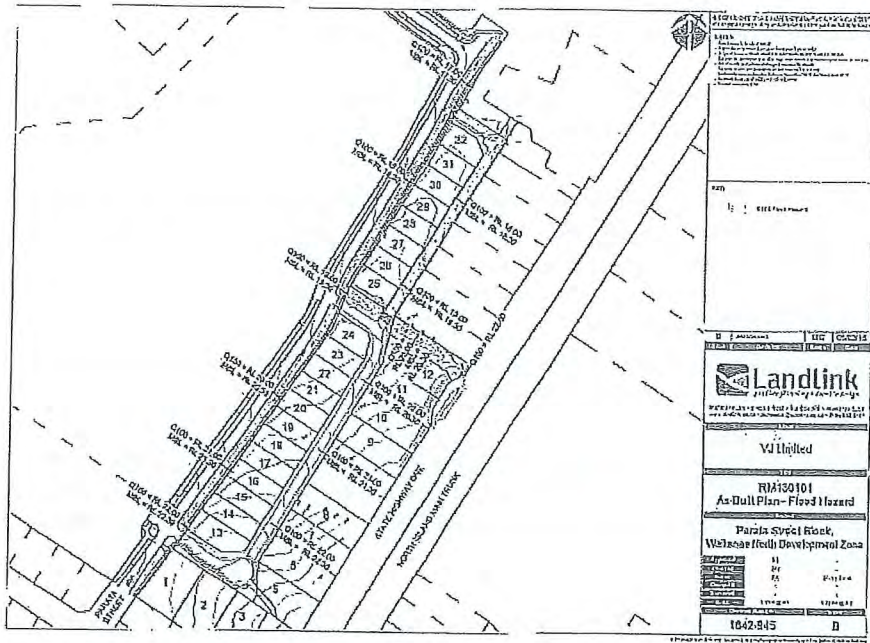
path and/or bund area which lies within area "X" on DP 476550.

The owners of Lots 201 and 202 DP 476550; VJ Limited and the Kapiti Coast District Council hereby agree to change the above so that it reads as follows:

1. With respect to Lots 1 and 13 to 32: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the following documents:
 - The Design Report for Parata St Block Waikanae north dated 8 October 2013 and prepared by J D Bell of Landlink; and
 - The report on Foundations, Roding and As Built Earthworks dated 13 November 2014 and prepared by DJ Munro of Landlink Limited

which were submitted to Council in relation to application No. RM130101. Copies of the above documents are available from file RM130101 in Council's Office at any time the office is open to the public and are also stored electronically under e-docs reference nos. 555006 and 555011 respectively.

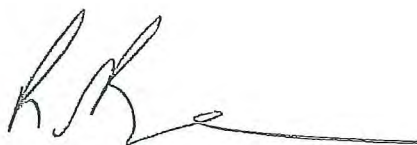
2. With respect to Lots 1 and 13 to 32 inclusive: The owner of the land has an ongoing responsibility for the construction and subsequent management and maintenance of any on site stormwater disposal system to meet the performance standards given in the certified stormwater disposal design as set out in the document entitled "RM130101 – Subdivision of Lot 3 DP 454080 On site attenuation requirements for residential lots" dated 20 March 2015. This document is stored by Kapiti Coast District Council on file RM130101 and also electronically under e-docs reference no. 555042. Both documents are available in Council's office at any time the office is open to the public.
3. Condition 3 will be removed in its entirety.
4. With respect to Lots 1 and 13 to 32 inclusive: All residential buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum build level as shown on the Flood Hazard map prepared by Landlink Limited and identified as Drawing Number 1642-945 issue B. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555529 and is available at any time the office is open to the public. For ease of identification, an image of the Flood Hazard map is set out below:



5. Condition 5 will be removed in its entirety.

Issued by the Kapiti Coast District Council in respect of RM140222A
this 15th day of January, 2016


Marnie Shayne Rydon
Authorised Officer


Rita Louise O'Brien
Authorised Officer

On Behalf of VJ Limited
Date:

APPROVED
BY
PLUMBING
AND
DRAINAGE
Simon C
5/8/2016



APPROVED
BY BUILDING
Stuart Nepia
03/08/2016

00 01

No Hose Taps or WC's to be on the town water supply permitted.

Water pipes running to w.c's and all hose taps are to be marked non potable for the entire length.

I recommend that the lid be secured of the water stoarge tank to prevent unauthorised access.

ENGINEERS DESIGN

This project contains elements specifically designed by an engineer. The owner/builder is required to ensure the engineer inspects the work and provides KCDC with written evidence of the inspection.

PROPOSED DWELLING

FOR AR THOMSOM FAMILY TRUST LOT 24, 25 MAHIA LANE, WAIKANAE

CAUTION

Plans have been digitally reproduced and may not be to scale.

BOUNDARY LINES

The Owner/Builder is responsible for clearly defining the site boundary lines and pegs. This may require a survey.
NOTE: established fences are not necessarily on the site boundary.

CONTENTS:

- 1 - SITE PLAN
- 2 - DRAINAGE PLAN
- 3 - FLOOR PLAN
- 4 - FOUNDATION PLAN & ROOF PLAN
- 5 - ELEVATIONS
- 6 - SECTION
- 7 - BRACING PLAN & ELECTRICAL PLAN
- 8 - DETAILS
- 9 - DETAILS
- 10 - DETAILS
- 11- E2 MATRIX

Noisy Equipment

It is the responsibility of the owner to ensure that no work with noisy equipment shall be carried out before 7:30 a.m. or after 6 p.m. Monday to Saturday. During the week there may be workers on site from 6:30 a.m. quietly preparing for work. Work with noisy equipment is not permitted on Sundays or public Holidays.

The water storage tank is to be topped up by a 600lt per day restricted supply from the second connection on the modified toby. No additional connections permitted. Two water mains required! one for house one for the tank.

Council's Manifold/meter box and base and lid are to be protected/reinstated if disturbed to original specification. The cost to reinstate any damage to Council's assets will be paid for by the contractor/property owner.

NOTES:

CAUTION - PLANS HAVE BEEN DIGITALLY REPRODUCED & MAY NOT BE TO SCALE.

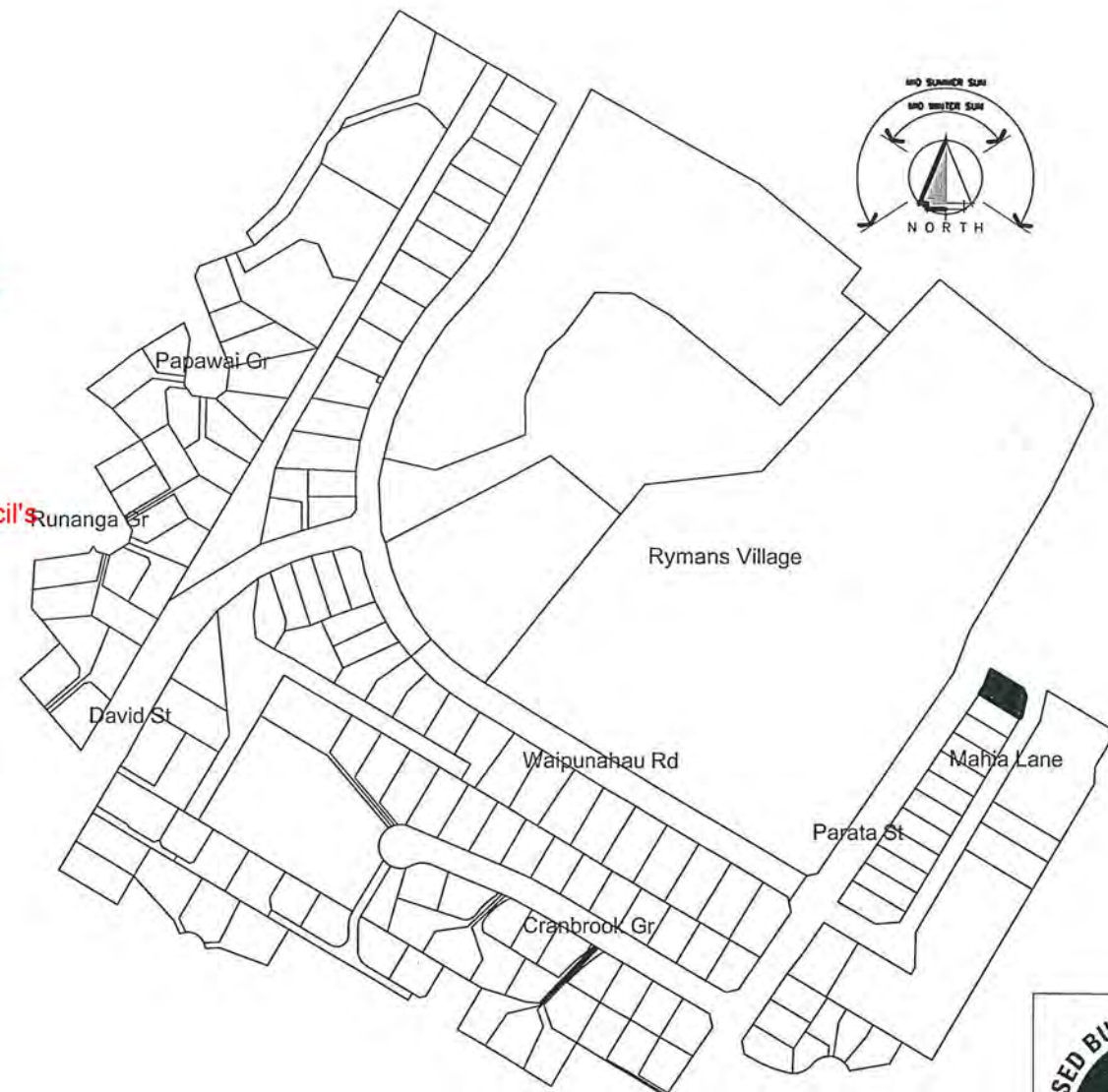
ALL WORK CARRIED OUT TO CONFORM TO RELEVANT BUILDING CODE & STANDARDS FOR LIGHT TIMBER FRAMED CONSTRUCTION.

ALL WORK CARRIED OUT UNDER JURISDICTION OF PRODUCER STATEMENT TO MEET THE ENGINEER REQUIREMENTS FULLY.

EAVE FLASHINGS FOR ALL PROFILED METAL ROOFING IN VERY HIGH WIND ZONES & IN ANY WIND ZONE WHERE ROOF PITCH IS LESS THAN 10°

SEISMIC RESTRAINT TO BE PROVIDED TO APPLIANCE & FLUE AS PER MANUFACTURER'S RECOMMENDATIONS & NZBC C/AS1, SECTIONS 9.1.2 & 9.2.2 EXTERNAL.

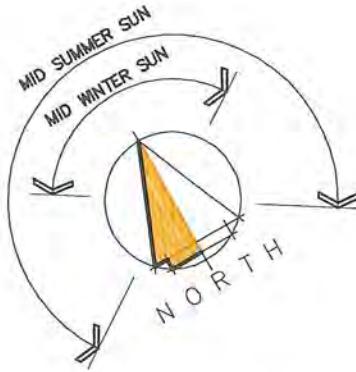
Endorsements made on any single page apply equally to the entire project.



COASTAL
ARCHITECTURE LTD.



MANHOLE LID IS
SITE DATUM = 19.22m



LOT 24
DP - 476550
SITE AREA = 467m²
DWELLING = 117m²
SITE COVERAGE = 25%

HIGH WIND ZONE
CORROSION ZONE C

APPROVED BY
PLANNING
jillburke
19/07/2016

Revisions:
JUNE 2016 rev A
01 JUL 2016
BY: Ange

00 02

Project:
PROPOSED
DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAЕ

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
SITE PLAN

Designer:

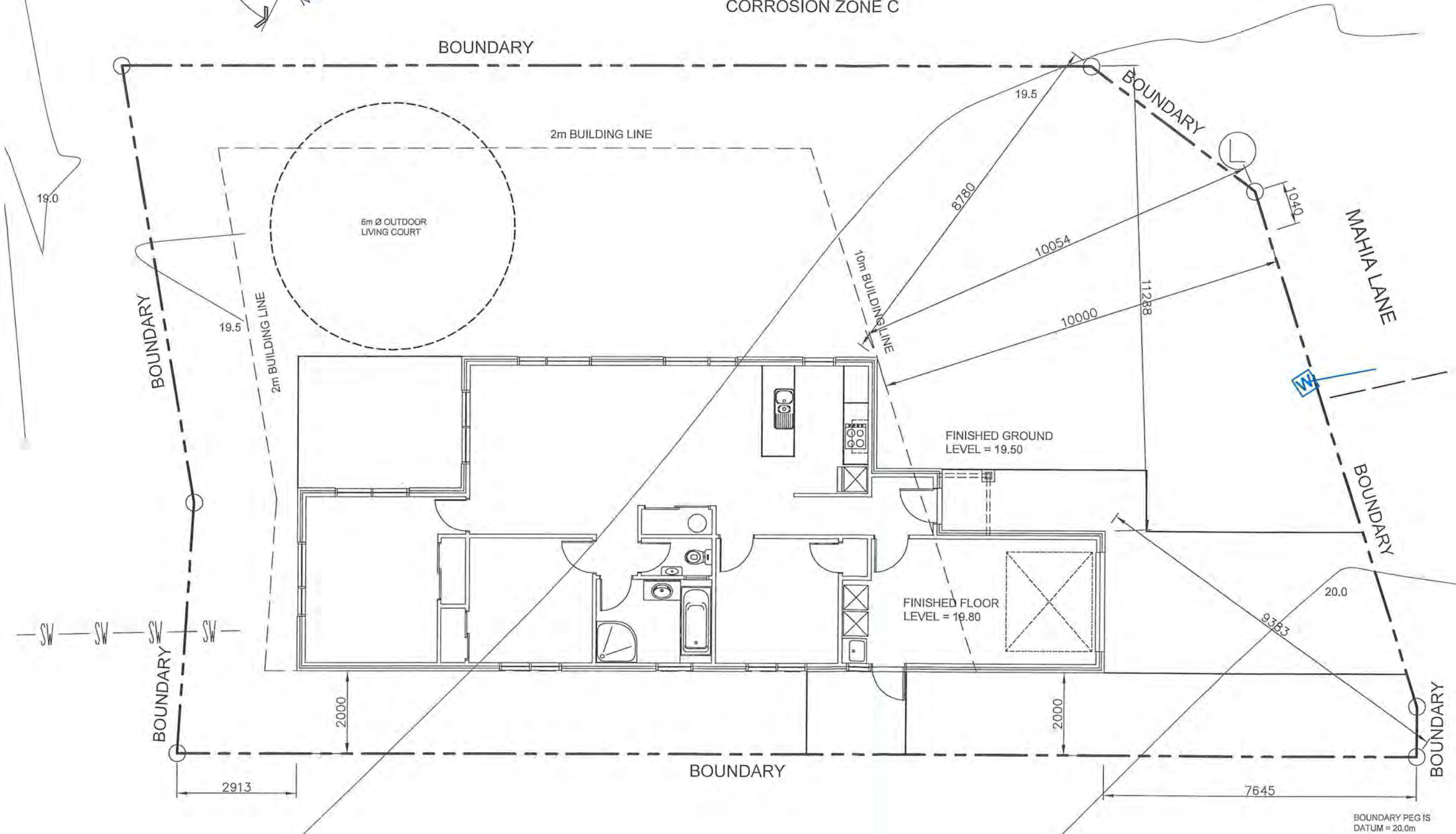
COASTAL
ARCHITECTURE LTD.
11 Kodex Place
Paraparaumu
New Zealand
Tel: 04 296 1248
e-mail: billfrancis@paradise.net.nz

Design: Bill Francis
Drawn: bf
Scale: as shown

Job: 1 Page of: 1 Rev: A



All work shall be in accordance with the NZBC. If in doubt ASK The Contractor must verify all dimensions on the job before commencing any work or shop drawings. Figured dimensions are to be used, scaled dimensions must be verified. This drawing and concept are copyright of Coastal Architecture Ltd. The recipient of this document is prohibited from disclosing its content for any purpose without the prior written consent of Coastal Architecture Ltd



SITE PLAN

SCALE 1:100

Revisions:
JUNE 2016 rev A
AUGUST 2016 rev B

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAHE

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
DRAINAGE PLAN

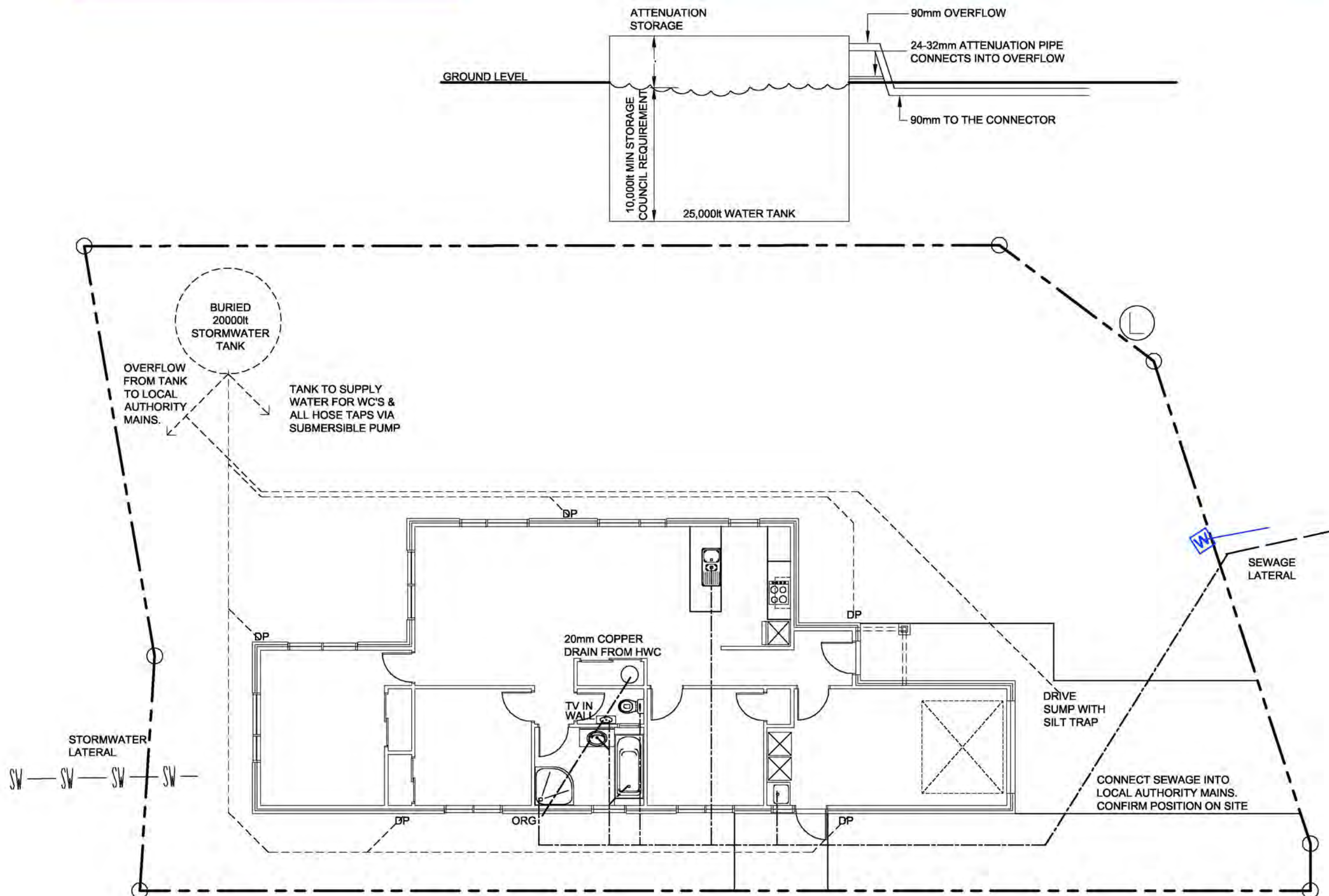
Designer:
COASTAL
ARCHITECTURE LTD.
11 Kodex Place
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New Zealand
Tel: 04 296 1248
e-mail : billfrancis@paradise.net.nz

Design: Bill Francis
Drawn: bf
Scale: as shown

Job: 1 Page of: 2 Rev: B



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A CERTIFYING PLUMBER/DRAINLAYER TO FILL OUT ATTACHED PRODUCER STATEMENT FORMS AND RETURN TO COUNCIL. ALSO PROVIDE NEAT ASBUILT DRAINAGE PLAN SHOWING SEWER STORMWATER AND WATER.

DRAINAGE PLAN NOTES:

- All Plumbing and Drainage to be in accordance with AS/NZS 3500.2 for ground floor systems and for single stack systems
- Plumber/drainlayer to fill out producer statement and return to council with an as built drainage plan
- Check PIM information for service connections
- Pipes to be inspected before covering with sand
- A tempering valve is required to be installed on the hot water service
- No pipes at any point exceed 10m in length from dn 100 vented drain

PIPE GRADIENTS

- Minimum grades for drains and discharge pipes
65Ø & less = 1 in 40
80Ø & 100Ø = 1 in 60

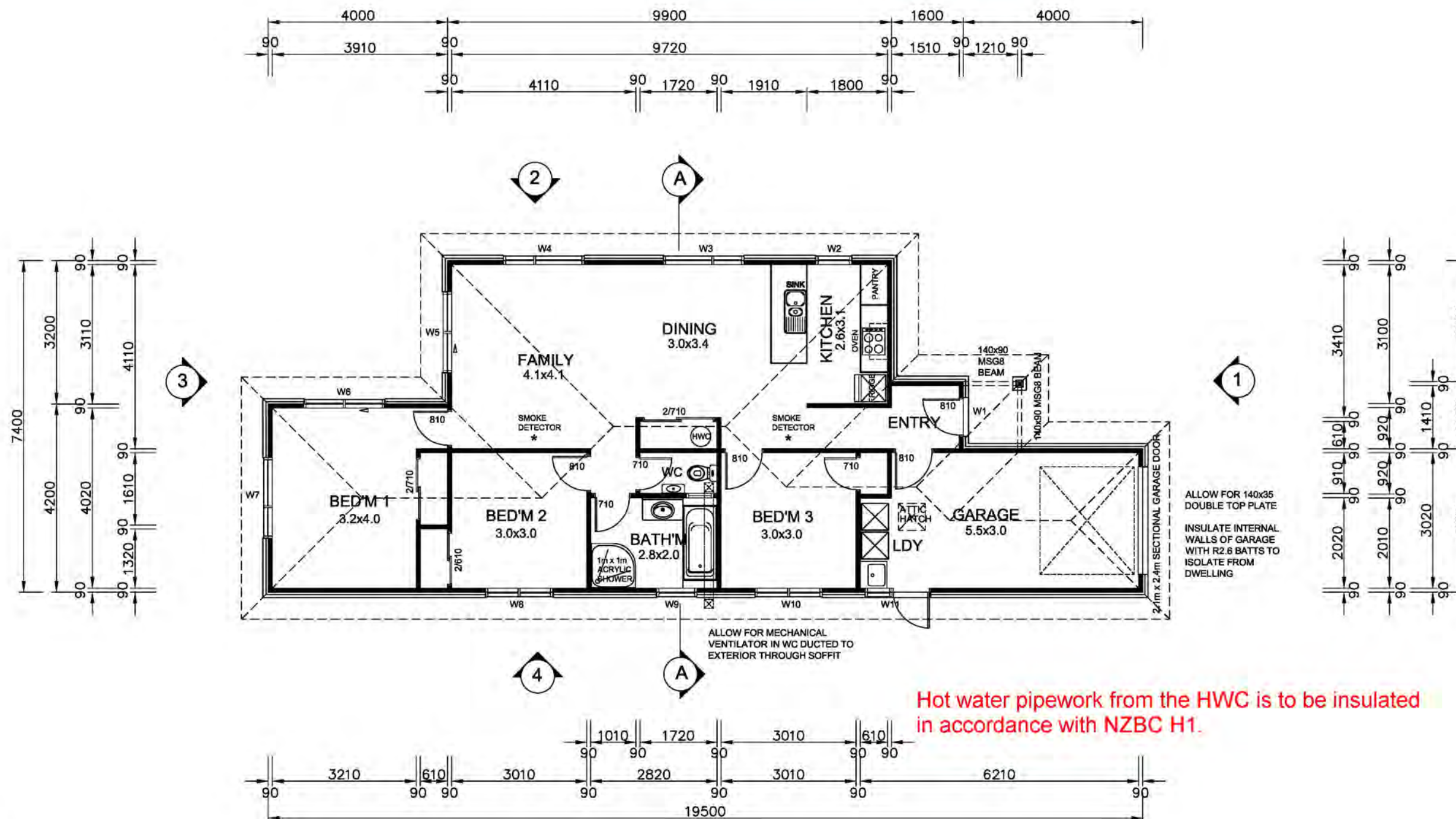
HOT & COLD WATER

- All hot & cold water pipes in house to be run in Iplex K2 pex plumbing system
- 20mm for Main, to bath and to HWC
15mm to all other branches
15mm to exterior taps

BUILDER TO ENSURE THAT PROPOSED FOUNDATION HEIGHT WILL ALLOW A SATISFACTORY DRAINAGE CONNECTION TO THE COUNCILS SEWER.

DRAINAGE PLAN

SCALE 1:100

**NOTES:****GENERAL NOTES:**

- All work must be carried out to conform to relevant sections of the New Zealand Building Code and New Zealand Standards - in particular NZS 3604, NZS 3602 & NZS 4218. All references to Standards shall be taken as reference to the latest revision including amendments.
- Ground bearing must be reconfirmed on site following excavation but prior to placing concrete and reinforcing.
- Confirm site boundaries with licenced surveyor. Fences may not necessarily be on the legal boundary.
- All work to be carried out to best trade practice
- All habitable rooms to have 5% of their floor area as opening windows or approved alternative to achieve ventilation requirements
- Garage spaces within or attached to the building envelope shall have
- A - Openings provided with a 50mm min total level change between the interior & exterior paving
- B - Provision to drain water away from the threshold of the opening. refer to E2 fig 65 & table 18 for overall level change requirements
- Do Not Scale off Building Consent Documentation issued from TA's as the plans may have been scanned and the scale distorted.
- Prenail framing and truss manufacturer to provide lintel sizes and provide a producer statement for framing, window lintels and trusses.
- Window openings to be 20mm larger than window sizes (10mm tolerance each side)
- All bottom plates and framing to shower areas to be H3.1. All framing in other at risk areas such as parapets and enclosed balconys to comply with NZS 3602 for particular situation.
- Allow for dwangs to fix fittings as required by owner.
- Wall junctions shall be framed up with not less than 2 studs blocked and nailed.
- Maximum diameter hole in 90mm stud to be 25mm or 35mm diameter where not more than 3 consecutive studs are drilled.
- Lintels supporting rafters or trusses shall be secured against uplift as per clause 8.6.1.8 & figure 8.12, NZS 3604:2011. 25x1mm strap with 6/30x2.5mm nails into both lintel & stud & 25x1mm strap taken under plate & up 150mm each side of stud fixed with 6/30x2.5mm nails into each side of stud
- Confirm building wrap is able to be used with timber treatment.

FRAMING

Exterior Walls & Internal Load Bearing Walls:

- Up to 2.4m - 90x45 SG8 at 600 crs H1.2

Interior Non Load Bearing Walls:

- Up to 2.4m - 90x45 SG8 at 600 crs H1.2

INTERNAL LININGS**WALLS:**

- Generally - 10mm Standard Gib Board
- Bathrooms - 10mm Gib Aqualine

CEILINGS:

- Generally - 13mm Standard Gib
- Bathrooms - 13mm Gib Aqualine
- Back block sheet joints and allow for control joints as required by manufacturer

Top Plate Fixing

The fixing of top plates supporting roof trusses to wall studs or lintels shall be in accordance with figure 8.14, 8.15 & 8.18 NZS 3604:2011

Joints in top plates to comply with clause 8.7.3 NZS 3604:2011

Bottom Plate Fixing

10mm Ø cast in @ max 900 crs
12mm Ø cast in @ max 1400 crs
Approved anchors (fixed to manufacturers specific instructions)

- Holes in plates to comply with clause 8.5.1.6 & figure 8.4, NZS 3604:2011
- Refer to Bracing Plan and Manufacturers specifications for additional framing fixings.

FLOOR PLAN

SCALE 1:100

AREA = 110m² (117m² OVER CLADDING)

A TEMPERING VALVE IS REQUIRED TO BE INSTALLED ON THE HOT WATER SERVICE ON PERSONAL HYGENE FIXTURES. Max temp 55c

Revisions:
JUNE 2016 rev A

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANA E

Client:
**AR THOMSOM
FAMILY TRUST**

Drawing Title:
FLOOR PLAN

Designer:

COASTAL
ARCHITECTURE LTD.

11 Kodex Place
Paraparaumu
New Zealand
Tel: 04 296 1248
e-mail : billfrancis@paradise.net.nz

Design:
Bill Francis

Drawn:
bf

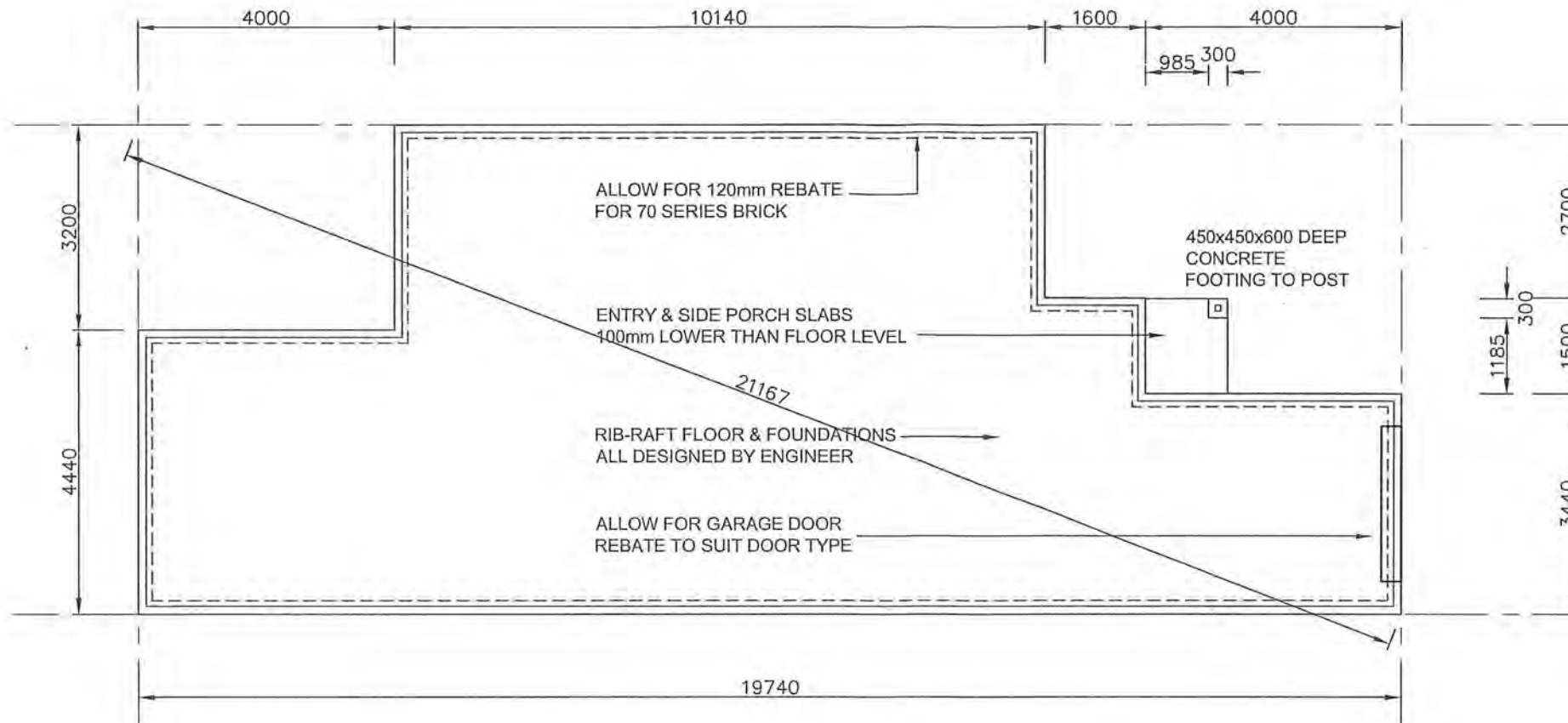
Scale:
as shown

Job: 1 Page of: 3 Rev: A



All work shall be in accordance with the NZBC. If in doubt ASK
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BC 160522



NZS 3604 2011 RECOMMENDS A CONTROL JOINT AROUND THE PERIMETER OF ANY AREAS WITH SOLID TILES ON FLOOR TO AVOID CRACKING. BUILDER TO VERIFY WITH OWNER SPECIFIC AREAS

AREA OF FOUNDATION (OVER BRICK) = 117m^2

ALL CONSTRUCTION TO COMPLY WITH NZS 3604:2011, NZBC
AND BEST POSSIBLE TRADE PRACTICES

BOTTOM PLATES FIXING
THE FIXING OF BOTTOM PLATES SHALL BE IN ACCORDANCE
WITH 7.5.12 NZS 3604:2011.
APPROVED ANCHORS (FIXED TO MANUFACTURERS SPECIFIC
INSTRUCTIONS) IN ACCORDANCE WITH 7.5.12.2 NZS 3604:2011

MINIMUM FLOOR HEIGHT

PROTECTED GROUND
100MM BRICK VENEER
150MM OTHER CLADDINGS
UNPROTECTED GROUND
150MM BRICK VENEER
225MM OTHER CLADDINGS
HEIGHTS AS PER NZS3604 2011 SECTION 7

FOUNDATION PLAN

NOTES

TRUSSES

WHERE THE BOTTOM CHORD OF A TRUSS CROSSES AN INTERNAL WALL CONTAINING ONE OR MORE WALL BRACING ELEMENTS, THE TRUSS SHALL BE CONNECTED TO THE TOP PLATE OF THE WALL EITHER DIRECTLY OR BY A CEILING BATTEN RUNNING PARALLEL TO THE PLATE AND FIXED TO BOTH THE PLATE AND THE BOTTOM CHORD. AS PER CLAUSE 10.4.1.2 NZS 3604:1999

DO NOT SUPPORT BOTTOM CHORD OF TRUSS AT POINTS OTHER THAN
THOSE DESIGNATED BY THE TRUSS MANUFACTURER
ALL ROOF FRAMING TO BE H1.2 DP

ROOF FRAMING FIXINGS

TRUSSES

FIXINGS FOR A ROOF TRUSS AT ITS SUPPORT SHALL BE AS GIVEN BY THE TRUSS MANUFACTURERS DESIGN BUT **SHALL BE NOT LESS THAN:** 2/90x3.15 SKEWED NAILS & STRAP FIXING (see figure 10.6 NZS 3604 2011)

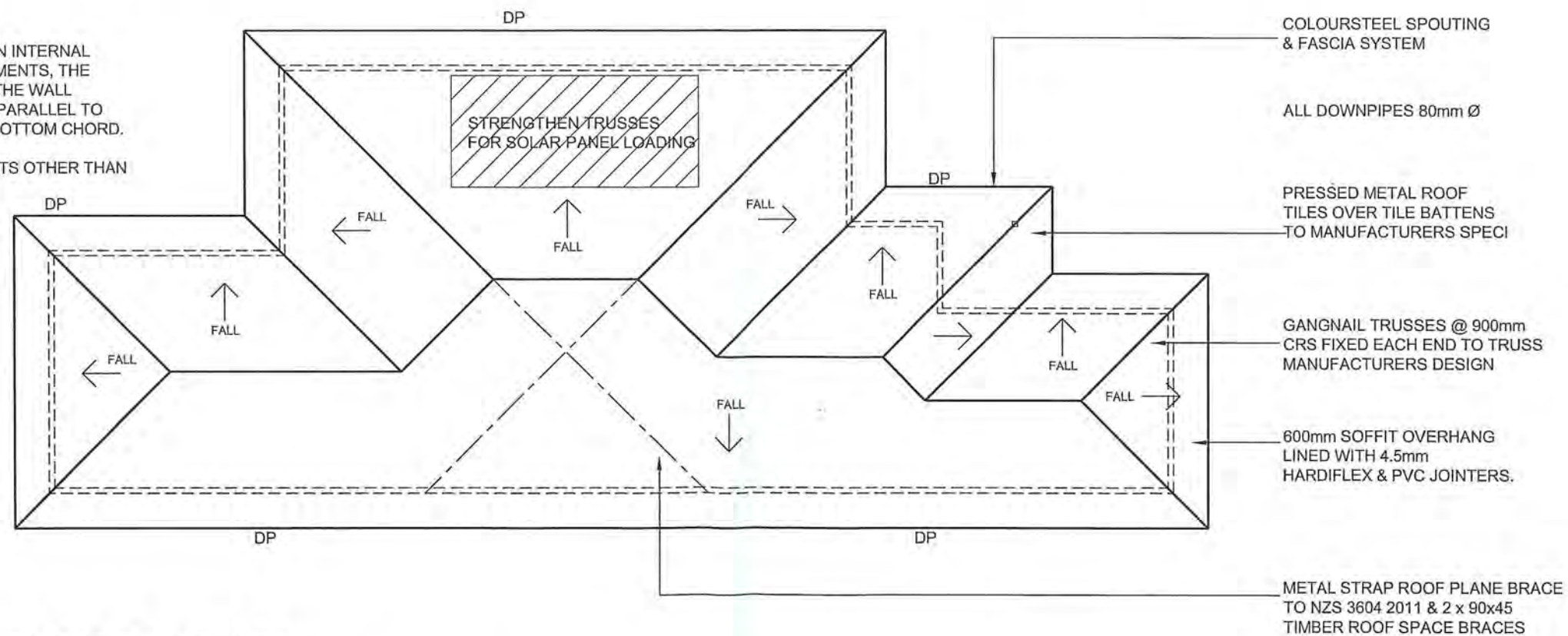
SUPPLY COPY OF RELEVANT WARRANTIES FOR ROOFING, MEMBRANE SYSTEMS & FASCIA / GUTTER SYSTEMS AS APPROPRIATE TO COUNCIL. ROOFING MATERIAL TO BE INSTALLED TO MANUFACTURERS REQUIREMENTS IN PARTICULAR, FIXING & MINIMUM PITCH (REFERENCE ALSO SECT 8 OF E2 NZ BUILDING CODE)

SOFFITS

UNFINISHED HARDIES SOFFITS MUST
BE PAINTED TO COMPLY WITH NZBC
DURABILITY REQUIREMENTS

SPOUTING

FRONT EDGE OF SPOUTING TO BE
20mm BELOW TOP EDGE OF FASCIA



ROOF PLAN

SCALE 1:100

Revisions:
JUNE 2016

rev A

07 JUL 2016
BY: hgw

10 65

Project:
PROPOSED
DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAЕ

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
**FOUNDATION &
ROOF PLANS**

Designer:

COASTAL
ARCHITECTURE LTD.

11 Kodex Place
Paraparaumu
New Zealand

Tel: 04 296 1248
e-mail : billfrancis@paradise.net.nz

Design:
Bill Francis

Drawn:
bf

Scale:
shown

Job: 1 Page of: 4 Rev: A



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HEIGHT LINE
5.7m / 45°BEVELBACK WEATHERBOARD
CLADDING OVER JOINERY600mm SOFFIT OVERHANG LINED WITH
4.5mm HARDIFLEX & PVC JOINTERS.

EAST ELEVATION 1

SCALE 1:100

POWDER COATED
ALUMINIUM JOINERY WITH
SUITABLE HEAD FLASHINGS

NORTH ELEVATION 2

SCALE 1:100

PRESSED METAL ROOF TILES OVER TILE
BATTENS TO MANUFACTURERS SPECICOLOURSTEEL SPOUTING
& FASCIA SYSTEM70 SERIES BRICK VENEER
EXTERIOR CLADDING

WEST ELEVATION 3

SCALE 1:100

BUILDING WRAP - JAMES HARDIE
'RAB-BOARD'
THERMAKRAFT 215 ROOFING
UNDERLAYINSULATION:
R4.6 BATTS TO CEILINGS
R2.6 BATTS TO EXTERIOR WALLS

SOUTH ELEVATION 4

SCALE 1:100



WINDOW SCHEDULE

SCALE 1:100

ALL WINDOWS HAVE DOUBLE GLAZING

The supplier and the main contractor shall check all
dimensions on site and confirm prior to manufacture.Exterior joinery to comply with NZS 4211, design to high wind
pressure and suitable head flashings to be fitted to all units.GLAZING TO CONFORM NZS 4223 PT 1, 2 & 3 1999 VERSION
HIGH WIND 1100pa DWP
VERY HIGH WIND 1550pa DWPRESTRICTOR STAYS TO LIMIT SASH OPENING TO MAX 100mm MUST BE
FITTED WHERE EVER SILL HEIGHT IS LESS THAN 760mm & THE DIFFERENCE
IN LEVELS ARE 1m OR GREATER. REFER F4 NZBCSAFETY GLASS AS REQUIRED BY NZS 4223 PT 3 1999 VERSION TO BE
PROVIDED TO ALL WET AREA JOINERY, GLAZED DOORS, SIDE PANELS, FULL
HEIGHT WINDOWS & WINDOWS WITH SILLS LESS THAN 500mm FROM FFL.

SILL SUPPORTS TO MANUFACTURERS SPECIFICATIONS & DETAILS

NOTE:
ALL CLADDINGS, ROOFING & SPOUTING SYSTEMS TO BE
MAINTAINED BY OWNER IN ACCORDANCE TO MANUFACTURERS
RECOMMENDATIONS & WARRANTEE REQUIREMENTSCLADDING TO BE INSTALLED TO MANUFACTURERS REQUIREMENTS IN
PARTICULAR FIXING & GROUND CLEARANCE.
ALSO REFER TO NZBC, CLAUSE E2/AS1, EXTERNAL MOISTURE FOR CLARITYALL JUNCTIONS TO CLADDINGS & OTHER EXTERNAL MOISTURE
PROTECTION AREAS TO HAVE CAPILLARY GAPS/BREAKS & INSEALS WHERE
RELEVANT, STOPPING WIND DRIVEN OR SURFACE TENSION WATERRevisions:
JUNE 2016 rev ABY: *hwl*

JO 06

Project:

PROPOSED
DWELLINGLOT 24,
25 MAHIA LANE,
WAIKANAE

Client:

AR THOMSOM
FAMILY TRUST

Drawing Title:

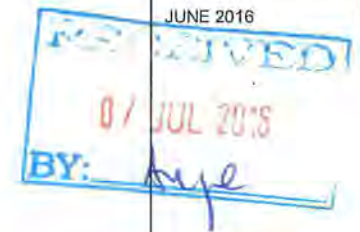
ELEVATIONS

Designer:

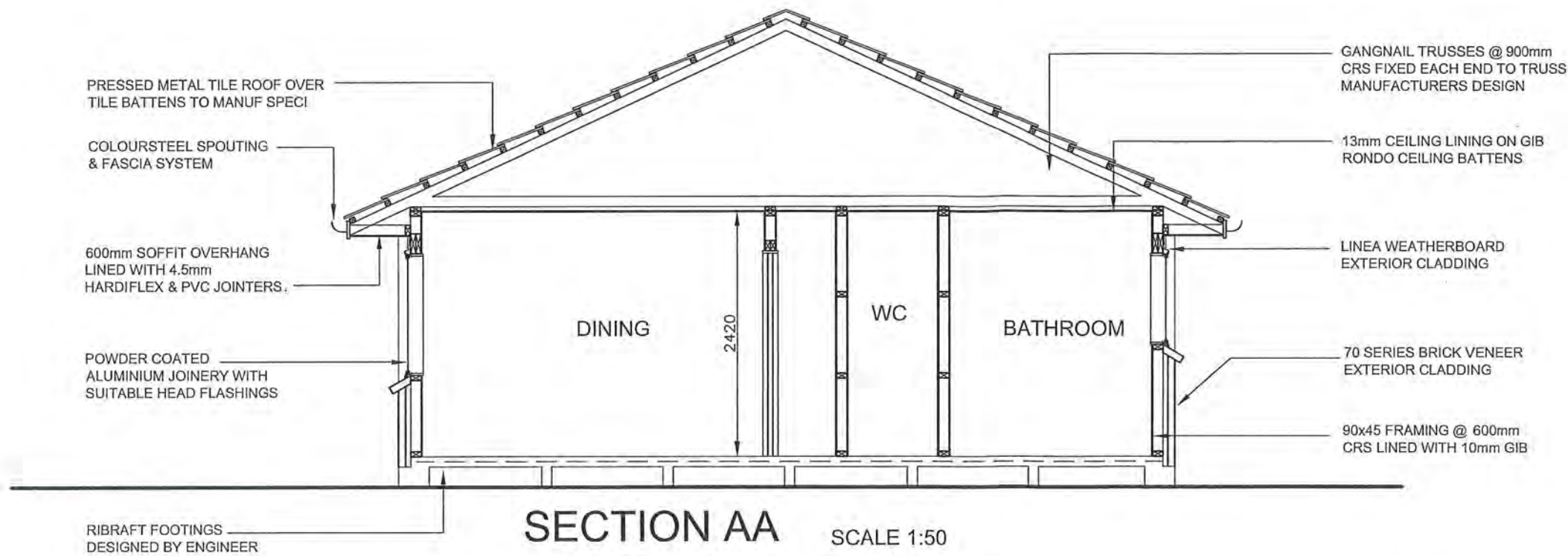
COASTAL
ARCHITECTURE LTD.11 Kodex Place
Paraparaumu
New ZealandTel: 04 296 1248
e-mail: billfrancis@paradise.net.nzDesign:
Bill FrancisDrawn:
bfScale:
as shown

Job: 1 Page of: 5 Rev: A

All work shall be in accordance with the
NZBC. If in doubt ASK
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the job before commencing any work or shop
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scaled dimensions must be verified.
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00 07



BUILDING WRAP - TEKTON
THERMAKRAFT 215 ROOFING
UNDERLAY

INSULATION:
R4.6 BATTS TO CEILINGS
R2.6 BATTS TO EXTERIOR WALLS

ALLOW FOR 90x45 DOUBLE TOP PLATE

ALL CONSTRUCTION TO COMPLY WITH
THE NZBC, NZS 3604:2011, NZS

CROSS SECTION NOTES

- CLADDING TO BE INSTALLED TO MANUFACTURERS REQUIREMENTS IN PARTICULAR FIXING AND GROUND CLEARANCE
- ALSO REFER TO NZBC, CLAUSE E2/AS1, EXTERNAL MOISTURE: THIRD EDITION FOR CLARITY
- ALL JUNCTIONS TO CLADDINGS AND OTHER EXTERNAL MOISTURE PROTECTION AREAS, TO HAVE CAPILLARY GAPS/BREAKS AND INSEAL WHERE RELEVANT, STOPPING WIND DRIVEN OR SURFACE TENSION WATER

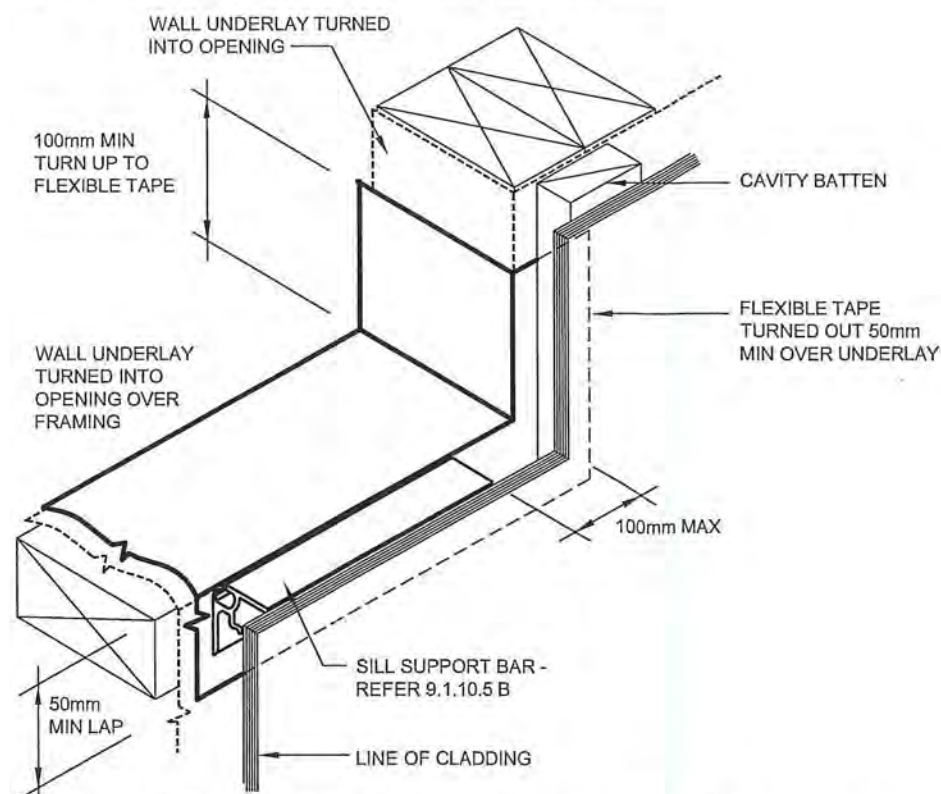
INTERNAL LININGS

- WALLS:
- GENERALLY - 10mm STANDARD GIB BOARD
 - BATHROOMS - 10mm GIB AQUALINE

- CEILINGS:
- GENERALLY - 13mm STANDARD GIB
 - BATHROOMS - 13mm GIB AQUALINE
 - BACK BLOCK SHEET JOINTS AND ALLOW FOR CONTROL JOINTS AS REQUIRED BY MANUFACTURER

NOTE:

- DETAILED CLADDING OMITTED FOR CLARITY, REFER TO SPECIFIC CLADDINGS.
- HEAD TO BE TREATED SIMILARLY WITH CONTINUOUS WALL UNDERLAY & FLEXIBLE TAPE AT CORNERS
- REFER INDIVIDUAL CLADDING DETAILS FOR JAMB FLASHINGS



BUILDING WRAP OPENING DETAIL n.t.s

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAE

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
SECTION AA

Designer:

COASTAL
ARCHITECTURE LTD.

11 Kodex Place
Paraparaumu
New Zealand

Tel: 04 296 1248
e-mail: billfrancis@paradise.net.nz

Design: Bill Francis
Drawn: bf
Scale: as shown

Job: 1
Page of: 6
Rev: A



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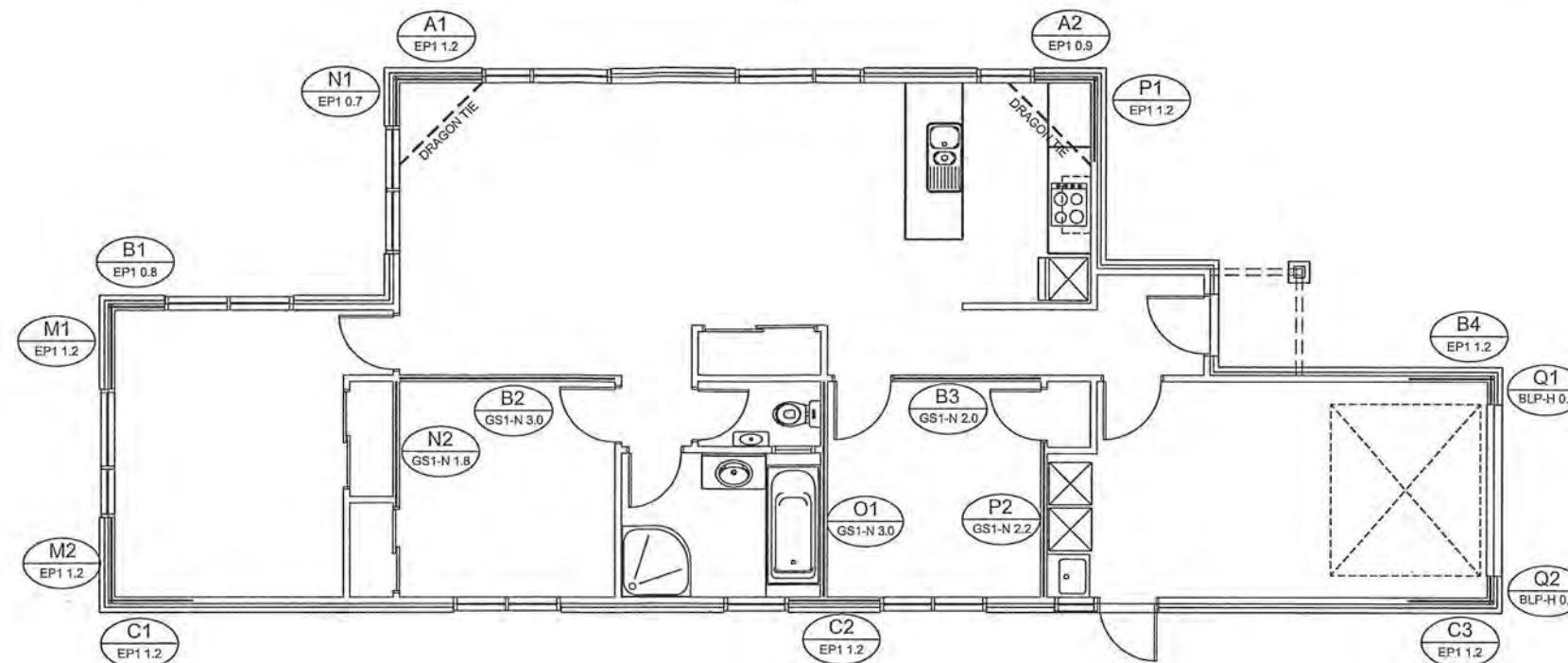
NOTES:

- THIS SITE IS A HIGH WIND ZONE
- BRACING TO BE INSTALLED TO MANUFACTURERS SPECIFICATIONS - WINSTONES GIB BRACING SYSTEMS 2011
- BRACING DISTRIBUTION TO NZS 3604 CLAUSE 5.5.3
- BATH INSTALLATION MUST NOT PENETRATE THE INTEGRITY OF THE WALL LINING SHEET - ESPECIALLY BRACING ELEMENTS ENSURE CONTRACTORS/PRENAILERS ARE ADVISED OF THE BRACING DESIGN REQUIREMENTS
- A CEILING DIAPHRAGM MAY BE SQUARE OR RECTANGULAR. ITS LENGTH SHALL NOT EXCEED TWICE ITS WIDTH AND EACH BRACING LINE MUST HAVE A MINIMUM OF 100 BU'S UNDER.

A →

B →

C →



BRACING PLAN SCALE 1:100

ELECTRICAL KEY

⊕	External lighting point	tv	Television Point
⊙	Recessed Downlight	ph	Telephone Point
⊗	Ceiling Light / Extract Fan	tr	Heated Towel Rail
⌂	Power Point (2 denotes double)	ad	Auto Garage Door Opener
— — —	Fluorescent tube	SB	Switch Board
*	Smoke detector	MB	Meter Board

ELECTRICAL

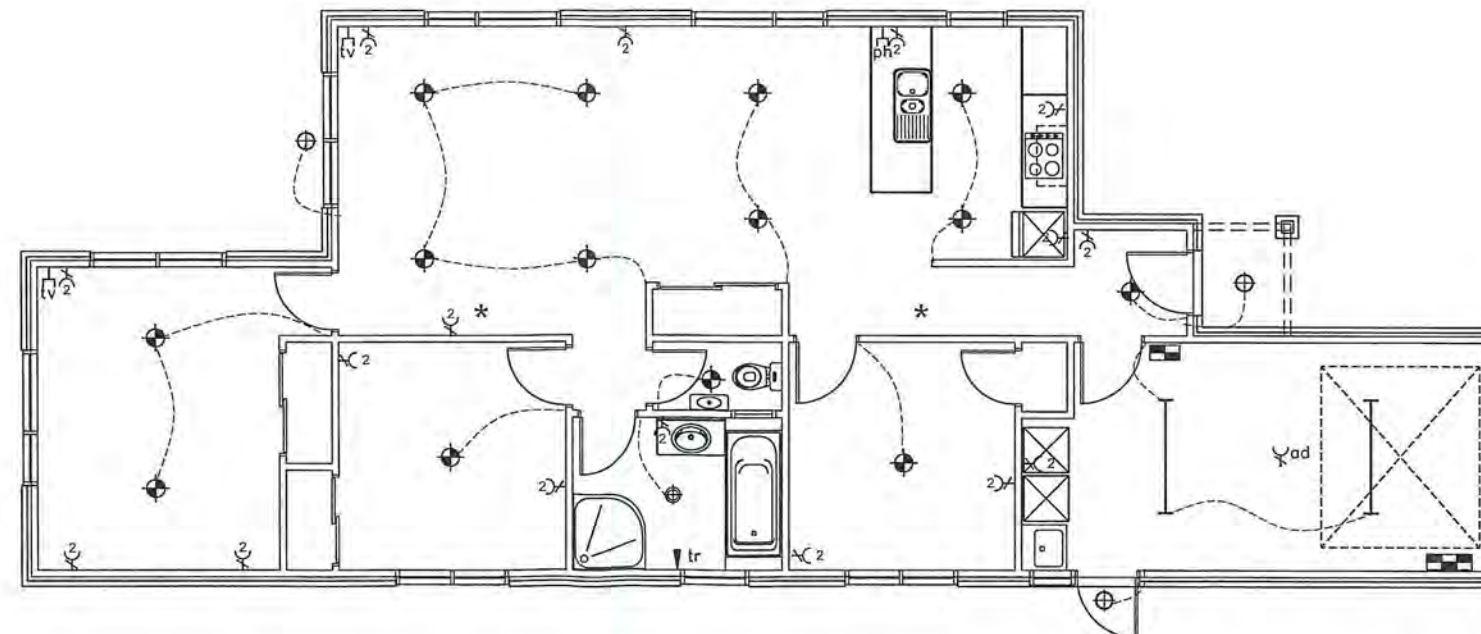
RECESSED DOWNLIGHTS (IF USED) SHALL BE INSTALLED TO PREVENT TRANSFER OF MOISTURE INTO CEILING SPACE & MAINTAIN MIN CLEARANCE FROM INSULATION AS REQUIRED BY NZECP 54:2001

PROVIDE ELECTRICAL CERTIFICATE AFTER COMPLETION & PRIOR TO CODE COMPLIANCE CERTIFICATE BEING ISSUED

NOTE: ALLOW FOR POWER SUPPLY TO KITCHEN

APPLIANCES

- DISHWASHER
- RANGEHOOD
- MICROWAVE
- WASTEMASTER



ELECTRICAL PLAN SCALE 1:100

Revisions:
JUNE 2016 rev A



00 08

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAE

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
**BRACING &
ELECTRICAL
PLANS**

Designer:

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Design:
Bill Francis

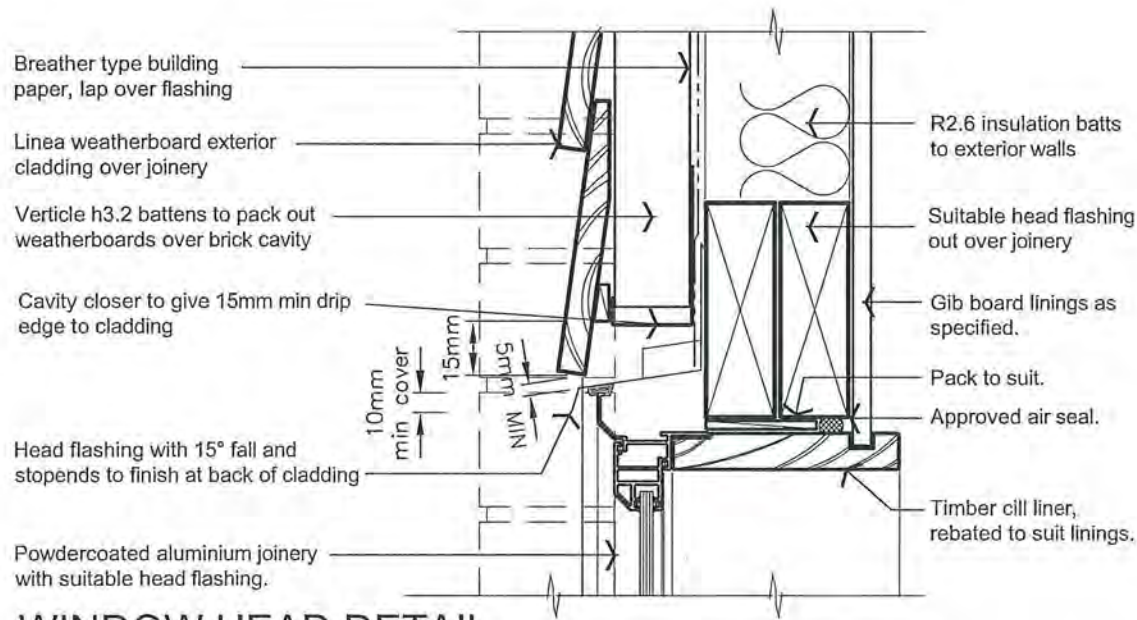
Drawn:
bf

Scale:
as shown

Job: 1 Page of: 7 Rev: A

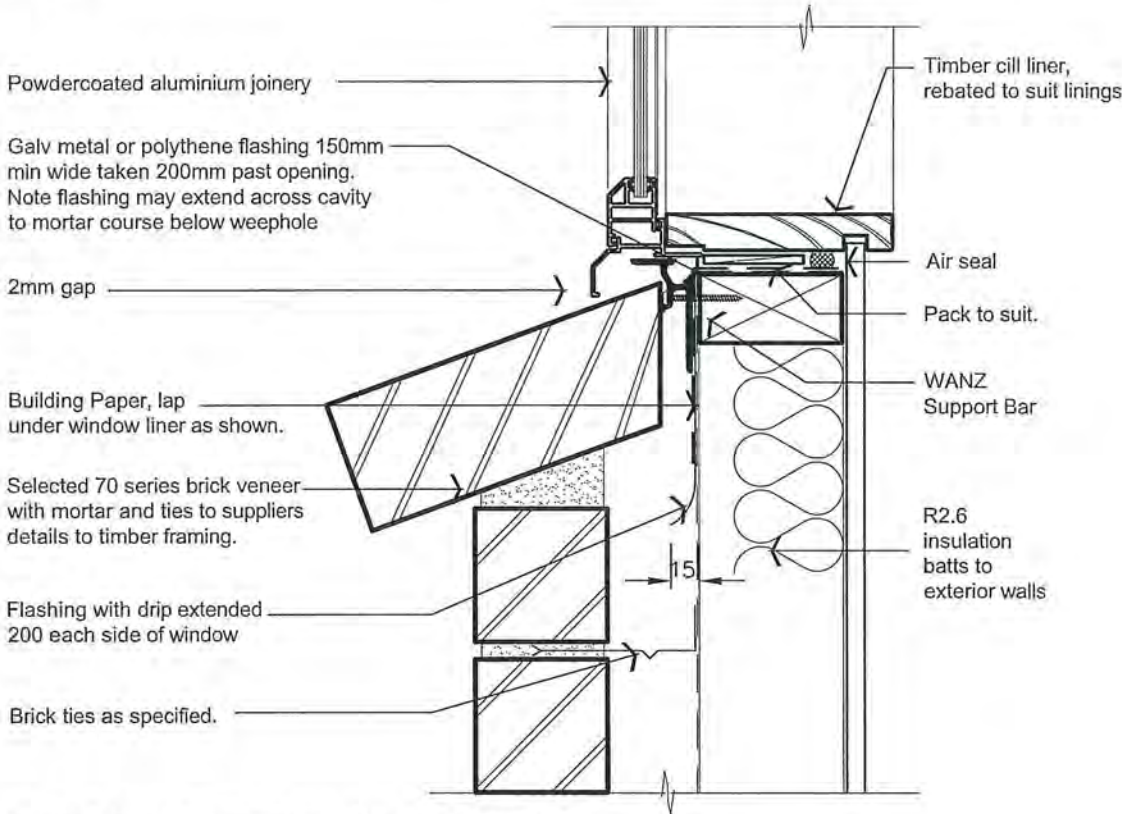


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WINDOW HEAD DETAIL

SCALE 1:5



BRICK WINDOW SILL DETAIL

SCALE 1:5

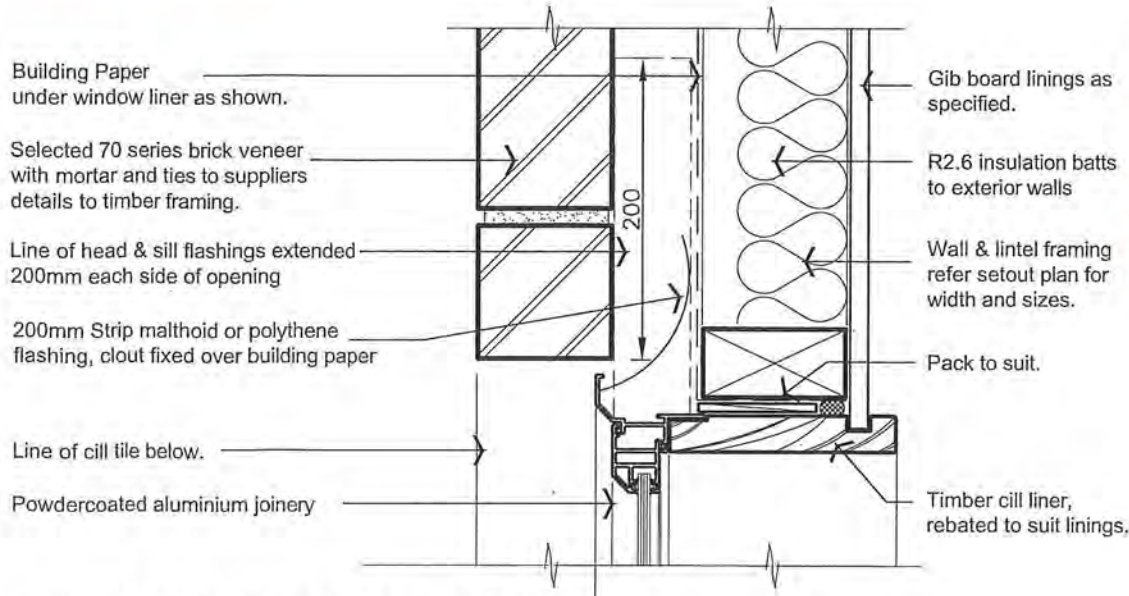
MASONARY NOTES:

NZS 3604 2011 & NZS 4210 2001 REQUIRE ALL STRUCTURAL MASONARY WORK TO BE CARRIED OUT BY AN EXPERIENCED TRADSMAN REGISTERED WITH THE NZ MASONARY REGISTRATION BOARD.

THE CAVITY BETWEEN THE MASONARY VENEER & THE EXTERIOR FACE OF TIMBER STUD WALL SHALL BE NOT LESS THAN 40mm NOR MORE THAN 75mm. PIPES & SERVICES SHALL NOT BE PLACED IN THE CAVITY.

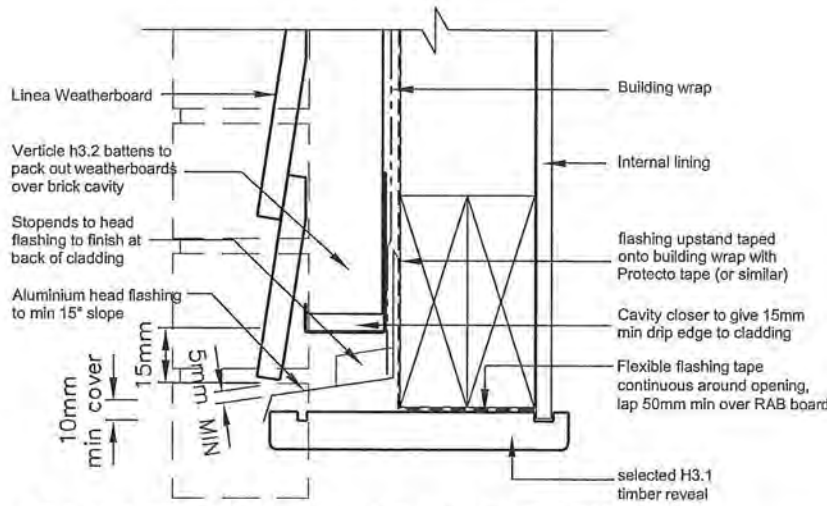
THE BRICK VENEER CAVITY SHALL BE VENTILATED TO THE OUTSIDE AIR WITH TOP & BOTTOM OPENINGS. THE BOTTOM OPENINGS SHALL SERVE AS WEEP HOLES TO DRAIN MOISTURE TO THE OUTSIDE

85mm GALV BRICK TIES POSITIONED 450mm HORIZONTALLY & 450mm VERTICALLY, WITHIN 200mm AROUND OPENINGS, WITHIN THE TOP 2 MORTAR COURSES, WITHIN THE BOTTOM 400mm OF VENEER & IN THE 2 COURSES WHERE A BOND BREAKER HAS BEEN USED



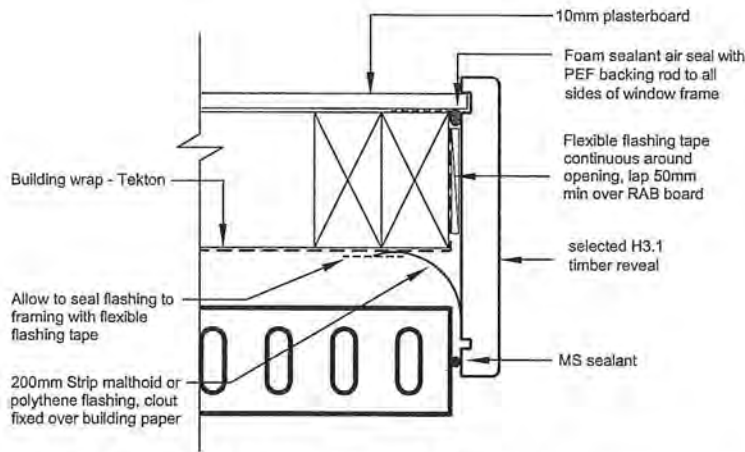
BRICK WINDOW JAMB DETAIL

SCALE 1:5



GARAGE DOOR HEAD DETAIL

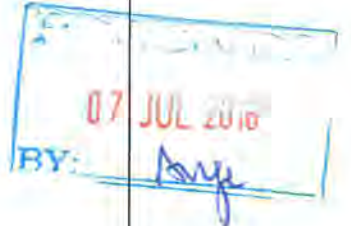
SCALE 1:5



GARAGE DOOR JAMB DETAIL

SCALE 1:5

Revisions:
JUNE 2016 rev A



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Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAE

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
DETAILS

Designer:

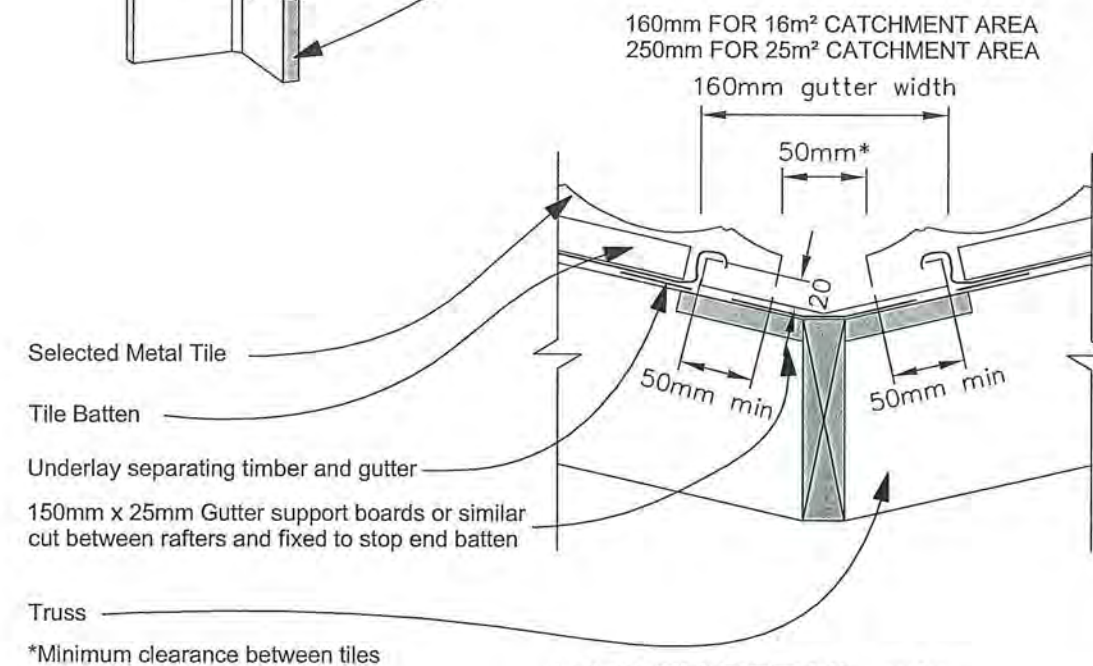
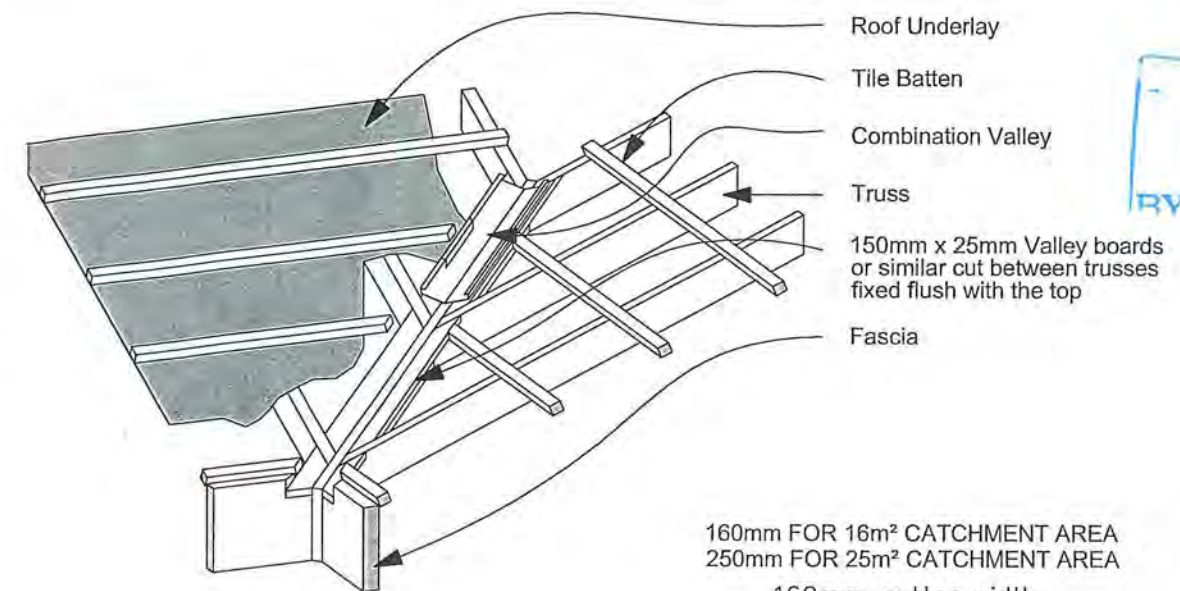
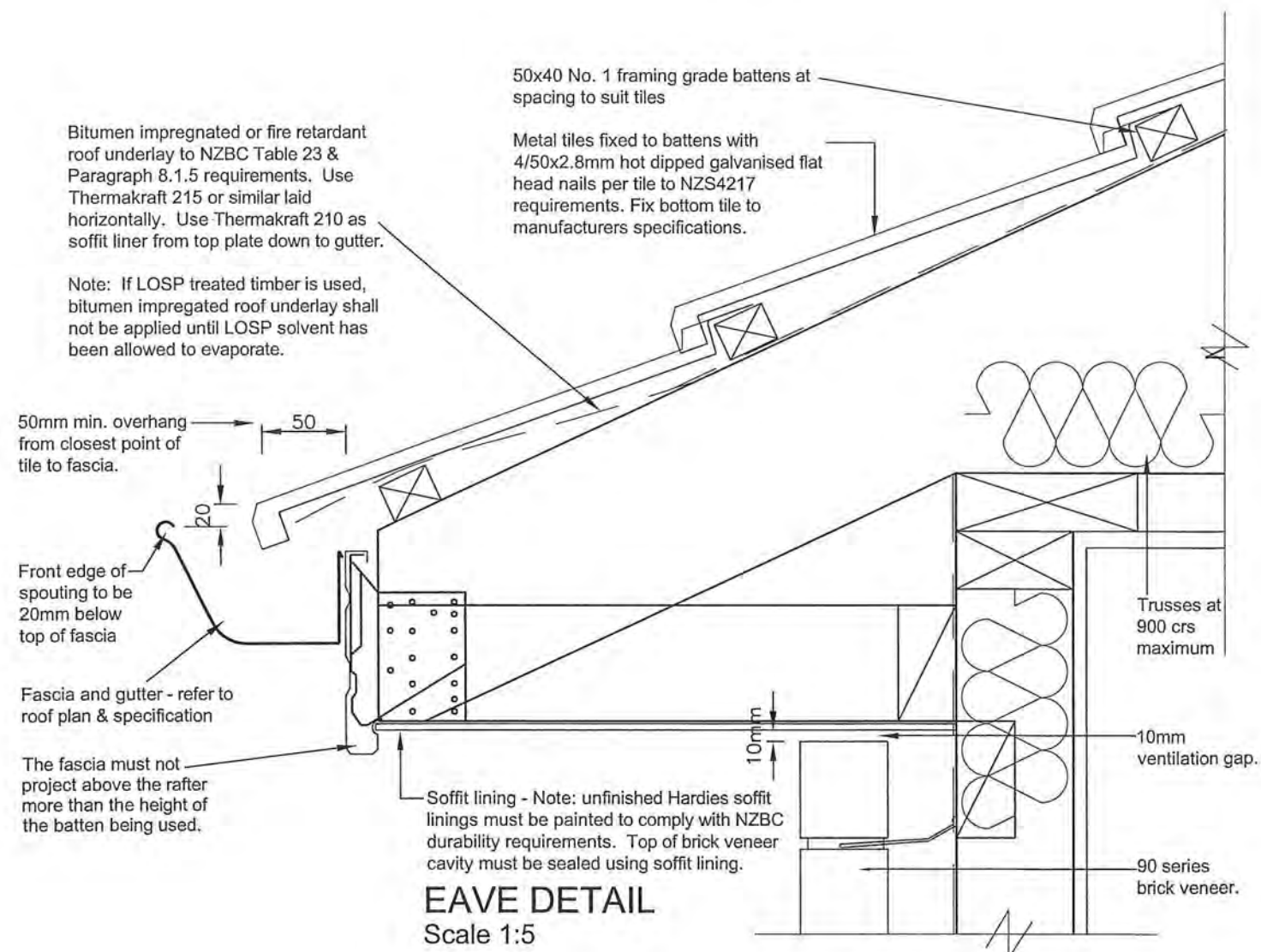
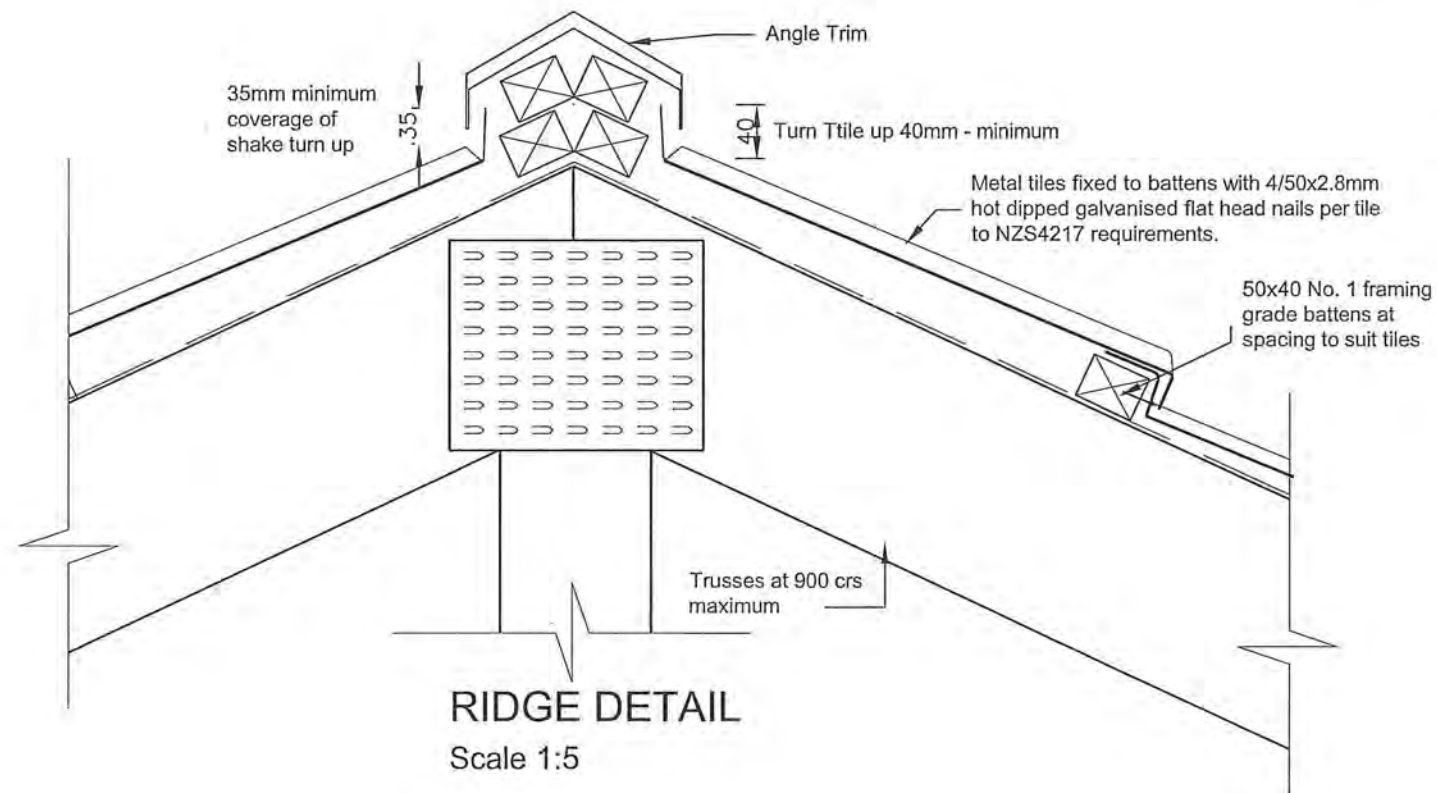
COASTAL
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e-mail : billfrancis@paradise.net.nz

Design: Bill Francis
Drawn: bf
Scale: as shown

Job: 1
Page of: 8
Rev: A



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07 JUL 2016
BY: [Signature]

00 10

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAHE

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
DETAILS

Designer:

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ARCHITECTURE LTD.

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Tel: 04 296 1248
e-mail: billfrancis@paradise.net.nz

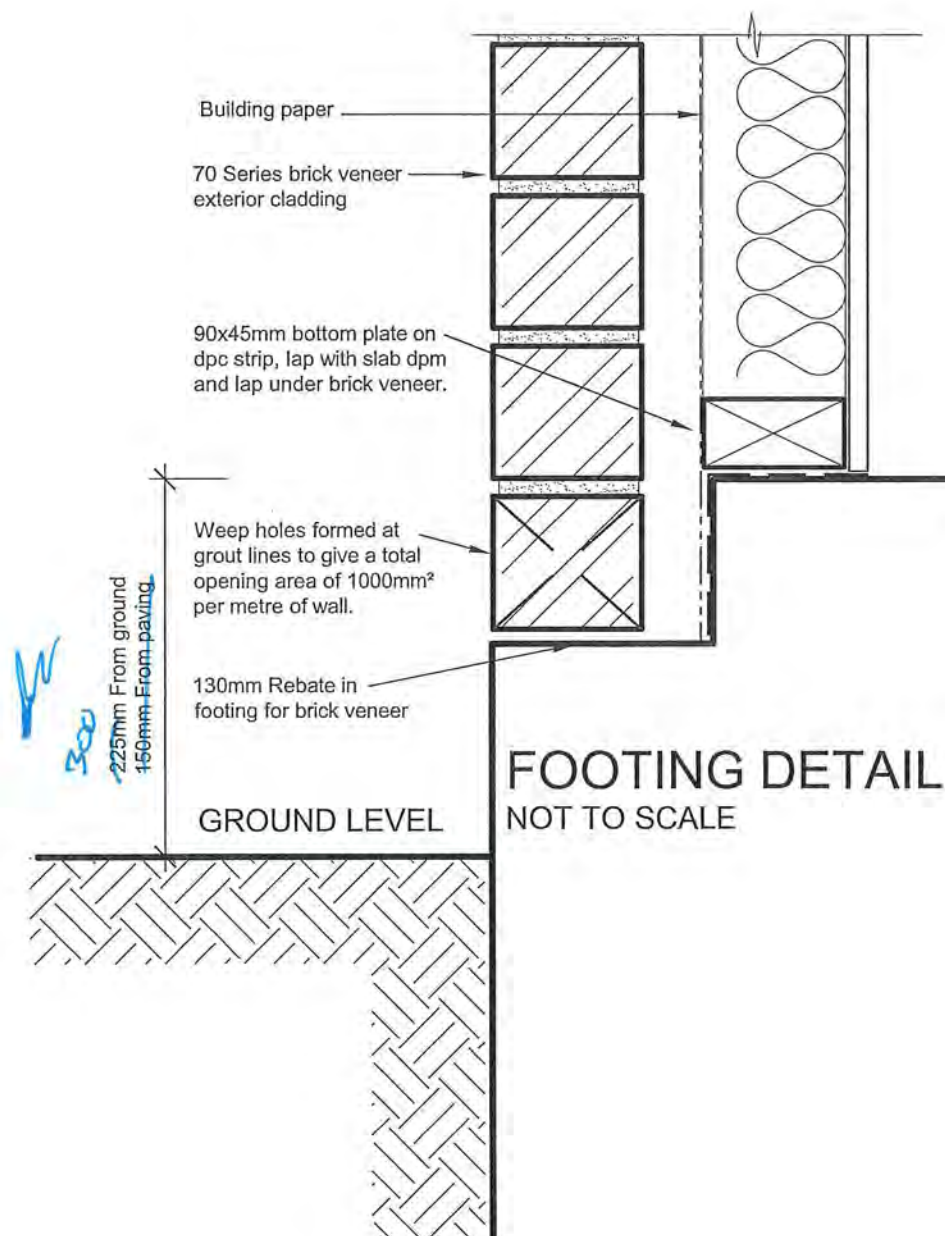
Design:
Bill Francis

Drawn:
bf
Scale:
as shown

Job: 1 Page of: 9 Rev: A



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TIMBER BEAM FIXED TO
FEATURE TRUSS WITH
BOWMAC BS45 BRACKET &
M12 STAINLESS STEEL BOLTS

TIMBER BEAM FIXED TO POST
WITH BOWMAC BS45 BRACKET
& M12 STAINLESS STEEL BOLTS
- REFER FLOOR PLANS FOR
BEAM SIZING & TREATMENT

BRICK VENEER TO POST TIED TO
POST & INSTALLED TO MANUF
SPECI, ALLOW FOR WEEP HOLES

POST FIXING DETAIL SCALE 1:10

BRICK VENEER TO POST TIED TO
POST & INSTALLED TO MANUF
SPECI, ALLOW FOR WEEP HOLES

90x90 H3.2 POST HOUSED &
BOLTED TO BRACKET

BOWMAC BS138 BRACKET
CAST IN CONC. PAD

500x500x600mm DEEP
CONC. PAD

POST FIXING DETAIL SCALE 1:10

Revisions:
JUNE 2016 rev A



00 11

Project:
**PROPOSED
DWELLING**

LOT 24,
25 MAHIA LANE,
WAIKANAE

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
DETAILS

Designer:

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ARCHITECTURE LTD.

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Design: Bill Francis
Drawn: bf
Scale: as shown

Job: 1
Page of: 10
Rev: A



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E2/AS1 : Building Envelope Risk Matrix.

Project Details.

Name NAME AR THOMSOM FAMILY TRUST
 Street/No. STREET 25 MAHIA LANE
 Lot/DP/No. LOT LOT 24
 City/Town/District. CITY WAIKANA

Definition of Risk [table 1 from E2/AS1]

Factor	Risk	Detail
A Wind Zone	LOW	LOW wind zone as described by NZS 3604
	MEDIUM	MEDIUM wind zone as described by NZS 3604
	HIGH	HIGH wind zone as described by NZS 3604
	V.HIGH	VERY HIGH wind zone as described by NZS 3604
B No. of storeys	LOW	One storey
	MEDIUM	Two storey in part
	HIGH	Two storey's
	V.HIGH	More than two storey's
C Roof / Wall intersection Design.	LOW	Roof / wall intersection - Fully protected. [eg. hip / gable roof with eaves.]
	MEDIUM	Roof / wall intersection - Partly exposed. [eg. hip / gable roof with NO eaves.]
	HIGH	Roof / wall intersection - Fully exposed. [eg. Parapets or eaves greater than 90° vertical with soffit linings.]
	V.HIGH	Roof elements finished within the boundaries formed by exterior walls [eg. lower ends of aprons, chimney's etc.]
D Eaves width (1.)	LOW	Greater than 600mm at first floor level.
	MEDIUM	450 - 600mm at first floor level, or 600mm at second floor level
	HIGH	100-450mm at first floor level, or 450-600mm at second floor level
	V.HIGH	0 -100mm at first floor level, or 100-450mm at second floor level or 450 - 600mm at third floor level
E Envelope Complexity	LOW	Simple rectangular, L, T, or boomerang shape with single cladding type
	MEDIUM	Complex angular or curved shape [eg. Y or arrow head] with single cladding type.
	HIGH	More complex angular or curved shape [eg. Y or arrow head] with multiple cladding type.
	V.HIGH	As for high risk, but with junctions not covered in C or F on this Table [eg. box windows, pergola's, multi storey re - entrant shapes etc.]
F Deck design.	LOW	None or timber slat deck or porch at ground level
	MEDIUM	Fully covered in plan by roof, or timber slat deck attached at first or second floor level.
	HIGH	Enclosed deck exposed in plan or cantilevered at first floor level
	V.HIGH	Enclosed deck exposed in plan or cantilevered at second floor level or above.

NOTES

1. Eaves width measured from external face of the wall cladding to outer edge of overhang including gutters and fascias
2. Balustrades and parapets count as 0 mm eaves.

Risk Severity by Face

North Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1	✓	2		5		1
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									2

East Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1	✓	2		5		1
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									2

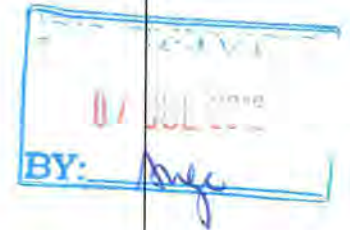
South Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1	✓	2		5		1
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									2

West Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1	✓	2		5		1
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									2

Selected Cladding Resulting from Risk Assessment

	Risk score from tables above.	Cladding Selected from table 3 [from tables on page 30 E2/AS1]	TICK SELECTED OPTION	
			DIRECT FIXED	DRAINED CAVITY
North Elevation.	2	Brick Veneer		✓
South Elevation.	2	Brick Veneer		✓
East Elevation.	2	Brick Veneer		✓
West Elevation.	2	Brick Veneer		✓

Revisions:
JUNE 2016 rev A



50 12

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANA

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
E2 MATRIX

Designer:

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ARCHITECTURE LTD.
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Design: Bill Francis
Drawn: bf
Scale: as shown

Job: 1 Page of: 11 Rev: A



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WATER DEMAND MANAGEMENT DECLARATION OF COMPLIANCE



In 2009 Council required all new homes built in urban areas to provide an alternative source of water for flushing toilets and outdoor irrigation. This form is to be submitted with all applications for a Project Information Memorandum/Building Consent for new or relocated dwellings on land zoned residential.

Address of Project	25 NAHIA LANE, WAIKANAЕ
Number of Dwellings	1
Building Consent Number	(Office Use Only)

1. Water Demand Management Solution:

All dwellings subject to this development (new or relocated) will use one of the following water demand management solutions in accordance with the District Plan (please tick one box):

☒	Rainwater storage tanks with a total volume of not less than 10,000 litres, for each house in the development.
☐	Rainwater storage tanks with a total volume of not less than 4,000 litres, for each house in the development, and a complying greywater diversion device.
☐	The application is made with an alternative solution (note that a discretionary resource consent will be required).
☐	The application is made without provision for water demand management (note that a notified resource consent will be required).

2. For All Applications where Water Demand Management Will be Provided:

Volume of rainwater storage tanks:

I confirm all the following:

☒	That the rain water tank volume complies with selected water demand management option and have provided a certificate from the manufacturer demonstrating the tank volume.
☒	That there will be no direct connection from the reticulated water supply to any outside taps.
☒	That there will be a direct connection from the rainwater storage tanks to all internal toilet cisterns and any external taps.
☒	That there will be no direct connection from the reticulated water supply to any toilet cistern.
☒	I understand that the toby or manifold may have to be replaced with a dual feed manifold at my expense. <i>A dual feed manifold has one supply for the house a separate restricted supply to connect to the rainwater tank.</i>
☒	I have completed Kāpiti Coast District Council Form 159: "Water Supply Connection / Alteration Application Form". <i>An applicant is required to submit this form to Kāpiti Coast District Council Water and Wastewater Team if a new water connection or alteration of existing connection is required.</i>

3. For Applications Where a Greywater Diversion Device is to be Installed:

Size of Disposal Field:

(Note that this needs to be marked on the site plan or the plumbing and drainage plan submitted to Council).

I confirm all the following:

- | | |
|--------------------------|---|
| ☐ | That greywater will be collected from all laundry and bathroom drains (excluding toilets) and channelled to a greywater diversion device for use in outdoor irrigation. |
| ☐ | The greywater worksheet is attached and confirms that greywater diversion is suitable on the lot. |
| ☐ | That the device will be installed by an approved installer and that a certificate demonstrating this will be available to Council on request after installation. |

4. Signatures

Name:

BILL FRANCIS (AGENT)

Signed:



Date:

4/8/2016

Requested Information

Rheem Premier Solar

RHEEM PREMIER SOLAR	
MODEL - ELECTRIC BOOST	A591270 2/T A591270 3/T
MODEL - GAS BOOST	A591270 2/TG A591270 3/TG
DIMENSIONS	1865 x 670
INSTALLATION	Internal or External
FROST PROTECTION	Drain Back
WARRANTY	7 years



General Solar Overview

There are 4 main types of Solar Water Heating:

- Open loop or direct, where the water that is heated in the collectors is the water that is stored in the cylinder and used in the home.
- Closed loop or indirect, where the heating fluid in the collectors is passed through a heat exchanger in the cylinder. The heat in the fluid is transferred into the potable water.
- Roof Mounted, where collectors and cylinders are both mounted on the roof. This method utilises thermosiphon to move water through collectors and cylinder.
- Split system, where the collectors are mounted on the roof and the cylinder at ground level. A pump is then used to circulate liquid through the heating loop.

Rheem Solar Introduction

Rheem Premier Solar is a closed loop or indirect, split solar water heater system specifically designed for environments prone to frost and/or with poor water quality. The collectors are mounted on the roof while the solar storage tank is located at ground level.

The revolutionary system combines an "in tank" heat exchanger in a proven vitreous enamel lined cylinder with Rheem's high efficiency, multi riser, 'T200' collector to produce a system with superior solar performance.

The system is factory charged with the correct amount of heat exchange fluid which requires no further filling on site. During periods of solar gain, the heat exchange fluid is pumped through the collectors to capture the sun's energy. When heating is complete or during periods of frost the fluid drains back to the tank providing total frost protection to -17°C.

The heat exchange design is also perfectly suited for areas of poor water quality because heat transfer fluid (glycol) passes through the collectors instead of water, which can form calcium in the collectors. The heat exchange circuit is kept clean and maintains peak performance for the life



of the system. With the correct selection of anode, vitreous enamel tanks have proven to be the most durable for all water conditions found in New Zealand.

Rheem Premier Solar is available in a 270 litre model with 26 litre a minute remote in-line gas boosting (gas type can be either Natural or LPG) or Electric boosting via a 3.6 kW element positioned to supply 135 litres of hot water when required.

Summary of Installation Features

Ease of installation is a key feature of Rheem Premier Solar.

- The tank is suitable for mounting in any upright position whether internal or external – in gas boosted models the continuous flow unit must be mounted externally.
- Solar flow and return lines are located on top of the storage tank to facilitate easy installation and a neater finish.
- Solar pump and controller are mounted within the unit to save space, reduce installation time and improve overall appearance.
- The system is pre-charged with glycol for peace of mind and quicker installation.

Boosting Options

Gas boost models utilise a specially developed 27L/min instantaneous gas water heater which eliminates the need for additional valving (by-pass valve) and provides an abundant amount of back up on those cloudy days. The boosting is conducted in-line. Solar heated water greater than the set point (58°C) will pass through the booster without igniting the burners, however should the solar pre-heat be less than the set point (58°C) the booster will ignite to deliver 60°C water.

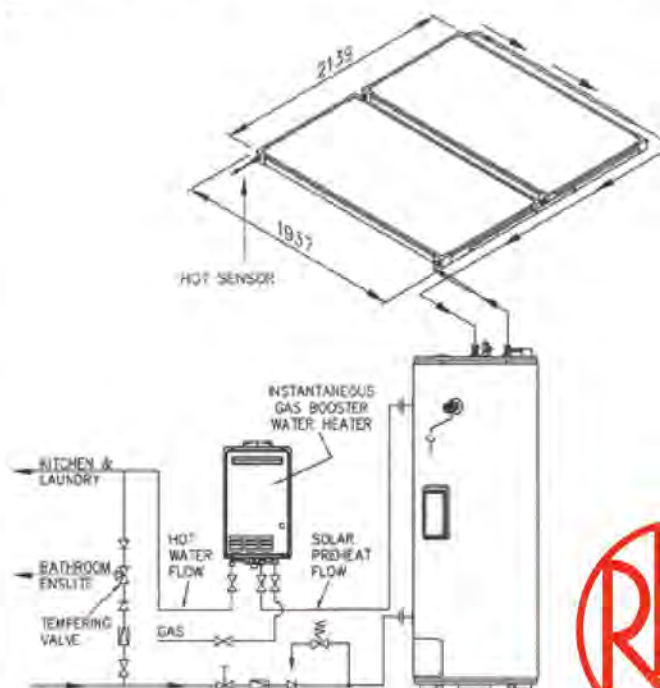
Electric boost model has a mid mounted 3.6kW element that will supply 135litres of hot water when required.

Note: Remote controllers cannot be used with any instantaneous water heater used in conjunction with solar, as the solar heated water cannot be set by the remote controller.

Rheem Premier Solar provides the ultimate in flexibility with the gas booster unit mounted remotely enabling the cylinder to be positioned wherever it is required.

The electric boost provides 135 litres of continuous boosted hot water, and is designed for connection to a continuous electricity supply to guarantee sufficient hot water during periods of low solar gain. The element rating is 3.6kW.

It is possible to connect the element to a night rate tariff, an automatic timer or booster switch to control the boost function to best suit the user. The 3.6kW element, with a current rating of 15 Amps, is suitable for use with most timers and switches, including Rheem Time Clock P/No 12104800.



Operation

Rheem Premier Solar is unlike any other product on the market. Competitor closed circuit split systems utilise an externally mounted plate heat exchanger to transfer the heat from the collectors to the water in the tank. This is unsightly, requires more space and is prone to damage in the water side of the heat exchanger due to scale build up or corrosion in poor water quality areas.

Heat Exchanger

Rheem Premier Solar uses a well proven method of heat transfer by inserting a "tube heat exchanger" through the centre of the cylinder. The "tube heat exchanger" is capped at the top and bottom and is factory charged with the correct amount of heat exchange fluid to operate up to 3 collectors. Additional water may need to be added during commissioning if 3 collectors and/or maximum pipe runs are installed. The solar circulating pump and controller are located inside the base of the unit. This improves the installed appearance and reduces installation time.

The solar cold and hot lines are connected at the top of the water heater. The solar cold pipe, from the pump, is run from the bottom of the heater, under the jacket, and is accessed by the plumber via nut and olive connections at the top of the water heater. The solar hot pipe returns into the top of the heater and connects directly into the central heat exchanger via nut and olive connections.

Information from sensors located at the collectors, in the tank and in the heating circuit line communicate with the controller to turn on the pump when solar heating is available. The heat exchange fluid is pumped up to the collectors where the heat is gathered and falls back under gravity to the heat exchanger. The design of the heat exchanger causes the fluid to adhere to the inside wall of the "tube heat exchanger" which is in contact with the water in the tank.

This is known as "falling film technology" and is how the heat is transferred to the water in the tank.

When heating is no longer required or available, the pump is de-activated and the fluid drains back from the collectors to the heat exchanger reservoir.



Pump

The pump in Premier Solar operates very differently to the circulator in an open loop Solar.

An open circuit solar system relies on the mains pressure to fill the entire circuit with water. Once the system is bled of air, the circulator simply moves the water around the circuit. Pressure lost in the circuit as the water flows up the pipe to the collectors is regained as the water moves down the pipe from the collectors.

By contrast, the pump in Premier Solar pushes the heat exchange fluid from the bottom of the tank to the highest point of the collectors every time solar heating is required. The operational limit on the pump is 9m vertical and 40m total flow and return length, with 20 x 90mm bends (see pipe out sheet). This should meet the requirements of most homes, however, if a height greater than 9m is required, a second pump will need to be fitted at the solar cold connection. A separate pump is available as a spare part, and instructions are included in the installation booklet.



Corrosion Protection

The heat exchanger is charged with nitrogen, an inert gas, which prevents corrosion of the system by displacing most of the oxygen. Any remaining oxygen in the system is quickly consumed upon start up, thereby eliminating oxidation.

Solar Relief Valve

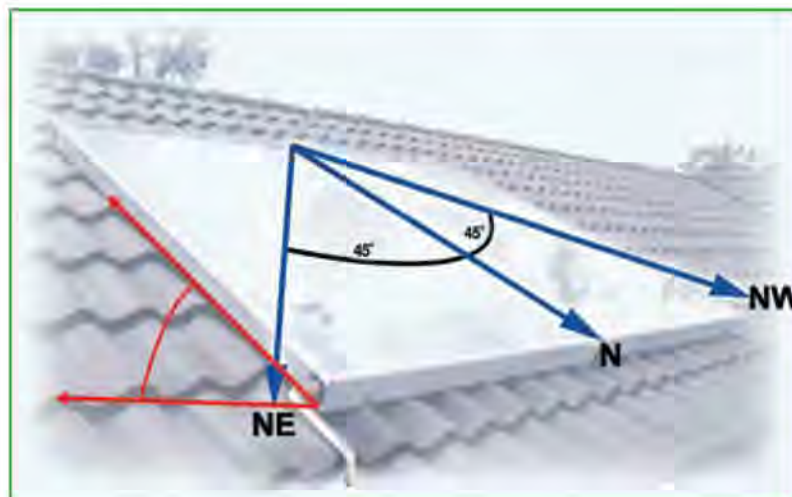
The solar circuit has a pressure relief valve set at 200kPa. On a good solar day the pressure in the solar circuit will build and this pressure may be relieved by the valve in the form of vapour. Upon cooling, the pressure will be reduced and a slight vacuum may be formed in the circuit. This has no effect on the operation of the system.

Orientation

- Collectors may be installed on an angle that varies from the latitude angle by $\pm 20\%$. Roof pitches below 10 may require a raised pitch frame.
- Solar collectors must be unshaded between 9.00 am – 5.00 pm. The chosen area must be structurally suitable for the water heater collectors. They weigh 48 kg each.
- Collectors should be installed facing north. Variation up to 45 East or West will have little effect on the total annual solar contribution. Variation above 60 East or West an additional collector may be required.

Minimum Inclination Angle

Auckland	20°
Hamilton	22°
Wellington	25°
Christchurch	30°
Dunedin	35°
Invercargill	37°

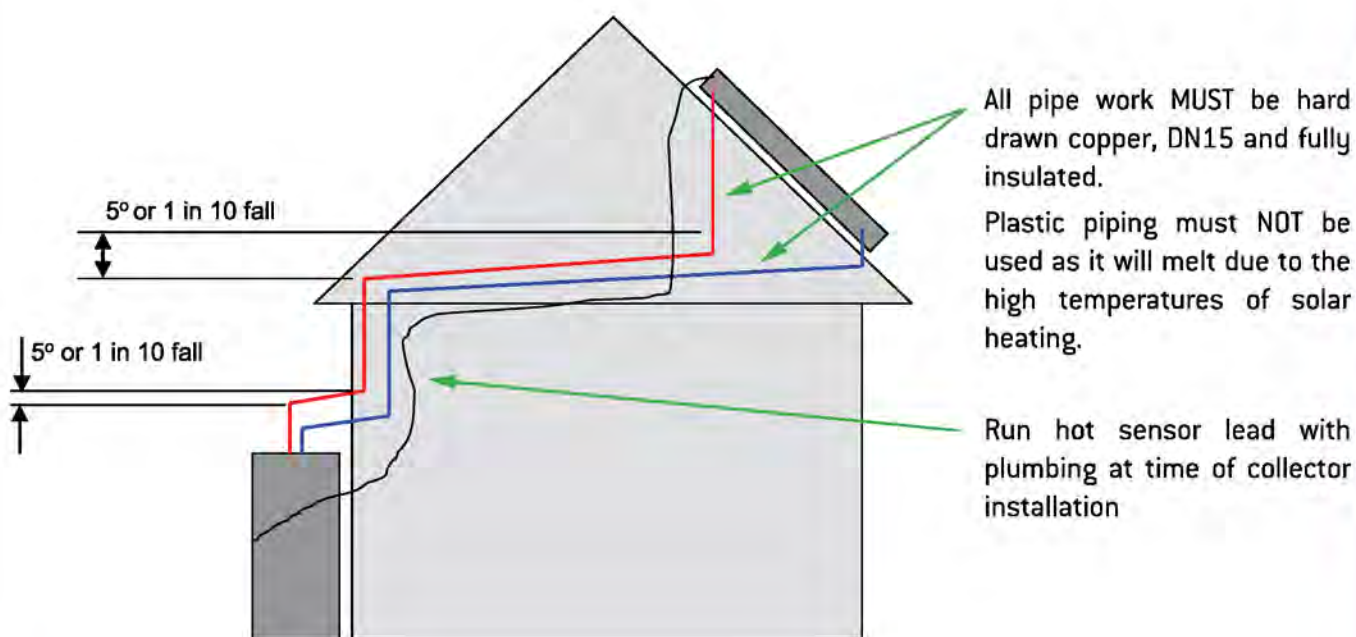


Installation Details

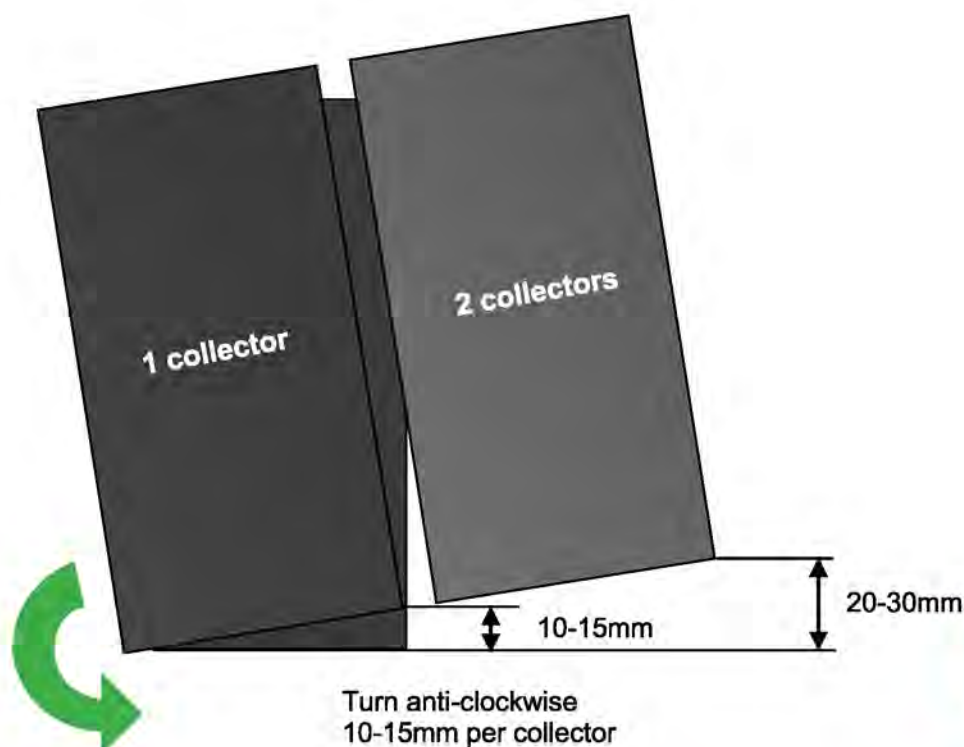
The Rheem Premier Solar closed loop system does not require any special plumbing to the heating loop. The Premier Solar systems drains back when solar heating is completed, therefore the possibility of stagnation and "flashback" is eliminated. This greatly simplifies the installation of the product.



- Copper pipe **MUST** be used between tank and collectors – plastic pipe **MUST NOT** be used.
- Copper or brass olives for compression fittings
- Insulate flow and return pipes with 13 mm, weather proof, UV resistant insulation
- Each pipe must fall continuously by at least 5°, or 1 in 10, to ensure proper drainback of heat exchange fluid into tank



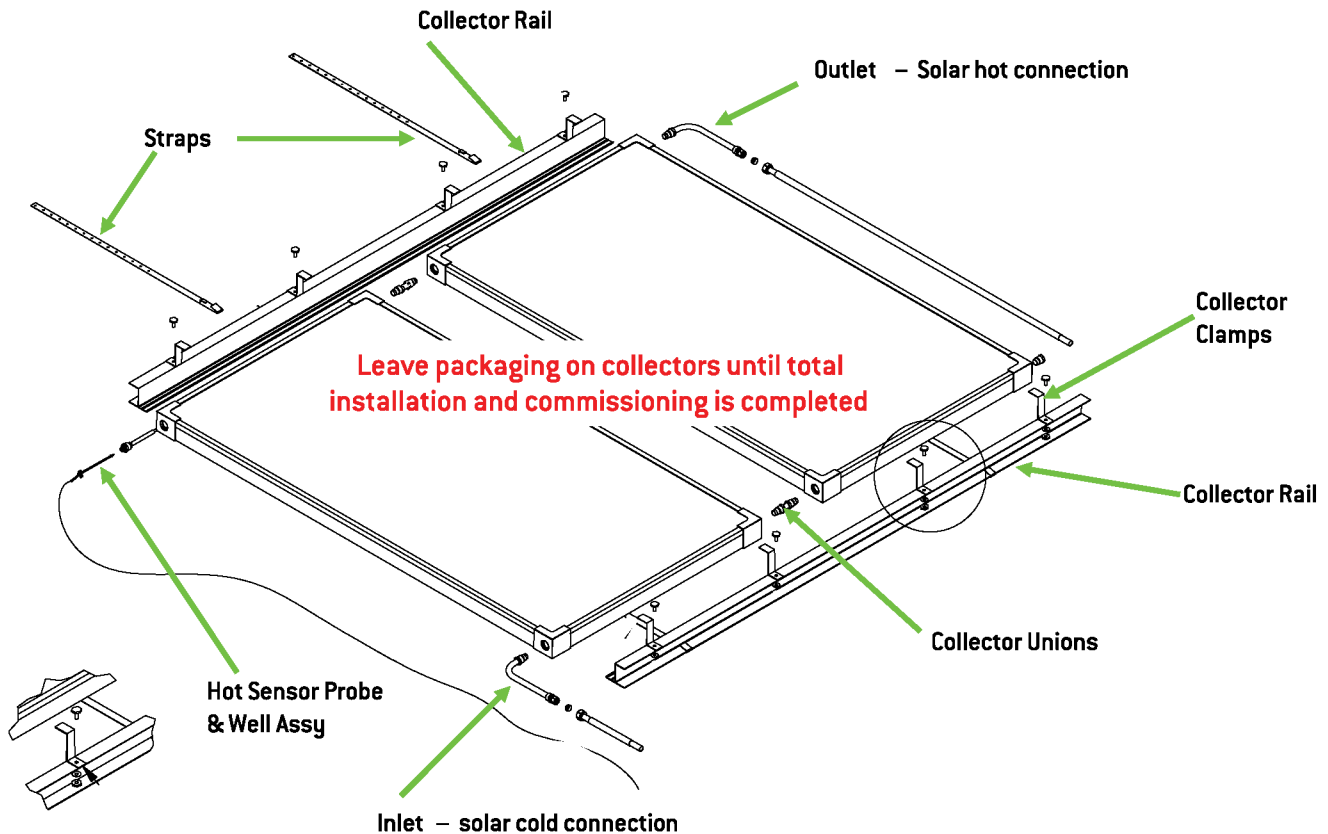
Collector Rotation



Roof Kits

Roof kits come as part of the Premier Solar system ordered – 2 or 3 as per requirements. Where a 3T system is specified a two collector kit and a 1 collector kit will be supplied that are coupled together to make up the 3.

Variable pitch collector stands can be ordered as extras as either for 2 collectors (Part No. A12106883) or 1 collector (Part No. A12106884) and as above, the 2 stands can be utilised to work as a 3 collector system.



Technical Specifications – Electric and Gas Boost Models

Model		A591270/2T	A591270/3T	A591270/2TG	A591270/3TG
Storage Capacity	Litres	270		270	
Suitable for	People	1-3		2-5	
Suitable for	Bathrooms	2		3	
Booster Alternatives		Electric		gas remote	
Boost Capacity	L/min @ 25°C rise			27	
Boost Capacity	Litres	135*		-	
Gas Input Max	MJ/h	-		205	
Gas Type Available		-		Natural or LPG	
Minimum Flow Rate	L/min	2.7		2.7	
Booster Frost Protection		Standard		Standard	
Element Rating	kW	3.6		3.6	
Collectors		2 x T200	3 x T200	2 x T200	3 x T200
Roof Space Required	W x H (m)	2.4 x 2.0	3.6 x 2.0	2.4 x 2.0	3.6 x 2.0
Dimensions - Tank	H mm	1755		1755	
	W mm	650		650	
	D mm	680		680	
Weight Empty - Tank	kg	146		146	
- Collectors	kg	48	96	48	96
Temperature Pressure Relief Valve Setting	kPa	1000		1000	
Maximum Water Supply Pressure					
- without ECV fitted	kPa	800		800	
- With ECV fitted	kPa	680		680	
Minimum Water Supply Pressure	kPa	-		150	
Connections					
Inlet	BSPF	3/4 / 20		3/4 / 20	
Outlet	BSPF	3/4 / 20		3/4 / 20	
Gas	BSPM	-		3/4 / 20	
Solar Flow and Return		DN15 Compression		DN15 Compression	

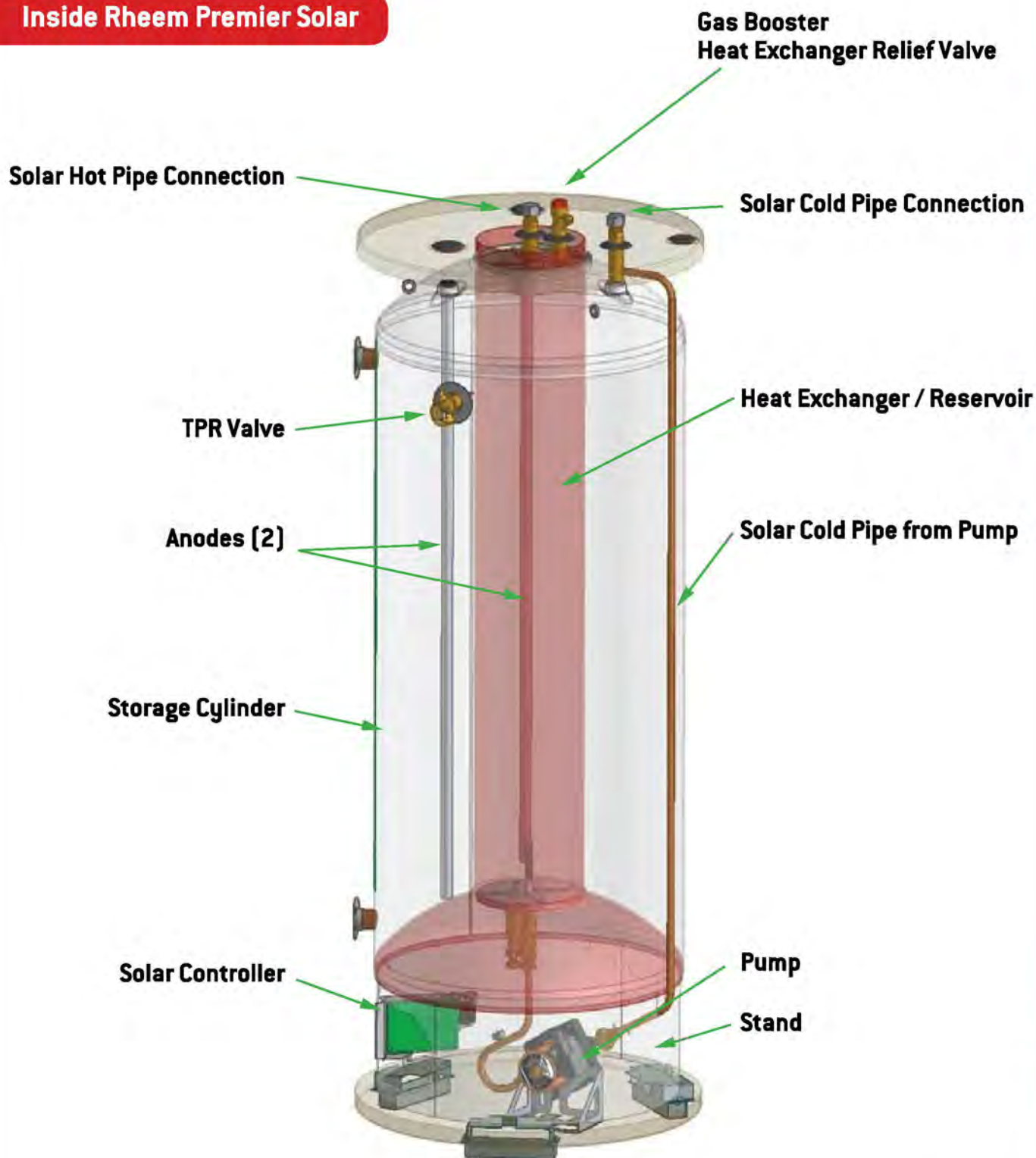
*Can be increased by 80 litres with Part No. 050335

Warranty

- 7 years on cylinder supply
- 7 years on collectors
- 10 years pro rata on Gas booster heat exchanger
- 1 year on parts including labour



Inside Rheem Premier Solar



Rheem New Zealand Limited

Freephone 0800 657 336 • Freefax 0800 657 337

Telephone 09 829 0200

PO Box 19011, Avondale, Auckland 1746, New Zealand

www.rheem.co.nz



Solar • Feb 09



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MiTek New Zealand Limited

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PO Box 58-014, Botany 2163
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CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03 348 8691
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MiTek 20/20 Engineering 4.6.6.346

Printed: 10:21:55 22 Jun 2016

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

ISSUED BY: **MiTek New Zealand Limited**

TO: **Paraparaumu Prenail Ltd**

IN RESPECT OF: **MiTek® Truss Designs**

This producer statement covers the MiTek 20/20® truss design and the structural performance of the GANG-NAIL® connector plate for the job reference **7921** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek 20/20® truss design program has been developed by MiTek New Zealand Limited for the design of MiTek® timber roof, floor and attic trusses in New Zealand. The truss designs computed by MiTek 20/20® are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents of the New Zealand Building Code and Verification Method B1/VM1; and internationally accepted standard ANSI/TPI 1 - 2002 as an alternative solution, to satisfy the requirements of Clauses B1 and B2 of the New Zealand Building Code.

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

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence
- vi) Timber is graded to the requirements of NZS 3603:1993
- vii) Minimum timber treatment for these MiTek® trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003

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

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

On behalf of MiTek New Zealand Limited,

Date: Wednesday, 22 June 2016

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

Paraparaumu Prenail Ltd

Fabricator Design Statement : Page 1

Job: 7921

Client: PlaceMakers Paraparaumu
Phone: 04-296 1086

Site: AR Thomson Family Trust
Lot 24, 25 Mahia Lane
Waikanae

Description:
Building Consent No.:
MITek 20/20 Engineering 4.6.6.346

MITek New Zealand Limited.

Phone:
Printed: 10:21:55 22 Jun 2016

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MITek accredited fabricator Paraparaumu Prenail Ltd, being licensed to use the MITek 20/20® software, to the client listed above and may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

MITek 20/20® TRUSS DESIGN DATA

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

Job Details				Importance Level :	2	Design Working Life :	50 years
Roof Truss				Pitch:	25.000 deg	Nominal Overhang:	600 mm
Timber Group:				Ceiling		Wind	
Roof				Material:	Metal battens on clips	Area:	High (44.0 m/s)
Material:				Dead Load:	0.200 kPa	Pressure Coeff:	Cpe = varies; Cpi = -0.30, 0.20
Dead Load:				Restraints:	1800 mm centres		
Restraints:				Live Load:	Qc = 1.400 kN		
Live Load:							
Qc = 1.100 kN							

The minimum timber treatment for these MITek® trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003. The timber for these MITek® trusses shall be graded to the requirements of NZS 3603:1993. Proprietary fixings and timber connectors shall be selected in accordance with NZS3604:2011 Section 4 - Durability.

MITek® Truss List

Legend: * = detail only, ? = input only, Fxx = failed design, Ø = non certified, Unmarked trusses = designed successfully, LB = lateral bracing required
GB = gable brace required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
T01	4	7400	25.000	900	J01E	1	2777	25.000	900	*R01	1	1590	25.000	900
TG01	1	7400	25.000	900	J01F	1	2777	25.000	900	*R01A	1	1590	25.000	900
TG01A	1	7400	25.000	900	J01G	2	2777	25.000	900	J06	1	1577	25.000	900
*HB01	2	6049	18.249	900	*HB02	1	2548	18.249	900	J06A	1	1577	25.000	900
T04	1	4700	25.000	900	*HB02A	1	2548	18.249	900	J06B	1	1577	25.000	900
T04A	1	4700	25.000	900	J07	1	2327	25.000	900	J09	1	1555	25.000	900
T02A	1	4200	25.000	900	J07A	1	2327	25.000	900	J09A	1	1555	25.000	900
T02	1	4200	25.000	900	J07B	1	2327	25.000	900	V02	1	1433	25.000	900
T05	1	4200	25.000	900	J04	2	2305	25.000	900	J08	1	1427	25.000	900
*HB05	1	4140	18.249	900	J05	1	2077	25.000	900	J08A	1	1427	25.000	900
*HB03	2	3787	18.249	900	J05A	1	2077	25.000	900	*R04	1	1290	25.000	900
T03	1	3200	25.000	900	J05B	1	2077	25.000	900	*R04A	1	1290	25.000	900
T03A	1	3200	25.000	900	J03	1	2055	25.000	900	*HB06	1	1232	18.249	900
T06	1	3200	25.000	900	J03A	1	2055	25.000	900	V01	1	1183	25.000	900
*HB04	2	3079	18.249	900	J02	1	1877	25.000	900	*R05	1	1140	25.000	900
J01	1	2777	25.000	900	J02A	1	1877	25.000	900	V03	1	1073	25.000	900
J01A	1	2777	25.000	900	J02B	1	1877	25.000	900	*R02	7	913	25.000	900
J01B	2	2777	25.000	900	J02C	1	1877	25.000	900	*R02A	7	913	25.000	900
J01C	1	2777	25.000	900	*R03	1	1790	25.000	900	*V04	1	503	25.000	900
J01D	1	2777	25.000	900	*R03A	1	1790	25.000	900					

Total quantity : 80

MITek truss computer design input has been carried out by:

Signed:

Date: Wednesday, 22 June 2016

Name of Detailer:

David Bright (MITek C.O.C. - 10615)

On behalf of : Paraparaumu Prenail Ltd



Paraparaumu Prenail Ltd

Fixing Report : Page 1

Job: 7921

Client: PlaceMakers Paraparaumu
Phone: 04-296 1086

Site: AR Thomson Family Trust
Lot 24, 25 Mahia Lane
Waikanae

Description:
Building Consent No.:
MiTek 20/20 Engineering 4.6.6.346

MiTek New Zealand Limited.

Phone:
Printed: 10:21:59 22 Jun 2016

TRUSS FIXING SELECTION REPORT - Characteristic Loads

Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data)

MiTek® Truss List

Legend: * = detail only, ? = input only, ~~xxx~~ = failed design, Ø = non certified, Unmarked trusses = designed successfully

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	Fixing
							Qty Selected
T01	4	7400	B	5.236	3.420	Cross	4 CT200 pair
			F	4.539	3.699	Cross	4 CT200 pair
TG01	1	7400	B	8.505	7.435	Cross	1 CT200 pair
			G	7.828	7.770	Cross	1 CT200 pair
TG01A	1	7400	B	8.617	7.545	Cross	1 CT200 pair
			G	7.852	7.776	Cross	1 CT200 pair
*HB01	2	6049					Refer NZS3604:2011 Tables 10.1 & 10.14
T04	1	4700	B	3.687	3.482	Cross	1 CT200 pair
			F	4.046	3.870	Cross	1 CT200 pair
T04A	1	4700	A	6.076	4.404	Cross	1 CT200 pair
			E	4.537	3.637	Cross	1 CT200 pair
T02A	1	4200	B	4.072	3.353	Cross	1 CT200 pair
			F	4.618	3.870	Cross	1 CT200 pair
T02	1	4200	B	3.549	3.300	Cross	1 CT200 pair
			F	3.549	3.300	Cross	1 CT200 pair
T05	1	4200	B	2.958	2.156	Cross	1 Pair of Wire Dog Staples
			F	2.958	2.156	Cross	1 Pair of Wire Dog Staples
*HB05	1	4140					Refer NZS3604:2011 Tables 10.1 & 10.14
*HB03	2	3787					Refer NZS3604:2011 Tables 10.1 & 10.14
T03	1	3200	B	2.948	2.322	Cross	1 Pair of Wire Dog Staples
			D	2.948	2.322	Cross	1 Pair of Wire Dog Staples
T03A	1	3200	A	3.016	2.698	Cross	1 Pair of Wire Dog Staples
			C	3.210	2.582	Cross	1 Pair of Wire Dog Staples
T06	1	3200	B	2.699	1.656	Cross	1 Pair of Wire Dog Staples
			D	2.699	1.656	Cross	1 Pair of Wire Dog Staples
*HB04	2	3079					Refer NZS3604:2011 Tables 10.1 & 10.14
J01	1	2777	B	2.859	1.894	Cross	1 Pair of Wire Dog Staples
			F	1.712	1.814	Butt	1 JH 47x90
J01A	1	2777	B	2.617	1.100	Cross	1 Pair of Wire Dog Staples
			F	1.681	1.172	Butt	1 JH 47x90
			D	0.371	0.562	Butt	1 Pair of 3.15d Nails
J01B	2	2777	A	1.517	1.034	Butt	2 JH 47x90
			E	1.713	1.188	Butt	2 JH 47x90
			C	0.344	0.556	Butt	2 Pair of 3.15d Nails
J01C	1	2777	A	2.140	2.055	Butt	1 JH 47x90
			E	1.927	2.121	Butt	1 JH 47x90
J01D	1	2777	B	2.859	1.894	Cross	1 Pair of Wire Dog Staples
			F	1.712	1.814	Butt	1 JH 47x90
J01E	1	2777	A	1.517	1.034	Butt	1 JH 47x90
			E	1.713	1.188	Butt	1 JH 47x90
			C	0.344	0.556	Butt	1 Pair of 3.15d Nails
J01F	1	2777	A	2.233	2.070	Butt	1 JH 47x90
			E	2.026	2.226	Butt	1 JH 47x90
J01G	2	2777	A	1.584	0.757	Butt	2 JH 47x90
			D	0.265	0.394	Butt	2 Pair of 3.15d Nails
			C	2.111	2.475	Cross	2 Pair of Wire Dog Staples
*HB02	1	2548					Refer NZS3604:2011 Tables 10.1 & 10.14
*HB02A	1	2548					Refer NZS3604:2011 Tables 10.1 & 10.14
J07	1	2327	A	0.725	0.606	Cross	1 Pair of Wire Dog Staples
			E	0.227	0.224	Butt	1 Pair of 3.15d Nails
			D	1.709	1.758	Cross	1 Pair of Wire Dog Staples
J07A	1	2327	A	1.648	1.644	Butt	1 JH 47x90
			E	1.435	1.399	Butt	1 JH 47x90
J07B	1	2327	A	1.318	0.866	Butt	1 JH 47x90
			E	1.659	1.037	Butt	1 JH 47x90
			C	0.339	0.425	Butt	1 Pair of 3.15d Nails
J04	2	2306	B	2.515	0.926	Cross	2 Pair of Wire Dog Staples
			F	1.430	1.435	Butt	2 JH 47x90
J05	1	2077	B	2.471	0.954	Cross	1 Pair of Wire Dog Staples
			F	1.176	0.755	Butt	1 Pair of 3.15d Nails
J05A	1	2077	B	2.471	0.954	Cross	1 Pair of Wire Dog Staples
			F	1.176	0.755	Butt	1 Pair of 3.15d Nails

Paraparaumu Prenail Ltd

Fixing Report : Page 2

Job: 7921

Client: PlaceMakers Paraparaumu
Phone: 04-296 1086

Site: AR Thomson Family Trust
Lot 24, 25 Mahia Lane
Waikanae

Description:

Building Consent No.:

MITek 20/20 Engineering 4.6.6.345

MITek New Zealand Limited.

Phone:

Printed: 10:21:59 22 Jun 2016

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	Fixing
J05B	1	2077	B	2.472	0.843	Cross	1 Pair of Wire Dog Staples
			F	1.433	0.822	Butt	1 JH 47x90
			D	0.318	0.468	Butt	1 Pair of 3.15d Nails
J03	1	2055	B	2.468	0.835	Cross	1 Pair of Wire Dog Staples
			F	1.302	1.276	Butt	1 JH 47x90
J03A	1	2055	B	2.468	0.835	Cross	1 Pair of Wire Dog Staples
			F	1.415	0.805	Butt	1 JH 47x90
			D	0.320	0.472	Butt	1 Pair of 3.15d Nails
J02	1	1877	B	2.438	0.881	Cross	1 Pair of Wire Dog Staples
			E	1.002	0.828	Butt	1 Pair of 3.15d Nails
J02A	1	1877	B	2.438	0.881	Cross	1 Pair of Wire Dog Staples
			E	1.002	0.828	Butt	1 Pair of 3.15d Nails
J02B	1	1877	B	2.435	0.769	Cross	1 Pair of Wire Dog Staples
			E	1.208	0.623	Butt	1 Pair of 3.15d Nails
			D	0.337	0.511	Butt	1 Pair of 3.15d Nails
J02C	1	1877	B	2.435	0.769	Cross	1 Pair of Wire Dog Staples
			E	1.208	0.623	Butt	1 Pair of 3.15d Nails
			D	0.337	0.511	Butt	1 Pair of 3.15d Nails
*R03	1	1790					Refer NZS3604:2011 Tables 10.1 & 10.14
*R03A	1	1790					Refer NZS3604:2011 Tables 10.1 & 10.14
*R01	1	1590					Refer NZS3604:2011 Tables 10.1 & 10.14
*R01A	1	1590					Refer NZS3604:2011 Tables 10.1 & 10.14
J06	1	1577	B	2.400	0.772	Cross	1 Pair of Wire Dog Staples
			E	0.749	0.438	Butt	1 Pair of 3.15d Nails
J06A	1	1577	B	2.400	0.772	Cross	1 Pair of Wire Dog Staples
			E	0.749	0.438	Butt	1 Pair of 3.15d Nails
J06B	1	1577	B	2.398	0.660	Cross	1 Pair of Wire Dog Staples
			D	0.462	0.046	Butt	1 Pair of 3.15d Nails
			C	0.495	0.925	Butt	1 Pair of 3.15d Nails
J09	1	1555	B	2.399	0.653	Cross	1 Pair of Wire Dog Staples
			D	0.975	0.958	Butt	1 Pair of 3.15d Nails
J09A	1	1555	B	2.399	0.653	Cross	1 Pair of Wire Dog Staples
			D	0.462	0.046	Butt	1 Pair of 3.15d Nails
			C	0.513	0.912	Butt	1 Pair of 3.15d Nails
V02	1	1433	A			Wide	No fixing selected
J08	1	1427	B	2.410	0.798	Cross	1 Pair of Wire Dog Staples
			D	0.626	0.261	Butt	1 Pair of 3.15d Nails
J08A	1	1427	B	2.390	0.596	Cross	1 Pair of Wire Dog Staples
			D	0.418	0.041	Butt	1 Pair of 3.15d Nails
			C	0.437	0.814	Butt	1 Pair of 3.15d Nails
*R04	1	1290					Refer NZS3604:2011 Tables 10.1 & 10.14
*R04A	1	1290					Refer NZS3604:2011 Tables 10.1 & 10.14
*HB06	1	1232					Refer NZS3604:2011 Tables 10.1 & 10.14
V01	1	1183	A			Wide	No fixing selected
*R05	1	1140					Refer NZS3604:2011 Tables 10.1 & 10.14
V03	1	1073	A			Wide	No fixing selected
*R02	7	913					Refer NZS3604:2011 Tables 10.1 & 10.14
*R02A	7	913					Refer NZS3604:2011 Tables 10.1 & 10.14
*V04	1	503					Refer NZS3604:2011 Tables 10.1 & 10.14

Fixing List

Qty	Selected Fixing
20	CT200 pair
33	Pair of Wire Dog Staples
24	JH 47x90
28	Pair of 3.15d Nails
3	No fixing selected

Note:

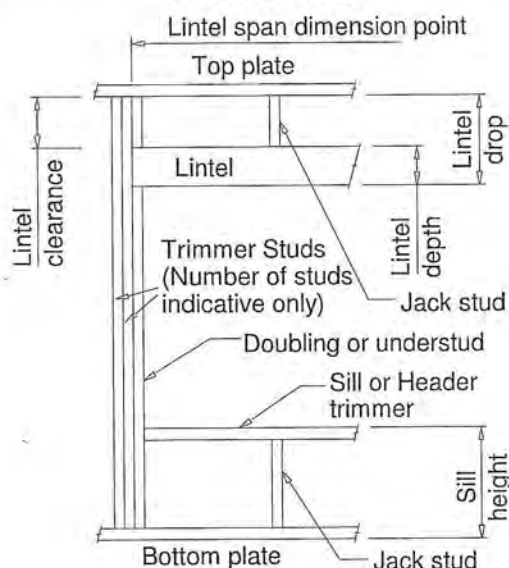
- 1) Fixings have been selected based on loading only. Please check that selected fixings are practical for each situation and that appropriate nailing can be applied on site.
- 2) Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data) with down and uplift characteristic loads of at least the values shown for each joint.

LINTEL FIXING SCHEDULE ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

NOTE:

- ★ All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ All fixings assume bottom plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011

DEFINITIONS



Lintel Supporting Girder Trusses:

Roof Tributary Area	Light Roof Wind Zone					Heavy Roof Wind Zone				
	L	M	H	VH	EH	L	M	H	VH	EH
8.6 m ²	G	G	H	G	G	H	G	G	H	H
11.6 m ²	G	H	H	G	G	H	G	H	H	H
12.1 m ²	G	H	H	G	G	H	G	H	H	H
15.3 m ²	H	H	-	G	G	H	H	H	-	-
19.1 m ²	H	-	-	G	H	H	-	-	-	-
20.9 m ²	H	-	-	H	H	H	-	-	-	-
21.8 m ²	H	-	-	H	-	-	-	-	-	-
34.3 m ²	-	-	-	H	-	-	-	-	-	-

Notes:

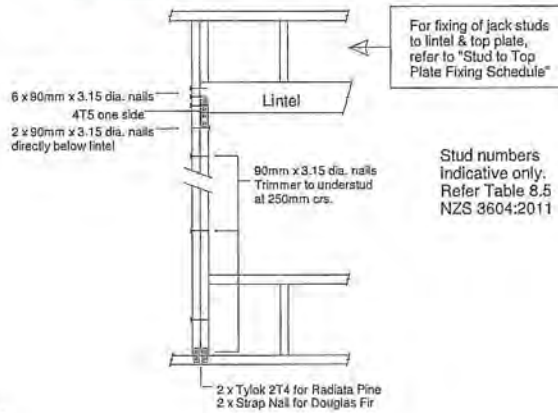
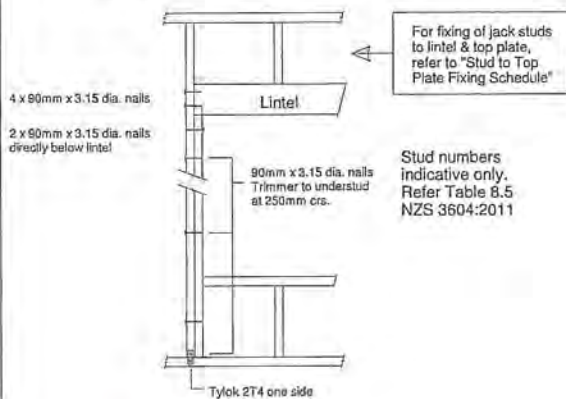
- 1) Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by Lintel)
- 2) Assumed girder truss is at mid-span or middle third span of lintel
- 3) Use similar fixings for both ends of lintel
- 4) All other cases require specific engineering design.

SELECTION CHART FOR LINTEL FIXING

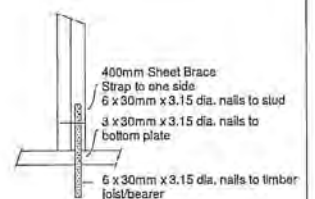
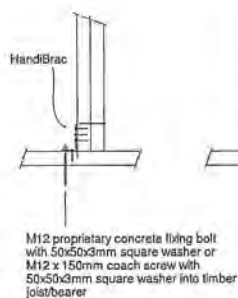
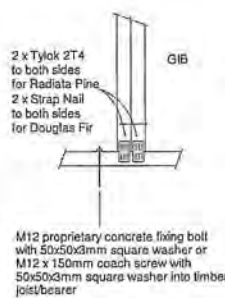
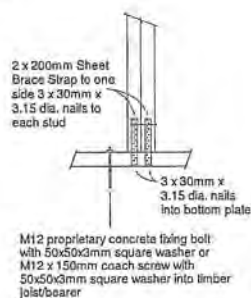
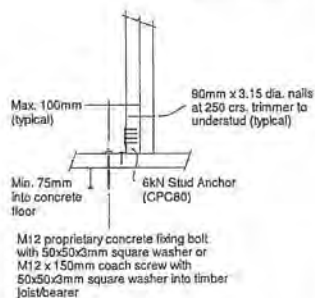
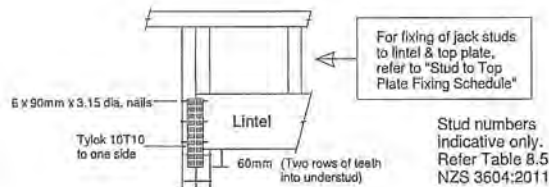
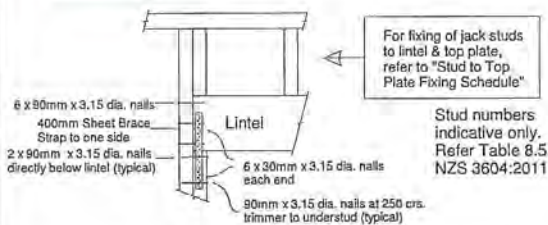
Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:2011)	Light Roof Wind Zone					Heavy Roof Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
0.7	2.0	E	E	E	E	F	E	E	E	E	E
	3.0	E	E	E	F	F	E	E	E	F	F
	4.0	E	E	F	F	F	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
0.9	2.0	E	E	E	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.0	2.0	E	E	E	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	F	F	F
	3.0	E	E	F	F	G	E	E	F	F	F
	4.0	E	F	F	F	G	E	E	F	F	G
	5.0	E	F	F	F	G	E	E	F	F	G
	6.0	E	F	F	G	H	E	E	F	F	G
1.5	2.0	E	E	F	F	F	E	E	F	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	F	G	E	E	F	F	G
	5.0	E	F	F	G	H	E	E	F	F	G
	6.0	E	F	F	G	H	E	E	F	F	G
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	F	G	E	E	F	F	G
	4.0	E	F	F	G	H	E	E	F	F	G
	5.0	E	F	F	G	H	E	E	F	F	G
	6.0	E	F	F	G	H	E	E	F	F	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	E	F	F	G	H	E	E	F	F	G
	4.0	E	F	F	G	H	E	E	F	F	G
	5.0	E	F	F	G	H	E	E	F	F	H
	6.0	E	F	F	G	H	E	E	F	F	H
3.0	2.0	E	F	F	G	H	E	E	F	F	G
	3.0	E	F	F	G	H	E	E	F	F	H
	4.0	E	F	F	G	H	E	E	F	F	H
	5.0	E	F	F	G	H	E	E	F	F	H
	6.0	E	F	F	G	H	E	E	F	F	H
3.6	2.0	E	F	F	G	H	E	E	F	F	G
	3.0	E	F	F	G	H	E	E	F	F	H
	4.0	E	F	F	G	H	E	E	F	F	H
	5.0	E	F	F	G	H	E	E	F	F	H
	6.0	E	F	F	G	H	E	E	F	F	H
4.2	2.0	E	F	F	G	H	E	E	F	F	G
	3.0	E	F	F	G	H	E	E	F	F	H
	4.0	E	F	F	G	H	E	E	F	F	H
	5.0	E	F	F	G	H	E	E	F	F	H
	6.0	E	F	F	G	H	E	E	F	F	H
4.5	2.0	E	F	F	G	H	E	E	F	F	H
	3.0	E	F	F	G	H	E	E	F	F	H
	3.4	E	F	F	G	H	E	E	F	F	H
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4.8	2.0	E	F	F	G	H	E	E	F	F	H
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	3.2	E	F	F	G	H	E	E	F	F	H
	4.0	E	F	F	G	H	E	E	F	F	H
	5.0	E	F	F	G	H	E	E	F	F	H
6.0	2.0	E	F	F	G	H	E	E	F	F	H
	3.0	E	F	F	G	H	E	E	F	F	H
	3.2	E	F	F	G	H	E	E	F	F	H
	4.0	E	F	F	G	H	E	E	F	F	H
	5.0	E	F	F	G	H	E	E	F	F	H

LINTEL FIXING OPTIONS

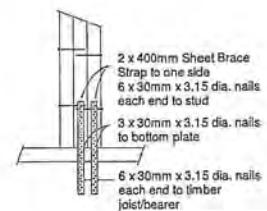
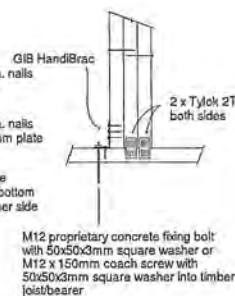
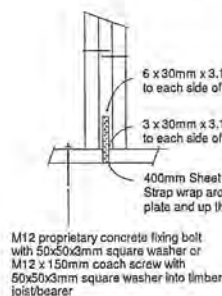
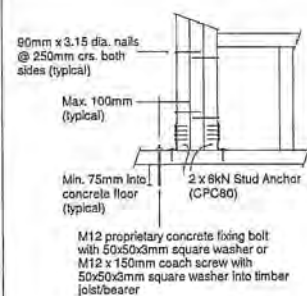
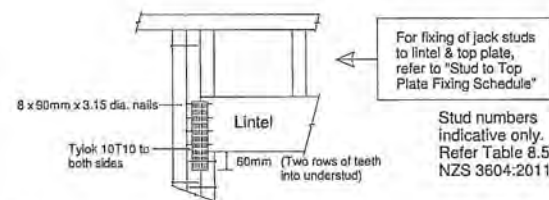
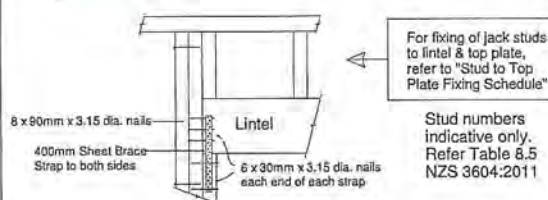
TYPE E 1.4kN

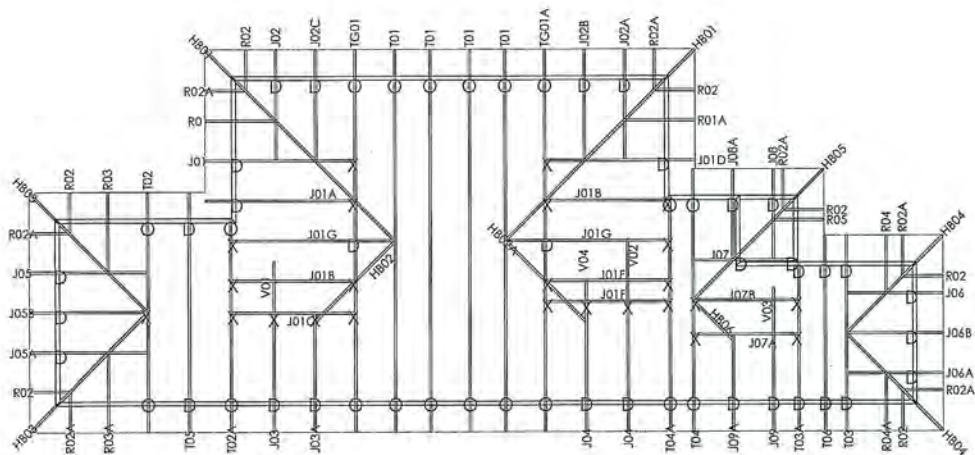


TYPE G 7.5kN



TYPE H 13.5kN





**PARAPARAUMU
PRENAIL LTD**
37 Ihakara Street Paraparaumu
Tel: 04-902-5618 Fax: 04-902-5619

Site Address:
AR Thomson Family Trust
Lot 24, 25 Mahia Lane
Waikanae

Sheet Title:
**For Building Consent
Buildable Truss Layout**

Date: 22 Jun 2016 Drawn: Dave Bright
Scale: 1:80 System: MITek 2010

Job Details:
Roof Pitch : 25.00deg
Roof Material : Metal Tiles
Ceiling Material : Metal battens on clips
Wind Zone : High
Roof Snow Load : 0.000kPa

Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 600mm

MITek 7921
Sheet: 1
Revision Number:

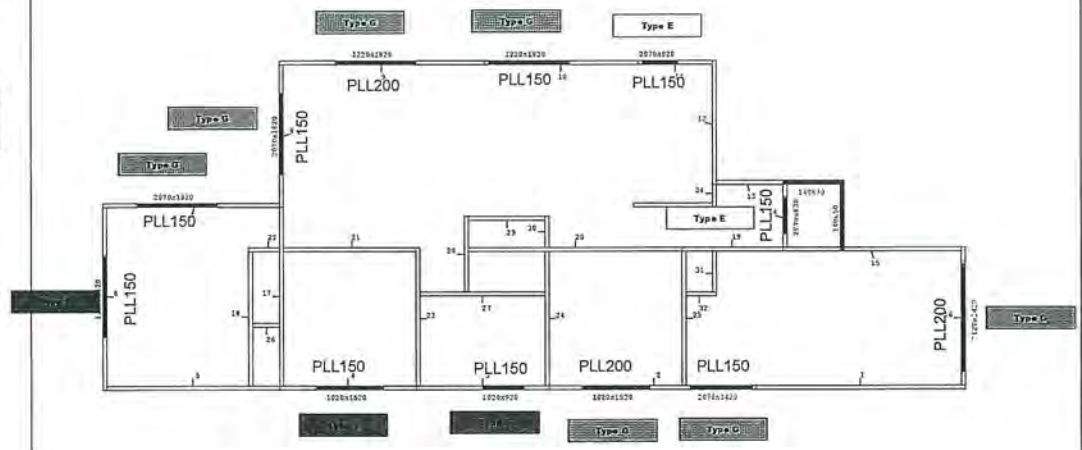
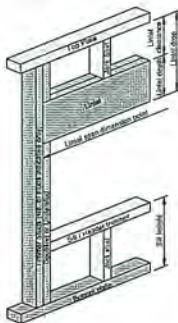
LUMBERLOK LINTEL FIXING OPTIONS

TYPE E
1.4 kN

TYPE F
4.0 kN

TYPE G
7.5 kN

TYPE H
13.5 kN



Refer to:
LUMBERLOK Lintel Fixing Schedule 10/2011
MITek Structural Fixings On-site Guide for Building Code Compliance
(Alternative to Table 8.14 & Figure 8.12 NZS 3604:2011)



PrimeCred v8.6.046

**PARAPARAUMU
PRENAIL LTD**
37 Ihakara Street Paraparaumu
Tel: 04-902-5618 Fax: 04-902-5619

Site Address:
AR Thomson Family Trust
Lot 24, 25 Mahia Lane
Waikanae

Sheet Title:
**For Building Consent
Lintel Fixing**

Date: 22 Jun 2016 Drawn: Dave Bright
Scale: 1:80 System: MITek 20/20

Job Details:
Roof Pitch : 25.00deg
Roof Material : Metal Tiles
Ceiling Material : Metal battens on clips
Wind Zone : High
Roof Snow Load : 0.000kPa

Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 600mm

MITek
Job Title:
7921
Sheet:
2
Revision Number:

TYPE A
0.7 kN

2 x 50mm x 3.15 Ø plain steel wire nails driven vertically into stud.



TYPE B CHOOSE ANY OF THE
4.7 kN 3 OPTIONS BELOW

2 x 90mm x 3.15 ϕ plain steel wire
nails driven vertically into stud.



Recommended for internal walk options to avoid filing issues.

OR

CPC80



2 x 90mm x 3.15 Ø plain steel w
nails driven vertically into stud.

1 x LUMBERLOK 6 kN Stud Anchor
(CPC80)

Stud Strap



2 x 90mm x 3,15 Ø plain-steel wire nails driven vertically into stud.

1 x LUMBER
Stud Strap

Refer to:
LUMBERLOK Stud to Top Plate Fixing Selection Chart 09/2011
MiTek Structural Fixings On-Site Guide for Building
Code Compliance
(Alternative to NZS 3604:2011 Table 8.18)

Street Talk : For Building Consent Stud To Top Plate Fixing

Date: 22 Jun 2016	Drawn: Dave Bright
Scale: 1:80	System: MATEk 2020

Job Details:	
Roof Pitch	: 25.00deg
Roof Material	: Metal Tiles
Ceiling Material	: Metal battens on clips
Wind Zone	: High
Roof Snow Load	: 0.000kPa

Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 600mm

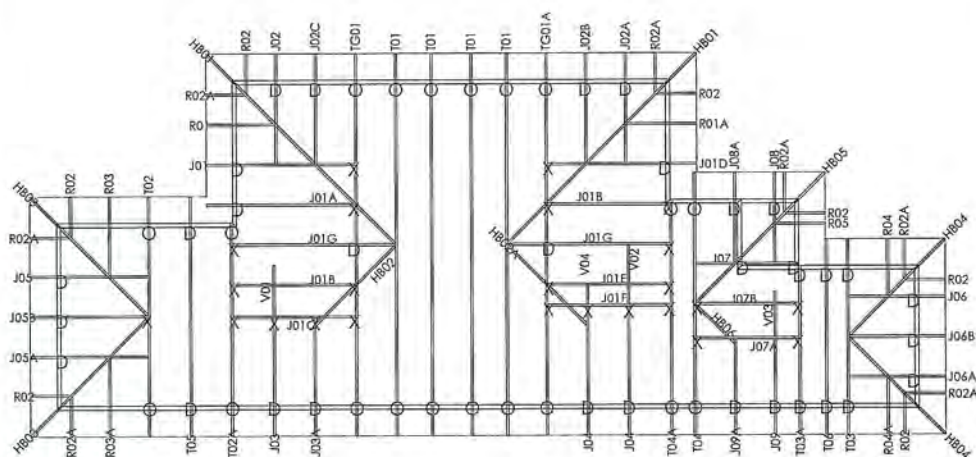


FTMA
NEW ZEALAND

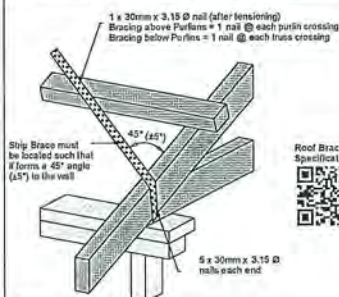
PrimeCad v4.5.5.96



MiTek



LUMBERLOK ROOF BRACING



Refer to:
LUMBERLOK Roof Bracing Specifications 10/2011
MITek Structural Fixings On-Site Guide for Building Code Compliance
(As per NZS 3804:2011)

LUMBERLOK TRUSS FIXINGS

- D - Pair of Wire Dogs and 2 x 90mm 3.15mm skew nails
- X - LUMBERLOK JH47x90 Joist Hanger
- Z - LUMBERLOK JH47x120 Joist Hanger
- P - LUMBERLOK JH47x180 Joist Hanger
- E - LUMBERLOK JH95x165 Joist Hanger
- T - LUMBERLOK CT200 Ceiling Tie
- O - Pair of LUMBERLOK CT200 Ceiling Ties
- H - LUMBERLOK CT400 Cyclone Tie
- B - LUMBERLOK CT600 Cyclone Tie
- M - Pair of LUMBERLOK Multi Grips
- NP - LUMBERLOK Nailon Plate
- N - LUMBERLOK N21 Diagonal Cleat
- V - LUMBERLOK CPC 40 Cleat
- W - Pair of LUMBERLOK CPC 40 Cleats
- K - LUMBERLOK TTP 16kN Truss to Top Plate set
- G - LUMBERLOK TTP 9kN Truss to Top Plate set

Joist Hanger
Installation



CT200 Truss to
Top Plate Fixing
Installation



16kN & 9kN Truss
to Top Plate Fixing
Installation



Notes:
All other areas must have the minimum 2 x 90mm 3.15mm skew nails and
2 x wire dogs for truss to top plate connections

Refer to:
LUMBERLOK Timber Connectors Characteristic Loadings Data Brochure
08/2014

**PARAPARAUMU
PRENAIL LTD**
37 Ihakara Street Paraparaumu
Tel: 04-902-5616 Fax: 04-902-5619

Site Address:
AR Thomson Family Trust
Lot 24, 25 Mahia Lane
Waikanae

Shed Title:
**For Building Consent
Truss Fixings & Roof Bracing**

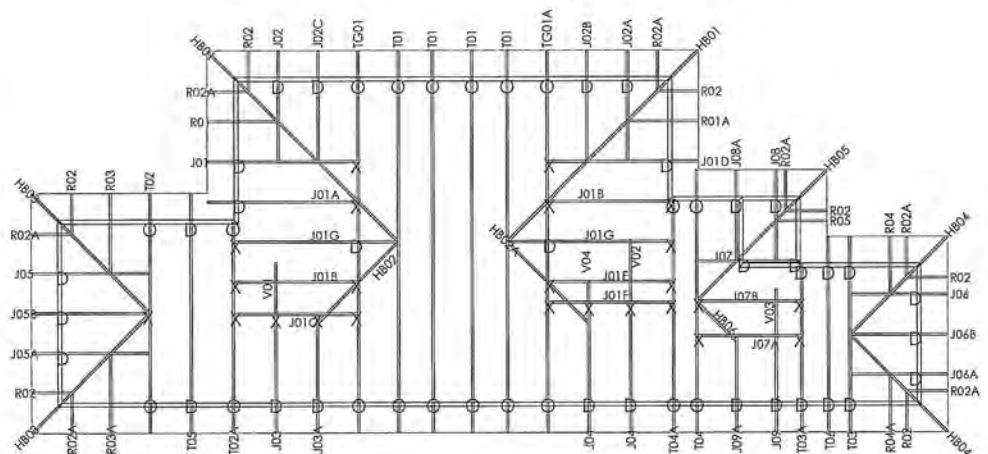
Date: 22 Jun 2019 Drawn: Claire Bright
Scale: 1:50 System: MITek 2019

Job Data:
Roof Pitch : 25.00deg
Roof Material : Metal Tiles
Ceiling Material : Metal battens on clips
Wind Zone : High
Roof Snow Load : 0.000kPa

Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 600mm

**FTMA
NEW ZEALAND**

Project: 7921
Sheet: 4
Revision Number:



Trusses Designed To Accept
Solar Panel Weight

PARAPARAUMU PRENAIL LTD

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

Producer Statement for Manufactured Frames

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

Job Name	Proposed Dwelling
Site Address	Lot 24, 25 Mahia Lane Waikanae
Client	AR Thomson Family Trust
Architect/Draughtsman	Coastal Architecture Ltd
Engineer	

Wind Zone	High
Snow Load Region	
Earthquake Region	

Roof Material	Light
---------------	--------------

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

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

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

NZS 3603: 1993 Timber Design

NZS 3604: 2011 Timber Framed Buildings

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

Designed by Brett Giles

Signed : Bwgiles

Date 22 June 2016



00 14

AR Thomson Family Trust - 25 Mahia Lane, Waikanae**Insulation Calculations**Calculation Method
Zone 2**Reference Building Heat Loss**

Building Thermal Envelope	Area (m2)	R-value	Heat Loss (Area/R-value)
Roof	91	2.9	31.4
Walls (excluding garage)	105	1.9	55.3
Floor (excluding garage)	91	1.3	70.0
Glazing ≤ 30%	23	0.26	88.5
Glazing > 30%	0	0.31	0.0

Total Heat Loss of Reference Building 245.1**Proposed Building Heat Loss**

Building Thermal Envelope	Area (m2)	R-value	Heat Loss (Area/R-value)
Roof - flat ceiling	91	4.67	19.5
Walls - brick (excluding garage)	105	2.88	36.5
Floor - Ribraft	91	2.05	44.4
Glazing ≤ 30%	23	0.26	88.5

Total Heat Loss of Proposed Building 188.8**Summary**

Roof	11.9
Roof - Steel roof with I R4.6 Batts	
Walls	18.8
Walls - Brick with R2.6 Batts	
Floor	25.6
Floor - Ribraft	
Glazing - Double glazing	0

Total Heat Gain 56.3



Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#).

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors ☐

Walls ☒

Roofs ☐

Element Name (optional)	2.88 m ² K/W
Type: Wall: Timber frame with vented cavity	
timber frame with vented cavity	
external surface 0.03	
Cladding : 70mm brick	R-value: 0.06
Air Barrier : Building paper	R-value: 0.01
Timber Frame & Cavity : no framing (for example SIP Panels)	
Wall Frame Area: 0.0%	Cavity Area: 100.0%
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
Framing : R-value: 0.00	Insulation : 2.6
	still Airgap: none R-value: 0.00
Wall Lining : Gypsum plasterboard 10mm	R-value: 0.04
internal surface 0.09	

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction) [i](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets [i](#):

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8



Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#)

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel .

Floors ☐

Walls ☐

Roofs ☒

Element Name (optional)		4.67	m ² K/W
Type:	Roof: Timber framed roof, direct fixed or battened flat ceiling		
Pitched timber framed roof, flat ceiling			
external surface 0.03			
Roofing :	Metal tiles with building paper		
R-value: 0.01			
Insulation :	4.6		
Timber Frame & Cavity :			
90mm rafters or joists @ 900mm, blocking @ 900mm			
Roof Frame Area: 9.8%		Cavity Area: 90.2%	
Roof space (still air) 0.11	Roof space (still air) 0.11		
Framing : R-value: 0.75	Insulation : .11		
Roof Lining :	Gypsum plasterboard 13mm		
R-value: 0.06			
internal surface 0.09			
Recessed downlights			
Ceiling Area [m ²]:	91	Number of downlights:	14
		Clearance from lamp holder side [m]:	.05

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction)

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8



00 15



Building Code Clause(s) B1 & 2

PRODUCER STATEMENT – PS1 – DESIGN

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

ISSUED BY: Hamish Wells Consulting Civil Engineer

TO: Adam Thomson (Design Firm)

KDC (Owner/Developer)

IN RESPECT OF: Non SCD draft of the value of same

AT: 25 Mahia Lane (Address)

LOT DP SO

We have been engaged by the owner/developer referred to above to provide design & supervision services in respect of the requirements of

Clause(s) B1 & 2 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 the Ministry of Business, Innovation & Employment 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 titled 25 Mahia Lane and numbered 1-5

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: 300mm Soils
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☐ CM2 ☒ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) Or ☐ as per agreement with owner/developer (Architectural)

I, Hamish Tennent Wells am: (Name of Design Professional)

☒ CPEng 186323 #

☐ Reg Arch #

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

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

The Design Firm is a member of ACENZ: ☐

SIGNED BY Hamish Wells ON BEHALF OF Hamish Wells (Design Firm)

Date: 1.7.2016 (signature)

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

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

THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, IPENZ AND NZIA

Hamish Wells

Civil Engineer
NIPENZ CPENG 186323

202 Otaki George Road, Otaki
P O Box 188, Otaki 5542

Hamish Wells - 0274 459 757
James Wickett - 0274 349 009
Steve Bright - 022 037 6315

Email: Engineer@stra.co.nz

FOUNDATION CALCULATION SPREADSHEET

Client	Thomson
Site	25 Mahia Lane
Designer	HW
Date	1/07/2016

ROOF

Roof type	Steel Galvanized 0.8mm	0.10	Kpa
Roof Tributary width (Max)	5.00	5.00	m
Roof pitch (Deg)	23.00	23.00	Deg
Roof area	117.00	117.00	
Effective roofing length		5.43	m
Adjusted roof weight		0.54	KN/m run
Roof supporting structure allowance		0.15	
Roof weight line load		1.29	KN/m run
Roof weight total		12.71	KN

UNDER ROOF CEILING

Ceiling Type	Gypsum Plaster, 13mm	0.13	
Ceiling supporting structure Y / N	No	0.00	Timber
Ceiling Tributary width (m)	5.00	5.00	
1st floor ceiling weight		0.65	KN/m run
1st floor ceiling weight total		15.21	KN

1ST FLOOR WALLS

Wall type	None	0.00	
Cladding Type	None	0.00	
Stories Height (m)		0.00	
Total wall length		0.00	
1st floor wall weight per m run on wall		0.00	KN/m run
1st floor wall weight total		0.00	KN

1ST FLOOR

Floor structure type	None	0.00	
Covering one	None	0.00	
Covering two	None	0.00	
Ceiling underside type	None	0.00	
Tributary width		0.00	
First floor area		0.00	
length across		0.00	
Length along		0.00	
1st Floor weight per m run		0.00	KN/m run
1st Floor weight total		0.00	KN

GROUND FLOOR WALLS

Wall type	Timber Stud	0.05	
Cladding Type	Brick 70mm	1.33	
Stories Height (m)	2.70	2.70	
Total external wall length	55.00	55.00	
Ground floor wall weight		3.73	KN/m run
Ground floor wall weight total		204.93	KN

FOUNDATION

Foundation type	Ribraft (85mm)		
Width (m)	0.30	Edge Wt	2.20
Depth (m) (total)	0.31	Slab Wt	3.19
Slab Thickness (m)	0.085		
Building Total Length along	13.0		
Total width across	10.0		
Foundation total slab area	117.0		
Foundation Perimeter length	55.0		
Ground beam length	10.0		
Foundation weight edge (inc 1m of slab)		3.62	KN/m run
Foundation weight Total		509.38	KN

IMPOSED LOADS

Imposed load roof	0.25	Kpa
Imposed load first floor	0.00	Kpa
Imposed load Ground floor	2.00	KPa

OUTPUT Foundation Edge Load

Total un-factored dead load on edge foundation beam	9.29	KN/m run
Total un-factored Imposed loads on edge foundation beam	7.90	KN/m run

Total Building Weight

Total un-factored dead load	742.2	KN
Total Un-factored imposed load	263.3	KN

Wind Snow

Wind zone	High		108.8	KN
Snow Load allow	0.00	Kpa	0.0	KN

NOTES

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BUILDING INPUTS

Client Thomson
Site 25 Mahia Lane

Date 1/07/2016
Designer HW

UNITS LOADS FROM NZS1170.1:2002

ROOF

Roof type	Kpa
0 None	0.00
1 Steel Galvanized 0.8mm	0.10
2 Concrete tiles	0.53
3 Other	10.00

UNDER ROOF

CEILING

Ceiling Types	Kpa
0 None	0.00
1 Fibrous Plaster 10mm	0.09
2 Gypsum Plaster, 13mm	0.13
3 Lime Plaster, 13mm	0.24
4 Other	10.00

WALLS

Wall and Cladding Types	
0 None	0.00
1 Timber Stud	0.05
2 Brick 70mm	1.33
3 20 Series Block	1.82
4 15 Series Block	1.51
5 10 Series Block	1.20
6 Ply (10mm)	0.12
7 Weather Board	0.15
8 Integra	0.45
9 Other	10.00

1ST FLOOR

Floor Types and Coverings	
0 None	0.00
1 Timber	0.12
2 Interspan	
4 Ply / wood / T and G, (20mm)	0.92
5 Carpet	0.10
6 Other	10.00

Timber joist weight calculator

width	45 mm
Depth	190 mm
Spacing	400 mm
	540.00 KG/M^3
	11.54 KG/M^2
	0.11 Kpa

Foundation

	Edge Beam	Slab	Edge weight	Slab Weight
	Width	Depth	Thickness: KN/M run	KN/M^2
0 None	0.00	0	0	0
1 Maxraft (100mm)	0.450	0.225	0.100	2.430 2.400
1 Maxraft (120mm)	0.450	0.225	0.120	2.430 2.880
1 Max-Rib-Raft (100mm slab)	0.450	0.270	0.100	2.916 2.400
2 Ribraft (85mm)	0.300	0.305	0.085	2.196 3.186
2 Ribraft (110mm)	0.300	0.330	0.110	2.376 3.786
3 Slab 85mm	0.300	0.450	0.085	3.240 2.040
4 Slab 100mm	0.300	0.450	0.100	3.240 2.400
5 Slab 125mm	0.300	0.450	0.125	3.240 3.000

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Email Engenr@xtra.co.nz

SLAB CALCULATIONS

Client Thomson
Site 25 Mahia Lane

Date 1/07/2016
Designer HW

Minimum Concrete strength determination WRT NZS 3101 CI 3.4 and 3.10

Site with in 500m of coast? No
Concrete exposed to freeze thawing? No
Minimum Concrete covers above DPM
In non aggressive soils
Exposed to wetting (exterior)

Min Concrete
20 Mpa
25 mm
40 mm
50 mm

Slab Calcs

Input data

Slab width bw 1 M
over all depth d 0.085 M
depth to centriod of tension reo t 0.0425 M
Mesh Type SE62
Concrete strength f'c 20 MPa

As 146.1 MM²
500 MPa

Checks

Minimum area of steel 110.5 MM² PASS
Moment capacity 2.65 KN/m

9.3.9.3.3

Max concrete shear capacity

Max capacity 0.2f'c 4.000 MPa
vc = lesser of 0.2 Sqrt f'c 0.894 MPa
or (0.07+10 Pw) Sqrt f'c 0.390 MPa
where Pw = as/bd

Garage point load shear check

NO GARAGE

Point load KN 13 NZS1170.1 Table 3.1 item F
Bearing area 0.2 by 0.2 Shear area
Applied punching shear
Bearing pressure under point load

0.14
9.49E-02 PASS
94.96 Kpa

EDGE BEAM CALCULATIONS

Input data

beam width bw 0.3 M
over all depth d 0.305 M
depth to centriod of tension reo t 0.255 M
Bottom reinforcement 2-HD12
Concrete strength f'c 25 MPa
Minimum area of steel 118.95 MM²
Moment capacity 25.03 KN/m

Ribraft (85mm)
226 MM²
500 MPa

Checks

Minimum area of steel 118.95 MM² PASS
Moment capacity 25.03 KN/m

9.3.9.3.3

Max concrete shear capacity

Max capacity 0.2f'c 5.000 MPa
vc = lesser of 0.2 Sqrt f'c 1.000 MPa
or (0.07+10 Pw) Sqrt f'c 0.498 MPa
where Pw = as/bd

Applied load

Load from previous sheets factored
Shear stress = V*/ ϕ bd 0.34 N/mm²
Applied bearing pressure 76.67 Kpa
Max spanning capacity of foundation 2.95 M

PASS

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SLAB CALCULATIONS

Client Thomson
Site 25 Mahia Lane

Date 1/07/2016
Designer JDW

Minimum Concrete strength determination WRT NZS 3101 Cl 3.4 and 3.10

Site with in 500m of coast?

No

Concrete exposed to freeze thawing?

No

Minimum Concrete covers above DPM

In non aggressive soils

Exposed to wetting (exterior)

Min Concrete

20 MPa

25 mm

40 mm

50 mm

RIB BEAM CALCULATIONS

Input data	beam width	bw	0.1 M	
	over all depth	d	0.305 M	
	depth to centriod of tension reo	t	0.255 M	
	Bottom reinforcement		1-HD12	
Checks	Concrete strength	f'c	25 MPa	
	Minimum area of steel		39.65 MM^2	
	Moment capacity		12.29 KN/m	
				PASS

9.3.9.3.3 Max concrete shear capacity

Max capacity	0.2f'c	5.000 MPa
vc = lesser of	0.2 Sqrt f'c	1.000 MPa
or	(0.07+10 Pw) Sqrt f'c	0.572 MPa

where Pw = as/bd

Applied load

Point load	13.00 KN
Shear stress = $V^*/\phi bd$	0.57 N/mm^2
	PASS
Max spanning capacity of foundation	2.75 M

Hamish Wells Civil Engineer Building Bracing Calculator

Demand Calculation Sheet

two storey

V1/2016

Job Details

Name Thomson
 Street and Number 25 Mahia Lane
 Lot and DP Number DP 492346
 City/Town/District
 Designer HW
 Company Name Hamish Wells Civil Engineer
 Date 1/07/2016

Select Lining Option

10 or 13 mm GB® Plasterboard

Building Specification

Number of storeys two
 Floor Loading 2kPa
 Foundation Type SLAB ONLY slab

Upper Floor
 Cladding Weight light
 Roof Weight light
 Room in Roof Space no
 Roof Pitch (degrees) 5
 Roof height above eaves (m) 1.0
 Building height to apex (m) 6.7
 Ground to lower floor level (m) 0.3

Lower Floor
 Cladding Weight light
 Roof Weight light
 Room in Roof Space no
 Roof Pitch (degrees) 5
 Roof height above eaves (m) 1.0

Lower to upper floor level (m)
 Stud Height (m)
 Building Length (m)
 Building Width (m)
 Building Plan Area (m2)

Lower Floor
 Lower to upper floor level (m) 3.0
 Stud Height (m) 2.7
 Building Length (m) 13.0
 Building Width (m) 10.0
 Building Plan Area (m2) 117

Building Location

Wind Zone High
 Select by Building Consent Authority Map
 or Preference High
 Wind Region Preference selected
 Lee Zone Preference selected
 Ground Roughness Preference selected
 Site Exposure Preference selected
 Topographic Class Preference selected

Earthquake Zone 3
Soil Type C(shallow)
Annual exceedance probability 1/500 (NZS3604:2011 default)

Bracing Units required for Wind

Demand W (BU)			
		lower	Walls upper
along	slab	491	
across	slab	595	

Bracing Units required for Earthquake

Demand along / across E (BU)		
	Walls	
	lower	upper
slab	654	

#REF!

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Foundation Calculation

Client Thomson
Site 25 Mahia Lane

Date 1/07/2016
Designer HW

Horizontal Loads

Of structure onto slab from bracing sheets (Ex. GIB)

Max Wind Demand	491	Bus	24.6	KN
Max Seismic Demand	0	Bus	0.0	KN

From NZS 1170

Peak ground acceleration a_h = ZRC

Location	Waikanae	
Z =	0.4	Z Ref Table 3.3 NZS 1170:5
R_{SLS} =	0.25	R Ref Table 3.3 NZS1170:0
R_{ULS} =	1	D Ref Table 3.3 NZS 1170:5

Soil type	D&E (deep, very soft)	C =	1.12
Annual Probability	1 in 500	R mod:	1

Ground acceleration for slab

a_h = 0.112 SLS a_h = 0.448 ULS

Sliding Demand Seismic

Foundation Weight, F_w =	509.4	KN
Building weight, B_w =	232.9	KN
Imposed load, IL =	263.3	KN

Sliding resistance

Wind = $(1.2G + \psi_c Q) \mu_s$ where, ψ_c = 0.4
Seismic = $(G + \psi_c Q) \mu_s$ where, μ_s = 0.4 ex McManus paper 6.03.01 max 0.5

Where G = 742.2 from previous calculation
 Q = 263.3 from previous calculation

SLS

Horizontal design load Wind =	17.19	KN
Horizontal sliding design load seismic =	57.1	KN

	Resistance		Demand	
=> Design sliding resistance wind =	398.4	>	17.2	KN PASS
=> Design sliding resistance Seismic =	339.0	>	57.1	KN PASS

ULS

Horizontal design load Wind =	24.6	KN
Horizontal sliding design load seismic =	228.2	KN

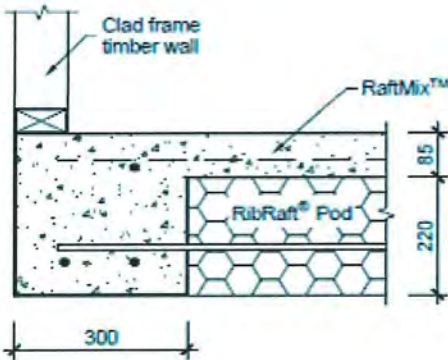
	Resistance		Demand	
=> Design sliding resistance wind =	398.4	>	24.6	KN PASS
=> Design sliding resistance Seismic =	339.0	>	228.2	KN PASS

NOTES

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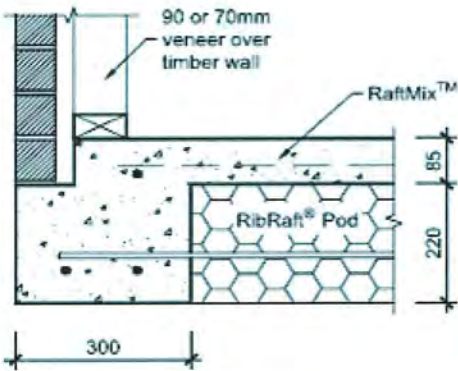
R value for RibRaft

slab area	117.00	R=>	2.0
perimeter	54.80		
a/p	2.14		



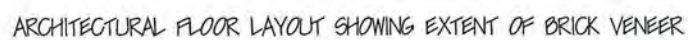
	Floor Area To Perimeter Ratio m ² /m									
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value m ² °C/W	1.48	1.52	1.64	1.75	1.86	1.97	2.07	2.17	2.38	2.57

Figure 8 RibRaft R-Values for 90mm thick walls on the floor edge.

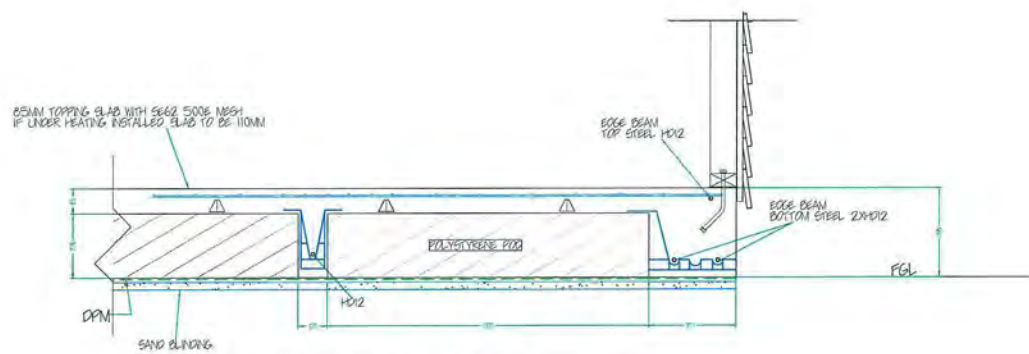


	Floor Area To Perimeter Ratio m ² /m									
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value m ² °C/W	1.54	1.67	1.80	1.93	2.05	2.17	2.28	2.40	2.62	2.84

Figure 9 RibRaft R-Values for 70-90mm thick veneer, cavity, and 90mm walls.



202 OTAN 60842 2040 102 OTAN 0274 455 757		HANISH WELLS CONSULTING CIVIL ENGINEER 166502 166502	
THOMSON 25 MAHIA LANE WAIKANA E - RIGRAFT			
DATE 0	DESCRIPTION 1 LAMBER	DRAIN BY MIN	DRAIN CH D MIN
0	75	0	0
BEST TITLE ARCHITECTS			
BEST TITLE ARCHITECTS			



EDGE BEAM
TOP GRID, 140'

EDGE BEAM
BOTTOM STEEL 2X4012

FGI

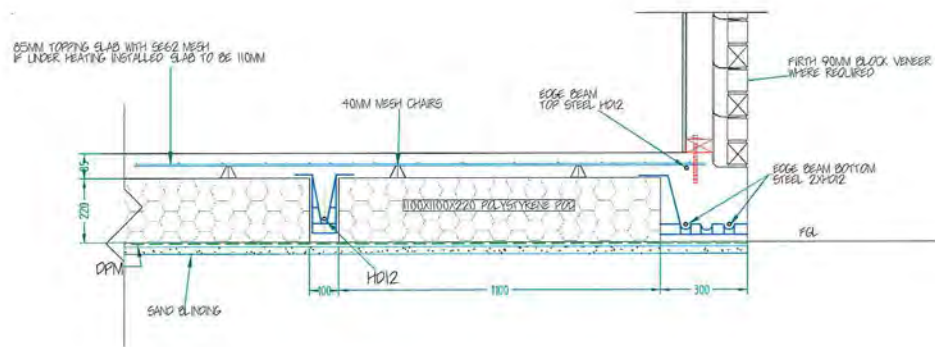
DPN

SAND BLINDING

1012

POLYSTYRENE POK

LIGHT CLADDING DETAIL - WHERE APPLICABLE



40MM NESH CHAIRS

EDGE BEAM
TOP STEEL HD12

EDGE BEAM BOTTOM
STEEL 2XHD12

FGL

DPN

1997

100

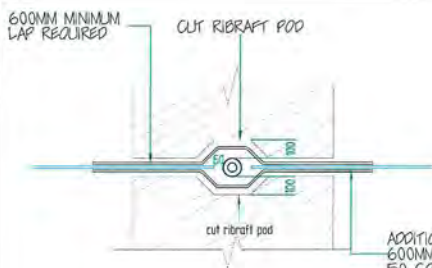
12/2

120

FIRTH 90MM BLACK VENEER
WHERE REQUIRED

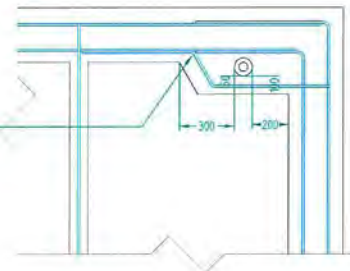
EDGE BEAM BOTTOM
STEEL 2X4012

HEAVY CLADDING DETAIL

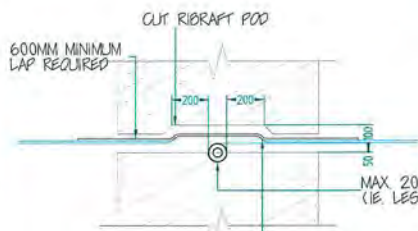


PLAN VIEW WITHIN RIB

ADDITIONAL HD12 CRANKED AROUND PIPE MIN. 600 LAP WITH EDGE BAR



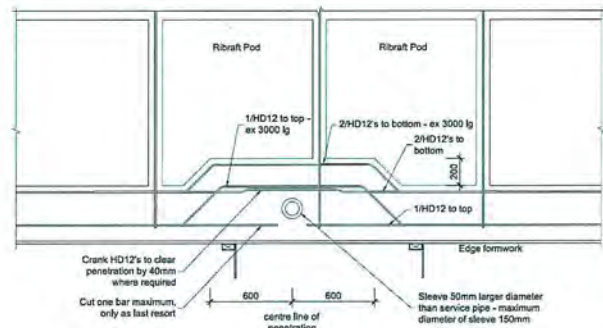
PLAN VIEW AT OPEN CORNER



PLAN VIEW AT RIB EDGE

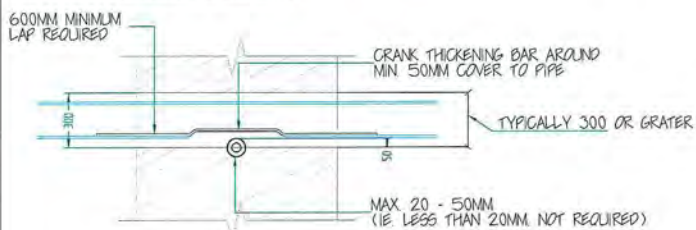
DIAMETER OF SLEEVE CAPPED WITH INTERNAL PIPE COMING UP THROUGH CAP TO ALL SERVICES

ADDITIONAL HD12 CRANK AROUND LAP MIN. 600MM AT BOTH ENDS WITH RIB BARS MIN. 50 COVER TO PIPE



SLEEVED SERVICES

SERVICE TO BE PLACED CENTRALLY IN DUCTS WITH ID 50MM LARGER THAN SERVICE OR DUCTS TO BE FIRMLY EMBEDDED IN SAND AND SECURELY FIXED AND TAPED TO PREVENT DISPLACEMENT DURING CONCRETING.

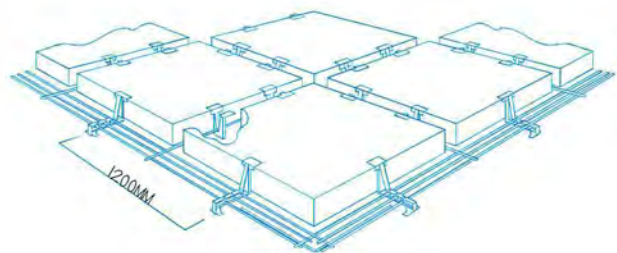
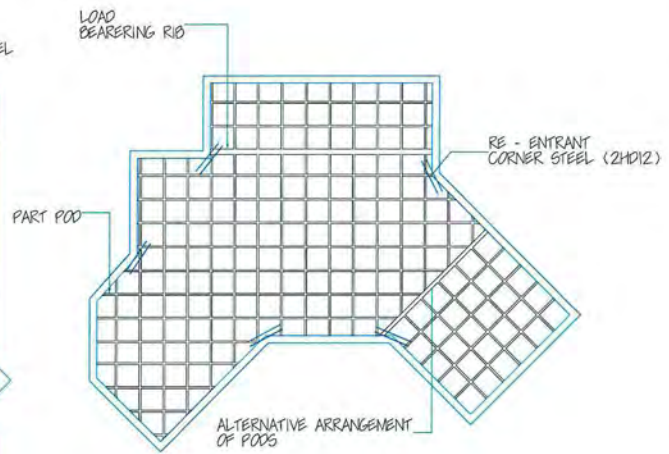
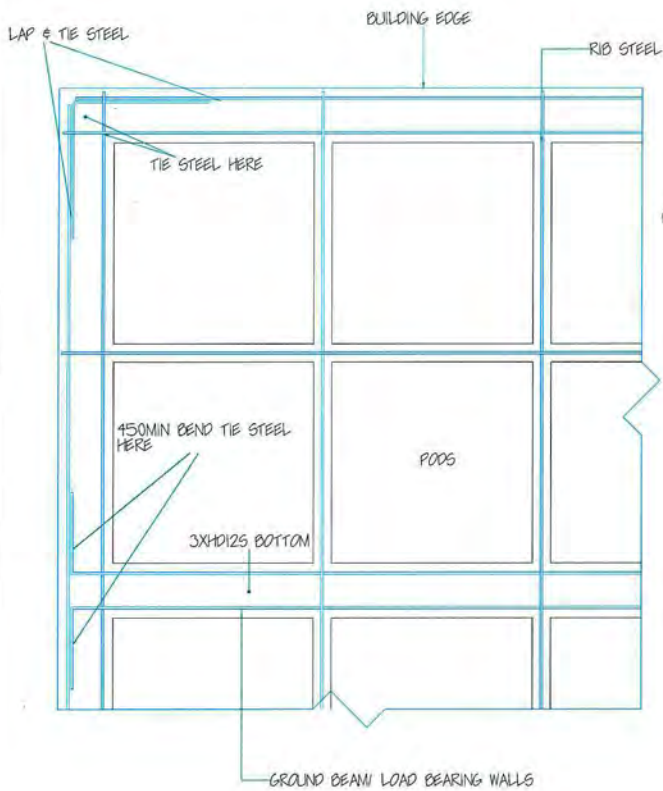


PLAN VIEW AT THICKENING EDGE

HANIGH WELLS
202 DRAIN FORCE
1000 1000 07/10
15552 NZ
0274 459 757
CORRELATING CIVIL ENGINEER
ENGINEERING • 155523
eng@hanigh.co.nz

THOMSON 25 NAHIA LANE
WAIKANA - RIBRAFT

PROJ. NO.	155523
DATE	15/05/23
BY	HW
CHECKED BY	HW
SCALE	1:10
SHEET NO.	155523
SHEET TOTAL	155523
DATE	15/05/23



GENERIC RIB RAFT DETAILS

HAMISH WELLS
288 OTAHU DRIVE
1000 1000 DRIVE
05502 NZ
CORRELING CIVIL ENGINEER 0274 757 757
engineer@hmc.co.nz
MAYNIE CORP. # 156323

THOMSON 25 MAHIA LANE
WAIKANA - RIBRAFT

PROJ. NO.	1000 1000
DATE	01/01/2020
BY	HW
CHECKED BY	HW
DATE	01/01/2020
SCALE	1:100
SHEET TITLE	DETAILS
SHEET NO.	5
TOTAL SHEETS	5

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

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING

Street address: 25 Mahina Lane
 Suburb: Waitanui
 Town/City: Waitanui Postcode:

THE OWNER

Name(s): Adam Thomson
 Mailing address: use email
 Suburb: PO Box/Private Bag:
 Town/City: Postcode:
 Phone number: 0274279820 Email address: adam.thomson@

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies (✓)

☐	sole designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design myself – no other person will be providing any additional memoranda for the project
☐	lead designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and no other person will be providing any additional memoranda for the project
☐	lead designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the other designers will provide their own memoranda relating to their specific RBW design
☒	specialist designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

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

I, Hamish Tennent Wells carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is restricted building work	Description	Carried out/ supervised	Reference to plans and specifications
Tick (✓) if included Cross (X) if excluded	[If appropriate, provide details of the restricted building work]	[Specify whether you carried out this design work or supervised someone else carrying]	[If appropriate, specify references]

		out this design work]	
Primary structure			
All RBW Design work relating to B1	☒	☒ Carried out ☐ Supervised	
Foundations and subfloor framing	☒	☒ Carried out ☐ Supervised	
Walls	☐	☐ Carried out ☐ Supervised	
Roof	☐	☐ Carried out ☐ Supervised	
Columns and beams	☐	☐ Carried out ☐ Supervised	
Bracing	☐	☐ Carried out ☐ Supervised	
Other	☐	☐ Carried out ☐ Supervised	

EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2

All RBW design work relating to E2	☐	☐ Carried out ☐ Supervised	
Damp proofing	☐	☐ Carried out ☐ Supervised	
Roof cladding or roof cladding system	☐	☐ Carried out ☐ Supervised	
Ventilation system (for example, subfloor or cavity)	☐	☐ Carried out ☐ Supervised	
Wall cladding or wall cladding system	☐	☐ Carried out ☐ Supervised	
Waterproofing	☐	☐ Carried out ☐ Supervised	
Other	☐	☐ Carried out ☐ Supervised	

FIRE SAFETY SYSTEMS: C1 - C6

Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or	☐	☐ Carried out ☐ Supervised	
--	--------------------------	---	--

other

Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.

Note: continue on another page if necessary.

WAIVERS AND MODIFICATIONS

Waivers or modifications of the building code are required () Yes ☒ No

If Yes, provide details of the waivers or modifications below:

Clause	Waiver/modification required
<i>[List relevant clause numbers of building code]</i>	<i>[Specify nature of waiver or modification of building code]</i>

Note: continue on another page if necessary.

ISSUED BY

Name: Hamish Tennent Wells	LBP or Registration number: 186323
The practitioner is a: () Design LBP () Registered architect (✓) Chartered professional engineer	
Design Entity or Company (optional): Hamish Wells Civil Engineer	
Mailing address (if different from below): P O Box 188 Otaki 5512	
Street address / Registered office: 202 Otaki Gorge Road Otaki 5582	
Suburb: NA	Town/City: Otaki
PO Box/Private Bag: 188	Postcode: 5512
Phone number: 0274 459 757	Mobile: 0274 459 757
After Hours: 0274 549 757	Fax: none
Email address: engenr@xtra.co.nz	Website: none

DECLARATION

I Hamish Tennent Wells [name of practitioner], LBP,

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

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

Signature:

H. S. Wells

Date:

1.7.2016



00 16

GIB EzyBrace® 2011 Software



Demand Calculation Sheet

single storey

V06a/14

Job Details

Name AR Thomson Family Trust
Street and Number 25 Mahia Lane
Lot and DP Number Lot 24
City/Town/District Waikanae
Designer BF
Company Name Coastal Architecture Ltd
Date 6/07/2016



Select Lining Option

10 or 13 mm GIB® Plasterboard

Building Specification

Number of storeys single
Floor Loading 2kPa
Foundation Type slab

Cladding Weight heavy
Roof Weight light
Room in Roof Space no
Roof Pitch (degrees) 25
Roof height above eaves (m) 2.2
Building height to apex (m) 4.8
Ground to lower floor level (m) 0.3

Stud Height (m) 2.4
Building Length (m) 19.5
Building Width (m) 7.4
Building Plan Area (m2) 110

Complete Single Floor Column only

--

Building Location

Wind Zone High
Select by Building Consent Authority Map
or Preference High
Wind Region Preference selected
Lee Zone Preference selected
Ground Roughness Preference selected
Site Exposure Preference selected
Topographic Class Preference selected

Earthquake Zone 3
Soil Type D&E (deep to very soft)
Annual exceedance probability 1/500 (NZS3604:2011 default)

Bracing Units required for Wind

Demand W (BU)		Walls single
along	slab	372
across	slab	922

Bracing Units required for Earthquake

Demand along / across E (BU)	
	Walls
	single
slab	933

GIB EzyBrace® 2011 Software



SINGLE OR UPPER STOREY WALLS ALONG

V06a/14

[illegible]

					Wind	Earthq.
Totals Achieved	W	330%	EQ	138%	1227	1289
<i>Concrete Slab</i>					<i>OK</i>	<i>OK</i>
Totals Required (from Demand)					372	933

GIB EzyBrace® 2011 Software



SINGLE OR UPPER STOREY WALLS ACROSS

V06a/14

[illegible]

						Wind	Earthq.
Totals Achieved	W	117%	EQ	117%	1078	1088	
Concrete Slab						OK	OK
Totals Required (from Demand)						922	933

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SPECIFICATION

OF WORK TO BE DONE & MATERIALS TO BE USED IN CARRYING
OUT THE WORKS SHOWN ON THE ACCOMPANYING DRAWINGS

FOR

AR THOMSON FAMILY TRUST

LOT 24, 25 MAHIA LANE, WAIKANAE

JULY 2016

1201 PRELIMINARIES AND GENERAL

1. THE PROJECT

1.1 THE WORKS

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

1.2 SITE

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

2. DOCUMENTATION

Contract related issues

2.5 INCONSISTENCIES IN CONTRACT DOCUMENTS

For the method of handling ambiguities, they will be resolved as follows:

- The drawings take precedence over specifications.
- Figured dimensions on drawings take precedence over scaled dimensions.
- Drawings to a larger scale take precedence over drawings to a smaller scale.
- Drawings showing particular parts of the contract works take precedence over drawings for more general purposes.

Specification structure

2.6 SPECIFICATION STRUCTURE

The designation and numbering of individual specification sections follows the CBI (Co-ordinated Building Information) system for the co-ordination and classification of construction information. Sections are for reference and convenience only and do not profess to define subcontracts.

Read all sections together and read 1201 PRELIMINARIES AND GENERAL with all other sections.

2.7 INTERPRETATIONS

Required:	Required by the documents, or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Approval:	Approval in writing.
Direction:	Direction in writing.
Provide and fix:	"Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.
Notified:	Notified in writing

2.8 ABBREVIATIONS

The following abbreviations are used throughout the specification sections:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BRANZ	Building Research Association of New Zealand
BS	British Standard
ECP	Electrical Code of Practice
FTMA	Frame and Truss Manufacturers Association of New Zealand
HERA	Heavy Engineering Research Association
IEC	International Electrotechnical Commission
MPNZA	Master Painters New Zealand Association Inc
NZBC	New Zealand Building Code
	AS Acceptable solution
	VM Verification method
NZHB	New Zealand Hand Book

NZMRM	New Zealand Metal Roofing Manufacturers Inc
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
OSH	Department of Labour – Occupational Safety and Health
WANZ	Window Association of New Zealand Inc

2.9 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

2.10 PERSONNEL

Owner: The person defined as “owner” in the New Zealand Building Code.
Contractor: The person contracted by the owner to carry out the contract.

2.11 PROPOSED SUBSTITUTIONS

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

2.12 NOTIFICATION OF SUBSTITUTIONS

Notify any proposed substitution of specified products. Notification to include but not be limited to:

- Product identification
- Detailed comparison between the properties and characteristics of the specified product and the proposed substitution
- Statement of NZBC compliance, including durability
- Manufacturer's name, address, telephone and facsimile numbers, website and email address
- All current manufacturer's literature on the product
- Accreditations and appraisals available
- Reference standards
- Product limitations
- Samples
- List of existing installations in the vicinity of the project

and

- Any changes required to the programme including any extension of time required
- Allowance (time and cost) for re-design and documentation (if applicable)
- Allowance (time and cost) for obtaining an amendment to the Building Consent (if applicable)
- An assessment of any change in cost associated with the proposed substitution

2.13 APPROVAL OF SUBSTITUTIONS

Approval of substitutions to be in writing.

2.14 MANUFACTURERS AND SUPPLIERS REQUIREMENTS

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

2.15 MANUFACTURERS AND SUPPLIERS DOCUMENTS

Refer to individual sections for a detailed list of manufacturers and suppliers documents relating to work on this project. Retain current copies of the documents listed, and other relevant manufacturers' technical literature, on site. Make this information available to all personnel and ensure they are familiar with requirements for handling, storing, preparing for, fixing and finishing products before commencing work.

2.16 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various New Zealand Building Code acceptable solutions (NZBC __/AS_) and verification methods (NZBC __/VM_) for criteria and/or methods used to establish compliance with the Building Act 2004.

Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards (AS, BS) and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications, and to ensure that all those engaged in construction of the works to be similarly informed.

Documents cited both directly and within other cited publications are deemed to form part of this specification.

2.17 PRECEDENCE OF REFERENCED DOCUMENTS

This specification takes precedence in the event of it being at variance with and requiring a higher standard than, the cited documents.

Resolution of any variance must be confirmed in writing and where building consent approval is affected, the change notified to the Building Consent Authority prior to any further work proceeding.

2.18 DOCUMENTS REFERRED TO

Documents referred to in this preliminaries and general section are:

Building Act 2004
Health and Safety in Employment Act 1992
Smoke Free Environments Act 1990

2.19 BUILDING CONSENT COMPLIANCE

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

2.20 STATUTORY OBLIGATIONS

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

2.21 BUILDING CONSENT

Obtain the building consent from the owner and keep them on site. Liaise with the Building Consent Authority for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

2.22 PRODUCER STATEMENTS

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

2.23 SHOP DRAWINGS

Where specified in the work sections, provide shop drawings for review. Proposed shop drawings to be submitted in due time to ensure conformance with the contract programme. Allow 10 working days for review.

Shop drawing review indicates only that the supplied interpretation of the design concept has been reviewed without the need for further modification, other than the corrections indicated by the reviewer. Review of shop drawings does not relieve the contractor of responsibility for the correctness of the shop drawings, site dimensions, the overall

design, or for ensuring the work is performed in compliance with the contract documents. Nor does it remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Neither can the review be construed as authorising departures from the contract documents.

2.24 MASTER BUILD SERVICES LTD GUARANTEE

Provide a Master Build New Homes or Alterations & Additions Guarantee including all costs in the contract price and covering loss of deposit, completion, inspection, execution and material defects under the terms of the guarantee offered by Master Build Services Ltd. Execute with all three signatories; owner, registered master builder and Master Build Services Ltd, before commencing the contract works.

2.25 CBANZ GUARANTEE

Provide a Certified Builders HomeFirst Builders Guarantee. Complete the guarantee application. Before commencing the contract works, execute with the signatures of the owner and the Certified Builder, and forward to CBA Guarantee Ltd along with a copy of the Building Consent, payment schedule and the fee payable.

2.26 WARRANTIES

Provide executed warranties in favour of the owner in respect of, but not limited to, materials, elements, service, application, installation and finishing called for in that specified section of work. The terms and conditions of the warranty in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability under the terms of the warranty called for in that specified section of work.

- Conform to the warranty agreement form included in this specification.
- Commence all warranties from the date of practical completion of the contract works.
- Maintain their effectiveness for the times stated.
- Deliver executed warranties to the owner at practical completion.

2.27 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY

Provide a warranty for a minimum period of 2 years, covering the weathertightness of the complete building envelope and the watertightness of all liquid supply and disposal systems and fittings. This general warranty is in addition to any specific warranties required.

2.28 TRADE WARRANTIES

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

2.29 FORM OF WARRANTY

Conform with the form of warranty agreement included in this specification. Commence all warranties from the date of practical completion. Maintain their effectiveness for the times stated.

2.31 SERVICES PLANS

Prepare services plans setting out the actual positions as constructed of all sewer, stormwater, sanitary plumbing, piped and ducted services, electrical and mechanical services. Except where specified otherwise, as-built plans may be marked up on copies of relevant project drawings. Provide 1 set of services plans to the owner. Provide services plans required by the building consent to the Building Consent Authority.

2.32 OPERATING AND MAINTENANCE MANUALS

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3. ESTABLISHMENT

3.1 **APPROVALS**

Attend on Building Consent Authority officers, statutory and network utility inspectors, as necessary to obtain approvals (in addition to building consent approval) for and the satisfactory completion of the works.

4. **TEMPORARY WORKS AND SERVICES**

4.1 **SITE TELEPHONE AND FACSIMILE**

Provide on site telephone and facsimile facilities for the duration of the works.

4.2 **SITE ACCOMMODATION**

Provide, erect and maintain scaffolding, sheds, toilets, water, power, hoardings and access to the site. Provide cartage, craneage, plant hire and storage necessary for carrying out the works. Provide temporary works and services necessary for the completion of the works. Pay fees and remove temporary works and services on completion of the works.

4.4 **PROVIDE SEDIMENT AND SILT RUN-OFF PROTECTION**

Provide appropriate measures to prevent or minimise sediment generation and silt run off. Comply with territorial and other authority requirements relating to carrying out earthworks.

Prevent silt run off by:

- exposing only as much ground as required at any time
- providing run off channels, contour drains or earth bunds to divert clean water away from the site on to stable sealed or grassed ground
- capture silt by the use of silt fences, vegetation buffer strips, sediment ponds or earth bunds.

Provide sediment control by:

- earth bunds constructed across the slope to control and detain run off
- silt fences constructed using filter fabric stretched between posts at a maximum of 1 metre spacing

Pump water from trenches and other areas of the site using methods to prevent sediment entering any drain or watercourse. Filter dirty water before discharging into drainage system.

4.6 **STORAGE**

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

5. **PROJECT MANAGEMENT**

5.1 **SITE MEETINGS**

Hold site meetings when required by the owner. The contractor's representative and site supervisor to attend such meetings. Inform subcontractors and others when their presence is required.

Meetings will normally be held: Fortnightly

5.3 **PROGRAMME**

Provide within 2 weeks of award of the contract a programme for the contract works, including the work of separate contractors being carried out concurrent with this contract. Form of programme: A dated bar chart, identifying the contract work's critical path and all key dates for the provision of labour, materials and elements. Review and update the programme monthly. Supply a copy of the programme and all updates to the owner.

- 5.4 **WORKING HOURS**
Work on site is not restricted. Comply with territorial authority consent conditions and noise and nuisance controls.
- 5.5 **WORKING HOURS RESTRICTIONS**
Work on site is restricted to ~.
- Work outside these hours may be permitted, but 24 hours notice is required in writing to the owner before proceeding. Obtain any necessary permits and permission for such work.
- 5.6 **HEALTH AND SAFETY**
Refer to the requirements of the Health and Safety in Employment Act 1992. Comply with all relevant New Zealand safety legislation.
- Take all practical steps to make the site and the contract works safe and to provide and maintain a safe working environment. Ensure that all those working on or visiting the site are aware of the rules governing site safety, are properly supervised and are not unnecessarily exposed to hazards.
- Identify any significant hazards.
- Maintain proper procedures for dealing with any emergencies that may arise. Immediately investigate accidents, identify their cause and maintain a register of accidents and serious harm. Provide a copy of any report which the contractor is required to make to a public authority on any accident which is associated with carrying out the contract works and results in serious harm to any person.
- 5.7 **SMOKING**
Do not smoke on site except in a designated location in accordance with the Smoke Free Environments Act 1990. Location determined by the contractor, with the approval of the owner.
- 5.8 **RESTRICTIONS**
Do not:
- light rubbish fires on the site
 - bring dogs on to or near the site
 - bring radios/audio players on to the site.
6. **CONSTRUCTION**
- 6.1 **QUALITY ASSURANCE**
Carry out and record regular checks of material quality and accuracy, including:
- Concrete quality and finishes (refer to 3101 CONCRETE).
 - Dimensional accuracy of structural columns (following completion of foundations).
 - All perimeter columns and frames for plumb.
 - Levels of all floors relative to the site datum.
 - Framing timber moisture content (refer to 3801 CARPENTRY).
- Where any material, quality or dimension exceeds specified or required tolerances, obtain written confirmation of remedial action from the owner. When building consent approval is affected, confirm with the Building Consent Authority.
- Provide all materials, equipment, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met.
- 6.2 **DAMAGE AND NUISANCE**
Take all reasonable precautions to prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and all other causes resulting from the contract works. Comply with the requirements of the territorial authority and relevant Acts and Standards.

- 6.3 **SET-OUT AND DATUM**
Set out the works to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.
- 6.4 **SET-OUT BY LICENSED CADASTRAL SURVEYOR**
Before commencing construction provide the owner with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site in accordance with the plans.
- 6.5 **CERTIFY HEIGHT TO BOUNDARY BY LICENSED CADASTRAL SURVEYOR**
When the building has reached critical framing stage(s) for height to boundary, a licensed cadastral surveyor is to check that the height to boundary complies with the approved documents. Provide the owner with a certificate confirming the height to boundary complies with the approved documents.
- 6.6 **OWNER TO SIGHT SET-OUT**
While it remains the contractor's responsibility to set out the works accurately and correctly and to confirm any changes from the approved location with the Building Consent Authority, obtain the owner's written confirmation that they have sighted the proposed building location, site datum and profiles, before commencing any further work.
- 6.7 **EXECUTION**
Conform to the requirements of this specification. Ensure work is level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.
- 6.8 **MATERIALS AND PRODUCTS**
Use only new materials and products, unless stated otherwise, of the specified quality and complying with all cited documents.
- Substitution of alternative materials, products, plant or equipment from those specified must first be confirmed by the owner in writing. If the building consent approval is affected, obtain the approval of the Building Consent Authority for the substitution.
- 6.9 **COMPATIBILITY**
Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.
- 6.10 **COMPLETE ALL SERVICES**
Ensure building services are operational, with temporary labelling removed, required labelling fixed and service instructions provided.
- 6.11 **CLEAR AWAY**
Regularly clear away trade debris, unused materials and elements from the site. On completion of the works leave the building clean and ready for occupancy, with all services operating and mechanical parts in good working order. Remove temporary markings, coverings and protective wrappings. Ensure that any maintenance requirements listed on temporary markings are conveyed to the owner.
- 6.12 **CLEAN**
Clean and wash down external surfaces to remove dirt, debris and marking. Clean interior surfaces including cabinetwork, joinery, sanitary and hardware items. Vacuum or polish floor surfaces. Clean and polish glass, both sides.
- 6.13 **SPARES**
Collect, protect and store safely spare materials required under the contract. Give the owner an inventory of spares.

2201 PREPARATION AND GROUNDWORK

1. GENERAL

This section deals with the clearance, excavation and backfilling of the site area in preparation for footings and floor slabs, and backfilling behind basement retaining walls.

1.1 DOCUMENTS

Documents referred to in this section are:

NZS 3604	Timber framed buildings
OSH	Approved code of practice for safety in excavation and shafts for foundations

1.3 SITE SAFETY

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

2. PRODUCTS

2.1 EXCAVATED FILL

Material from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

2.4 SAND FILL

Clean sand of such grading in particle size to achieve mechanical compaction to 90% maximum density.

2.5 HARD FILL

Scoria or crushed rock to GAP (General All Passing) 40 grading.

2.8 FREE-DRAINING AGGREGATE

Scoria or crushed gravel graded 50 to 14 clean.

3. EXECUTION

3.1 EXCAVATION GENERALLY

Carry out excavation to the guidelines set by the OSH publication: Approved code of practice for safety in excavation and shafts for foundations.

3.2 BURNING OF MATERIALS

Burning of materials is not permitted on site.

3.3 PROTECT EXISTING WORK

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

3.4 PROTECT TREES

Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained. Ensure existing levels are undisturbed beneath the dripline of retained trees.

3.5 SURFACE PREPARATION

Comply with NZS 3604, section 3.5, Site preparation. Remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area to be built on.

3.6 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove old foundations, slabs, drainage pipes, manholes, tanks, cables and redundant services. Report for instructions when any unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to territorial authority approval.

- 3.7 STOCKPILE TOPSOIL
Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.
- 3.9 GENERAL EXCAVATION
Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.
- 3.11 FOUNDATION EXCAVATION
Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and solid, stepped as detailed and clean and free of water.
- 3.12 INADEQUATE BEARING
If bearing is inadequate then excavate further and backfill with material as follows. Confirm any changes with the territorial authority.
Below slabs on grade: Hardfill compacted in 150 mm layers
Below footings: 10 MPa concrete
Service trenches: Hardfill compacted in 150 mm layers

If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.
- 3.13 GRANULAR BASE FOR SLABS
To conform with NZS 3604, section 7.5.3, Granular base. Consolidate with a vibrating roller. Blind the surface with coarse sand or sand/cement and roll ready to receive a damp-proof membrane.
- 3.14 GENERAL BACKFILLING
Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150 mm layers with the last 200 mm in clean topsoil, lightly compacted and neatly finished off.
- 3.15 RETAINING WALLS
Backfill behind retaining walls with free draining granular material and compact in 200 mm layers. Ensure any tanking membranes, drain coil and damp-proofing are not damaged.
- 3.16 SURPLUS MATERIAL
Remove surplus and excavated material from the site.

2301 FOUNDATIONS

1. GENERAL

This section deals with all foundation and piling work, with the exception of in situ concrete work and concrete masonry.

1.1 RELATED SECTIONS

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

Refer to CONCRETE MASONRY for concrete block foundation walls.

1.2 DOCUMENTS

Documents referred to in this section are:

NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3605	Timber piles and poles for use in buildings
NZS 3631	New Zealand national timber grading rules

2. PRODUCTS

2.1 CONCRETE PILES IN SITU

To NZS 3604 for concrete, reinforcement, footing and type.

2.6 NAILS

Steel, stainless steel and galvanized steel of pattern to NZS 3604, table 6.8 and section 4 Durability.

2.7 BOLTS AND SCREWS

Steel, stainless steel and galvanized steel to NZS 3604.

2.8 NAIL PLATES

Stainless steel and galvanized steel toothed or nailed steel plates to the plate manufacturer's design for the particular locations shown on the drawings.

2.9 CONCRETE

For piles and footings, 17.5 MPa prescribed mix concrete to NZS 3104, section 3, Provisions for prescribed mix concrete, and NZS 3604, section 6.4.5, Pile footings.

3. EXECUTION

3.1 FOUNDATIONS GENERALLY

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

3101 CONCRETE

1. GENERAL

This section deals with formwork, reinforcement, concrete mixes and the placing of concrete.

1.1 DOCUMENTS

Documents referred to in this section are:

AS 1366.3	Rigid cellular plastics for thermal insulation - Rigid cellular polystyrene – Moulded (RC/PS – M)
NZS 3101.1	Concrete structures standard
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber framed buildings
AS/NZS 4671	Steel reinforcing materials

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

2. PRODUCTS

2.1 NORMAL CONCRETE

Normal concrete 25MPa grade, maximum aggregate size 19 mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

2.4 REINFORCEMENT

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

2.5 TYING WIRE

Mild drawn steel wire not less than 1.2 mm diameter.

2.6 SPACERS AND CHAIRS

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

2.7 DAMP-PROOF MEMBRANE

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

2.8 CELLULAR POLYSTYRENE INSULATION

Proprietary expanded polystyrene (EPS) foam board to AS 1366.3.

3. EXECUTION

3.1 HANDLE AND STORE

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

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

3.2 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality. Ensure timber or plywood used for formwork is non-staining to the set concrete.

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

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

Unless detailed otherwise, set up soffit boxing for beams and slabs to provide a camber when forms are stripped, of 3 mm rise for every 3 metres of total clear span.

3.3 INSTALL DAMP-PROOF MEMBRANE

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

3.5 CUT AND BEND REINFORCEMENT

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109: 3.3 Hooks and bends. Minimum radii of reinforcement bends to NZS 3109: table 3.1, Minimum radii of reinforcement bends. Do not rebend bars. Where rebending is necessary, use a purpose built tool, proper preparation and preheating.

3.6 ADJUSTMENTS

Use a purpose built tool for on site bending and to deal with minor adjustments to steel reinforcement.

3.7 TOLERANCES, BENDING

To NZS 3109: clause 3.9, Tolerances for reinforcement.

3.8 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums laid down in NZS 3109: clause 3.6, Spacing of reinforcement.

3.9 LAPPED SPLICES

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

3.10 REINFORCEMENT COVER

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

3.11 CASTING IN

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

Do not use grounds exceeding 100 mm in length. Location and form of conduits to be approved in writing by the owner. Minimum cover 40 mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25 mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar.

Form all pockets, chases and flashing grooves as required by all trades and as shown on the drawings.

Wrap all pipes embedded in concrete with tape to break the bond and to accommodate expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

- 3.12 **CONSTRUCTION JOINTS**
Locate and construct as shown on the drawings or in accordance with NZS 3109: clause 5.6, 5.6.3 Type B.
- 3.13 **PRE-PLACEMENT INSPECTION**
Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the Building Consent Authority.
- 3.14 **SURFACE FINISHES**
To NZS 3114: clause 105, Specification of finishes, as scheduled or as denoted on the drawings.
- 3.15 **EXPOSED CONCRETE**
Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Unless detailed, obtain written confirmation of the type and pattern of all joints.
- 3.16 **CONCRETE SURFACE TOLERANCES**
To NZS 3114: clause 104, Surface tolerances and clause 105, Specification of finishes, with the suggested tolerances becoming the required tolerances.
- 3.17 **PUMPING CONCRETE**
Set up and supervise pump operation, placing and compaction of the mix to NZS 3109: clause 7.4, Handling and placing and clause 7.6, Compaction Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.
- 3.18 **COMPACTION**
Use power operated vibrators on foundations, vertical constructions and beams.
- 3.19 **RESIDENTIAL FLOOR SLABS**
Construct to NZS 3604: clause 7.5, Concrete slab-on-ground floors in timber buildings. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3 mm gradual deviation over a 3 metre straight-edge, to NZS 3109: clause 104, Surface tolerances.
- 3.20 **SAW CUTS**
Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring. Where saw cuts are made, cut out 100 mm of every second wire of the mesh for a length of 50 mm each side of the saw cut position. Saw cuts: $\frac{1}{3}$ slab depth or 30 mm minimum.
- 3.21 **SURFACE DEFECTS**
Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with 1:2 mortar or plaster, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.
- 3.22 **CURING OF CONCRETE**
Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.
- 3.23 **STRIKE FORMWORK**
Strike formwork without damaging or overloading structure. Do not remove formwork before the following minimum periods:
- | | |
|-----------|---|
| 12 hours: | Sides of beams, walls and columns |
| 4 days: | Slabs in beam and slab construction
(leave props under slab spans over 2 metres) |
| 10 days: | Props from under slab spans over 2 metres |
| 18 days: | Beams, soffits and slab spans over 5 metres |

- 3.24 CLEAN OUT
Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.
- 3.25 REMOVE
Remove all unused materials and all concrete and reinforcing debris from the site.

3301 BRICKWORK

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC	B1/AS1	Structure – general, 2.0 Masonry
NZBC	B1/AS3	Small chimneys

AS/NZS 2699 Built in components for masonry construction
2699.1 Wall ties

2699.3 Lintels and shelf angles (durability requirements)

NZS 3103 Sands for mortars and plasters

NZS 3117 Pigments for Portland cement and Portland cement products

NZS 3604 Timber framed buildings

NZS 4210 Masonry construction: materials and workmanship

AS/NZS 4455 Masonry units and segmental pavers

NZS 7421 Installation of solid fuel burning domestic appliances

BRANZ Bulletin 436: Masonry veneer construction

1.2 QUALIFICATIONS

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

2. PRODUCTS

2.1 BRICKS

To AS/NZS 4455.

2.2 SILL TILES

Unglazed terracotta.

2.3 VERMIN STOP

Galvanised steel wire netting strip with reinforced edges and galvanised staples for fixing.

2.4 DAMPPROOF MEMBRANE

Heavy kraft strip laminates saturated and coated with bitumen, or bituminous brush-applied liquid membrane to suit location and detail.

2.5 VENEER TIES

To AS/NZS 2669.1, as modified by NZBC acceptable solution B1/AS1.

2.6 SAND FOR MORTAR

Sand to comply with NZS 3103. Chloride levels to not exceed 0.04% by dry weight of sand.

2.7 MORTAR

Composed of Portland cement, sand and water with an admixture to the provisions of NZS 4210, clause 2.2. Obtain written approval of admixture to be used. Also obtain written approval if intending to use cement mortar as a damp proof course and where, or if intending to use hydrated lime in the mortar.

2.8 MORTAR COLOUR

Add mineral oxide pigment conforming to NZS 3117 and to requirements of NZS 4210, clause 2.2.2.2(f).

- 2.9 WATER
Clean, fresh and free from excess alkali, salt, silt and organic materials. Water from a local authority water supply is acceptable.
3. EXECUTION
- 3.1 VENEER WORK
To NZS 3604, section 11.7, NZS 4210, section 2.9 and BRANZ Bulletin 436.
- 3.2 DETAILING
Where not otherwise detailed on the drawings or covered in the documents listed, carry out veneer construction to the details required by BRANZ Bulletin 436.
- 3.3 STORAGE
Store bricks and other materials clear of the ground, under cover and well ventilated until placed in the work.
- 3.4 LAY BRICKS
To NZS 4210. Ensure bricks are dry when laid. Use bricks equally off all pallets as work proceeds. Distribute facing bricks of varying colour randomly throughout so no patches or striping appears.
- 3.5 BOND
Stretcher bond, single width unless detailed or stated otherwise.
- 3.6 INSTALLING VENEER WALL TIES
Fix to face of studs without otherwise piercing or damaging the building paper. Ties placed and spaced to NZS 4210, section 2.9.7, as modified by NZBC acceptable solution B1/AS1. Install to NZS 3604, clause 11.7.5.3.
- 3.7 MORTAR
To maximum practical density. Mortar fully laid, firmly placed, correctly cured and not re-tempered. Discard any mortar not used within 1½ hours of mixing.
Joint thickness: 10 mm ±1 mm.
- 3.8 RAKE OUT
Rake out joints as work proceeds, for pointing as detailed. Maximum depth of rake.
- 3.9 POINTING
Joints tooled concave after initial stiffening.
- 3.10 WEEPHOLES
Rake out every third perpend where weep holes are required, and vent veneer to NZS 3604, clause 11.7.4.3 and to BRANZ Bulletin 436.
- 3.11 CO-ORDINATE
Co-ordinate the building-in of all exterior joinery and items required to be fitted as the work proceeds. Rake out for or build in flashings as required.
- 12 KEEP CAVITY AND TIES CLEAR
Keep cavity and ties clear of mortar droppings and clean the brickwork face of any marking as the work proceeds. Repair damage to building paper immediately it occurs.
- 13 LIQUID DAMPPROOFING
Apply bituminous brush-on liquid applied membrane as a primer and 2 coats, to drain water effectively out of the cavity.
- 4 DAMP PROOF MEMBRANE
Lay the bitumen laminate sheet, lapped and adhered, to drain water effectively out of the cavity.

3801 CARPENTRY

1. GENERAL

This section relates to the supply and erection of light timber framing, floors, flooring underlays for ceramic tiling and insulation.

1.1 DOCUMENTS

Documents referred to in this section are:

AS/NZS 1748	Mechanically stress-graded timber
AS/NZS 1860.1	Particleboard flooring - Specifications
AS/NZS 2269	Plywood - Structural
AS/NZS 2904	Damp-proof courses and flashings
AS/NZS 2918	Domestic solid fuel burning appliances - Installation
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber framed buildings
NZS 3606	Manufacturer of glue-laminated timber
NZS 3631	New Zealand national timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 4347	Damp-proof courses and flashings – Methods of test
BRANZ Bulletin 453	Fasteners selection
BRANZ Bulletin 368	Preventing moisture problems in timber framed skillion roofs

1.3 SAMPLES

Provide samples of the following for review prior to ordering:

- Boarding for exterior decks
- Timber strip flooring.

1.4 DIMENSIONS

All timber sizes except for battens are actual minimum dried sizes.

2. PRODUCTS

2.1 TIMBER FRAMING, TREATED

Species, grade and in service moisture content to NZS 3602 and treatment to NZS 3640. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.

2.3 LAMINATED TIMBER

Radiata pine laminations to NZS 3606, table 1; treated as required by NZS 3602, to the requirements of NZS 3640, with special attention to Appendix B "Specification advisory notes". Supply weather resistant sealed.

2.4 TIMBER TRUSSES

Moisture content: 16% at supply

2.7 PARTICLEBOARD FLOORING

Flooring grade high density resin bonded to AS/NZS 1860.1.

2.8 PLYWOOD

Structural plywood to AS/NZS 2269 for bracing, bracketing, sarking and floors.

2.12 NAILS

Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ Bulletin 453 Fasteners selection.

2.13 BOLTS AND SCREWS

Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ Bulletin 453 Fasteners selection.

- 2.14 **NAIL PLATES**
Stainless steel and/or galvanized steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings.
- 2.15 **CONNECTORS**
Galvanized steel connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.
- 2.16 **POLYETHYLENE DPC**
Polyethylene film to AS/NZS2904 and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings to doors and windows.
- 2.17 **BITUMINOUS IMPREGNATED DPC**
Heavy Kraft impregnated with high grade bitumen and coated with higher heat resistant bitumen to AS/NZS 2904 and AS/NZS 4347.
3. **EXECUTION**
- 3.1 **EXECUTION GENERALLY**
To NZS 3603 and NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).
- 3.2 **SEPARATION**
Separate all timber framing timbers from concrete, masonry and brick by: -
- a full length bituminous damp-proof membrane overlapping timber by at least 6 mm; or
- a 12 mm minimum free draining air space
- 3.3 **ATTENDANCE**
Provide and fix blocks, nogs, openings and other items as required by other trades.
- 3.4 **MOISTURE CONTENT**
Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings for framing to which linings are attached.
- | | |
|------------------------|-----------------------|
| Framing at erection: | 24% maximum |
| Framing at enclosure: | 20% maximum |
| Framing at lining: | 16% maximum |
| Timber strip flooring: | 10% at time of laying |
- 3.5 **SET-OUT**
Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings.
- 3.6 **FRAMING SUB-FLOOR**
Frame up off foundation walls and piles, all fabricated, fastened and braced to NZS 3604, section 6.10, Framed subfloor walls.
- 3.7 **FRAMING FLOORS**
Framed and fastened to NZS 3604, section 7, Floors.
- 3.8 **FRAMING WALLS**
Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604, section 8, Walls.
- 3.9 **FRAMING ROOFS**
Frame to required loading and bracing complete with valley boards, ridge boards and purlins. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604, section 9, Posts and 10, Roof framing.

- 3.10 **FRAMING CEILINGS**
Frame to required loading and bracing complete with runners and battens set out to support ceiling-lining. All fabricated and fastened to NZS 3604, section 13, Ceilings. Trim for openings in ceilings and hatches to NZS 3604 section 13.3, Openings in ceilings. Provide blocking for water tanks located in the ceiling space to NZS 3604, section 13.4, Water tanks in roof space.
- 3.11 **INSTALLING WALL WRAPS, UNDERLAYS AND SHEET INSULATION PRODUCTS**
Refer to WALL CLADDING and THERMAL INSULATION for the installation of wall wraps, underlays and sheet insulation.
- 3.14 **LAYING PARTICLEBOARD FLOORING**
Lay and fasten to the flooring manufacturer's requirements and NZS 3604, section 7.2.3, Wood-based sheet flooring. Punch nails, fill holes for clear finishing, then sand with one coarse and one fine paper, hand sanding into corners.
- 3.15 **LAYING PLYWOOD SARKING AND FLOORING**
Lay and countersink screw fix to the plywood manufacturer's requirements and to NZS 3604, section 7.2.3, Wood-based sheet flooring.
- 3.20 **DPC TO LOSP TREATED TIMBER**
Lay polyethylene DPC under LOSP treated bottom plate of all timber framed walls on concrete, in a single layer with 50 mm overlaps at joints to provide a waterproof barrier.
- 3.21 **DPC TO TIMBER**
Lay bituminous DPC under the bottom plate of all timber framed walls on concrete, in a single layer with 50 mm overlaps at joints to provide a waterproof barrier.
- 3.22 **INSTALL PROPRIETARY FIREPLACE**
Prepare for the installation as detailed and as required by the manufacturer. Install strictly in accordance with AS/NZS 2918 and the manufacturer's stated and detailed requirements.

4102 WRAPS, UNDERLAYS AND DPC

1. GENERAL

This section deals with the application of DPC, underfloor foil insulation, wall wraps and roofing underlays.

Building code compliance

1.1 DURABILITY

The work covered by this part of the specification has been designed and manufactured to achieve the durability provisions of NZBC B2.3.1

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC	E2/AS1 External moisture
AS 1530	Methods for fire tests on building materials, components and structures
NZS 2295	Building papers (breather/absorbent type)
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber framed buildings
NZS 4200	Pliable building membranes and underlays
AS/NZS 4347	Damp-proof courses and flashings – Methods of test
AS/NZS 4389	Safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
NZMRM	NZ metal roof and wall cladding – Code of practice.

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

1.4 ABBREVIATIONS

The following abbreviations are used in this specification.

NZMRM	New Zealand Metal Roofing Manufacturers Inc.
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1.5 INTERPRETATION

Wall underlay used in this specification has the same meaning as building wraps in NZS 3604 and NZBC E2/AS1.

Requirements

1.6 INSTALLATION SKILL LEVELS

Installers to be familiar with the manufacturer's technical literature and the NZMRM NZ metal roof and wall cladding – Code of practice.

2. PRODUCTS

Materials

DPC

2.1 POLYETHYLENE DPC

Polyethylene film to AS/NZS2904 and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings to doors and windows.

2.2 BITUMINOUS IMPREGNATED DPC

Heavy Kraft impregnated with high grade bitumen and coated with higher heat resistant bitumen to AS/NZS 2904 and AS/NZS 4347.

Underfloor insulation

Wall wraps

- 2.5 **POLYETHYLENE BREATHER TYPE MEMBRANE**
High tensile coated polyolefin woven into sheet form with micro sized pores that allow the membrane to breathe with a fire retardant flammability index of 1, tested to AS 1530.
- 2.6 **POLYPROPYLENE BREATHER TYPE MEMBRANE**
Absorbent breathable spun bonded non-woven polypropylene type building membrane.
- 2.7 **BITUMINOUS STANDARD WEIGHT BUILDING PAPER**
Bituminous standard weight building paper tested to NZS 4200.
- 2.8 **BITUMINOUS HEAVY WEIGHT BUILDING PAPER**
Bituminous heavy weight building paper tested to NZS 4200.

Roofing underlay

- 2.11 **BITUMINOUS HEAVY WEIGHT BUILDING PAPER**
Bituminous heavy weight building paper tested to NZS 2295.
- 2.12 **BITUMINOUS SELF SUPPORTING**
Bituminous self supporting roofing underlay tested to NZS 2295.

Accessories

- 2.16 **WINDOW DOOR SEALING SYSTEM**
Proprietary window and door flashing tape.
- 2.17 **STUD STRAPS**
19 mm wide polyethylene straps.
- 2.18 **WIRE NETTING**
75 mm galvanized hexagonal wire netting to AS/NZS 4534.
- 2.19 **GUTTER AND UNDER FLASHINGS**
Bituminous breather type building paper cut to width by manufacturer for use under valley, apron flashing and internal gutters. Soffit liner cut to width from bituminous breather type building paper.
- 2.20 **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 **GENERAL REQUIREMENTS**
To NZS 3604 Section 11 Table 11.1 Underlays; and NZBC E2/AS1 Table 23 Properties of Roof Underlays and Building Wraps; and manufacturers technical literature.
- 3.2 **STORAGE**
Store building underlays and accessory materials, under conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture.
- 3.3 **INSPECTION**
Before starting work, check that the framing will allow work of the required standard. Carry out remedial work identified before laying underlay.

Application DPC

- 3.4 **DPC TO LOSP TREATED TIMBER**
Lay polyethylene DPC under LOSP treated bottom plate of all external timber framed walls on concrete, in a single layer with 50 mm overlaps at joints to provide a waterproof barrier.
- 3.5 **DPC TO TIMBER**
Lay bituminous DPC under the bottom plate of all external timber framed walls on concrete, in a single layer with 50 mm overlaps at joints to provide a waterproof barrier.
- 3.6 **DPC TO MASONRY AND BRICK VENEER**
Lay DPC along based of cavity and fix top edge to studs with galvanized clouts. Turn DPC out over concrete rebate under bottom course of veneer.

Application – Wraps / wall underlay

- 3.8 **WALL UNDERLAY**
Fix horizontally to outside face of substrate in true alignment, with succeeding sheets overlapping 150 mm. Fix to manufacturers requirements. Scribe neatly around penetrations and openings to leave no gaps. Tape all penetrations. Keep clean, undamaged and without visible weather deterioration until closed in.

Application - Roofing underlay

- 3.9 **WIRE NETTING**
Lay 75 mm galvanized wire netting at right angles across the purlins and drawn taunt before fixing. Tie edges of netting together with galvanized wire clips.
- 3.10 **BUILDING PAPER ROOF UNDERLAY**
Lay vertically over purlins on wire netting with a 150 mm side lap. Fix securely to purlins with galvanized fixing clips. Lay underlay to avoid excessive dishing between purlins. When used vertically limit individual runs to 10 metres for bituminous based papers and 7 metres for fire retardant underlays.

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

- 3.11 **GUTTER AND UNDER FLASHINGS**
Lay bituminous breather type building paper cut to width by manufacturer for use as an underlay to valley, apron flashings, internal gutters and soffit liner. Lap under flashings with adjoining underlays. Fix soffit liner from top plate down 150 mm past ribbon plate.

Completion

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

4201 WALL CLADDING

1. GENERAL

This section deals with the supply and installation of exterior cladding, including any associated flashings and any timber fascias, barges, trims, beads and facings.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC E2/AS1	External moisture
	9.0 Wall claddings
	9.1 General
	9.3 Stucco
	9.5 Fibre cement weatherboard
	9.7 Fibre cement sheet
AS/NZS 1491	Finger jointed structural timber
AS/NZS 2269	Plywood - Structural
AS/NZS 2908.2	Cellulose-cement products - Flat sheets
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3617	Profiles of weatherboards fascia boards and flooring
NZS 3631	New Zealand national timber grading rules
BRANZ Bulletin 441	Sealed joints in external claddings - 2. Sealants
BRANZ Bulletin 465	Domestic flashing installation
BRANZ Bulletin 467	Principles of flashing design

1.3 PERFORMANCE

Accept responsibility for the weathertight performance of the completed cladding system, including all penetrations.

2. PRODUCTS

2.1 BUILDING WRAPS AND UNDERLAYS

Breather type, waterproof, to NZBC E2/AS1, table 23: Properties of roof underlays and building wraps. Refer to SELECTIONS for type.

2.2 WOOD FIBRE SUB-SHEATHING

Low density insulating board, 10.5 mm thick and faced with bitumen emulsion.

2.3 EXTERIOR CAVITY WALL BATTENS

Radiata pine battens, minimum 20 mm 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.

2.4 EXTERIOR CAVITY VERMIN-PROOFING

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

2.5 FIBRE CEMENT RIGID BACKING

Treated cellulose fibre in a matrix of cement and sand autoclaved sheet, 4.5 mm thick, tinted.

2.7 PLYWOOD CLADDING

Rotary cut radiata pine veneer ply sheet to AS/NZS 2269 treated H3.

2.8 TIMBER WEATHERBOARD

Dressing grade to NZS 3631, to NZS 3617 for profile and treated to NZS 3602, table 2, reference 2.A1, Requirements for wood-based building components to achieve a 15-year durability performance.

2.10 FIBRE-CEMENT WEATHERBOARD

Cellulose cement autoclaved sheets to NZS/AS 2908.2.

- 2.12 FIBRE-CEMENT SOFFIT LINING
Cellulose cement autoclaved sheets to AS/NZS 2908.2.
- 2.13 TIMBER FASCIAS AND BARGE BOARDS
Dressing grade to NZS 3631 and treated to NZS 3602, table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance. Finger jointed timber to AS/NZS 1491.
- 2.14 PVC JOINTERS
To suit sheet thickness.
- 2.15 NAILS, SCREWS AND FASTENINGS
Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.
- 2.16 FLASHINGS
Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.
3. EXECUTION
- 3.1 MOISTURE CONTENT
Maximum allowable moisture content to NZS 3602 for:
Equilibrium moisture content (EMC)
- | | |
|------------------------------|-----------------------|
| - Framing: | 20% at closing in |
| - Weatherboards: | 14% at time of fixing |
| - Exterior joinery and trim: | 14% |
- 3.2 EXECUTION METHODS AND PRACTICES
To NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).
- 3.3 FIX WRAPS AND UNDERLAYS
Fix to framing, with laps and fixing to the cladding manufacturer's requirements.
- 3.4 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).
- 3.6 INSTALL DRAINED CAVITY
20 mm 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 vermin-proofing at base. Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.
- 3.7 INSTALL FIBRE CEMENT RIGID BACKING
Install to NZBC E2/AS1: 9.3 Stucco, and the rigid backing manufacturer's requirements, including expansion joints and control joints as required. Liaise with the solid plasterer regarding the timing of fixing the overlay. Install overlay to the backing manufacturer's and the plasterer's requirements.

- 3.10 **PRIME OR SEAL TIMBER WEATHERBOARDS AND TRIM**
Prime or seal all front and back faces, edges and end grain before fixing weatherboards and exterior trim, to the finish and quality specified in PAINTING AND PAPERHANGING.
- 3.12 **INSTALL TIMBER WEATHERBOARDS**
Install level, true to line and face, to NZBC E2/AS1: 9.4 Timber weatherboards, and to NZS 3604, section 11.5.2, timber weatherboards. Refer to NZS 3604 for fixings durability requirements for specific provisions.
- 3.13 **INSTALL FIBRE CEMENT WEATHERBOARDS**
Install to the weatherboard manufacturer's requirements. Refer to the cladding manufacturer's literature for fixing details and NZS 3604 for fixings durability requirements for specific provisions.
- 3.15 **INSTALL FIBRE CEMENT SOFFITS WITH JOINTERS AND CAPPING MOULDS**
Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details and NZS 3604 for fixings durability requirements for specific provisions.
- 3.16 **INSTALL FLUSH JOINTED FIBRE CEMENT SOFFIT SHEETS**
Cut sheets dry, and scribe fit to fully support all edges and joints. Fit expansion joints to limit finished areas to 9 metre x 6 metres maximum, confirm with the sheet manufacturer's requirements. Flush joints with bedding compound reinforcing tape and finishing compound to flush width of 150 mm. Refer to the sheet manufacturer's requirements and details.
- 3.17 **INSTALL EXTERIOR TIMBER FINISHINGS**
Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.
- 3.18 **INSTALL FLASHINGS**
Install flashings, covers and soakers as detailed on the drawings and to BRANZ Bulletins 467 Principles of flashing design and 465 Domestic flashing installation.
- 3.19 **USE OF SEALANTS**
Selection and use of sealants to follow BRANZ Bulletin 441 Sealed joints in external claddings - 2. Sealants.
- 3.20 **COMPLETE**
Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.
- 3.21 **REPLACE**
Replace damaged or marked elements. Remove unused materials from the site.

4302G GERARD® STEEL TILE ROOFING

1. GENERAL

This section deals with Gerard interlocking pressed metal roofing tiles complete with underlay, battens and accessories including GERARD® Klass fascia rainwater systems.

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC E2/AS1	External moisture
	4.0 Flashings
	5.0 Roof/wall junctions
	6.0 Parapets
	8.0 Roof claddings
	8.1 General
	8.3 Pressed metal tiles
NZS 3602	Timber and wood based products for use in building
NZS 3604	Timber framed buildings
NZS 4217	Pressed metal tile roofs
NZMRM	NZ metal roof and wall cladding code of practice

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

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
GERARD® Roofs Technical Specifications for the installation of GERARD® Roofs

Copies of the above literature are available from GERARD® Roofs
Telephone: 0800 100 868.

1.3 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:
NZMRM New Zealand Metal Roofing Manufacturers Inc.

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GERARD® system, or associated components and products.

1.5 QUALIFICATIONS

Carry out the roofing work with trained, experienced, competent installers familiar with the products being used, employed by or contracted to a GERARD® Certified Roofing Company.

Warranties

1.6 MANUFACTURER'S WARRANTY

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

Materials:	25 years full weatherproof warranty; plus a diminishing pro rata warranty for the next 25 years
Coating:	15 years pro rata AHI Roofing warranty (satin or textured coating) 5 years full warranty; plus a diminishing pro rata warranty for the next 10 years
Execution:	5 years installation warranty

The required form of warranty agreement is the GERARD® Roofs Metal Tile Warranty for New Zealand. Refer to the PRELIMINARIES AND GENERAL section for details of when completed warranties must be submitted.

- 1.7 **FIXINGS, WIND**
Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; to the NZMRM NZ Metal roof & wall cladding - Code of practice, section 10, tables 10.1.5A, 10.1.5.B and 10.1.5.C.
- 1.8 **CO-ORDINATE**
Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof.
- 1.9 **PERFORMANCE**
Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets. Comply with the NZMRM NZ Metal roof & wall cladding - Code of practice, sections 2 to 7 (Performance, Loadings, Design, Flashings, Penetrations and Installation).
2. **PRODUCTS**
 - 2.1 **UNDERLAY**
Breather type roof underlay.
 - 2.2 **BATTENS**
To NZS 3602 table 1, reference 1E1, size, spacing and fixing to the NZMRM NZ Metal roof & wall cladding - Code of practice, section 10, clause 10.1 Design.
 - 2.3 **PRESSED METAL TILES**
To NZS 4217, part 1 and the NZMRM NZ Metal roof & wall cladding - Code of practice, section 10, tables 10.1.5A, 10.1.5.B and 10.1.5.C.
 - 2.4 **NAILS**
Hot dipped galvanized steel flat head 50 mm x 2.8 mm nails to AHJ Roofing specification.
 - 2.5 **FLASHINGS, CAPPINGS AND COVERS**
Use ridge and hip caps, barge covers, general purpose malleable-edged flashings and side flashings supplied by GERARD® Roofs as part of the selected tile roofing system.
 - 2.6 **GERARD® KLASS FASCIA RAINWATER SYSTEM**
Fascia/barge type complete with jointing, brackets, fittings and accessories, brand matched and complete to GERARD requirements.
3. **EXECUTION**
 - 3.1 **INSPECTION**
Inspect the roof framing and supporting structure and do not start work until it is complete and fully braced ready for tiling, all to the requirements of NZS 3604.
 - 3.2 **STORAGE**
Stack tiles on a level, hard base, ventilated and protected from damage and weather.
 - 3.3 **HANDLING**
Unload and handle tiles without soiling, scratching, crushing or other damage.
 - 3.4 **COMPLY**
Comply with the preparation, laying and fixing requirements of NZS 4217, NZBC E2/AS1 8.0 Roof claddings, and the GERARD® Roof's requirements where these are of a higher standard.
 - 3.5 **SET-OUT**
Carefully set out the roof with a measuring rod to position the battens accurately taking account of rafter lengths, overhangs into gutters and spoutings and verge overhangs, all to minimise tile cutting.

- 3.6 **LAY UNDERLAY**
Lay roof underlay, drawn tight, over rafters from ridges and hips, over fascia into gutters and into valleys to NZS 4217 and NZBC E2/AS1: 8.1.5 Underlays. Fix to GERARD® Roof's requirements, without any damage. If damaged make good with full lap inserts as the work proceeds.
- 3.7 **FIX BATTENS**
Fix battens over the underlays in straight courses, spanning at least 3 rafters, between fascia and ridge and elsewhere to GERARD® Roof's required details. Nail at every crossing to the requirements of NZMRM NZ Metal roof & wall cladding - Code of practice, clause 10.1.5 Tiling battens, tables 10.1.5A, 10.1.5.B and 10.1.5.C. Square cut ends to form butt joint over rafters with joints staggered.
- 3.8 **LAYING**
Do not take heavy equipment onto the roof. Plan work to minimise foot traffic. Work on the roof only using appropriate footwear. Interlock, lap and lay tiles to NZBC E2/AS1: 8.3 Pressed metal tiles, and GERARD® Roof's requirements. Finish ridge, hip, valley, barge and eaves to GERARD® Roof's required details if not detailed elsewhere.
- 3.9 **NAILING TILES**
Nail tiles to battens generally through the upstand and downturn of the tile lap as well as all elements to GERARD® Roof's details and to nail size, type and spacing in NZS 4217, table 5. Fix bottom course of satin finish tiles with vertical nails with butyl/EPDM washers.
- 3.10 **CUTTING AND BENDING**
Cut, bend and straighten tiles neatly to finish true to line and plane when in place, using installation equipment maintained in the proper condition, all to NZS 4217 and to GERARD® Roof's details.
- 3.11 **FIT FLASHINGS, COVERS AND CAPPINGS**
Cut, fit and fix all elements true to line and plane, to NZBC E2/AS1: 4.0 Flashings, 5.0 Roof/wall junctions, 6.0 Parapets, to GERARD® Roof's details and the NZMRM NZ Metal roof & wall cladding - Code of practice, section 10, if not detailed elsewhere.
- 3.12 **PENETRATIONS**
Form to NZBC E2/AS1: 8.1.7 Roof penetrations, and to the NZMRM NZ Metal roof & wall cladding - Code of practice.
- Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:
- underlay turned up at wall and parapet lines
 - underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
 - roofing installation neatly finished to all sides of openings and to all wall and parapet junctions including proprietary GERARD® PVC stop ends.
 - installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).
- 3.13 **MAKE GOOD**
Touch up all damaged coatings with GERARD® Roof's finishing kit.
- 3.14 **LEAVE**
Leave this work complete with all necessary flashings, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.
- 3.15 **REMOVE**
Remove trade rubbish and unused materials from the roof and surrounds regularly during the work. Sweep down the completed roof and clean out spoutings, gutters and rainwater pipes. Remove debris, unused materials and elements from the site.

4502 ALUMINIUM WINDOWS AND DOORS

1. GENERAL

This section deals with the manufacture, supply and installation of aluminium windows and doors and associated flashings.

1.1 RELATED SECTIONS

Refer to GLAZING for glazing for type and thickness.

1.2 DOCUMENTS

Documents referred to in this section are:

NZS 3604	Timber framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
NZS 4223	Code of practice for glazing in buildings - Human impact safety requirements
WANZ	Aluminium Window Handbook
WANZ	Specification for powder coatings on architectural aluminium products
WANZ	Installation code for aluminium joinery products
WANZ	Window installation system: An Alternative Solution for the installation of Windows and doors
BRANZ Bulletin 349	Finishes for aluminium

1.3 SUBMIT SAMPLE SECTIONS

Submit full size section samples, with the selected finish of all profiles offered.

1.4 SHOP DRAWINGS

Shop drawings to show, but not be limited to:

- Fully dimensioned elevations of all elements (minimum scale 1:20)
- Dimensions of all typical elements and of any special sizes and shapes
- Glazing specification and details

Provide a copy of shop drawings revised to include required modifications, before proceeding with any fabrication or erection.

1.5 CERTIFICATION

Provide a certificate from a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the performance requirements of NZS 4211.

1.6 QUALIFICATIONS

Fabrication by a member of WANZ.

1.7 PERFORMANCE

The structural and weather-tight performance of the completed window installation, the glazing and infill panels is the responsibility of the window manufacturer.

2. PRODUCTS

2.1 WINDOW AND DOOR SECTIONS

Form all aluminium members from extruded sections. Folded sections are restricted to flashings and concealed members only.

2.2 FLASHINGS GENERALLY

Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components – for direct fix systems

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

Components – for cavity systems

- 2.4 **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.
- 2.5 **WANZ SUPPORT BAR**
Extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit.
- 2.6 **WANZ SUPPORT ANGLE**
Support angle for use with the sill pan for deeper claddings to transfer the weight of the window back to the frame.

Components

- 2.7 **WINDOW HARDWARE**
Fasteners, stays, locks, vents and other hardware as scheduled. Refer to SELECTIONS for type and finish. Where hardware is not scheduled, use hardware from window manufacturer's standard range. Key alike all lockable window hardware able to be keyed alike.
- 2.8 **DOOR HARDWARE**
Locks, bolts, door rollers, door restrictors, hinges and other hardware as scheduled. Refer to SELECTIONS for type and finish. Where hardware is not scheduled, use hardware from door manufacturer's standard range. Key alike all door locks able to be keyed alike.
- 2.9 **SAFETY STAYS**
Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Table 2, Acceptable opening sizes for barriers.
- 2.10 **FABRICATION SEALANT**
To the window manufacturer's requirements.
- 2.11 **GLAZING TAPE AND GASKETS**
To the window manufacturer's requirements.
- 2.12 **FIXINGS**
Ensure all fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

Finishes

- 2.13 **POWDER COATING FINISH**
To AS 3715 and WANZ Specification for powder coatings on architectural aluminium products. All finished surfaces to show uniformity of gloss and colour (to match approved sample) free of all coating defects.
- 2.14 **ANODISING**
To BRANZ Bulletin 349 "Finishes for aluminium".

3. EXECUTION

- 3.1 **CONFIRM**
Confirm all framing openings on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery.

3.2 EXECUTION GENERALLY
Execute all fabrication and installation work in accordance with the requirements of NZS 4211, WANZ Aluminium window handbook and WANZ Installation code for aluminium joinery products.

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

3.4 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.

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

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

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

Required preparatory work includes the following:

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

3.8 FIX FRAMES
Fix frames rigidly in place without distortion, to the window manufacturers and WANZ Aluminium window handbook requirements, plumb, true to line and face, weathertight and with all openings operating freely.

3.9 DRAINAGE
Provide anti-condensation channels to all sills. Sills to sashes and fixed lights to incorporate positive drainage to the exterior.

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

3.11 INSTALLATION DIRECT FIX
Install to window manufacturers details and drawings including sill pans to window and door units.

3.12 INSTALLATION CAVITY CONSTRUCTION
Install to WANZ Installation System details and drawings including WANZ cavity closers, support bars and support angles

Flashings and air seals

3.13 **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 jamb facings by 15 mm at each end.

3.14 **COMPLETE AIR SEAL**

Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods, applied deep within the reveal to completely fill the gap between joinery and structural framing. Ensure that in combination with the internal linings a complete air seal is created.

Completion items

3.15 **SEAL FRAMES ON SITE**

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.16 **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.

3.17 **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.

3.18 **MANIFESTATIONS**

To NZS 4223.3, 303.1: Manifestation (making glass visible).

3.19 **TRADE CLEAN**

Clean off or remove safety indicators at completion of the building.

3.20 **CLEAN FRAMES**

On completion clean down both sides of window and door frames using the methods required by the window and door manufacturer.

3.21 **CONFIRM**

Confirm the proper operation of hardware and operating systems on completion of the installation and again at completion of the contract works.

4505 GARAGE DOORS

1. GENERAL

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

Related work

1.1 RELATED SECTIONS

Refer to GLAZING for glazing not forming part of the proprietary garage door.

Refer to PAINTING AND PAPERHANGING for painting not forming part of the proprietary garage door.

Refer to ELECTRICAL for power supply to opening system

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 1170 Structural design actions

NZS 1170.5 Structural design actions - Earthquake actions - New Zealand

NZS 3604 Timber framed buildings

AS/NZS 4505 Domestic garage doors

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

Performance

1.3 LOADS

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

1.4 RESPONSIBILITY FOR PERFORMANCE

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

2. PRODUCTS

2.1 GARAGE DOOR

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

2.2 MOTORISED DOOR OPENER

To be advised

3. EXECUTION

3.1 PREPARATION FOR INSTALLATION

Check that the trimmed and lined openings are formed and constructed to suit the required door units. Do not proceed until openings are properly formed.

3.2 MANUFACTURERS REQUIREMENT FOR INSTALLATION

Install door, track and operating equipment complete with all specified and necessary accessories and hardware to the manufacturer's requirements.

3.3 START UP

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

3.4 ADJUSTMENT

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

- 3.5 DEMONSTRATION
Carry out start up procedures and verify proper performance of the door. Demonstrate the operation of the door to the principal/principal's representative. Set security features to principal's requirements. Reset security features at practical completion of the contract works.
- 3.6 OPERATING INSTRUCTIONS AND MAINTENANCE PROCEDURES
Provide operating instructions for the garage doors and associated opening equipment. Provide a list of all components requiring regular maintenance.
- Completion**
- 3.7 ENSURE
Ensure all elements are free of marks or blemishes, with all moving parts working fully and freely.
- 3.8 REPLACE
Replace damaged, cracked or marked elements.
- 3.9 LEAVE
Leave work to the standard required by following procedures.
- 3.10 REMOVE
Remove all debris, unused materials and elements from the site.

4601 GLAZING

1. GENERAL

This section deals with the supply and glazing of glass into external and internal joinery on or off site, and other specialty glasswork (e.g. shower and bath screens, glass balustrade panels and mirrors).

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure, 7.0 Glazing
NZBC F2/AS1	Hazardous building materials, 1.0 Glazing
NZBC F4/AS1	Safety from falling, 1.0 Barriers in buildings
NZS 3604	Timber framed buildings
NZS 4223.1	Glazing in buildings - The selection and installation of glass in buildings
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Dead, wind and snow loading
AS/NZS 2208	Safety glazing materials in building
AS/NZS 4666	Insulating glass units
AS/NZS 4667	Quality requirements for cut-to-size and processed glass

2. PRODUCTS

2.1 GLASS

Processed glass to AS/NZS 4667, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

Clear float glass:	Clear annealed transparent float glass
Patterned glass:	Translucent, annealed, rolled glass with a decorative pattern on one surface.
Wired glass:	With 13 mm square welded, treated steel wire mesh in the centre.
Laminated glass:	Grade A safety glazing material to AS/NZS 2208 with PVB or CIP resin interlayer.
Toughened glass:	Grade A safety glazing material to AS/NZS 2208.
Tinted float glass:	Body tinted float glass

Special glass, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

Solar float glass:	Coated glass and low-E glass made from float glass
Insulating glass units (IGU's):	To AS/NZS 4666 and IGU Manufacturer's Association (IGUMA) requirements.

2.2 TEMPORARY PROTECTION FILM

Factory applied UV resistant film to protect the glass from construction damage.

2.3 MIRROR GLASS

Float mirror glass to NZS 4223.1, clause 101.2.2.2: (b) Silvering quality (selection S), with silver and copper plating and 2 coats of protective paint.

2.4 SAFETY MIRROR GLASS

Float mirror glass with silver plating and vinyl backing, safety glazing material to AS/NZS 2208.

2.5 GLASS SCREENS

Proprietary shower/bath screens, formed to shape before toughening, complete with matching hardware.

Components, timber glazing

2.6 PUTTY, TIMBER FRAME

Linseed oil based, knife grade putty.

2.7 SPRIGS

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

2.8 GLAZING TAPE
Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes for bead glazing.

2.9 GASKETS
PVC or Santoprene to window manufacturers' requirements.

2.10 SETTING BLOCKS
Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes. Use with bead glazing and for IGU's.

Components, aluminium glazing

2.11 GLAZING TAPE AND GASKETS
Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

2.12 SETTING BLOCKS
Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

Components, mirrors

2.13 MIRROR ADHESIVE
Adhesive mirror-mastic and double-sided adhesive tape.

3. EXECUTION

3.1 GLAZING GENERALLY
To NZS 4223.1 and for human impact safety glazing to NZS 4223.3.
To AS/NZS 4666 for IGU's.

Application timber

3.2 INSTALL GLASS, EXTERIOR TIMBER FRAME, PUTTY
Paint prime rebates, back-putty, sprig in glass and neatly complete putty fronting. Rebates and glazing clearances to NZS 4223.1.

3.3 PRIME PUTTY
Ensure exposed putty is primed once surface has skinned - normally within 10-15 days of completing glazing.

3.4 INSTALL GLASS, EXTERIOR TIMBER FRAME, BEADED
Remove temporarily pinned beads, paint prime rebates and beads (if not factory primed), install glazing tape and setting blocks. Install glass. Neatly replace beads, fixing horizontal beads followed by vertical beads. Do not mitre corners. Rebates and glazing clearances to NZS 4223.1.

3.5 INSTALL GLASS, CLEAR OR NATURAL FINISH JOINERY
Remove temporarily pinned beads, paint prime rebates and concealed faces of beads, install glazing tape and setting blocks. Install glass. Neatly replace beads, fixing horizontal beads followed by vertical beads. Do not mitre corners. Rebates and glazing clearances to NZS 4223.1.

3.6 INSTALL GLASS, INTERIOR JOINERY
Remove temporarily pinned beads; fit tape, set glass on setting blocks and refit beads with or without tape to suit detail.

3.7 INSTALL SAFETY GLASS
To NZS 4223.3, as modified by NZBC F2/AS1.

Application aluminium

- 3.8 **INSTALL GLASS TO ALUMINIUM FRAMES**
Install glass to NZS 4223.1.
- Bead glaze to 105.9 Glazing with beads.
- Channel glaze to 105.10 Glazing in grooves

- 3.9 **INSTALL SAFETY GLASS**
To NZS 4223.3, as modified by NZBC F2/AS1.

Application mirrors

- 3.10 **MIRRORS, SCREW FIXED**
Fix with proprietary countersunk-head screws, fitted with black neoprene washers with fine-threaded upstands to receive chrome plated dome screw covers.
- 3.11 **MIRRORS, CHANNEL MOUNTED**
Fix with proprietary mounting channels, to the channel manufacturer's requirements.
- 3.12 **MIRRORS, ADHESIVE FIXED**
Fix with adhesive mirror-mastic and double-sided adhesive tape.

Application miscellaneous

- 3.13 **INSTALL GLASS BALUSTRADES**
Confirm/design and carry out installation to requirements of NZBC B1/AS1: 7.0 Glazing, NZBC F2/AS1: Glazing and NZBC F4/AS1: Safety from falling: 1.0 Barriers in buildings.
- 3.14 **INSTALL GLASS SCREENS**
Install shower and bath screens and doors to manufacturer's requirements. Fix wall channel with silicone sealant.

Finishing

- 3.15 **SAFETY**
After glazing indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type.
- 3.16 **MANIFESTATIONS**
To comply with NZS 4223.3, 303.1. Manifestations (making glass visible)
- 3.17 **TRADE CLEAN**
Clean off or remove safety indicators and any temporary protection film at completion of the building.

4701P PINK® BATTS® & PINK® BATTS® SILENCER® INSULATION

1. GENERAL

This section deals with Tasman Insulation Pink® Batts®, Pink® Batts® Ultra™, and Pink® Batts® Silencer® acoustic insulation materials installed in residential buildings.

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC H1/AS1	Energy efficiency, 2.0 Building thermal envelope
NZS 3602	Timber and wood-based products for use in building
NZS 4218	Energy efficiency – Small building envelope
AS 1530.1	Methods for fire tests on building materials, components and structures – Combustibility test for materials

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

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
Tasman Insulation New Zealand: Pink® Batts® Insulation Products Manual

Copies of the above literature are available at

Web: www.comfortablehomes.co.nz

Telephone: 0800 802 287

1.3 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation Pink® Batts® insulation or associated products, components or accessories.

1.4 QUALIFICATIONS, PINK® BATTS® AND PINK® BATTS® SILENCER®

Installers to be PinkFit® - Preferred Pink® Batts® installers. A list of approved installers can be obtained at www.comfortablehomes.co.nz, by telephoning Freephone 0800 746 534 (0800 PINKFIT) or from the local building supplies merchant.

1.5 GUARANTEE

Provide a Tasman Insulation PinkFit® installation and durability guarantee.

On completion of the installation, provide a Tasman Insulation guarantee on the PinkFit® guarantee form.

2. PRODUCTS

Materials, thermal

2.1 ENVIRONMENTAL CHOICE GLASS WOOL THERMAL INSULATING PADS

Pink® Batts® Ultra™ Environmental Choice "Licence No. 2504017 – Thermal (resistive type) building insulants", non combustible to AS 1530.1, bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular insulating pads and tested for rigidity for wall applications.

2.2 GLASS WOOL THERMAL INSULATING PADS

Pink® Batts®, non combustible to AS 1530.1, bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular insulating pads and tested for rigidity for wall applications.

2.3 GLASS WOOL MASONRY WALL THERMAL INSULATION

Pink® Batts® bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular insulating pads and blanket.

Materials, acoustic

- 2.4 ACOUSTIC PINK® BATTS® SILENCER® NOISE CONTROL PADS
Pink® Batts® Silencer®, bio-soluble glass wool manufactured from up to 80% recycled glass in pads and coloured grey for identification.

- 2.5 MID FLOOR ACOUSTIC PADS
Pink® Batts® Silencer® Mid Floor, bio-soluble glass wool manufactured from up to 80% recycled glass and coloured grey for identification.

3. EXECUTION

3.1 STORAGE

Accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, compression, puncturing and damage to edges of materials. Do not use damaged or wet insulation materials.

3.2 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.

3.3 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, building papers and vapour barriers are in place.

Application, thermal insulation

- 3.4 FIT GLASS WOOL THERMAL INSULATING PINK® BATTS® ULTRA™
Lay, install, fit and fix Environmental Choice "Licence No. 2504017 – Thermal (resistive type) building insulants", Pink® Batts® Ultra™ to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope. Install in housing to NZS 4218 and in large buildings to NZS 4243.

Friction fit insulating Pink® Batts® Ultra™ in place to completely fill the whole of the cavities with no gaps and with no folds and to the Tasman Insulation requirements. Slightly oversize length for friction fit and cut across pad and fill cavity. Cut smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Do not cover vents. Leave a clear 150 mm clear gap around recessed light fittings and metal flues.

- 3.5 FIT GLASS WOOL THERMAL INSULATING PINK® BATTS® INSULATION
Lay, install, fit and fix Pink® Batts® to assist in meeting NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope. Install insulation to comply with R values to meet relevant table requirements in housing to NZS 4218 and in large buildings to NZS 4243.

Friction fit insulating Pink® Batts® insulation in place to completely fill the whole of the cavities with no gaps and with no folds and to the Tasman Insulation requirements. Slightly oversize length for friction fit and cut across pad and fill cavity. Cut smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Do not cover vents. Leave a clear 150 mm clear gap around recessed light fittings and metal flues.

- 3.6 FIT GLASS WOOL MASONRY WALL INSULATION

Lay, install, fit and fix Pink® Batts® masonry wall insulation to assist in meeting NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope. Install insulation to comply with R values to meet relevant table requirements in housing to NZS 4218.

Friction fit insulating Pink® Batts® between strapping to completely fill the whole of the cavities with no gaps and with no folds and to the Tasman Insulation requirements. Slightly oversize length for friction fit and cut across pad and fill cavity. Staple top of insulation to batten to hold insulation until wall linings are in place. Cut smaller pieces for

smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Do not cover vents.

Application, acoustic insulation

- 3.7 **FIT GLASS WOOL ACOUSTIC INSULATION**
After the wall lining is fixed to one side of the partition, friction fit **Pink® Batts® Silencer®** pad in place to completely fill the whole of the cavities. Carefully scribe cut insulating panels slightly oversize to retain friction fit to each other, smaller spaces and around services. Maintain full thickness of the insulating panels over the whole of the installation.
- 3.8 **FIT GLASS WOOL ACOUSTIC NOISE CONTROL BLANKET INSULATION**
Before fitting the second row of studs in the double stud partitions, run **Noise Control Blanket** across the inside face of studs, sitting one on top of the other with firmly butted edges and ends and without gaps or holes. Maintain full thickness of blanket over the whole of the installation by weaving to minimise any compression as the studs are fixed in place.
- Completion**
- 3.9 **CLEAN UP**
Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.
- 3.10 **LEAVE**
Leave work to the standard required by following procedures.
- 3.11 **REMOVE**
Remove debris, unused materials and elements from the site.

5101G GIB® PLASTERBOARD LININGS

1. GENERAL

This section deals with the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form standard, bracing, fire-rated, wet area, impact resistant and sound insulation systems.

Related work

1.1 RELATED SECTIONS

Refer to GIB ULTRALINE® PLUS LINING SYSTEM for GIB Ultraline® PLUS plasterboard linings.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber framed buildings

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.

1.3 ABBREVIATIONS

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

FRR	Fire resistance rating
IIC	Impact insulation class
STC	Sound transmission class

1.4 MANUFACTURER'S DOCUMENTS

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

General:	GIB® Site Guide (May 2006)
Sound:	GIB® Noise Control Systems (March 2006)
	GIB® Sound Barrier® Noise control system for Floors (July 2002)
Wet areas:	GIB Aqualine® Wet Area Systems (October 2002 v2)
Bracing:	GIB® Bracing Systems (March 2006)
Fire:	GIB® Fire Rated Systems (January 2006)
	Penetrations in GIB® Fire Rated Systems (August 2003)
	GIB® Residential Garage Boundary Walls (May 2006)
Ceilings:	GIB® Rondo® Metal Ceiling Batten Systems
Accessories:	GIB-Cove®
	GIB® Goldline™ Platinum Tape-on Trims
	GIB® UltraFlex high impact corner mould

Copies of the above literature are available at

Web: 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
- Contractor membership of the Association of Wall and Ceiling Industries New Zealand (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 rated wall systems. Refer to SELECTIONS for system/FRR.
- 1.9 **SOUND INSULATION REQUIREMENTS**
Provide wall and floor/ceiling 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 bracing rated plasterboard sheet to meet the requirements of NZS 3604 when tested to BRANZ technical Paper P21: A wall bracing test and evaluation procedure. Refer to drawings for location and type.

2. PRODUCTS

Materials

- 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 Ultralite® high quality surface plasterboard
GIB Fyrelite® fire resistant plasterboard
GIB Bracelene® wall bracing plasterboard
GIB Aqualine® wet area plasterboard

GIB Noiseline® high density sound control plasterboard
GIB Toughline® Impact Resistant plasterboard
GIB Sound Barrier® 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: 30 mm, 40 mm
- 2.6 **METAL ANGLE TRIMS**
GIB® galvanized steel slim angle trims.

2.7 CONTROL JOINTS
GIB® Rondo® P35 control joints.

2.8 TAPE ON TRIMS AND EDGES
GIB® Goldline™ tape-on paper tape and galvanized steel trims and edges or GIB® UltraFlex high impact corner mould.

Accessories

2.9 ADHESIVE
Timber frame: GIBFix® Wood Bond wallboard adhesive.
Timber frame LOSP treated: GIBFix® All-Bond wallboard adhesive.
Steel frame: GIBFix® All-Bond wallboard adhesive.

2.10 JOINTING COMPOUND
Bedding compound: GIB Tradeset®, GIB Lite Blue®, GIB Promix® All Purpose, GIB® AquaMix, GIB Plus 4®
Finishing compound: GIB ProMix® All Purpose GIB ProMix® Lite, GIB® All Purpose and GIB Plus 4®, GIB® Topcoat
Cove: GIB-Cove® Bond

2.11 JOINTING TAPE
GIB® paper jointing tape.

2.12 ACOUSTIC SEALANT
GIB Soundseal® acoustic sealant.

Finishes

3. EXECUTION

Conditions

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

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

3.3 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE
Before commencing work, agree in writing upon the surface finish assessment procedure necessary to ensure that the levels of finish specified, along with the effect of the type and/or angle of illumination on them, are obtained and are acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the required plasterboard level of finish has been achieved.

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard prior to the application of a range of decorative finishes under various lighting conditions. Refer to GIB® Site Guide (May 2006).

3.4 SUBSTRATE
Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Refer to GIB® Site Guide (May 2006).

3.5 **TIMBER FRAME MOISTURE CONTENT**
Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to GIB® Site Guide (May 2006).

3.6 **METAL FRAMING**
Metal framing, to which gypsum lining is fixed, shall comply with AS 1397, AS 3623 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/m³) such as 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 (May 2006).

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 (May 2006). Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.10 **BOARD ORIENTATION**
To be advised

3.11 **FORM SOUND INSULATION SYSTEMS**
Form to GIB® Noise Control Systems (March 2006).

3.12 **FORM WET AREA SYSTEMS**
Form to GIB Aqualine® Wet Area Systems (October 2002 v2).

3.13 **FORM BRACING SYSTEMS**
Form to GIB® Bracing Systems (March 2006).

3.14 **FORM FIRE RATED SYSTEMS**
Form to GIB® Fire Rated Systems (January 2006) and Penetrations in GIB® Fire Rated Systems (August 2003).

3.15 **FORM CONTROL JOINTS**
Form control joints to GIB Ultraline® PLUS Lining System book (February 2006) and GIB® Site Guide (May 2006)

3.16 **INSTALL COVES**
Install to GIB-Cove® literature using GIB-Cove® Bond.

3.17 **INSTALL TAPE-ON TRIMS**
Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

Finishing

3.18 **FINISHING GENERALLY**
To GIB® Site Guide (May 2006) and AS/NZS 2589.

Completion

3.19 **REPLACE**
Replace damaged sheets or elements.

3.20 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.

3.21 REMOVE

Remove debris, unused materials and elements from the site.

3.22 LEAVE

Leave work to the standard required by following procedures.