

F5 Construction and Demolition Hazards
Where work on site is not completely enclosed and unauthorised entry by children is likely, it is acceptable for the specific hazards to be fenced when workers are absent from the immediate vicinity.
If the potential hazard requires a safety barrier, this barrier must comply with Table 1 of NZBC F5/AS1



Document Number: **RDC-992868**

Date Registered: **25/2/2020**

BUILDING PLATFORM PREPARATION:

Site prepared to **O'BRIEN GEOTECH - Geotechnical Assessment for Proposed New House**

Project # 583

Listed in part below (to be read in conjunction with the Geotechnical Assessment for Proposed New House) - any firm to soil cohesive soils or very loose granular soils encountered shall be replaced with a minimum of 150mm of light weight pumice fill approved by the Geotechnical Engineer shall be used to suit minimum floor levels.

A perforated pipe connected to the stormwater system shall be installed around the perimeter of the foundation in line with Geotech report.

A 100mm thick hardfill capillary break shall be provided to Geotech specifications.

A 2 layer enhanced damp proof membrane shall be provided to Geotech specifications.

WIND ZONE
REGION: A
GROUND ROUGHNESS: Urban Terrain
SITE EXPOSURE: Sheltered
TOPOGRAPHIC CLASS: T1
WIND ZONE HIGH

SOIL BEARING CAPACITY:
Site prepared to allow for min. 100kPa soil bearing capacity under foundations as per NZS 3604 Specific engineers design required for sites outside these soil conditions.

FINISHED GROUND LEVELS
Finished ground levels adjoining the concrete slab on ground shall be formed to carry surface water away from the residence.
Finished Ground Levels should be a minimum distance below Floor levels as detailed under the base details for the relevant cladding finishes.
In general allow 150mm to protected ground such as paving, allow 225mm for unprotected ground.

SLIP RESISTANCE:
Main route to the entrance to have a slip resistance/friction coefficient of 0.4 as per NZBC D1/AS1

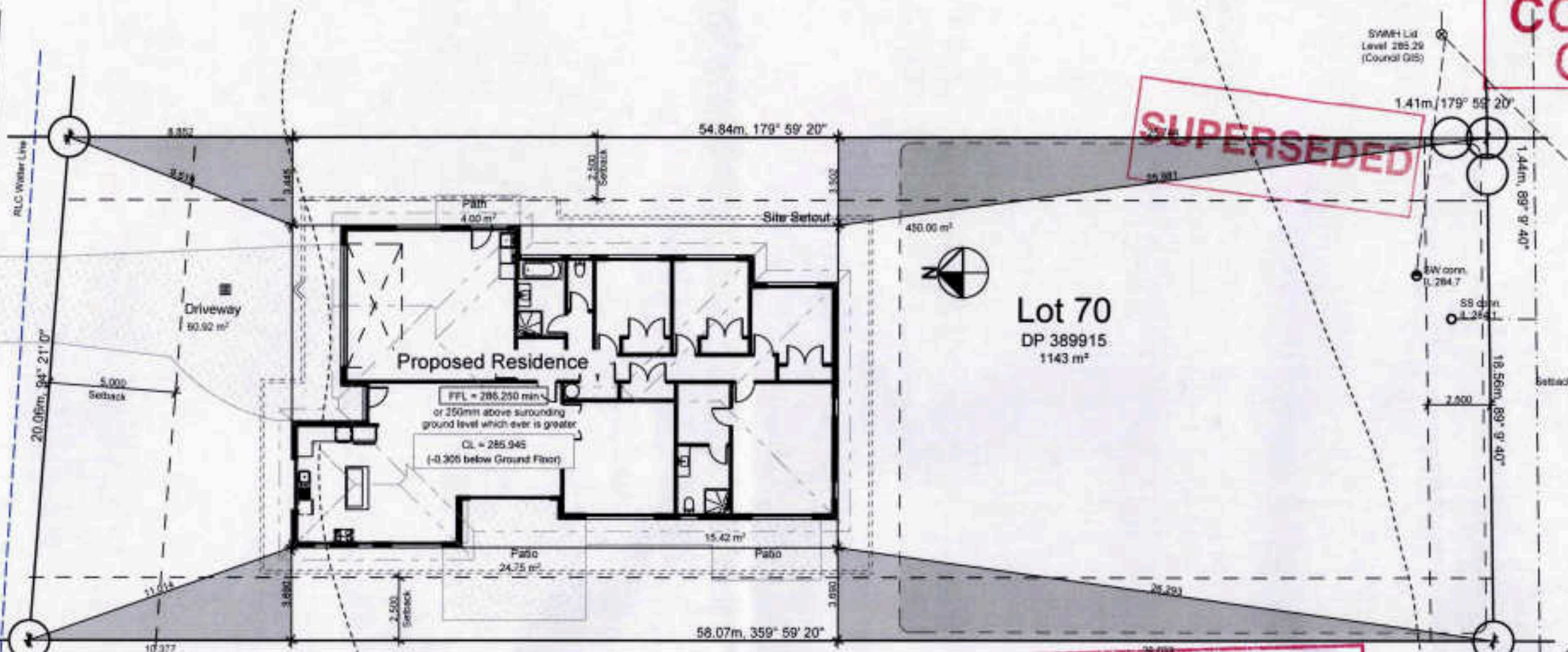
SOIL MOVEMENTS:
Soil movements have been determined using the contour data provided. Volumes are for the soil movements to 1.0m outside the building platform and excavation to 150mm below natural ground. For detailed excavation requirements refer to the Geotechnical report under excavation recommendations.

AREA	
SOIL MOVEMENT AREA	300 m²
SURFACE AREAS OF THE FOLLOWING:	
DRIVE AREA	60 m²
HARDSCAPE AREAS	45 m²
VOLUME	
SOIL MOVEMENT VOLUME	45 m³

OAKLAND PLACE

SSMH Ltd
Level across road 285.36
(Council GIS)

Footpath



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ADDITIONAL INFORMATION
PROVIDED DURING
BUILDING CONSENT
PROCESS**

Signed: */ Reid* Date: *23/7/18*

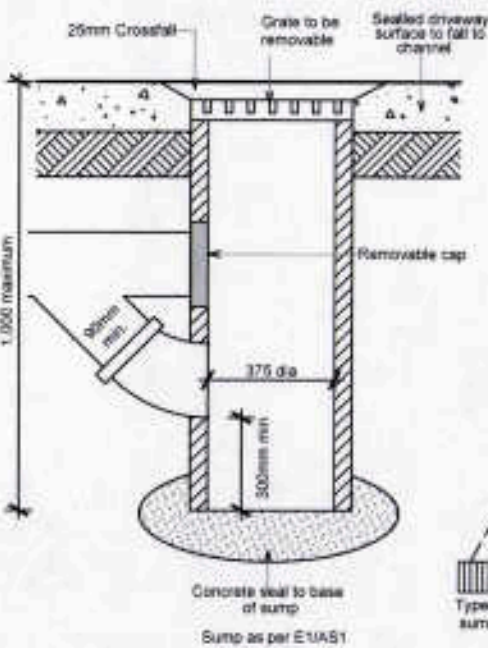
**PLANS APPROVED SUBJECT TO ALL
REQUIREMENTS OF THE BUILDING
ACT 2004 BEING FULLY COMPLIED
WITH**
77977
DATE: *23/7/18* CONSENT No: *77977*
SUPERSEDED
OFFICER: *[Signature]*

BISHOP ARCHITECTURE
P O Box 908 ROTORUA
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jobs@bishoparch.co.nz

TOTAL FLOOR AREA	222.72 m²
TOTAL ROOF AREA	258.78 m²
SITE AREA	1143 m²
ALLOWABLE SITE COVERAGE	40 %
SITE COVERAGE AREA	228.18 m²
SITE COVERAGE PERCENT	20.3 %
Our calculations exclude the Areas of the existing buildings on site	
SITE COVERAGE: The site coverage of the building is based on the area measured over the foundation line. For covered areas it is based on the area up to 600mm inside the eave line.	
ZONES	
RDC	ZONE Residential 1
WIND ZONE	High
EARTHQUAKE ZONE	2
CORROSION ZONE	B
LEE ZONE	N/A
SOIL CLASS	D/E
SNOW ZONE	NO

CONSENT		Site Plan	
Client	Mark Lam	Scale	1:200, 1:1
Site Address	16 Oakland Place, Ngongotaha, Rotorua.	Drawn	JWD
		Checked	MB
		Published	08-Jun-18
		Drawing Number	01
		Job No.	GH84

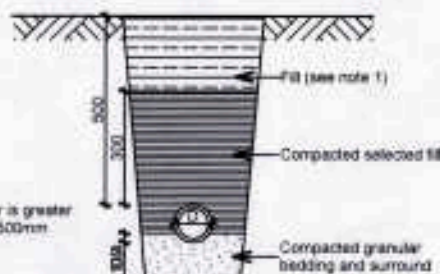
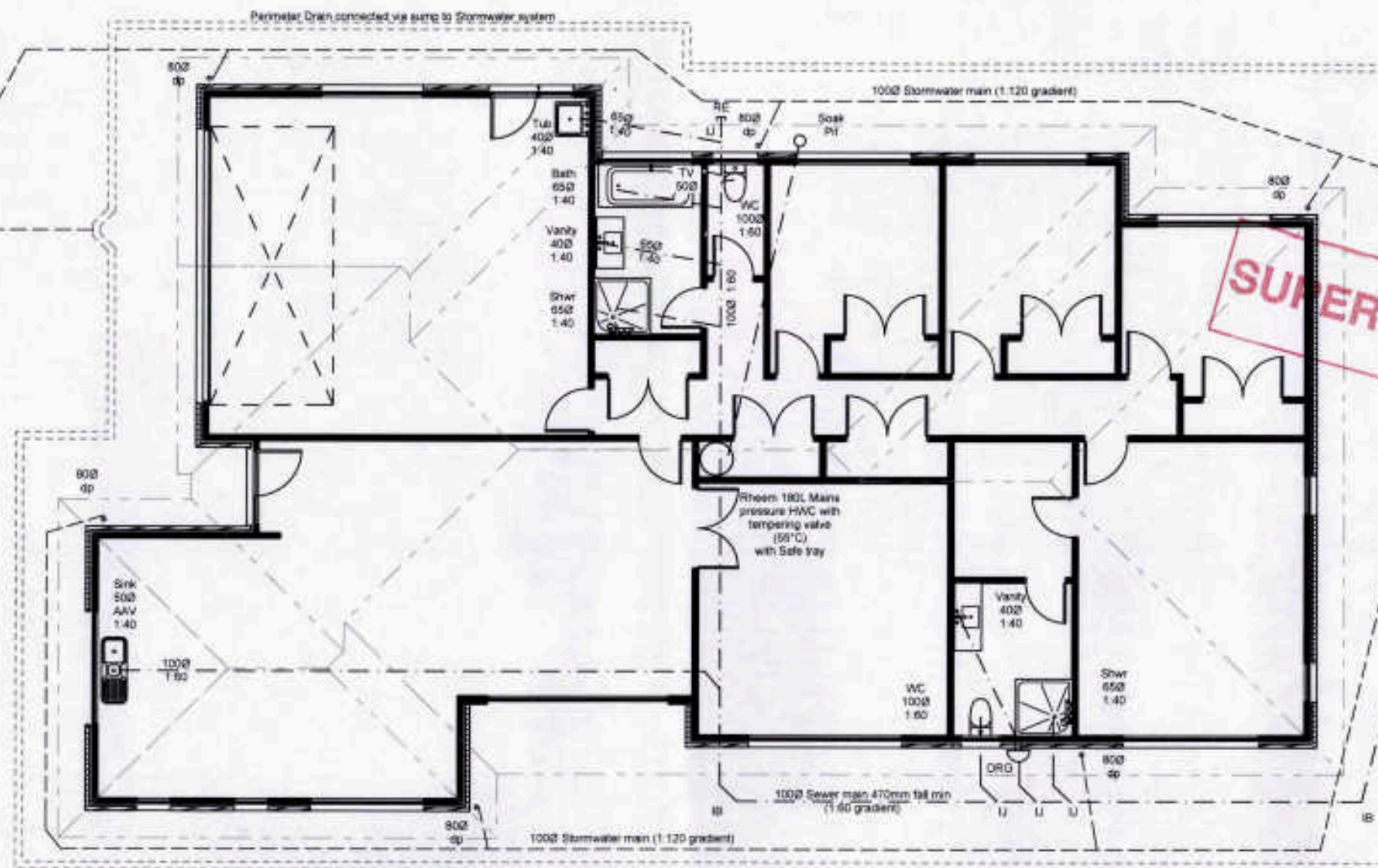
ALL DIMENSIONS TO BE VERIFIED ON SITE



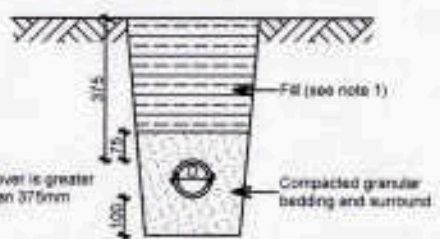
Refuse to Grant BC77977
 Dated: 17 FEB 2020
 Lathan

BISHOP
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 P O Box 908, ROTORUA
 1109 Puketua Street, ROTORUA
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 77977

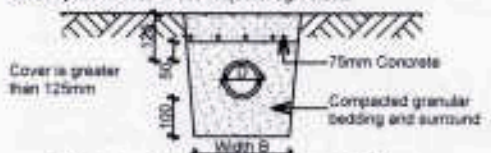


(A) Bedding type 'B' of NZS 7643



(B) Bedding type 'D' of NZS 7643

Note:
 1. Fill shall be:
 -Ordinary fill where drains are located below gardens and open country.
 -Compacted selected fill where the drains are located below residential driveways and similar areas subject to light traffic.



(C) Cover between 125mm and 375mm

SERVICES
 All Sanitary plumbing as detailed to comply with AS 3500

AS 3500 Drain and Gradient requirements

Table:	Drain size	Gradient
Basin	40	1:40
Shower	40	1:40
Sink	50	1:40
Bath	40	1:40
Tub	50	1:40
WC	100	1:60
Drain	65	1:40
Drain	100	1:60

CONSENT

Client: **Mark Lam**
 Site Address: **16 Oakland Place, Ngongotaha, Rotorua,**

LEGAL DESCRIPTION
 Lot No. **70** 389915

Job Title
Gourlay Home - Mark Lam

Drawing Title
Services Plan

Scale: **1:100, 1:20, 1:10**
 Drawing Number: **02**
 Drawn: **JWD**
 Checked: **MB**
 Published: **08-Jun-18**
 Job No.: **GH84**

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 Signed: */Neil* Date: *23/7/18*

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NOTES:

In general all construction to comply with NZS3604 and the New Zealand Building code and all relevant NZA standards whether detailed on these plans or not.

TIMBER WALL FRAMING:

Timber grading to NZS3604, treatment to NZS3602 grading to AS/NZS 1748 or NZS 3631. All timbers to be minimum SQ 8.

TIMBER ROOF FRAMING:

Timber: truss layout to producer's design. Moisture content 10% at supply

PLYWOOD:

Structural plywood to AS/NZS 2269 for bracing

SLIP RESISTANCE:

Main route to the entrance to have a slip resistance coefficient of 0.4 as per NZBC D1/AS1

ENGINEERED WOOD PRODUCTS:

NZS3604:2011 Clause 2.3.9.5
Engineered wood products may be used as a direct substitute for SQ 8 or 10 provided that they are of the same finished size as the member to be substituted and that the strength and stiffness properties have been verified and marked in accordance with NZS 3602 and are no less than the strength and stiffness properties of the grade to be substituted.

ZONE	ZONE	Residential 1
RDC	High	LEE ZONE
WIND ZONE	2	SOIL CLASS
EARTHQUAKE ZONE	B	SNOW ZONE
CORROSION ZONE		

Garage Area	43.11 m ²
House Area	179.17 m ²
Ground Floor Area	222.72 m ² Perimeter: 72.34 m
Roof Area	259.78 m ² Perimeter: 73.28 m
TOTAL FLOOR AREA	222.72 m²
TOTAL ROOF AREA	259.78 m²
SITE AREA	1143 m²

CONSENT

Client:

Mark Lam

Site Address:

16 Oakland Place, Ngongotaha, Rotorua.

LEGAL DESCRIPTION

Lot No. **70** 389915

Job Title

Gourlay Home - Mark Lam

Drawing Title

Floor Plan

Scale

1:100, 1:1

Drawn

JWD

Checked

MB

Published

08-Jun-18

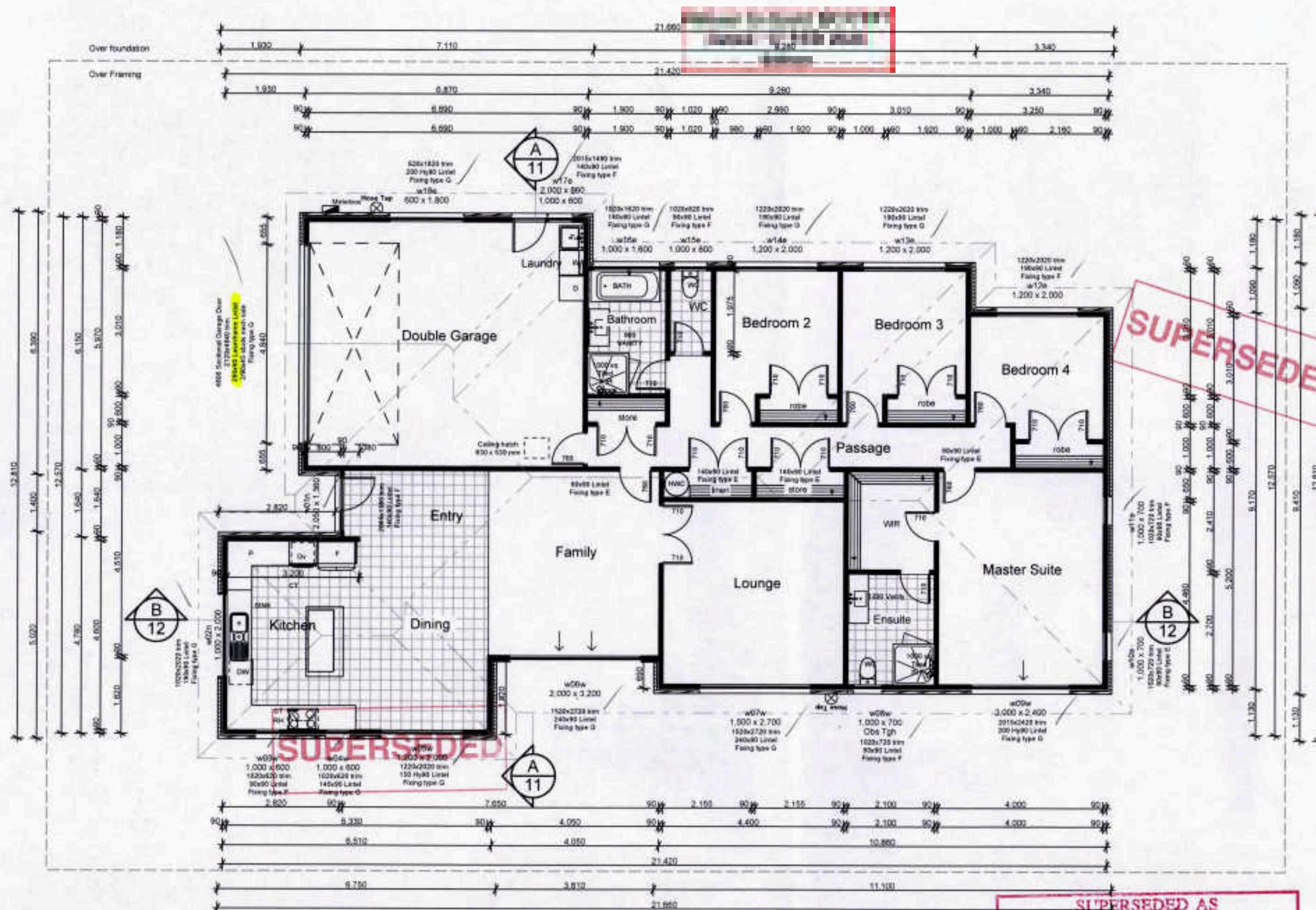
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03

Job No.

GH84

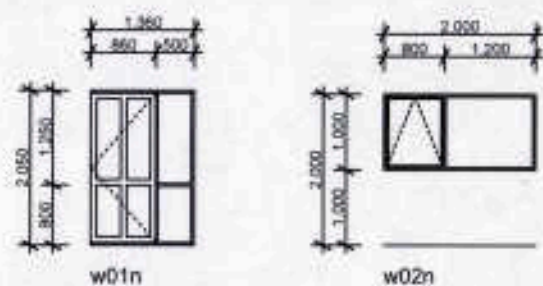
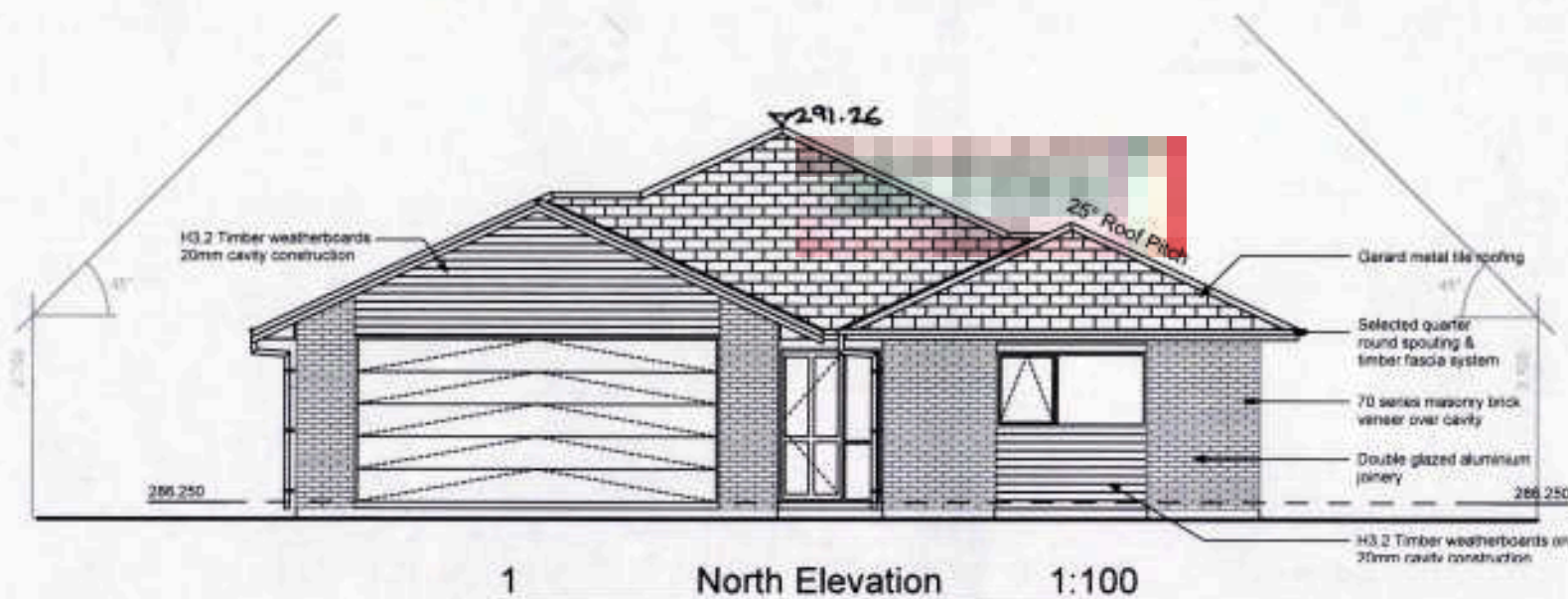
ALL DIMENSIONS TO BE VERIFIED ON SITE



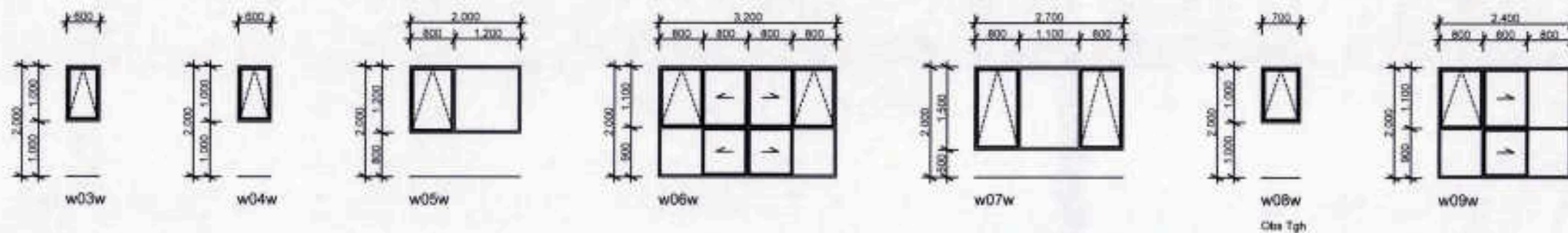
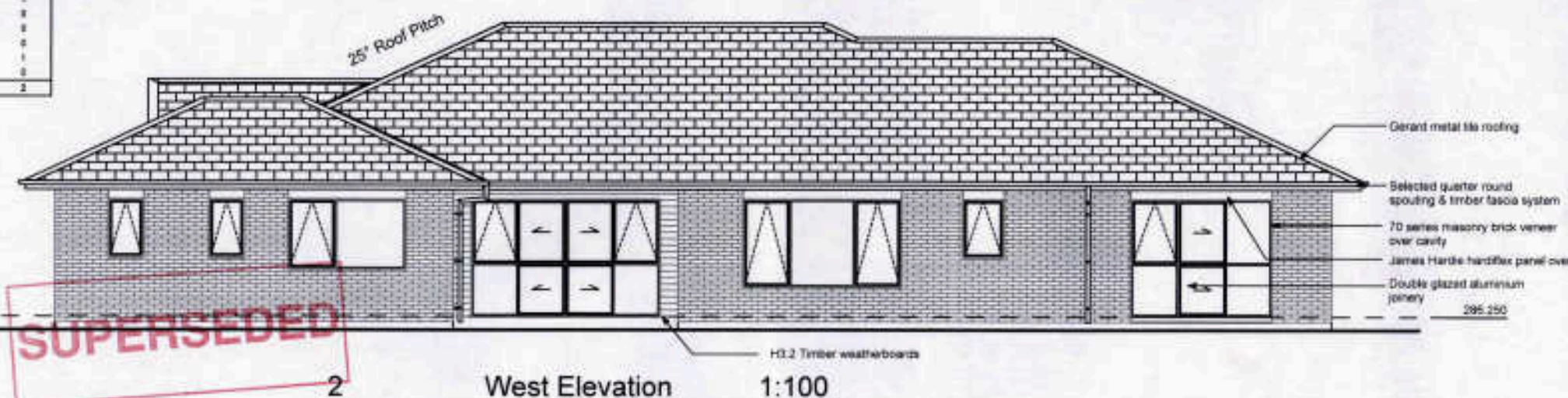
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ADDITIONAL INFORMATION
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BUILDING CONSENT
PROCESS**

Signed: *L Reid* Date: *23/7/18*

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



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



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Signed: *1/11/18* Date: *23/7/18*

ROOFING
As detailed to comply with NZS 3604
NZS E2/AS1:
Pressed metal tiles - NZS 4217

BRICK VENEER CLADDING:
As detailed on plans to comply with NZS 3604 and NZS
E2/AS1
Brick Veneer Cladding
- built in components to AS/NZS 2699
- Masonry construction NZS 4210 and BRANZ bulletin
436.

WEATHERBOARD CLADDING:
As detailed on plans to comply with E2/AS1
Timber Weatherboards

JOINERY:
All joinery as detailed to comply with NZBC E2/AS1,
NZS 4211 & WINZ Aluminium Joinery Handbook
Double glazed units throughout

GLAZING:
All glazing shall be selected by the supplier to comply
with NZS 4223 for Glazing in Buildings.

CONSENT

Client:
Mark Lam
Site Address:
16 Oakland Place, Ngongotaha, Rotorua,

LEGAL DESCRIPTION
Lot No. **70** 389915

Job Title
**Gourlay Home -
Mark Lam**

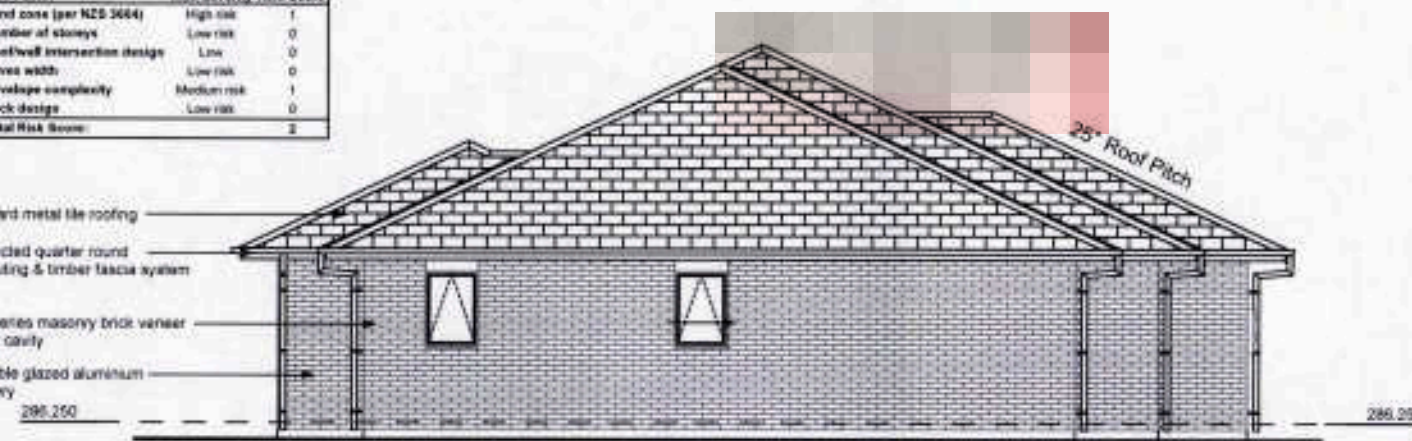
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Elevations

Scale
1:100
Drawing Number
04
Drawn **JWD**
Checked **MB**
Published **08-Jun-18** Job No. **GH84**

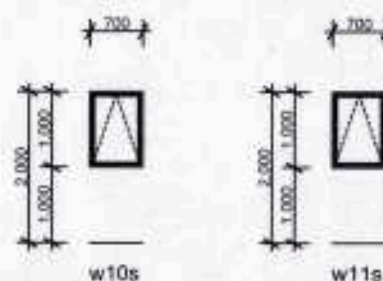
ALL DIMENSIONS TO BE VERIFIED ON SITE

BUILDING ENVELOPE RISK MATRIX		
South Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roofwall intersection design	Low	0
Eaves width	Low risk	0
Envelope complexity	Medium risk	1
Deck design	Low risk	0
Total Risk Score:		2

Gerard metal tile roofing
Selected quarter round
spouting & timber fascia system
70 series masonry brick veneer
over cavity
Double glazed aluminium
joinery

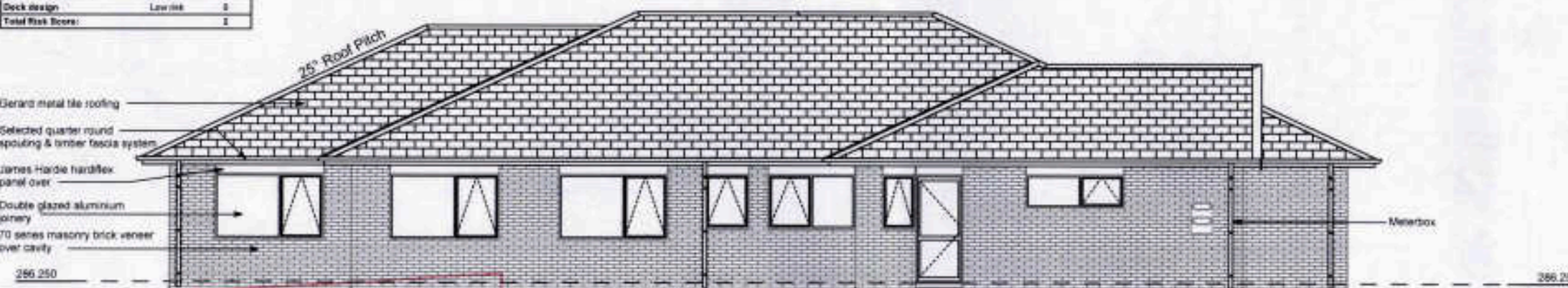


3 South Elevation 1:100

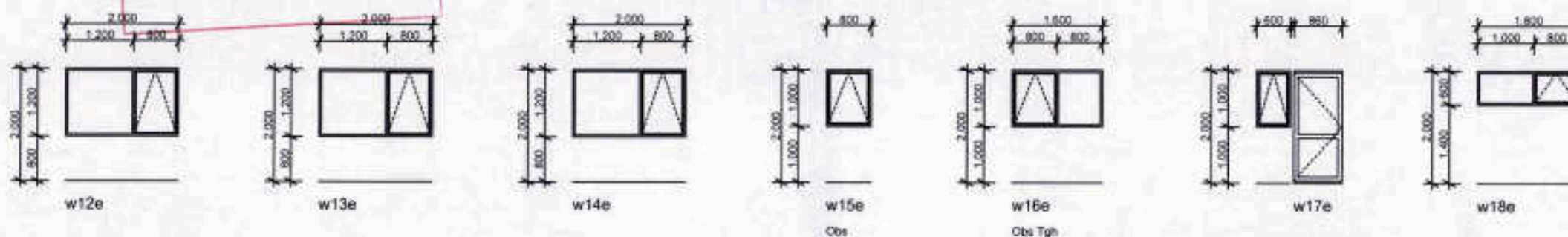


BUILDING ENVELOPE RISK MATRIX		
East Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roofwall intersection design	Low	0
Eaves width	Low risk	0
Envelope complexity	Medium risk	1
Deck design	Low risk	0
Total Risk Score:		2

Gerard metal tile roofing
Selected quarter round
spouting & timber fascia system
James Hardie hardiflex
panel over
Double glazed aluminium
joinery
70 series masonry brick veneer
over cavity



4 East Elevation 1:100



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Signed: */ Reid* Date: *23/7/18*

ROOFING
As detailed to comply with NZS3604
NZS E24851.
Pressed metal tiles - NZS 4217

BRICK VENEER CLADDING:
As detailed on plans to comply with NZS3604 and NZS
E24851
Brick Veneer Cladding
- built in components to AS/NZS 2999
- Masonry construction NZS 4210 and BRANZ bulletin
436.

JOINERY:
All joinery as detailed to comply with NZBC E24851,
NZS 4211 & WAKZ Aluminium Joinery Handbook
Double glazed units throughout

GLAZING:
All glazing shall be selected by the supplier to comply
with NZS4223 for Glazing in Buildings.

CONSENT

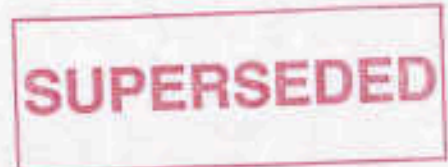
Client
Mark Lam
Site Address
16 Oakland Place, Ngongotaha, Rotorua,

LEGAL DESCRIPTION
Lot No. **70** **389915**

Job Title
**Gourlay Home -
Mark Lam**

Drawing Title
Elevations
Scale
1:100
Drawing Number
05
Drawn
JWD
Checked
MB
Published
08-Jun-18
Job No.
GH84

ALL DIMENSIONS TO BE VERIFIED ON SITE



Garage Area	43.11	m ²	XXXX	m ²
House Area	179.17	m ²	XXXX	m ²
TOTAL FLOOR AREA				222.72
TOTAL ROOF AREA				259.78
SITE AREA				1143
ZONES				
RDC			ZONE: Residential 1	
WIND ZONE	High	LEE ZONE:	N/A	
EARTHQUAKE ZONE	2	SOIL CLASS	D/E	
CORROSION ZONE	2	CORROSION TYPE	NA	

Client:	Mark Lam	
Site Address:	16 Oakland Place, Ngongotaha, Rotorua,	
<u>LEGAL DESCRIPTION</u>		
Lot No.	70	389915
Job Title:	Gourlay Home - Mark Lam	

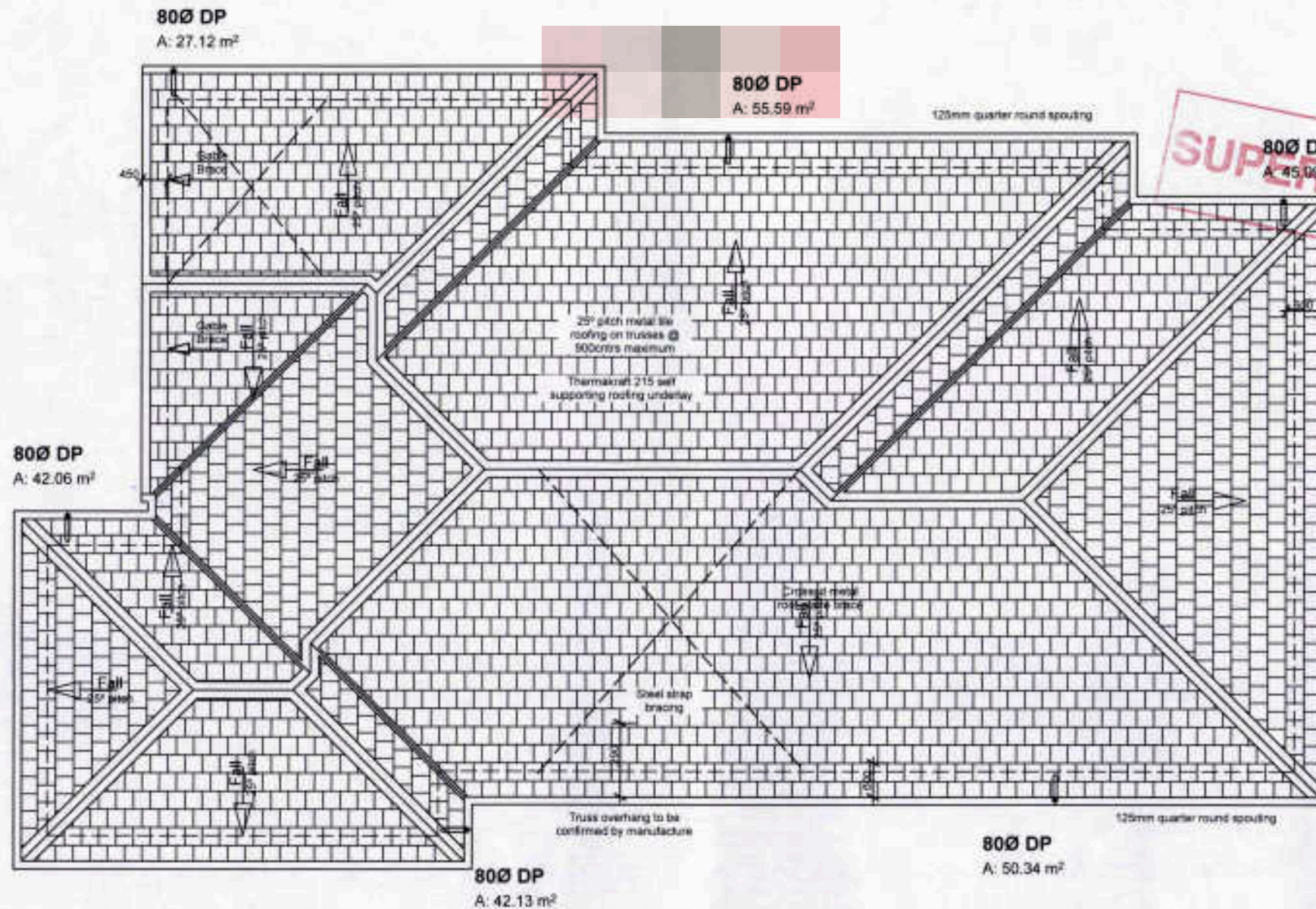
Drawing Title		Bracing Plan	
Scale	1:100, 1:1	Drawing Number	07
Drawn	JWD		
Checked	MB		
Published	08-Jun-18	Job No.	GH84

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Signed: *L. Reid* Date: *23/7/18*



Truss Fixings
LUMBERLOK JH47x90 Joist Hanger
LUMBERLOK JH47x120 Joist Hanger
LUMBERLOK JH47x150 Joist Hanger
LUMBERLOK JH47x185 Joist Hanger
Pair of LUMBERLOK CT200 Ceiling Tie
Pair of LUMBERLOK CT400 Cyclone Tie
Pair of LUMBERLOK CT600 Cyclone Tie
Pair of LUMBERLOK Multi Grips
LUMBERLOK Nailon Plate
LUMBERLOK N21 Diagonal Cleat
Pair of LUMBERLOK CPC45 Cleats
LUMBERLOK TTP 15xN Truss to Top Plate set
2 Wire Dogs

Rafter Fixings as per NZS 3604:2011 Table 15.6
Fixing Type E 2/90x3.15 Skew nails + 2 wire dogs
Fixing Type F 3/90x3.15 Skew nails + 2 wire dogs + strap fixing

SUPERSEDED

METAL TILE ROOFING:
To comply with NZBC E2/A51 External moisture, NZS 3602, NZS 3604 and NZS 4217.
Installed to NZ metal roof and wall cladding code of practice and to the Metrotile technical specification.
For Roof truss layout design refer to ITM producer statement.

BOTTOM CHORD RESTRAINTS:
90x35mm bottom chord restraints (Rafter roofing details) required when using clip on metal battens to ceilings.

CONSENT

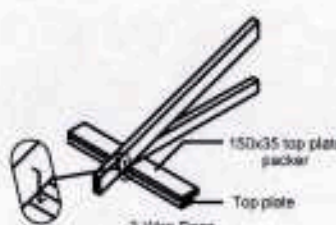
Client	Mark Lam
Site Address	16 Oakland Place, Ngongotaha, Rotorua.
LEGAL DESCRIPTION	
Lot No.	70
	389915
Job Title	Gourlay Home - Mark Lam
Drawing Title	Roof Plan
Scale	1:100, 1:10
Drawn	JWD
Checked	MB
Published	08-Jun-18
Job No.	GH84

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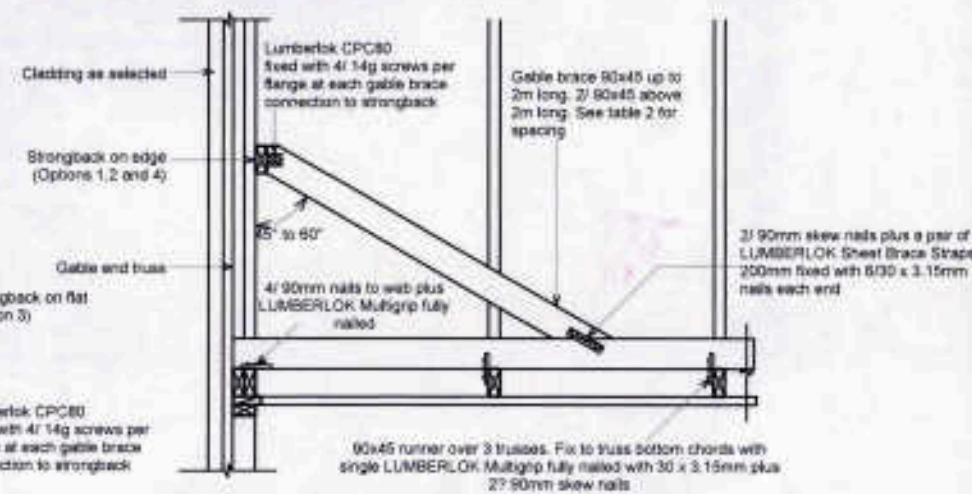
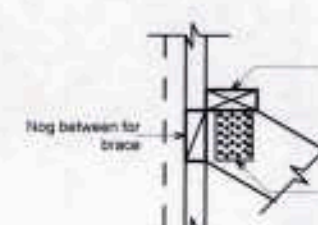
CT200 FIXING

Load Details
Truss Span: 6000-15000 High - Very High Wind zone
Roof Weight: Heavy or Light
Truss Centres: 900mm maximum



WIRE DOG FIXING

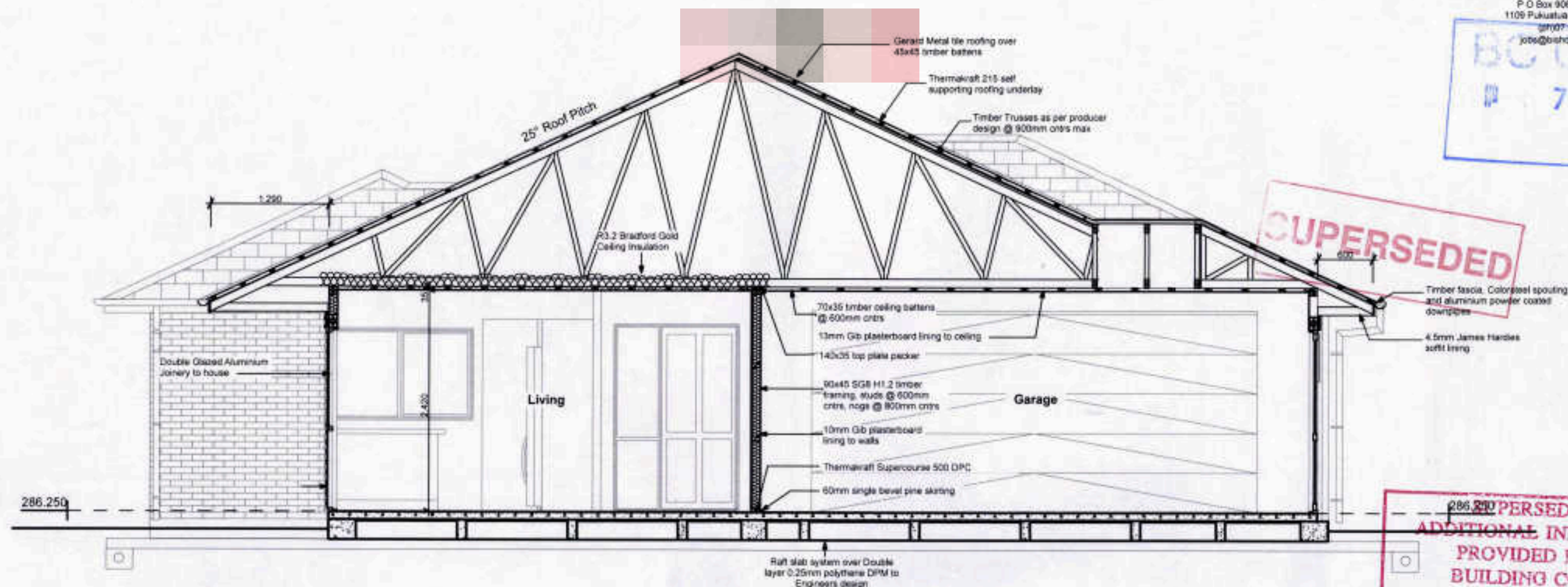
Load Details
Truss Span: 3000-10000 Low - Medium Wind zone
Truss Span: 3000-6000 High - Very High Wind zone
Roof Weight: Heavy or Light
Truss Centres: 900mm maximum



Fixings Gable End Detail

Scale: 1:10

3

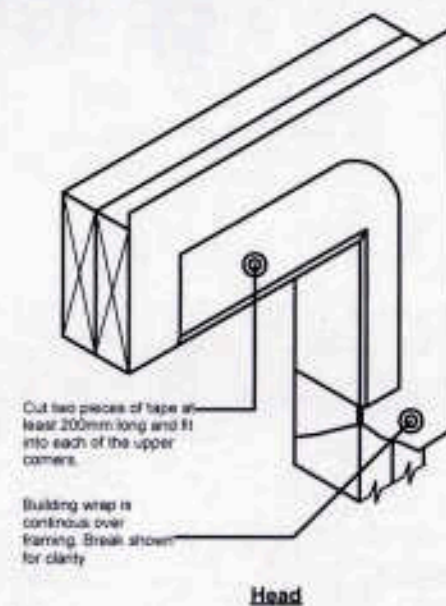
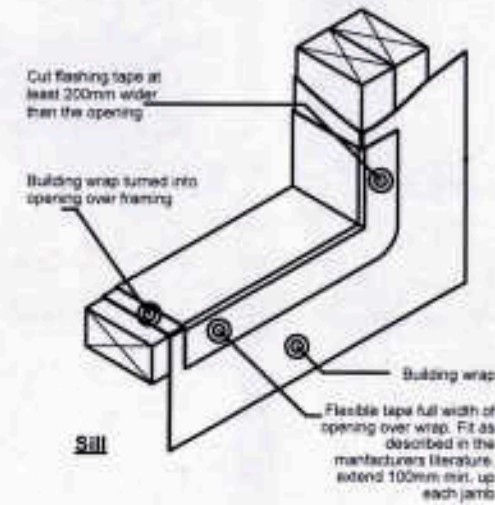


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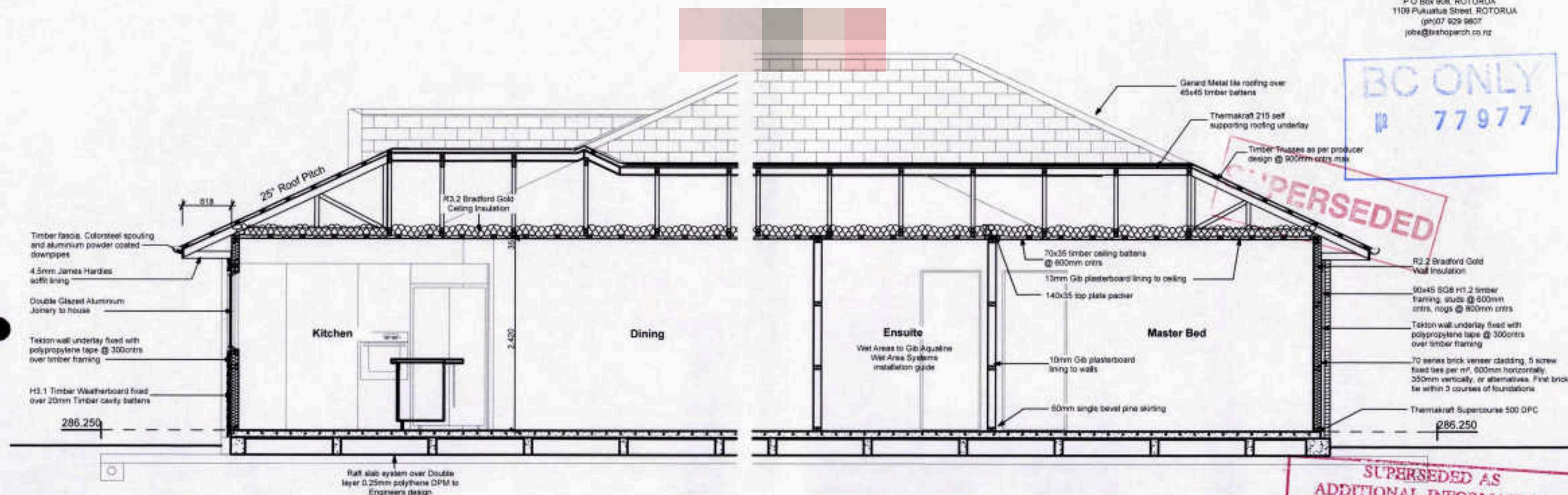
FLASHING TAPE SYSTEMS	
BRAND	APPRAISAL CERT.
Thermakraft alubond window sealing tape and corner mouldings	BRANZ CERT 878
Protecto sill system protects tape	BRANZ CERT 444 BRANZ CERT 450
Tyvek weatherization system	BRANZ CERT 455
Weathercoat seamless flexible flashing tape	BRANZ CERT 492



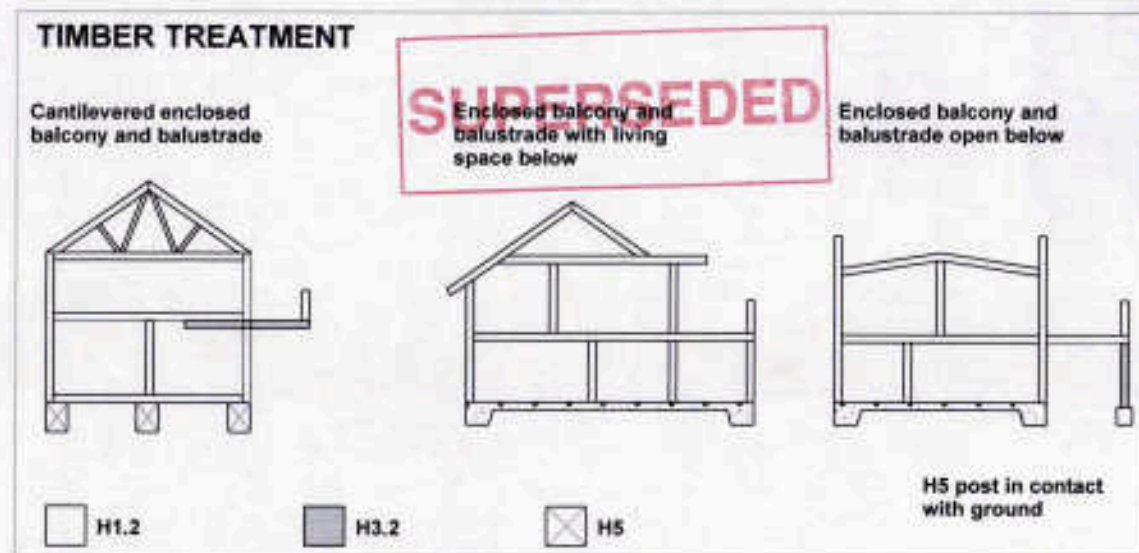
CONSENT	
Client:	Mark Lam
Site Address:	16 Oakland Place, Ngongotaha, Rotorua,
LEGAL DESCRIPTION	
Lot No. 70	389915
Job Title	
Gourlay Home - Mark Lam	
Drawing Title	
Section AA	
Scale	Drawing Number
1:50, 1:1	11
Drawn	JWD
Checked	MB
Published	08-Jun-18
Job No.	GH84

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Signed: *L. Kei* Date: *27/2/18*

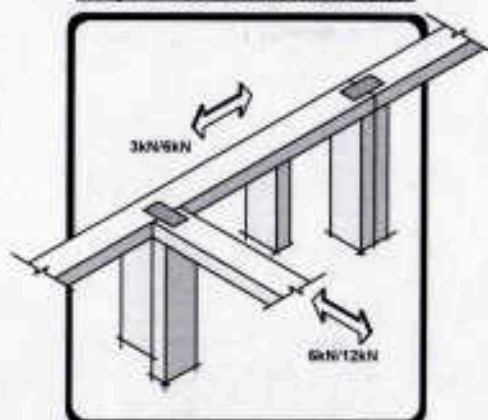


TIMBER TREATMENT as per NZS 3602			
HAZARD CLASS	EXPOSURE	SERVICE CONDITIONS	BUILDING ELEMENTS
H1.2	Protected from weather, above ground, but with a possibility of exposure to moisture	Protected from weather, but with a risk of moisture content conducive to decay	• Wall Framing • Low risk internal wall framing • Ceiling framing
H3.1	Exposed to weather above ground or protected from the weather but with a risk of moisture entrapment	Periodic wetting, not in contact with the ground	• Cavity framing • Window jamb linings
H3.2	Exposed to weather above ground	Periodic wetting, not in contact with the ground, more critical and uses	• Structural ply bracing • Decks and Pergolas • External beams and posts above ground • Timber Fascia
H5	Exposed to the weather, in ground or in fresh water	Ground contact, or conditions of severe or continuous wetting, where uses are critical and where a higher level of protection than H4 is required	House posts

CONSENT	
Client:	Mark Lam
Site Address:	16 Oakland Place, Ngongotaha, Rotorua,
LEGAL DESCRIPTION	
Lot No	70 389915
Job Title	Gourlay Home - Mark Lam
Drawing Title	
Section BB	
Scale	1:50
Drawn	JWD
Checked	MB
Published	08-Jun-18
Drawing Number	12
Job No.	GH84

ALL DIMENSIONS TO BE VERIFIED ON SITE

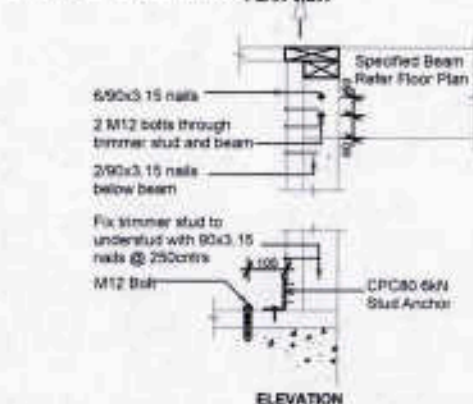
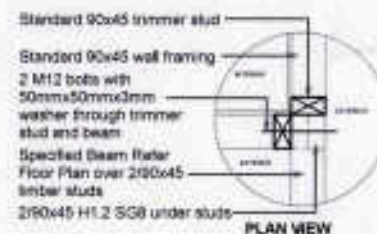
Top Plate Connections



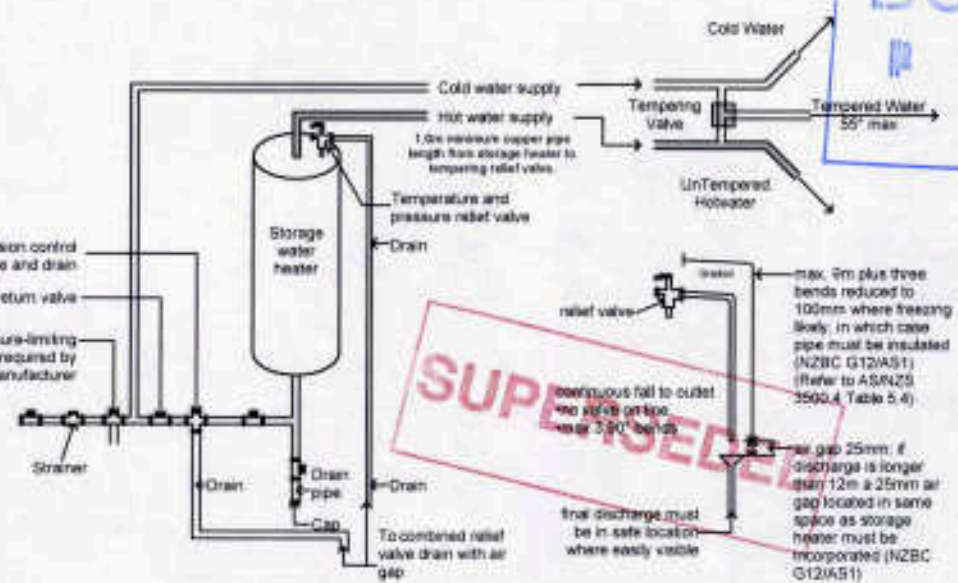
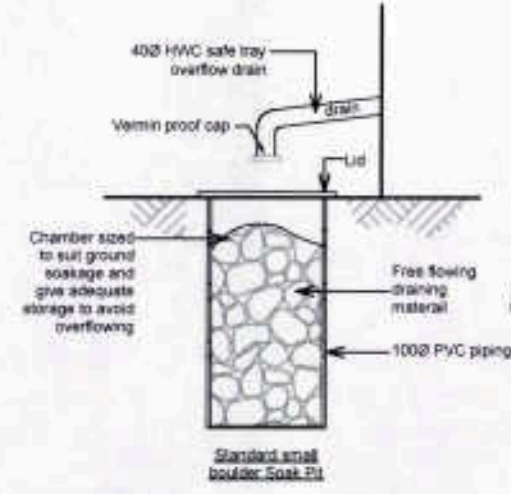
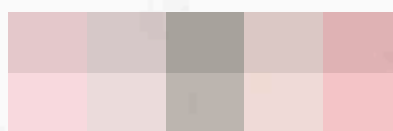
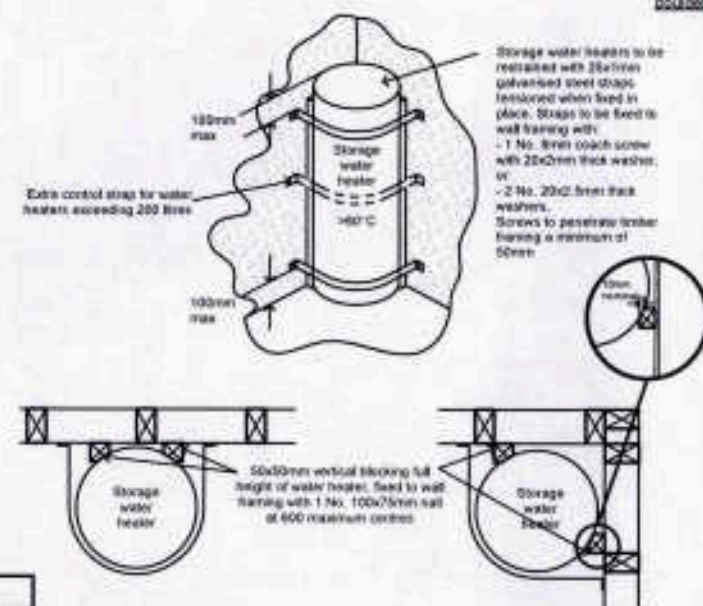
Top Plates at Right Angles	
Connection Capacity	LUMBERLOK Connector
6kN	Tylok 6T10 or 2x Strap Nails
12kN	2xSheet Brace Straps fixed with 8 x LUMBERLOK Product Nails 30mmx3.15 dia. per end per strap (24 nails total)
Top Plates in Line	
Connection Capacity	LUMBERLOK Connector
3kN	Tylok 6T5 Strap Nails
6kN	Tylok 6T10 or 2x Strap Nails

For single-storey buildings the connection in line of the top plate of a wall that contains one or more wall bracing elements shall be jointed according to the bracing capacity of the highest-rated individual wall bracing elements as follows:

- Bracing capacity not exceeding 100 bracing units: A 3 kN connection
- Bracing capacity exceeding 100 bracing units: A 6 kN connection
- Wall top joists to which ceiling diaphragms are attached: A 6 kN connection



7 Beam Connections 1:20

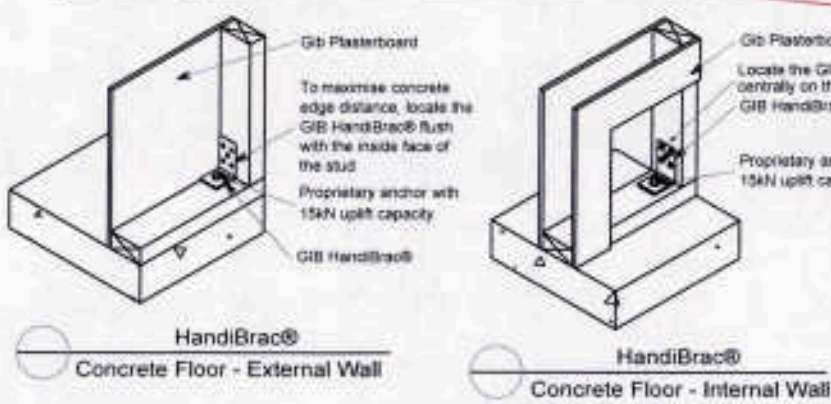


6.7.3 Combined relief valve drains
When relief valve drains are combined the combined drain shall (see Figure 13):
a) Receive discharges from one temperature pressure relief valve or the pressure relief valve and one expansion control valve.
b) Discharge via a minimum air break of 25 mm, and
c) Have a minimum size of 20 mm diameter and be one size larger than the largest relief valve outlet.

6.7.5 relief drains located where freezing is likely
Additional requirements for relief drains located where freezing is likely (see Figure 12) are that:
a) Relief valve drain pipes shall discharge over a tundish with a 25 mm air break before the drain pipe enters a zone where freezing is likely, and
b) Relief valve drains from a tundish shall be one size larger than the outlet diameter of the relief valve.

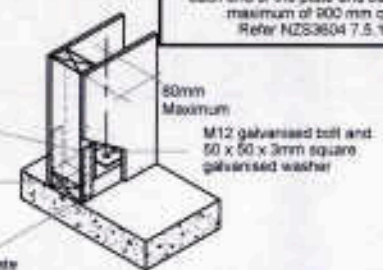
Pipework insulation
6.7.6 Closed cell foam polymer insulation or fibre glass insulation which is performed to the shape of the pipe and not less than 15 mm thick, is acceptable material for preventing pipes less than or equal to 40 mm diameter from freezing. Any insulation material that absorbs moisture shall be protected in a waterproof membrane the relief valve.

Panel Hold-downs Details	
GIB HandiBrac® - RECOMMENDED METHOD	
Developed in conjunction with MITEX NZ, the GIB HandiBrac® has been designed and tested for use as a hold-down in GIB® BL and GIB® bracing elements.	GIB HandiBrac®
- The GIB HandiBrac® registered design provides for quick and easy installation.	
- The GIB HandiBrac® provides a flush surface for the wall lining because it is fitted inside the framing. There is no need to check in the framing as recommended with conventional straps.	
- The GIB HandiBrac® is suitable for both new and retrofit construction.	
- The design also allows for installation and inspection at any stage prior to fitting internal linings.	



Typical Bottom Plate Fixing
Proprietary anchors shall be within 150 mm of each end of the plate and be spaced at a maximum of 900 mm centres.
Refer NZS3604 7.5.12.2-4

5x 30 x 2.5mm galvanised flat head nails to each side of stud
400 x 25 x 0.9mm galvanised strap (strap passes underneath bottom plate)
Three 30 x 2.5mm galvanised flat head nails to each side of bottom plate



**SUPERSEDED AS
ADDITIONAL INFORMATION
PROVIDED DURING
BUILDING CONSENT
PROCESS**
Signed: *L. Reid* Date: *27/10/18*

BISHOP ARCHITECTURE
P O Box 105, ROTORUA
1100 Fukuwha Street, ROTORUA
(ph) 07 929 9807
jobs@bishoparch.co.nz

BC ONLY
77977

CONSENT	
Client:	Mark Lam
Site Address:	16 Oakland Place, Ngongotaha, Rotorua,
LEGAL DESCRIPTION	
Lot No.	70 389915
Job Title	
Gourlay Home - Mark Lam	
Drawing Title	
Fixing Details	
Scale	Drawing Number
1:10, 1:20	18
Drawn	JWD
Checked	MB
Published	08-Jun-18
Job No.	GH84

ALL DIMENSIONS TO BE VERIFIED ON SITE



Demand Calculation Sheet

Job Details

Name: Gourlay Homes
 Street and Number: 16 Oakland Place
 Lot and DP Number: 68 DP 389915
 City/Town/District: Rotorua
 Designer: MB
 Company: Bishop Architecture
 Date: Friday, April 6, 2018

Building Specification

Number of Storeys: 1
 Floor Loading: 2 kPa
 Foundation Type: Slab
 Cladding Weight: Single Light
 Roof Weight: Light
 Room in Roof Space: No
 Roof Pitch (degrees): 25
 Roof Height above Eaves (m): 2.9
 Building Height to Apex (m): 5.3
 Ground to Lower Floor (m): 0.2
 Average Stud Height (m): 2.4
 Building Length (m): 21.66
 Building Width (m): 12.610
 Building Plan Area (m²): 223

Building Location

Wind Zone = High
 Earthquake Zone 2
 Soil Type: D & E (Deep to Very Soft)
 Annual Prob. of Exceedance: 1 in 500 (NZS3604:2011 Default)

Bracing Units required for Wind

	Along	Across
Single Level	718	1345

Bracing Units required for Earthquake

	Along & Across
Single Level	861

GIB EzyBrace® Version 5.16

ALONG

Bracing Line			Bracing Elements Provided					Wind		Earthquake	
Line Label	Min BUs W	Min BUs E	Brace No.	Brace Type	Brace Length	Brace Angle	Brace Height	Rating BUs/m	BUs Achieved	Rating BUs/m	BUs Achieved
A	105	108	A1	GS1-N	1.1	0.0	2.4	50	55.0	55	60.5
			A2	GS1-N	1.0	0.0	2.4	50	50.0	55	55.0
B	192	192	B1	GSP-H	1.0	0.0	2.4	100	100.0	115	115.0
			B2	GS1-N	0.5	0.0	2.4	50	25.0	55	27.5
			B3	GSP-H	0.6	0.0	2.4	100	60.0	115	69.0
			B4	GS1-N	0.6	0.0	2.4	50	30.0	55	33.0
			B5	GS1-N	0.4	0.0	2.4	50	20.0	55	22.0
C	100	108	C1	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
			C2	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
			C3	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
D	329	329	D1	GSP-H	0.6	0.0	2.4	100	60.0	115	69.0
			D2	GS1-N	0.7	0.0	2.4	50	35.0	55	38.5
			D3	GSP-H	0.5	0.0	2.4	100	50.0	115	57.5
			D4	GSP-H	0.6	0.0	2.4	100	60.0	115	69.0
			D5	GSP-H	0.6	0.0	2.4	100	60.0	115	69.0
			D6	GS1-N	0.8	0.0	2.4	50	40.0	55	44.0
			D7	GS1-N	0.8	0.0	2.4	50	40.0	55	44.0
			D8	GS1-N	0.5	0.0	2.4	50	25.0	55	27.5
			D9	GS1-N	1.0	0.0	2.4	50	50.0	55	55.0
Totals Achieved								W	1,138.0	E	1,179.5
Totals Required								W	718.0	E	861.0

ACROSS

Bracing Line			Bracing Elements Provided					Wind		Earthquake	
Line Label	Min BUs W	Min BUs E	Brace No.	Brace Type	Brace Length	Brace Angle	Brace Height	Rating BUs/m	BUs Achieved	Rating BUs/m	BUs Achieved
M	100	100	M1	GS1-N	1.2	0.0	2.4	70	84.0	60	72.0
			M2	GS1-N	1.2	0.0	2.4	70	84.0	60	72.0
N	119	119	N1	BLP-H	0.5	0.0	2.4	135	67.5	135	67.5
			N2	BLP-H	0.5	0.0	2.4	135	67.5	135	67.5
O	100	100	O1	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
P	100	100	P1	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
			P2	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
Q	100	100	Q1	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
			Q2	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
R	100	100	R1	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
			R2	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
S	141	141	S1	GS1-N	1.8	0.0	2.4	70	126.0	60	108.0
			S2	GS1-N	2.6	0.0	2.4	70	182.0	60	156.0
Totals Achieved								W	1,493.0	E	1,299.0
Totals Required								W	1,345.0	E	861.0

Signed: / Res Date: 23/7/18

CONSENT

Client: Mark Lam
 Site Address: 16 Oakland Place, Ngongotaha, Rotorua.

LEGAL DESCRIPTION: Lot No. 70 389915

Job Title: Gourlay Home - Mark Lam

Drawing Title: Bracing Calcs

Scale: 1:100
 Drawing Number: 23
 Drawn: JWD
 Checked: MB
 Published: 08-Jun-18
 Job No.: GH84

ALL DIMENSIONS TO BE VERIFIED ON SITE

SUPERSEDED AS
 ADDITIONAL INFORMATION
 PROVIDED DURING
 BUILDING CONSENT
 PROCESS

SUPERSEDED

BC ONLY
 77977