BC220320

APPROVED DOCUMENTS
Date Approved: 24/01/2023
MARLBOROUGH DISTRICT COUNCIL

Table 2: Guide to treated radiata pine applications.			
Timber to be used for	Required treatment	Timber to be used for	Required treatment
External timber use			
piles	H5	poles	H5
enclosed subfloor framing	H1.2	exposed subfloor framing	H3.2
veranda posts supported clear of ground	H3.2	veranda posts in ground	H5
deck jack studs supported clear of ground	H3.2	deck piles in ground	H5
deck joists/bearers	H3.2	wall framing weather exposed	H3.2
decking	H3.2	roof framing weather exposed	H3.2
cladding or exterior trims unpainted, clear finished or stained	H3.2	shingles/shakes	H3.2
cladding or exterior trims painted	H3.1	exterior plywood unpainted or used as bracing	H3 CCA
fence rails and palings	H3.2	exterior plywood painted	H3 LOSP
fence posts	H4	balcony barrier exposed	H3.2
Framing timbers (1, 2)			
external wall framing masonry veneer cladding	H1.2	external wall framing E2/AS1 20 mm cavity cladding	H1.2
balcony wall framing enclosed	H1.2	cavity battens	H3.1
parapet framing	H1.2	interior wall framing	H1.2
roof framing – low slope/skillion	H1.2	enclosed cantilevered floor joists	H3.2
roof farming – roof space	H1.2	roof sarking timber	H1.2
		roof sarking plywood membrane roof	H3 CCA
Interior timbers			
window reveals to aluminium windows	H3.1	furniture	untreated
plywood	untreated	finishing timbers	untreated
flooring	H1.2	joinery	untreated
Note (1)	Douglas fir may be used untreated on low-risk design buildings as defined in Amendment 7 to B2/AS1.		
Note (2)	H1.2 boric-treated Douglas fir may be used in all framing applications where H1.2 boric-treated radiata pine is permitted.		
	pine is permitted.		

GENERAL:
ALL WORK TO COMPLY WITH TERRITORIAL AUTHORITY REQUIREMENTS AND THE RELEVANT SECTIONS OF THE NEW ZEALAND BUILDING CODE - NZS 3604 2011.
CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCING WORK.ALL DIMENSIONS ARE TO FRAMING LINES.

PRODUCER STATEMENTS AND INSPECTION REPORTS ARE REQUIRED FOR THIS PROJECT
These must be provided by people or organisations approved to do so by the Building Consent Authority. These are listed on the inspection sheet attached to the site copy of the documents and are to be received before the code compliance certificate can be issued.

INTERNAL ALTERATION

PRELIMINARY AND GENERAL CONTRACTORS DUTIES The Contractor shall carry out all work as indicated in a tradesman like manner and in compliance with the New Zealand Building Code, relevant New Zealand standards and Codes of Practice and in accordance with any BCA regulations and to be of a standard acceptable to the property owner. All tradesmen will be suitably qualified and complete all aspects of the work to a standard of best trade practice in a safe manner. The Contractor shall supply all tools, materials, labour and shall be responsible for all sub-contractors required to complete the Works.
CODE COMPLIANCE CERTIFICATE The Contractor shall allow for and be responsible to obtain on behalf of the owners a Code of Compliance Certificate issued by the Territorial Authority within 3 months of completion of these works.
GENERAL The Contractor shall ensure all measurements are checked on site. The site is deemed hazardous. All contractors must obtain approval prior to entering the site for assessment and quotation purposes. The Contractor will observe the provisions of the "Health and Safety in Employment Act 1992" and shall display appropriate signage during construction.
PROTECTION OF WORK: All parts of the works, existing portions of the building and property, are to be protected by the contractor and adequately insured until the completion of the Contract and made good if damage occurs. Evidence of building Public Liability and All Risks Insurance must be presented to the Loss Adjuster. The Public Liability Insurance to be a minimum of $1,000,000.00.
MAINTENANCE The Contractor shall maintain the property repairs for a period of 120 days after the completion and any damage ensuring during the period through faulty materials or workmanship shall be made good to the satisfaction of the owner, at the Contractor's expense. The completion date from which the maintenance period is deemed to commence shall be the date of the Completion Certificate issued by the Loss Adjuster.

CARPENTRY- GENERAL

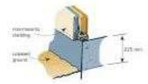
WALLS - interior - Supply and fix new timber framing -90x45 h1.2 studs at 600 max centres- dwangs at 800 centres, line with 10mm gib. Fix gib bracing elements as detailed on attached plans. Aqualine gib to f/dry and bathroom. Gib finished to a level 4 finish. Square set walls to ceiling.
CEILINGS - Supply and fix 13mm standard gib on rondo steel ceiling battens at 600 max centres screw fixed to bottom chord of truss members. Gib finished to a level 4 finish.
TRIMS - all rooms including cupboards - Skirting boards- 40x12 bevelled painted H1.2 treated pine. - Scotia boards- 40x12 bevelled painted H1.2 treated pine. - 40x12 bevelled painted H1.2 treated pine architraves to all joinery

INTERIOR - Supply and fix pre hung solid mdf painting grade doors with architraves.


Masonry veneer with permanent paving.


Masonry veneer with unpaved ground.


Non-masonry cladding with permanent paving.


Non-masonry cladding with unpaved ground.

Minimum permitted ground clearances

The rules for minimum clearances are set out in Building Code Acceptable Solution E1/AS1 and NZS 3604.

Top of concrete slab on ground – veneer cladding – above paving	100 mm
Top of concrete slab on ground – veneer cladding – above soil	150 mm
Top of concrete slab on ground – other cladding – above paving	150 mm
Top of concrete slab on ground – other cladding – above soil	225 mm
Top of timber pile above finished ground level	300 mm or 150 mm with DPC
Top of concrete pile above finished ground level	150 mm with DPC
Top of foundation wall above finished ground level	225 mm
Suspended timber floor construction – bottom of cladding	200 mm
Suspended timber floor construction – underside of joists (i.e. crawlspace)	450 mm
Bottom of cladding to paving – except masonry veneer	100 mm
Bottom of cladding to unpaved ground – except masonry veneer	175 mm
Bottom of cladding to unpaved ground – except masonry veneer	175 mm

PLUMBING AND DRAINAGE All work shall be carried out by a competent registered plumber and drainlayer with a current practising licence. All work to comply with compliance documents G13/AS1 Foul water and E1/AS1 surface water. Plumber to live test the system.
WATER SUPPLY - Supply water to all new plumbing fixtures with polybutylene pipe from mains access point
DRAINAGE -Sewer-connect new sewer lines from house to existing sewer laterals as indicated on plans. All wastewater drainage to comply with NZBC G13/ AS1.
HOT WATER CYLINDER - Supply and install mains pressure hot water cylinder. Fix hot water cylinder with seismic restraints. Fix tempering valve to HWC, 20mm copper sludge pipe under floor to building exterior.

ELECTRICAL A competent registered electrician with a current practising licence shall carry out all work. All work to comply with the Electricity Act 1992, the Electricity Regulations 1993, attendant NZ Electrical Codes of Practice and AS/NZS Wiring Rules. Allow for all tests. Owner to verify all electrical fittings with electrician on site. MAINS SUPPLY - New electricity supply to be arranged from street prior to any construction.
MAINS BOARD - Supply and install electrical mains board at rear of laundry.

PAINTING AND DECORATING
INTERIOR FINISHES
-gib to be taped, stopped and sanded to a level 4 finish. Paint with acrylic undercoat and 2-finish coats - an extra coat required if streaking is still visible.
Ensuite, bathroom and laundry walls and ceiling to be coated with enamel acrylic undercoat.

MARLBOROUGH DISTRICT COUNCIL
BUILDING CONSENT AUTHORITY
APPROVED DOCUMENTS
Signed:
Date: 24 Jan 2023
ALL WORK IS TO COMPLY WITH THE CONSENTED DOCUMENTS & THE NZ BUILDING CODE
DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL

NOTES

DIMENSIONS

ALL DIMENSIONS ARE TO FRAMING UNLESS OTHERWISE STATED.

EXISTING HOT WATER CYLINDER

EXISTING ELECTRIC HOT WATER CYLINDER TO BE CHECKED FOR PRESSURE REDUCING, RELIEF & TEMPERING VALVES ALONG WITH SEISMIC RESTRAINTS AS PER ACCEPTABLE SOLUTION G12/AS1 (WATER SUPPLIES) FIGURE 14. FIT OR REPLACE ANY VALVES AND RESTRAINTS MISSING OR DEFECTIVE.

TIMBER FRAMING

EXTERIOR AND LOAD-BEARING WALLS TO BE BE FRAMED WITH 90x45mm SG8 STUDS @ 600mm MAX. CRS UNLESS OTHERWISE SHOWN. ALL OTHER INTERNAL STUDS TO BE SG8 STUDS @ 600mm MAX. CRS. ALL EXTERNAL WALL FRAMING SHALL BE PRESERVATIVE TREATED "H1.2" WITH "H1.2" BOTTOM PLATES.

UNLESS OTHERWISE STATED ALL OTHER FRAMING TIMBER (INCLUDING FLOOR, ROOF, DECK, ETC.) SHALL HAVE A MINIMUM GRADE OF SG8.

LINTELS

ALL LINTELS & BEAMS TO BE SG8 OR GREATER, FOR PREVENTION OF UPLIFT REFER TO "MITEK LUMBERLOK" LINTEL FIXING SCHEDULE FOR LINTEL FIXING "TYPE" DEFINITIONS.

DEFINITIONS.

Sheet Number	Sheet Name
Sheet 01	Cover Page
Sheet 02	over view
Sheet 03	Perp. views
Sheet 04	SAT view - boundary
Sheet 05	SAT view Property
Sheet 06	Siteplan with Services
Sheet 07	existing - proposed,wall bracing
Sheet 08	floorplan cad
Sheet 09	foundation
Sheet 10	Elevations CAD ,recession indicator
Sheet 11	Topview /roof
Sheet 12	roof structure and fixings
Sheet 13	details soffit and internal corner
Sheet 14	details internal door and roof - cladding flashing
Sheet 15	details door/window frame, soffit support flashing
Sheet 16	details cladding deck
Sheet 17	Lintel fixing ,Gib bracing Calc.
Sheet 18	Balustrade to joist fixing
Sheet 19	H1 Heat loss calculation
Sheet 20	window direct fix
Sheet 21	window schedule,risk matrix
Sheet 22	GIB Bracing calculations
Sheet 23	stud thickness and spacing
Sheet 24	
Sheet 25	
Sheet 26	
Sheet 27	
Sheet 28	
Sheet 29	
Sheet 30	

All levels/dimensions are to be confirmed onsite before commencing any work, this applies to all trades. Do not scale off drawings.

All work is to be carried out in full accordance with the NZBC and Territorial Authority requirements as they apply. Any queries and discrepancies must be confirmed with the Designer before beginning any work

DesignWorx
CBDN106952
Marlborough District Council
Date Received: <1/1/2023

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[redacted]

Date Created: August 21, 2021
Date modified: December 28, 2022

01/23

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DesignWorx
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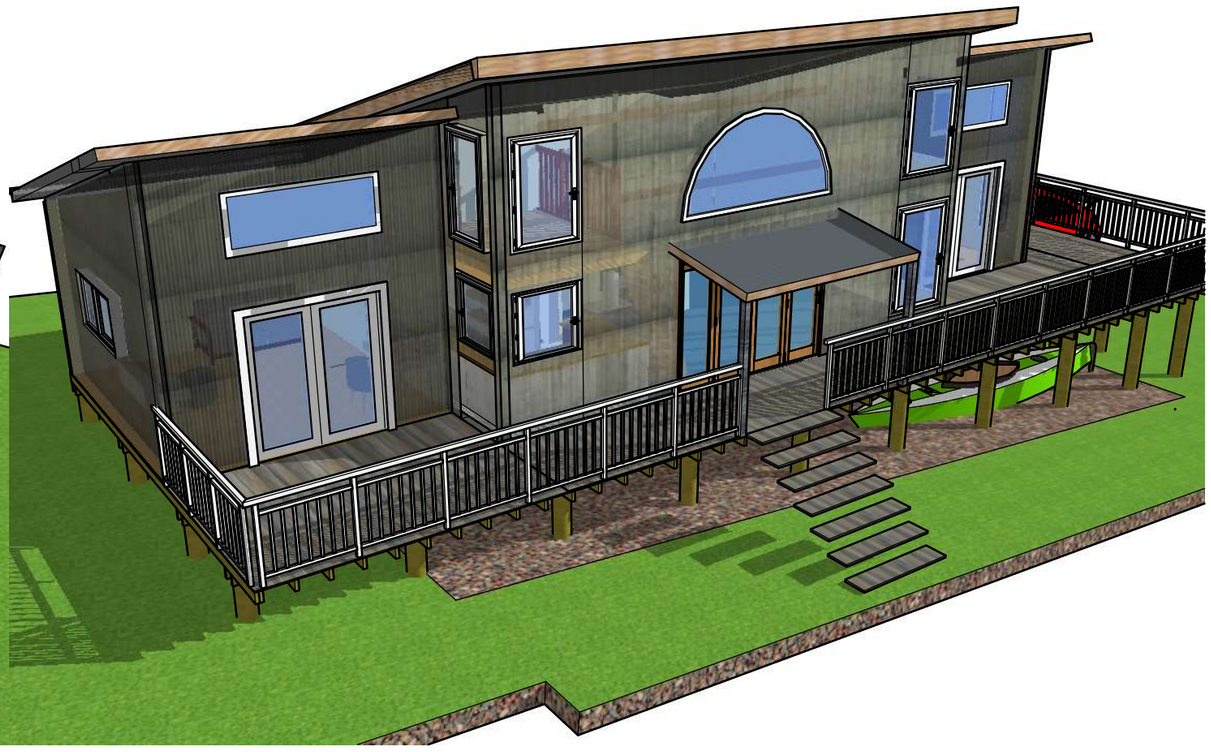

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DesignWorx	Date Created: August 21, 2021 Date modified: December 28, 2022	[redacted] for consent 28-12-2022	Perp. views 03/23

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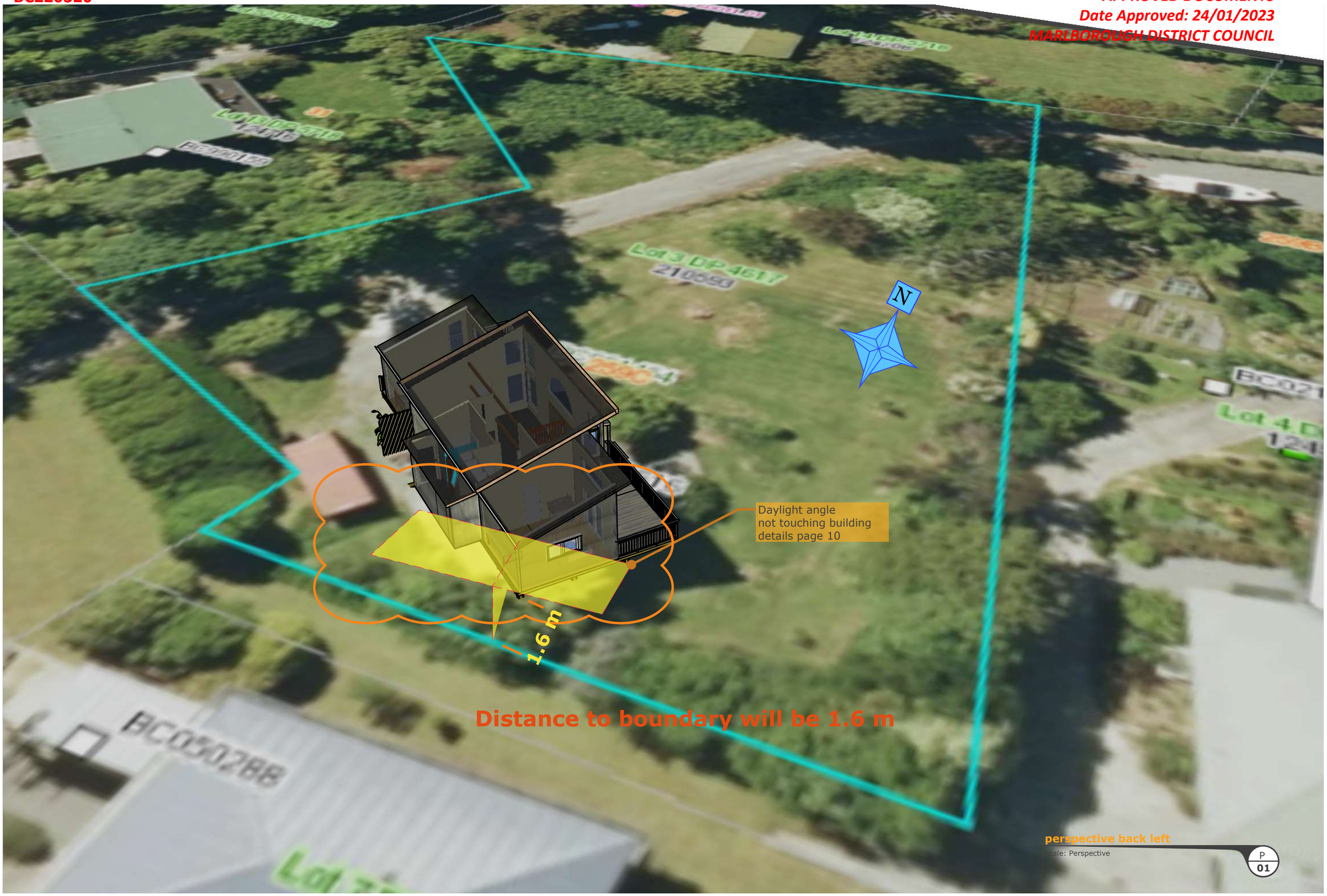

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Date modified: December 28, 2022

[redacted] for consent 28-12-2022

SAT view - boundary

04/23

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Property Number:
Valuation Number:
Legal Description:

Land Value: $
Improvement Value: $
Capital Value: $

Land Area: 0.2298 ha
Building Decade: 1990
Improvements: DWG OI

Parcel ID: 3
Appellatior
Location:

Climate Zone: 3
Earthquake Zone: Zone 3
Exposure Zone: Zone D
Lee Zone: No
Rainfall Range: 50 - 60
Wind Region: W
Wind Zone: Specific Engineering Design

Siteplan with bouindary
scale 1:250 mm

K 01

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SAT view Property

05/23

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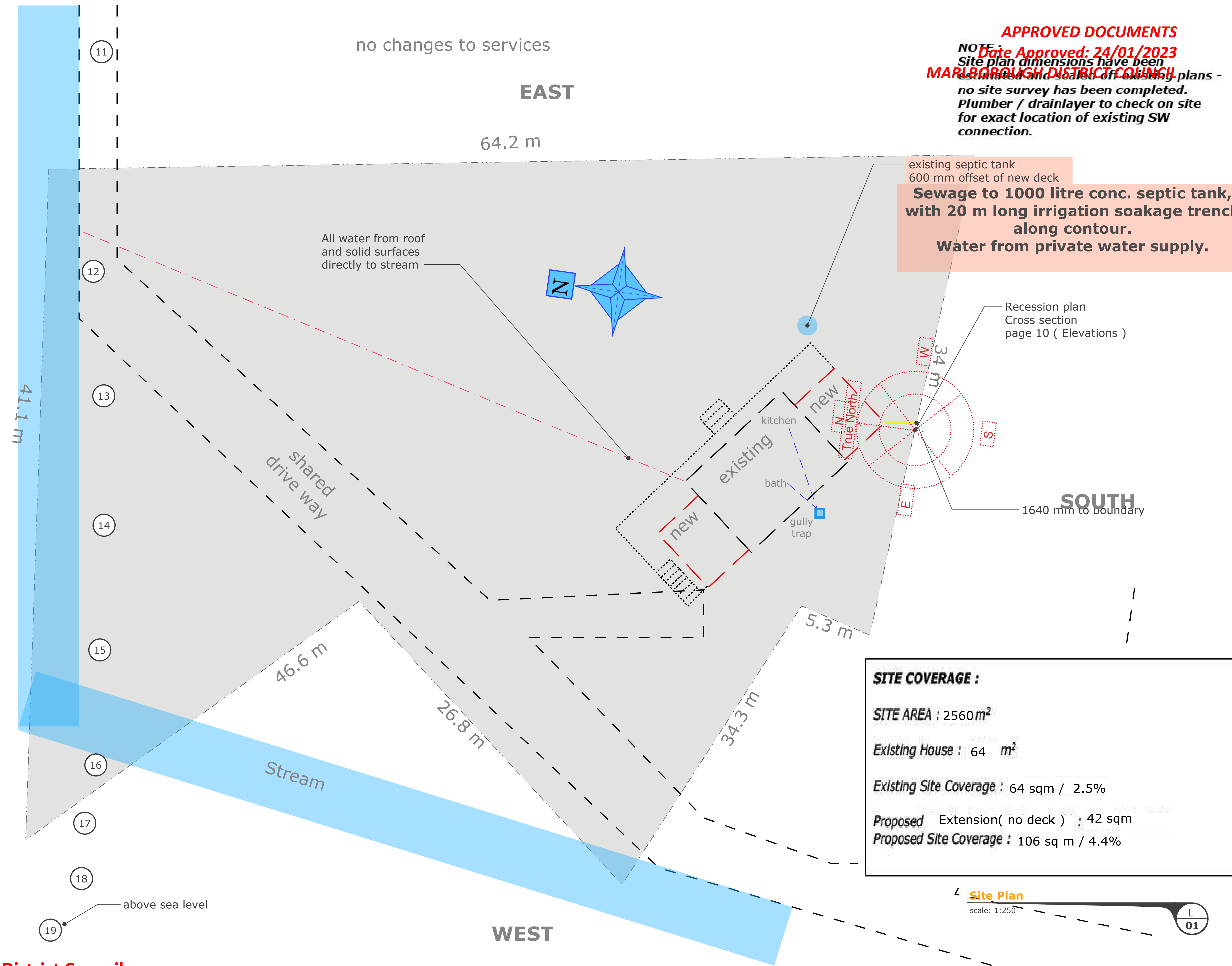
NOTE -
Site plan dimensions have been estimated and scaled off existing plans - no site survey has been completed. Plumber / drainlayer to check on site for exact location of existing SW connection.



SITE COVERAGE :

SITE AREA : 2560 m^2

Existing House : 64 m^2

Existing Site Coverage : 64 sqm / 2.5%

Proposed Extension(no deck) : 42 sqm
Proposed Site Coverage : 106 sq m / 4.4%

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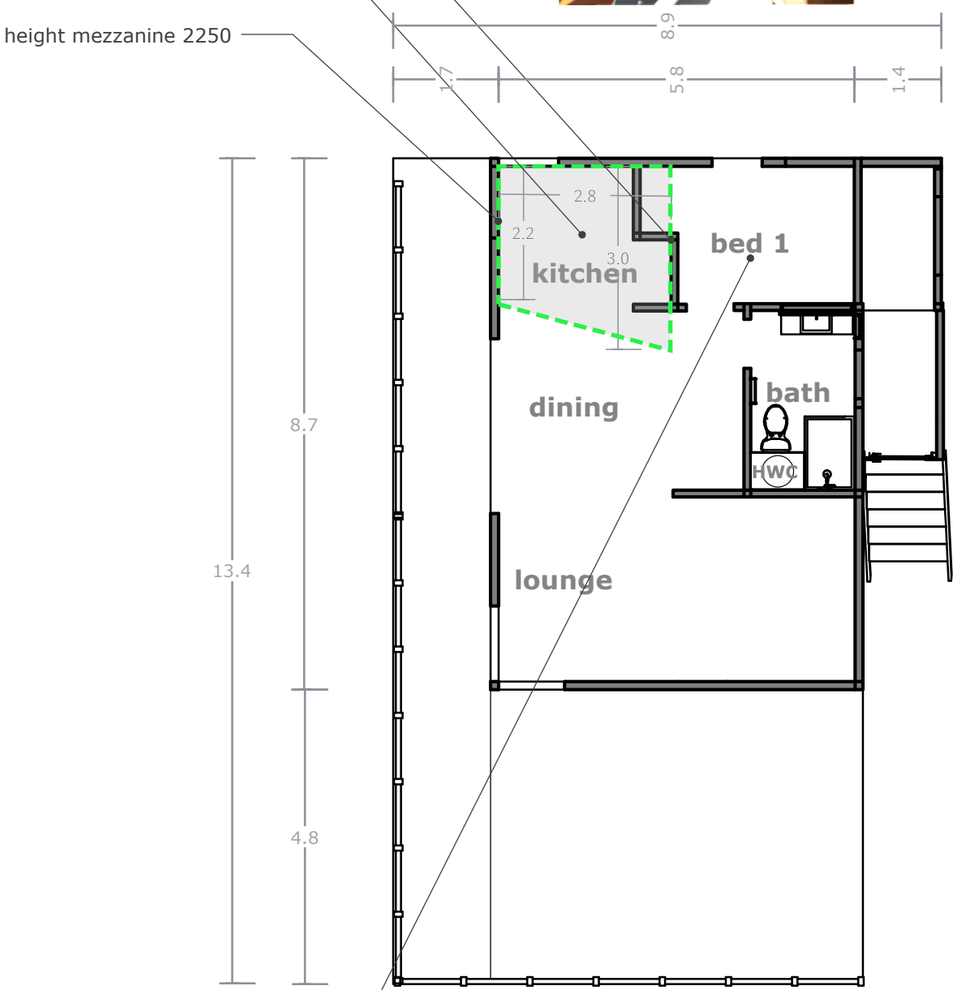
BC220320

existing

height mezzanine 1450

mezzanine used as storage

height mezzanine 2250



floorplan existing
scale: 1:100
D 01

no additional bedroom

proposed

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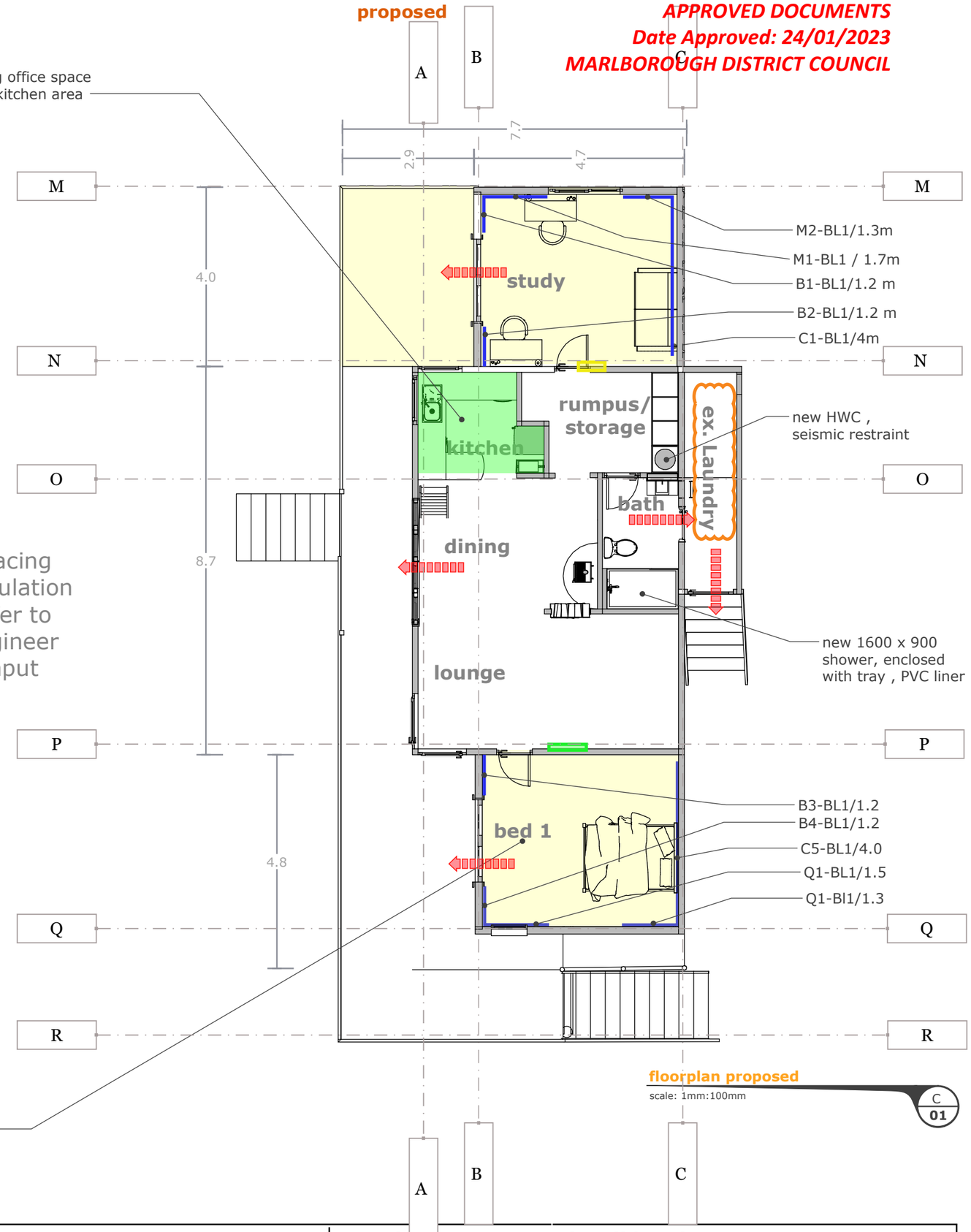
existing office space above kitchen area

Bracing calculation refer to engineer input



floorplan proposed
scale: 1mm:100mm
C 01

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r consent 28-12-2022

existing - proposed,wall bracing

07/23

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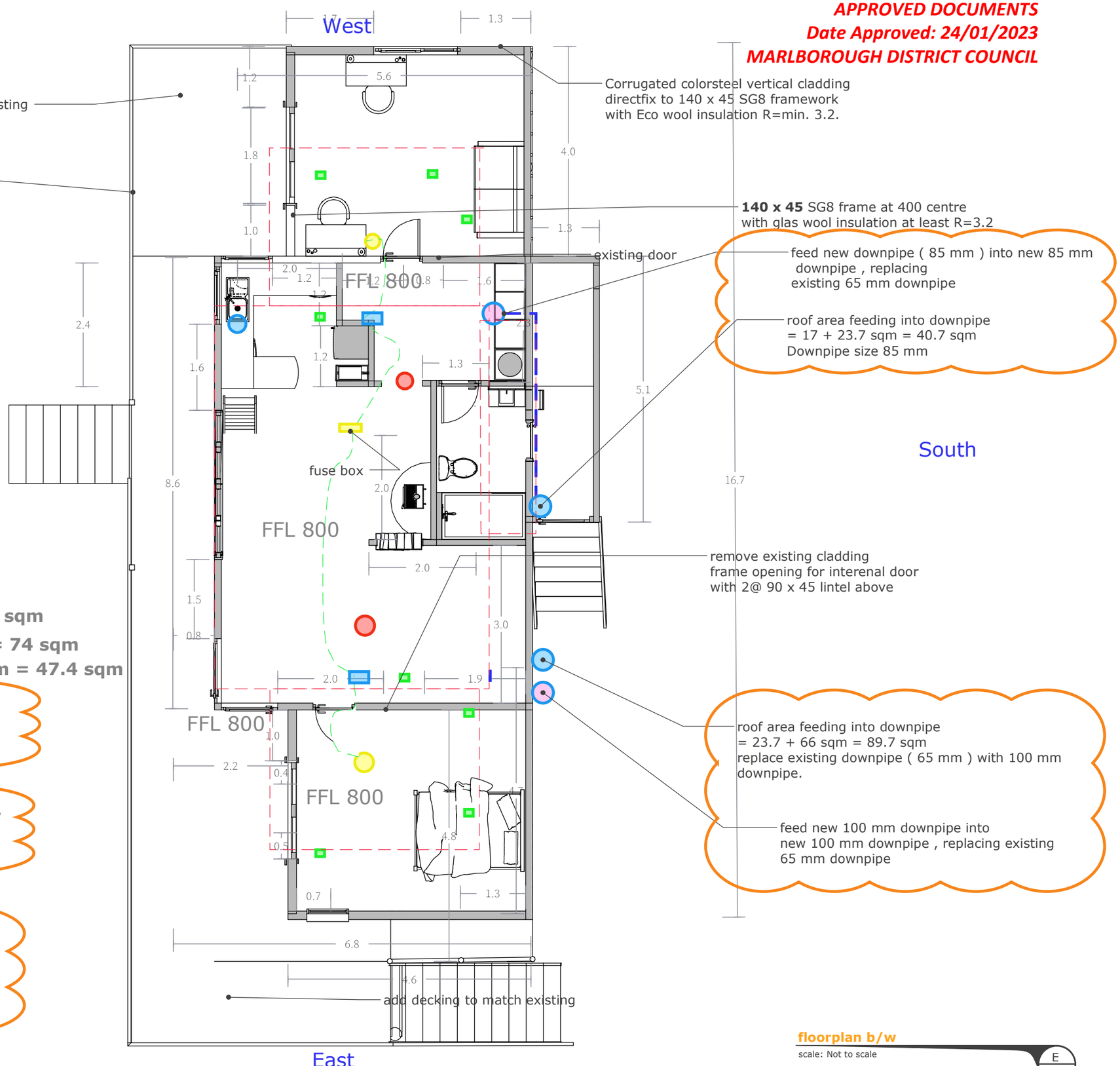

- Smoke Alarm
- existing downpipes
- additional downpipe
- Fuse Box
- Light- Switch
- Light fixture
- 240 Volt Plugs

Exposure Zone D : All colorsteel shall be Endura or Maxx

existing floor area = 59 sqm
additional proposed floor area = 17sqm +17 sqm = 34 sqm
existing roof area = 66 sqm + 8 sqm (laundry roof) = 74 sqm
additional proposed roof area = 23 . 7 sqm + 23.7 sqm = 47.4 sqm

Corrugated roofing iron, Downpipes and gutter shall be factory-painted aluminium-zinc coated or galvanised steel to AS/NZS 2728 (includes prepainted tiles) (type 4 or 6)
Roofing screws Type 17's

Wall underlay Thermacraft Watergate Plus underlay with 140 mm pink batt insulation R= 3.2

Rainfall intensity : I = 120 mm /hr
biggest Roof (existing) 66 sqm
Spouting : Continous spouting "Halo 200 "
All downpipes circular , 100 mm diameter

floorplan b/w
scale: Not to scale
E 01

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floorplan cad

08/23

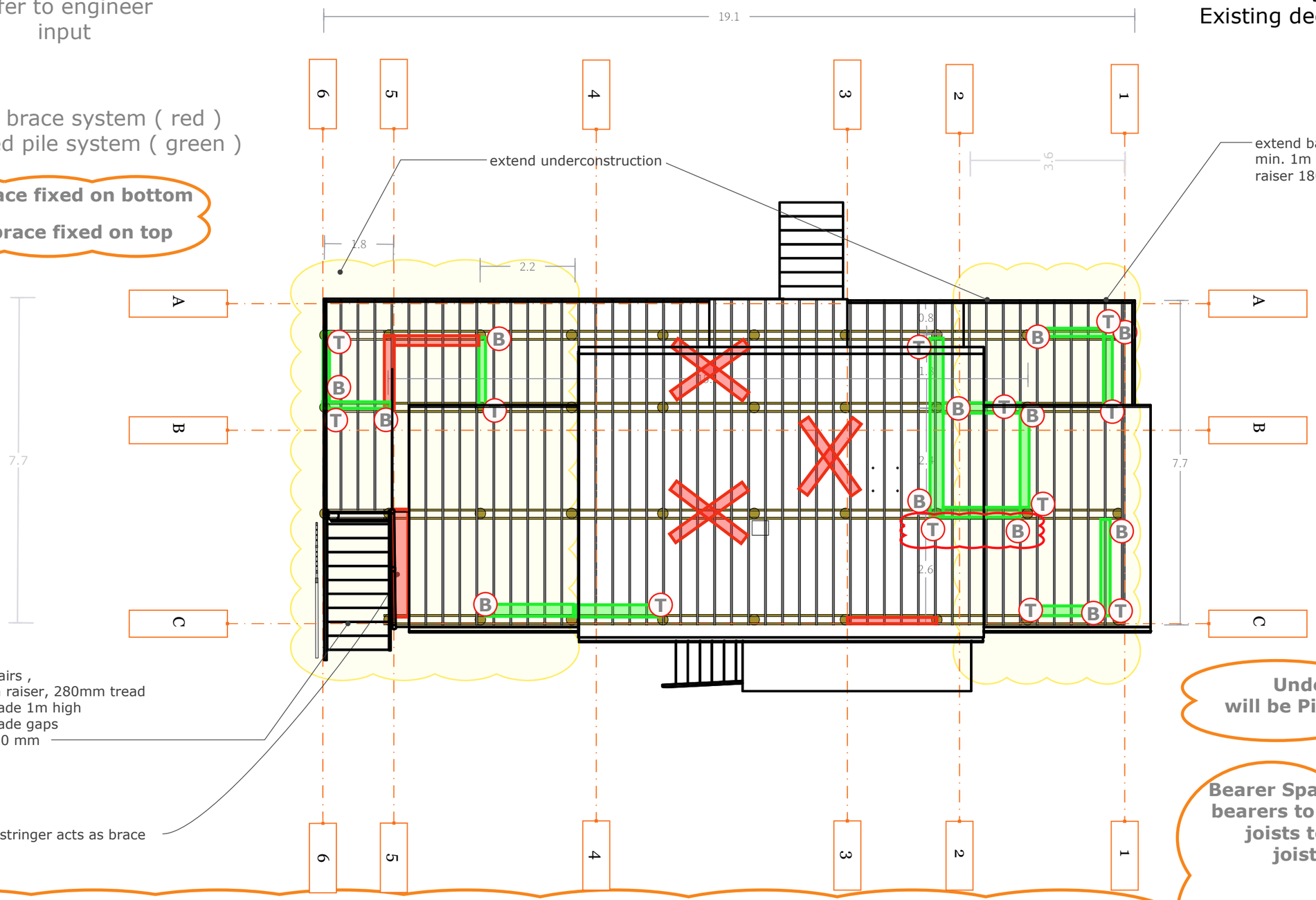
Pile bracing ,
refer to engineer
input

existing brace system (red)
New Braced pile system (green)

B = brace fixed on bottom

T = brace fixed on top

Existing bearers 240 x 50 H3.2
Existing joists 140 x 45 H3.2
Existing decking 32 mm treated pine



New Stairs ,
180mm raiser, 280mm tread
Balustrade 1m high
Balustrade gaps
max.100 mm

Stair stringer acts as brace

**Underfloor insulation
will be Pink Batts "SnugFloor "
R=2.6**

**Bearer Span 2 m ,floor load 3Kpa
bearers to be 240 x 50 SG8 H3.2,
joists to be 140 x 50 H3.2,
joist span 2.4 m max
400 center**

**joist to bearer fixing
6 kn , fix joists closest to braced pile
with 12 Kn fixings**

**All timber for underconstruction
shall be H3.2,piles H5**

NOTES :
1. All construction to be in accordance with NZS:3604 2011, and the New Zealand Building Code.
2. Unless otherwise noted, all timber to be Grade SG8, to meet the properties specified for MSG 8 or VSG 8 in NZS:3603, unless otherwise specified.
3. Exposure Zone D : All connections exterior to building envelope to be Type 316 Stainless Steel.
4. Footings to be excavated to Good Ground.
5. All exposed concrete, and concrete with reinforcing, to be 25MPa.

Summary of Foundations : Use timber piled foundation as specified by NZS3604 except all piles need to extend down to 1.1 m (incl. braced piles)

All piles to be 175 SED H5 , footing to 1.1 m embedment. Height of piles out of ground < 600

Ordinary piles to be fixed with 6kN fixings, braced piles fixed with 12 kN fixings (refer to Lumberlock pile fixing)

Foundation color

scale: 1mm:100mm

M 01

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foundation

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Studs 140 x 45 at 200 center where wall higher than 3.6 m , Under 3.6 m height use 140 x 45 , 480 center. All internal timber shall be H1.2

Top plate fixings at 400 center ,Fixing Type B 2/90 x 3.15 end nails and 2 wire dogs or alternative 4.7 kN connection Bottom plate fixing , 3 90 x 3.15 nails every 600 mm, 7.5 kn fixing to bottom plate, closest to both sides of trim studs

details page 23

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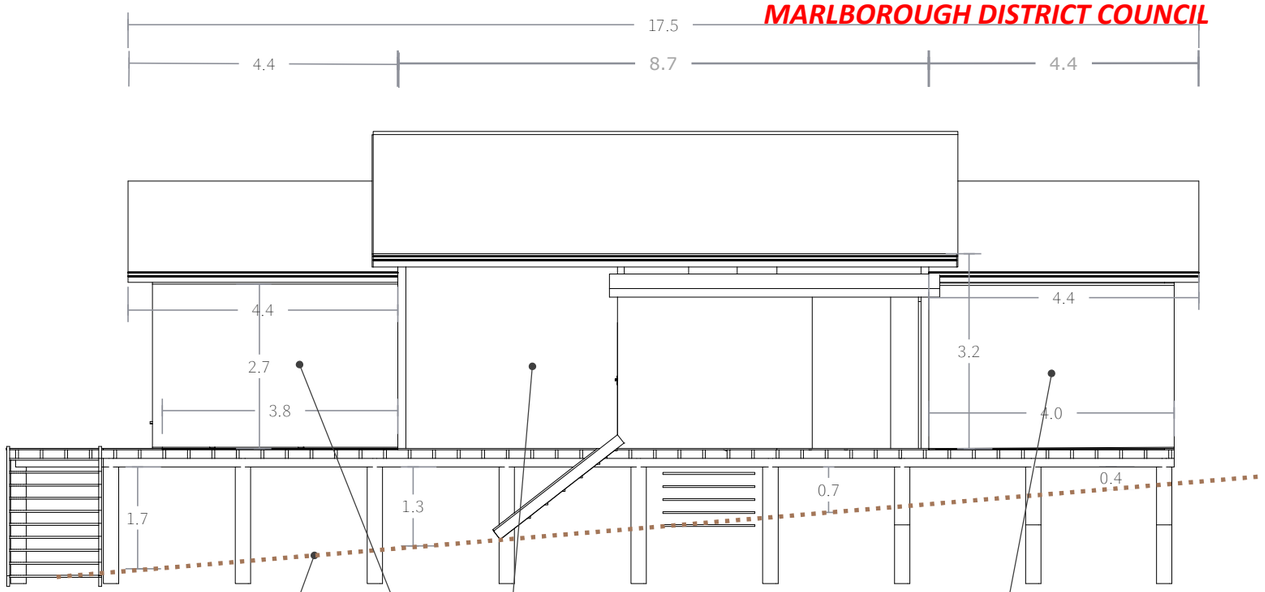
Elevation Front CAD
scale: 1mm:100mm
N 01

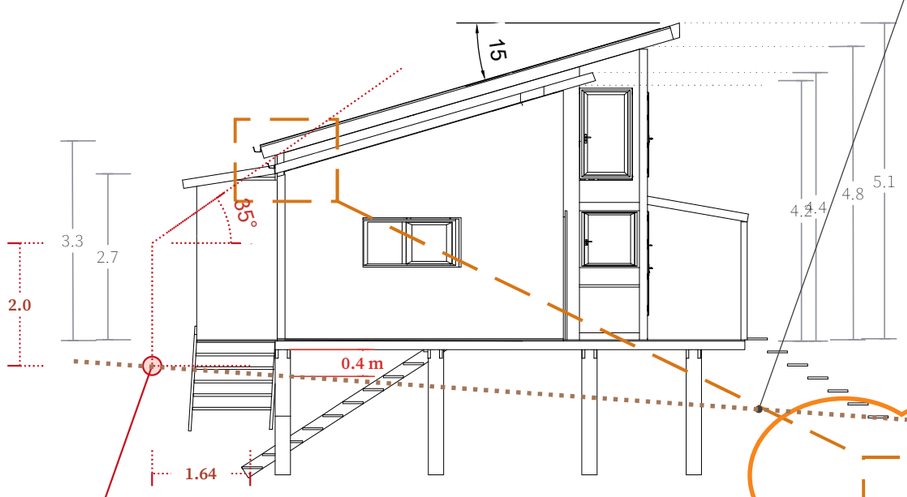


Elevation right CAD
scale: 1mm:100mm
Q 01

existing board and batten

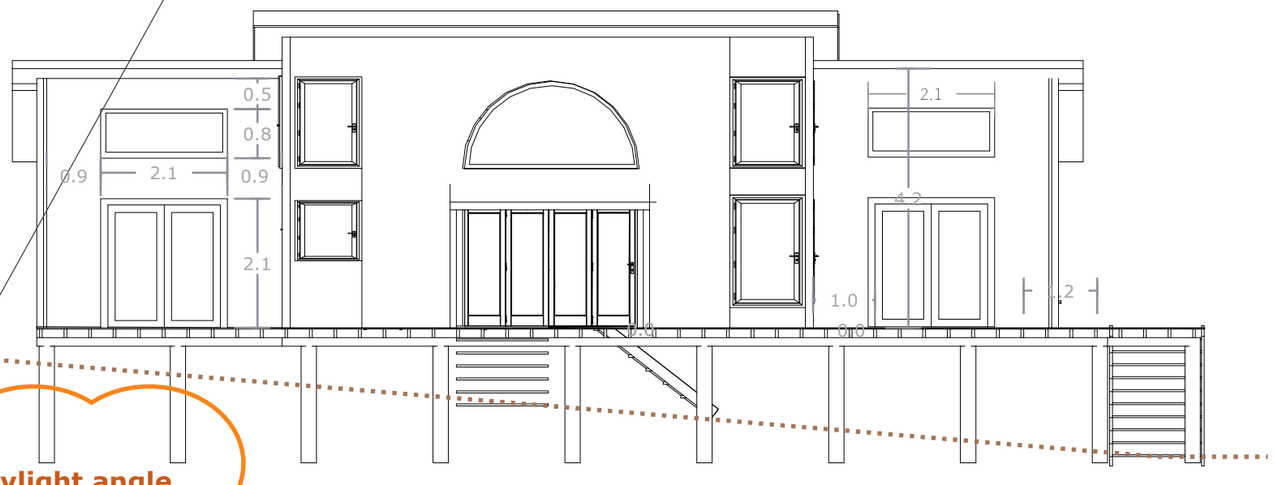
new vertical direct fix corrugated

ca. 18m above Sea level

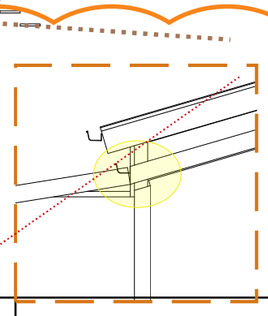


Elevation back CAD
scale: 1mm:100mm
R 01

closest to south boundary



Elevation left CAD
scale: 1mm:100mm
S 01



Daylight angle not touching building. see also page 4

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Elevations CAD ,recession indicator

10/23

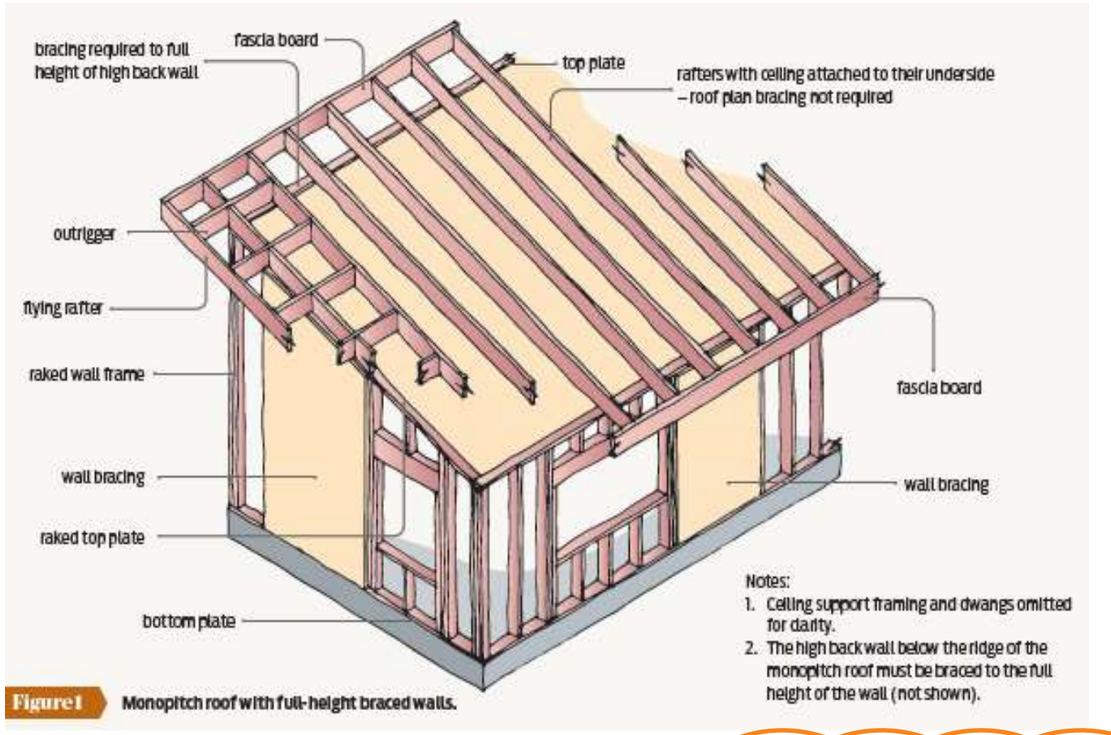


Figure 1 Monopitch roof with full-height braced walls.

Table 10.2 – Rafters (continued) (see 10.2.1.3.2) **– VSG 8 and MSG 8**

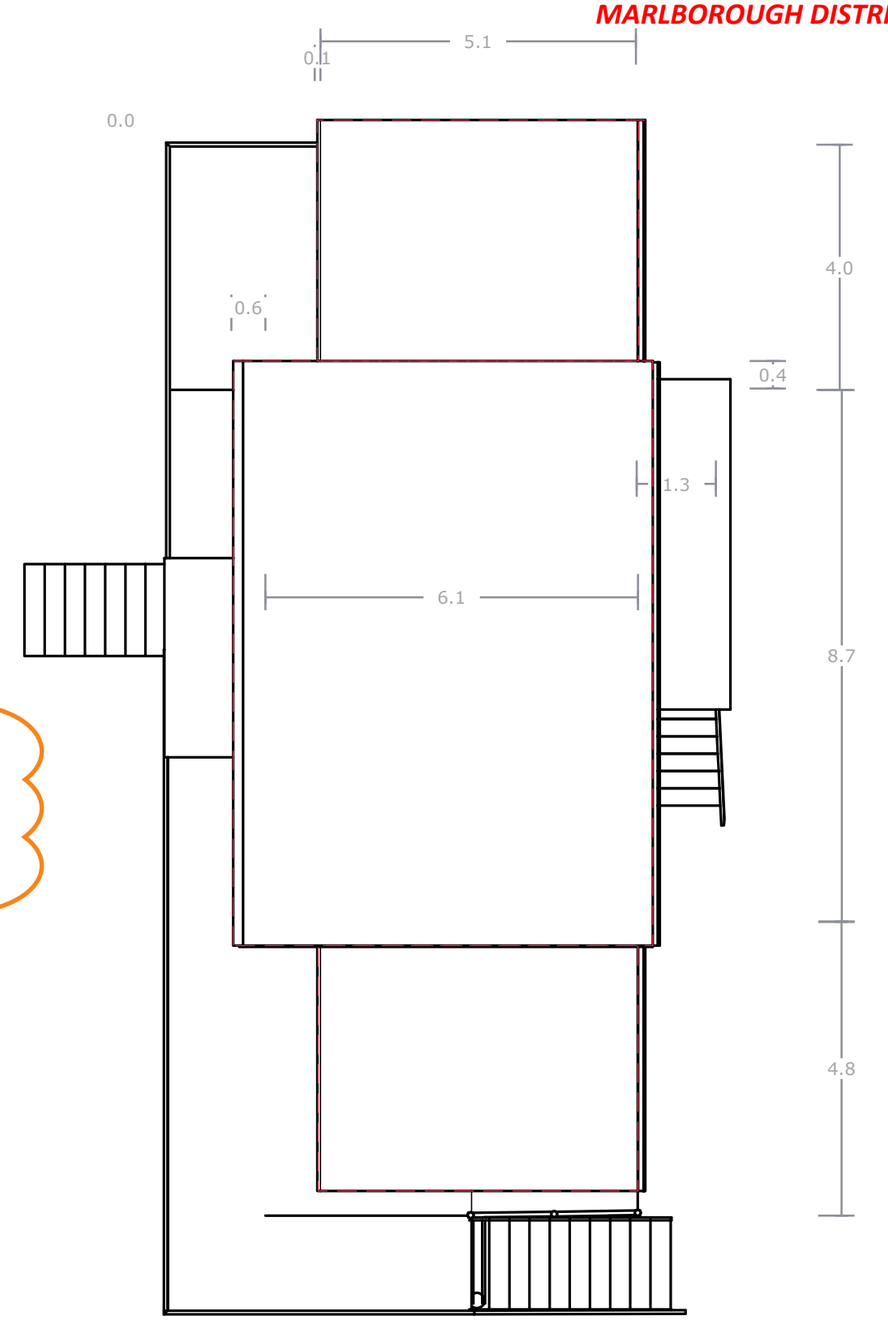
(d) Light roof for very high wind zone

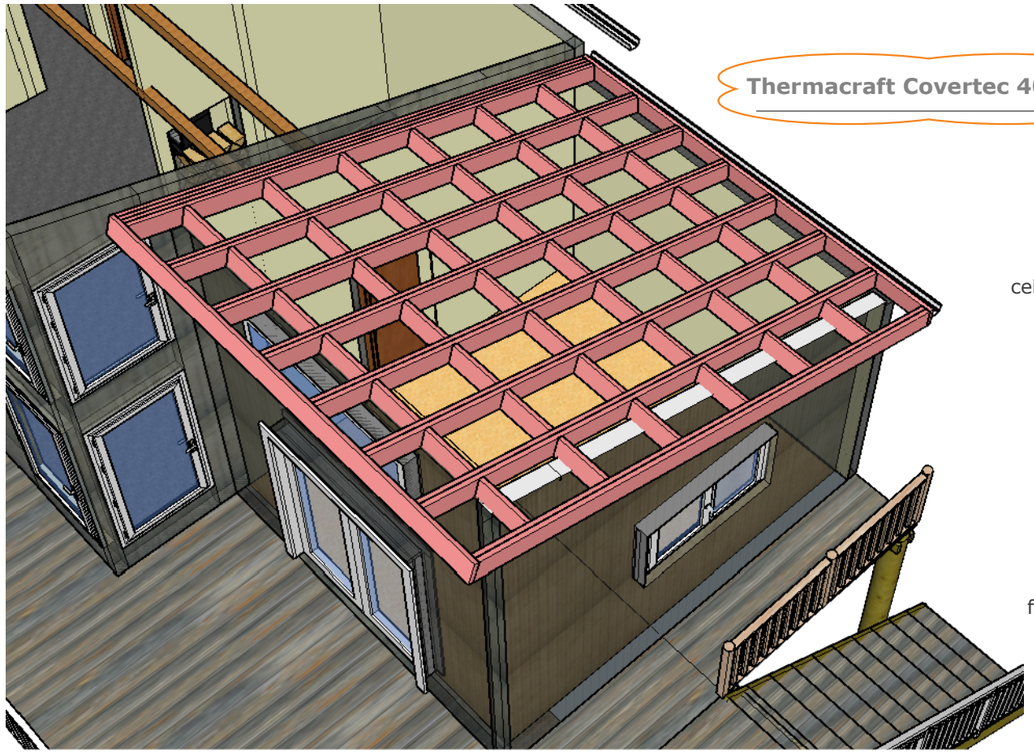
Rafter size (Width x thickness)	Rafter spacing (mm) 600		900		1200	
	Rafter span	Fixing type	Rafter span	Fixing type	Rafter span	Fixing type
(mm x mm)	(m)		(m)		(m)	
70 x 35	1.3	A	–	–	–	–
90 x 35	1.7	B	1.5	B	1.3	B
140 x 35	2.4	B	2.1	B	1.9	B
70 x 45	1.4	A	1.2	B	–	–
90 x 45	1.8	B	1.6	B	1.4	B
140 x 45	2.9	B	2.5	B	2.3	B
190 x 45	3.5	B	3.0	B	2.7	B
240 x 45	3.8	B	3.3	B	3.0	C
290 x 45	4.1	B	3.5	B	3.2	C
90 x 70	2.1	B	1.8	B	1.7	B
140 x 70	3.3	B	2.9	B	2.6	B
190 x 70	4.5	B	3.9	C	3.6	C
240 x 70	5.7	B	5.0	C	4.5	C
290 x 70	6.3	C	5.5	C	5.0	C

Fixing type	Fixing to resist uplift	Alternative fixing capacity (kN)
A	2/100 x 3.75 skewed nails	0.7
B	2/100 x 3.75 skewed nails + 1 wire dog	2.7
C	2/100 x 3.75 skewed nails + 2 wire dogs	4.7

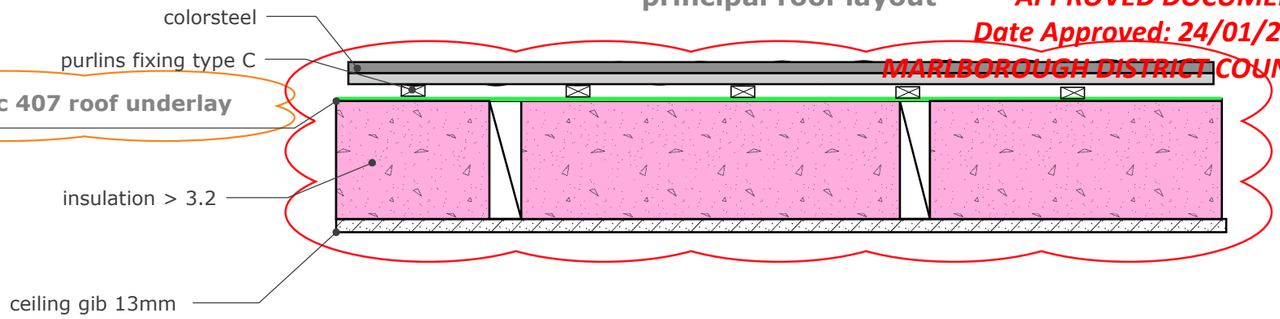
NOTE –
(1) Rafter spans may be increased by 10 % for rafters continuous over 2 or more spans that have not been birdsmouthed at intermediate supports.
(2) Fixing types at intermediate supports for rafters running continuously over those supports shall have double the capacity of the fixing types given in this table.
(3) For the full range of fixing types and capacity see table 10.13.
(4) Members 70 mm and 90 mm thick may be substituted with built-up members sized and nailed in accordance with 2.4.4.7.

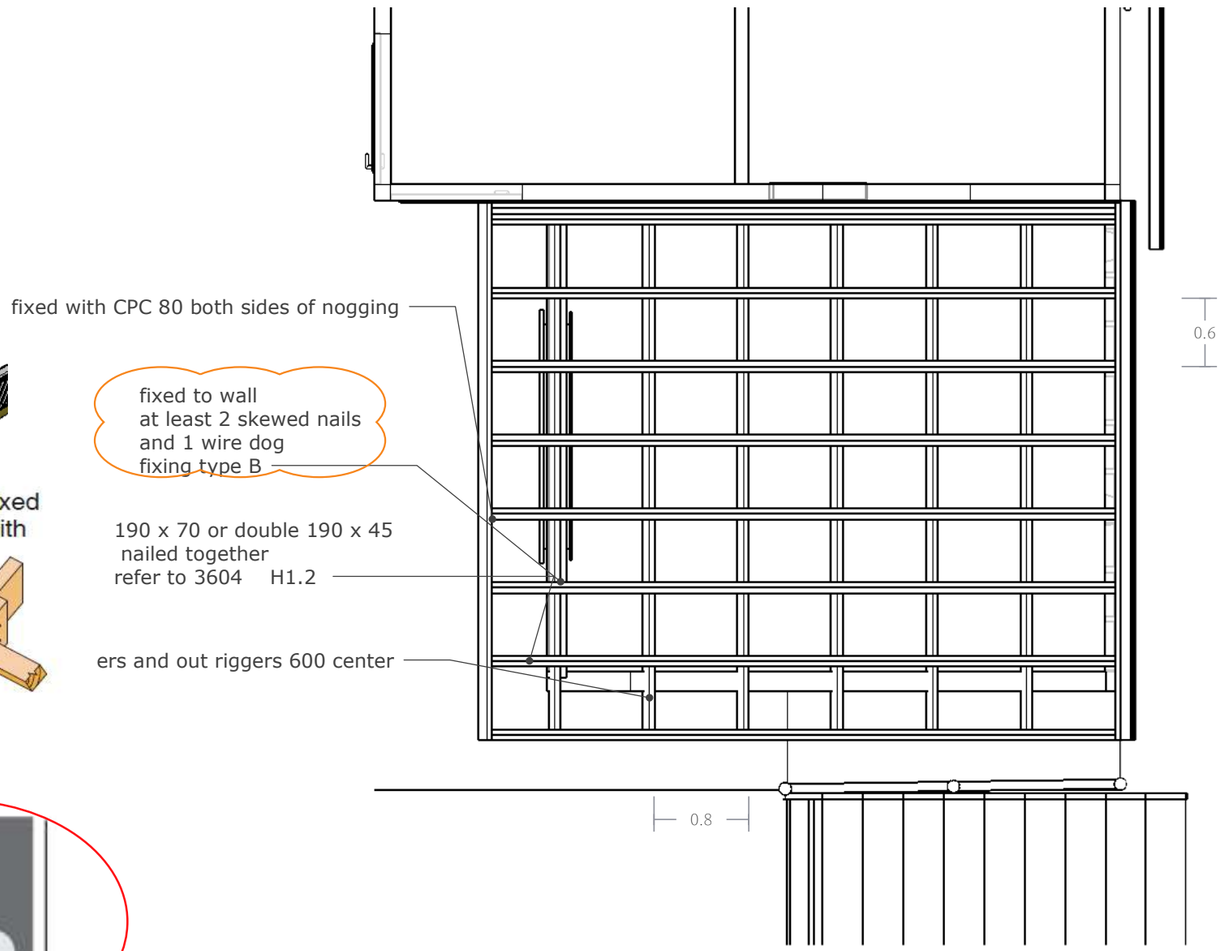
Rafters shall be 190 x 70
or alternative 190 x 90
H1.2 , 600 center , fixing type B





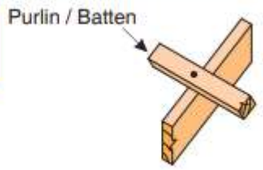
principal roof layout





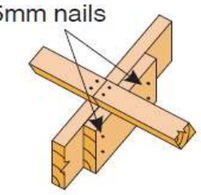
FIXING TYPE C 2.4kN

1 BLUE SCREW



FIXING TYPE C, D or E OVER PURLIN SPLICE

90 x 35mm block fixed to chord or rafter with 4 x 75mm nails



- TYPE C
  1 SCREW
  to each purlin
- TYPE D & E
  1 NAIL plus 1 SCREW to each purlin

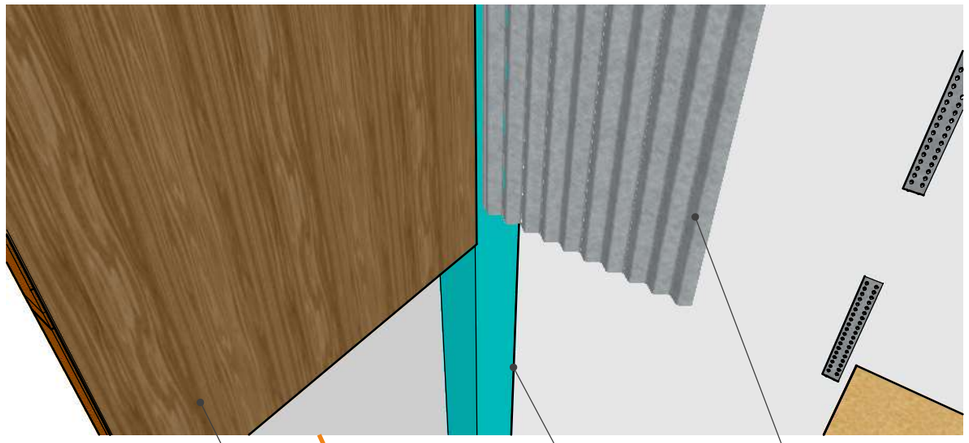
Table 12: Steel corrugate profiled roofing – 0.55 mm BMT with minimum profile height 16.5 mm
Maximum spans and fixing patterns. Refer to Paragraph 8.4.6

Purlin spacings (metres)		Wind zones		
End span	Intermediate span	Low and Medium	High and Very High	Extra High
0.4	0.6	C3	C3	C3
0.6	0.9	C3	C3	C3
0.8	1.2	C3	C3	C3
1.15	1.6	C3	C3	C2

NOTE: C2 fixing pattern is – Hit 1, miss 1, hit 1, miss 2...
C3 fixing pattern is – Hit 1, miss 2, hit 1, miss 3...

Amend 5 Aug 2011

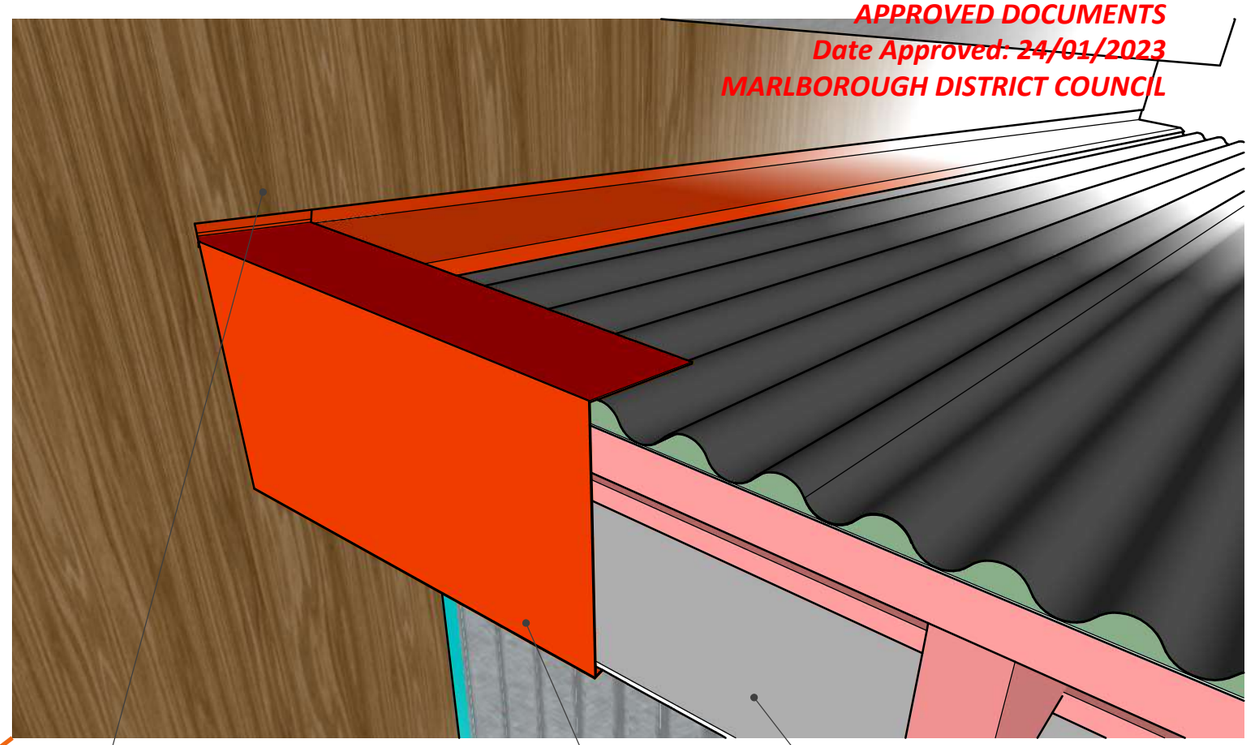
roof structure
no scale
T 01



existing cladding
(board and Batten

dyna flashing
on top of building
paper

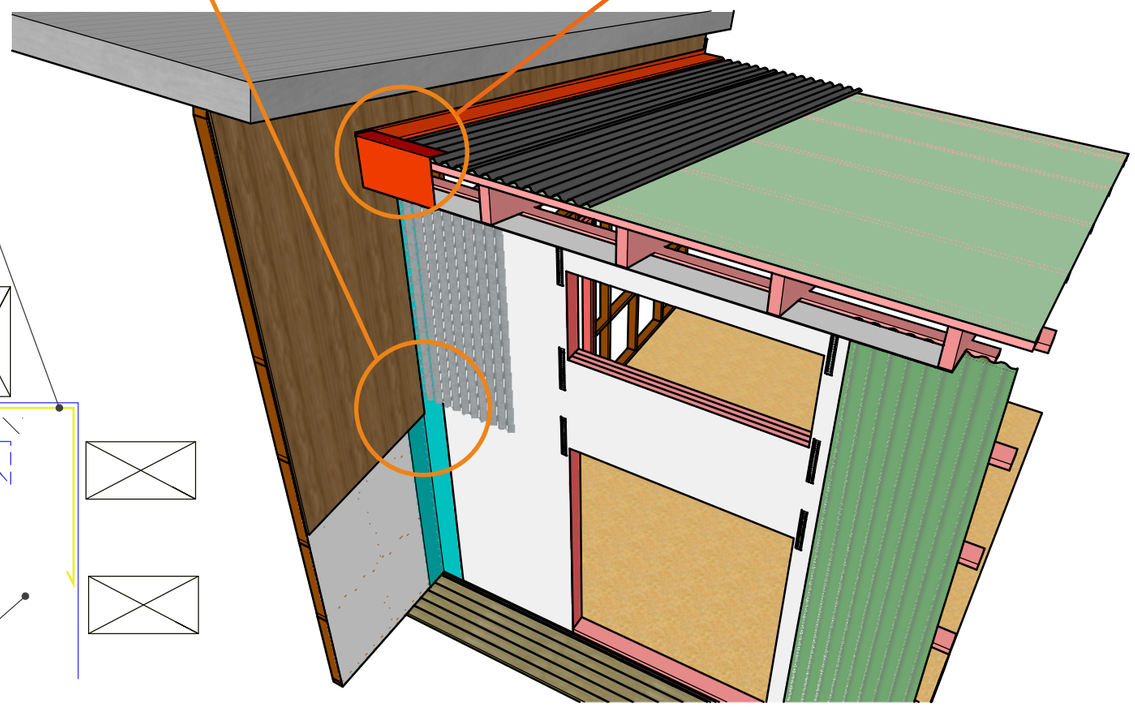
new corrugated
metal cladding
vertical, direct
fix



cut back existing cladding

soffit (6 mm Hardie)

flashing custom made



internal corner
flashing

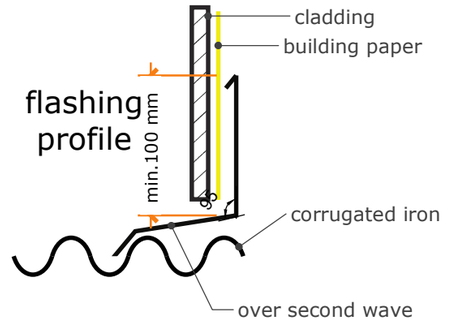
studs

paper

existing cladding

decorative
trim can
be done

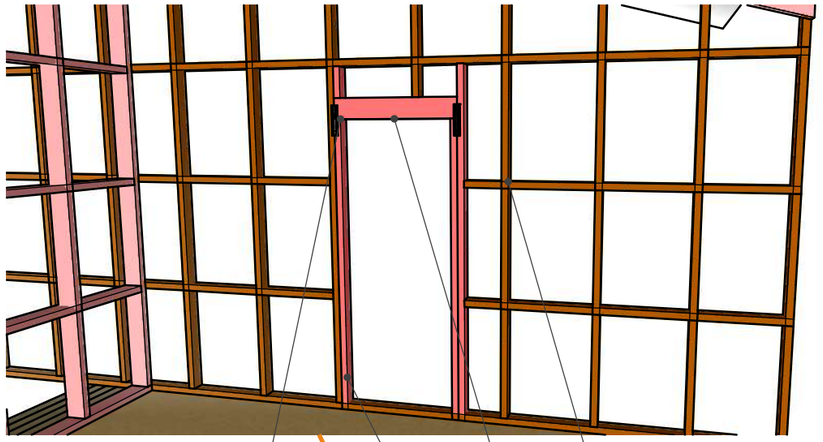
new corrugated
vertical flashing



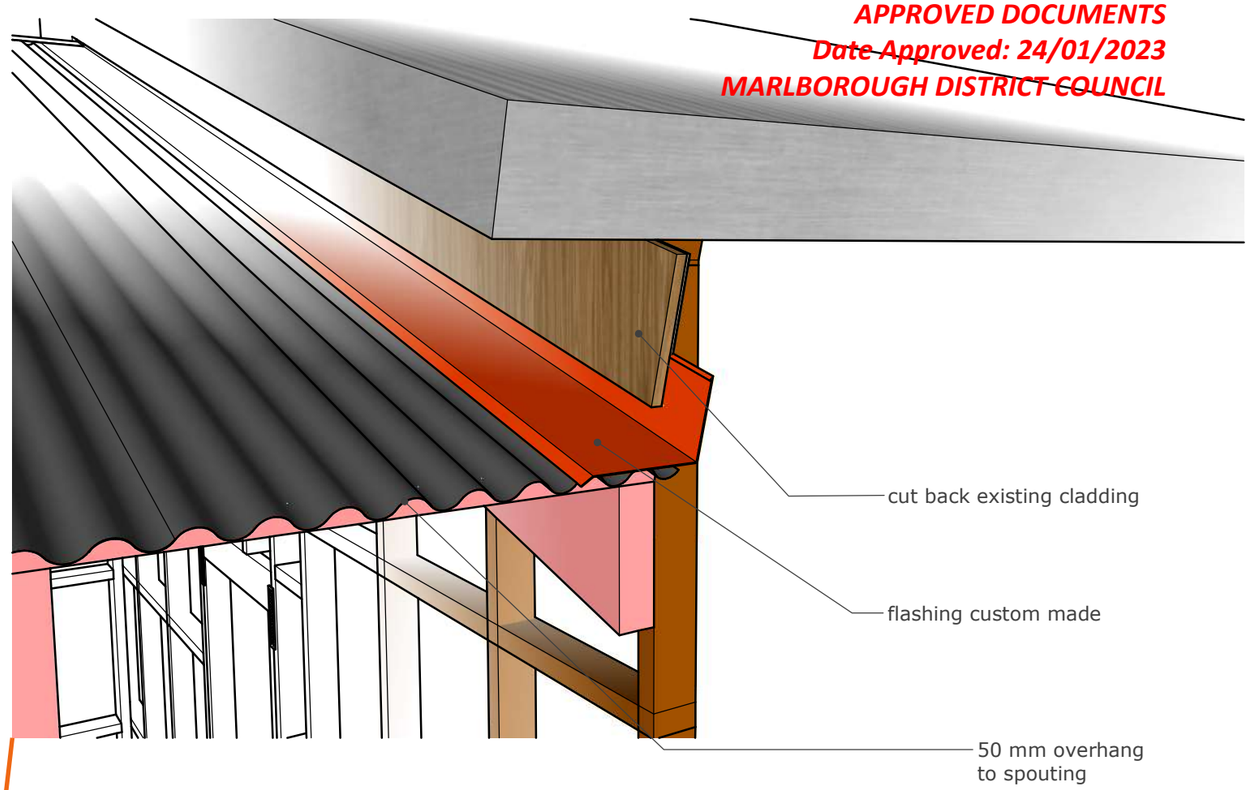
overview details front

scale: Perspective

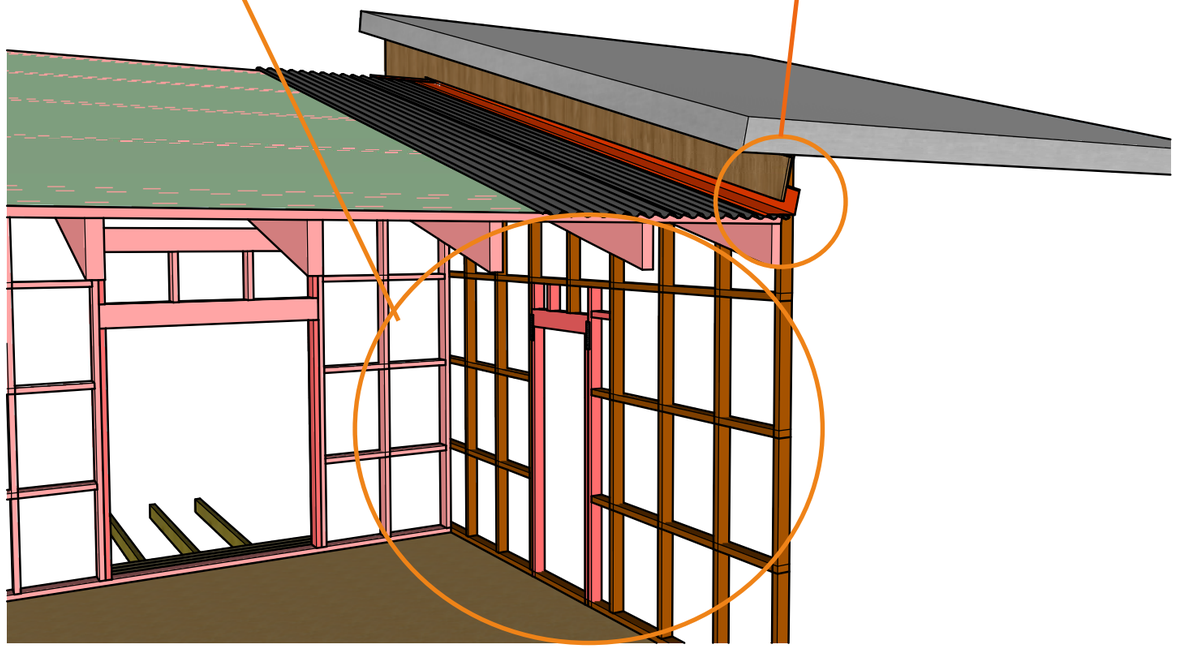
U
01

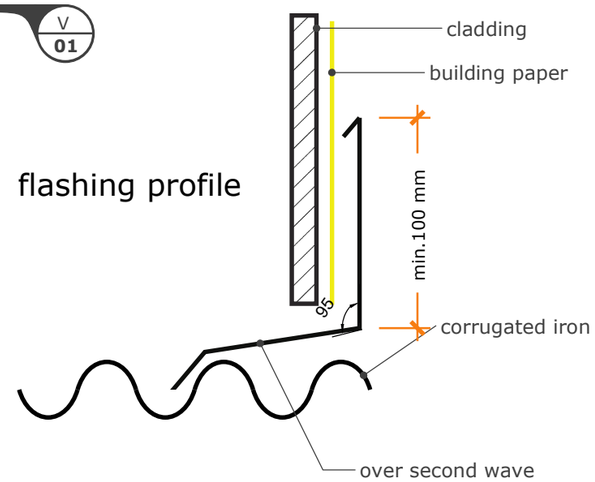


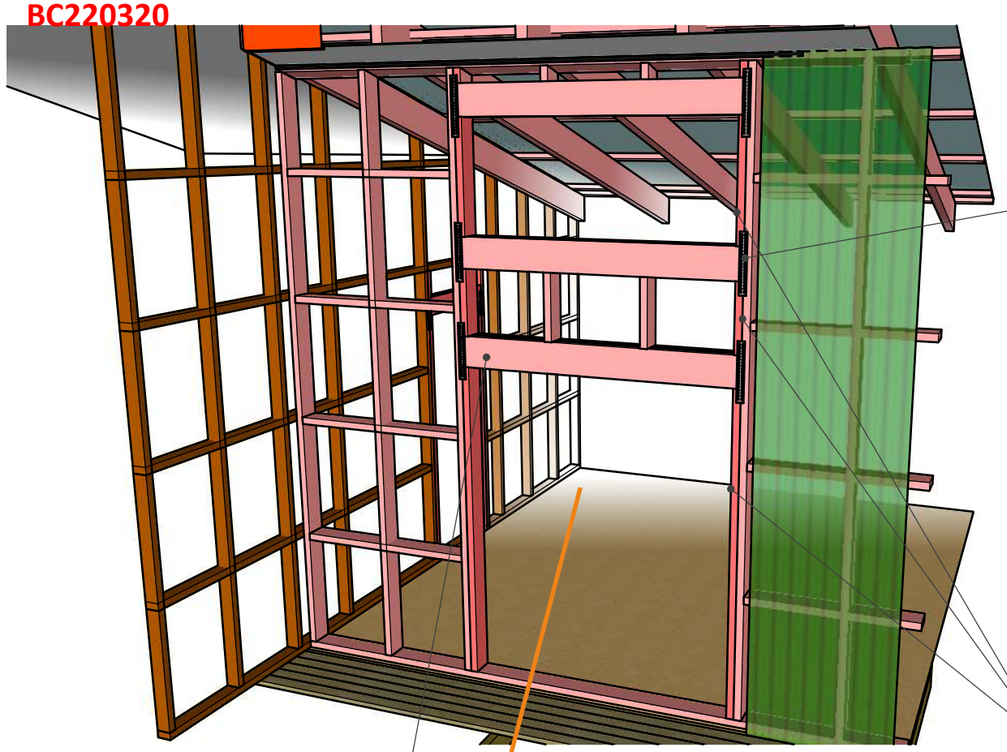
detail door existing framwork
scale: Perspective
W 01



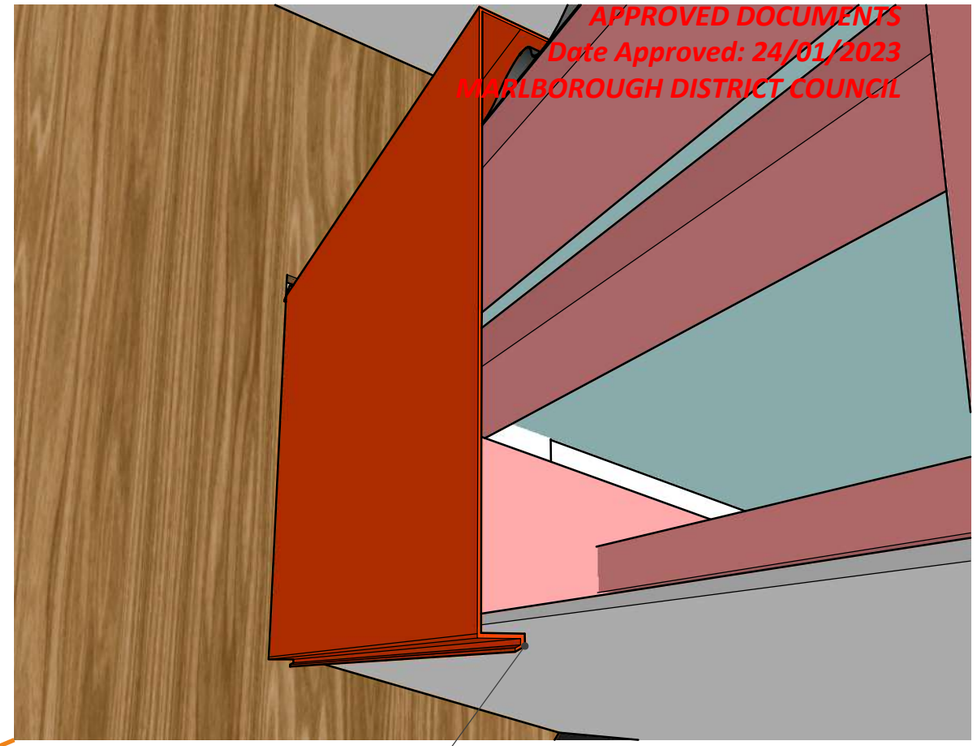
detail roof junction flashing
scale: Perspective
V 01





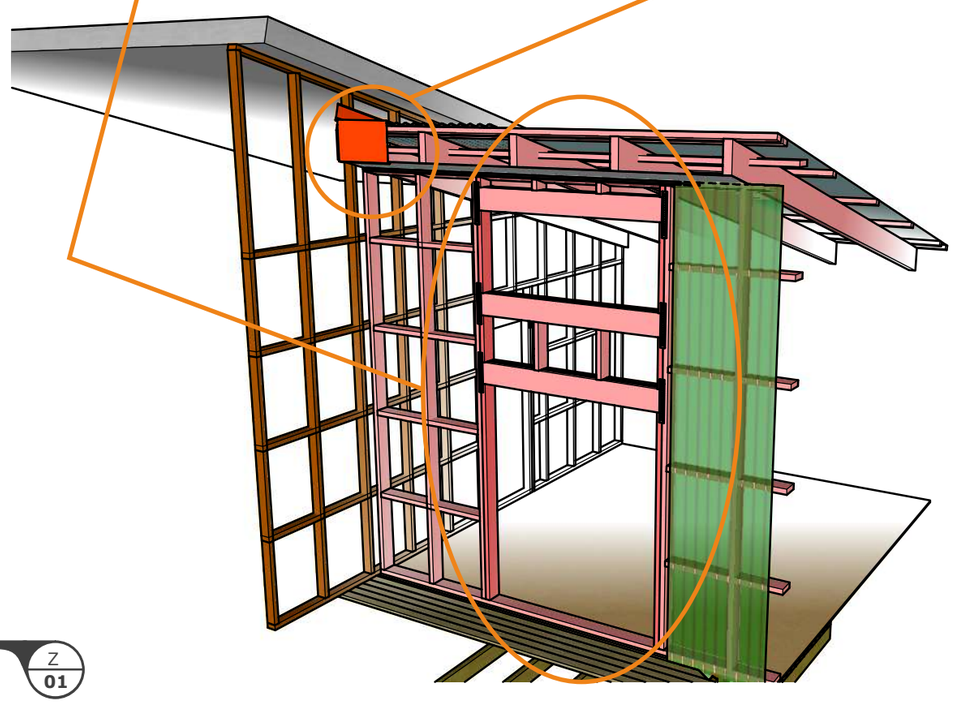


detail frames door window
scale: Perspective
X
01

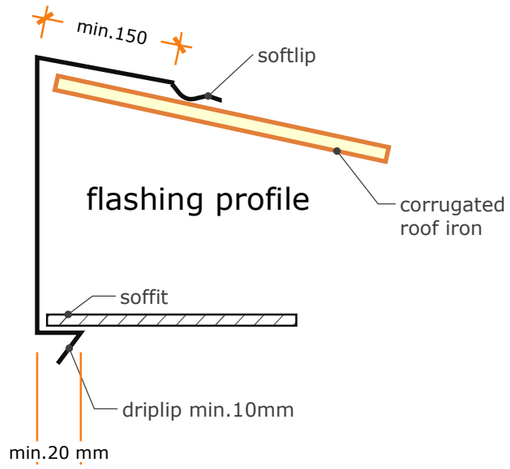


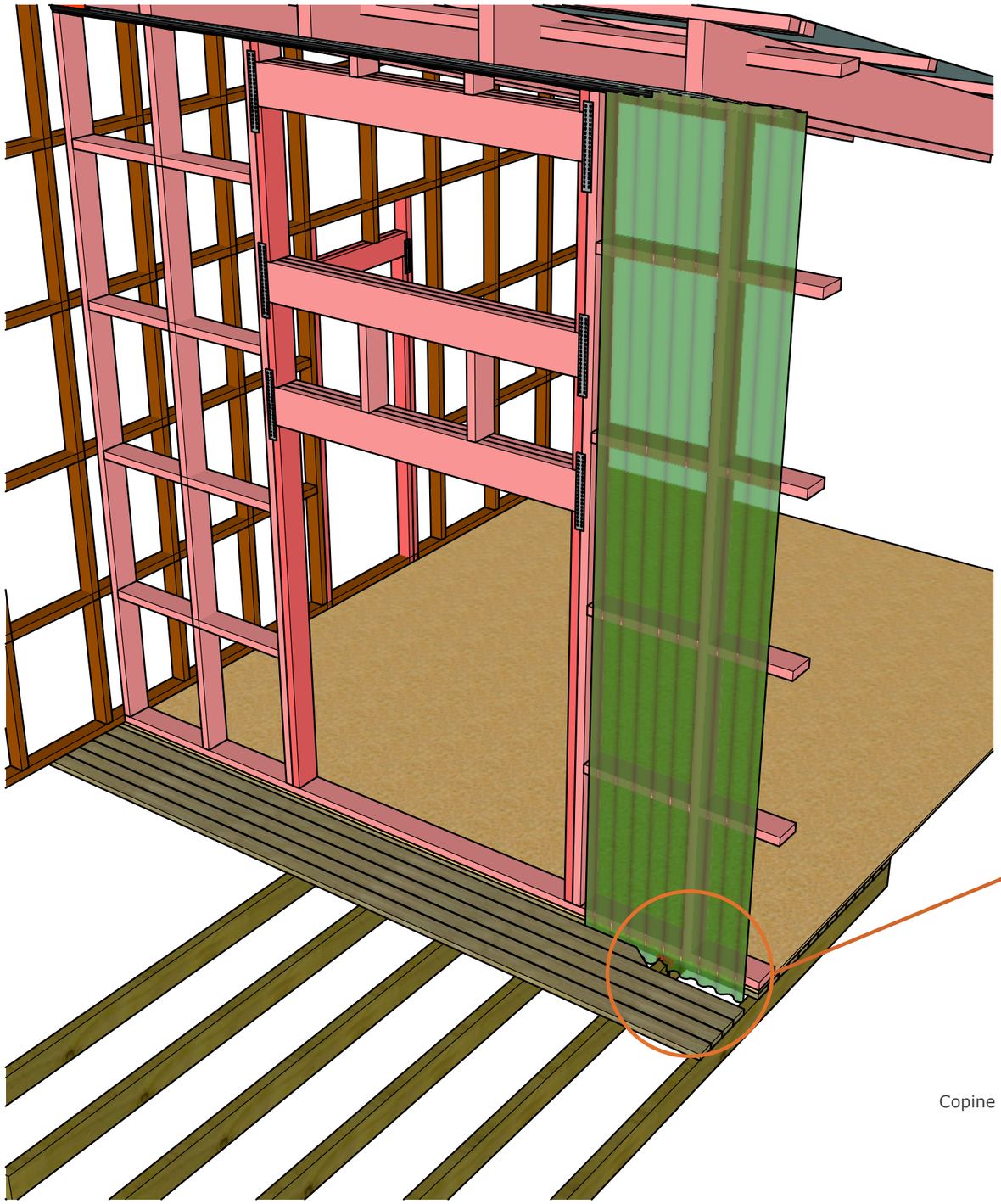
detail soffit flashing
scale: Perspective
Y
01

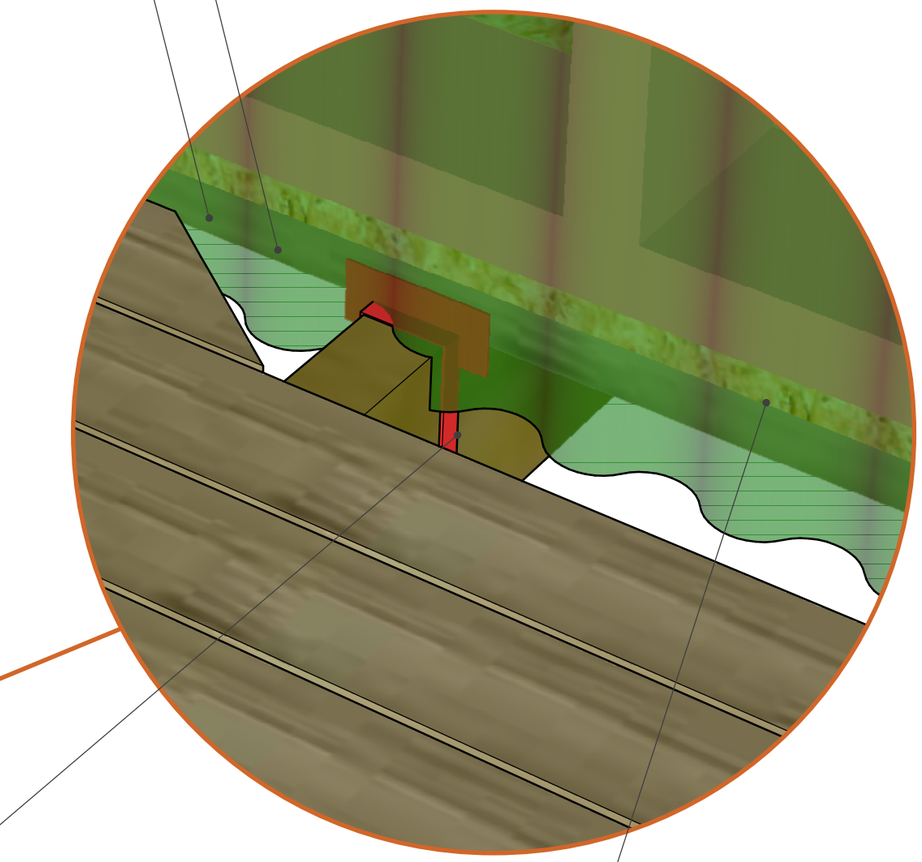
folded back for soffit
support, drip lip



detail frames door window
scale: Perspective
Z
01

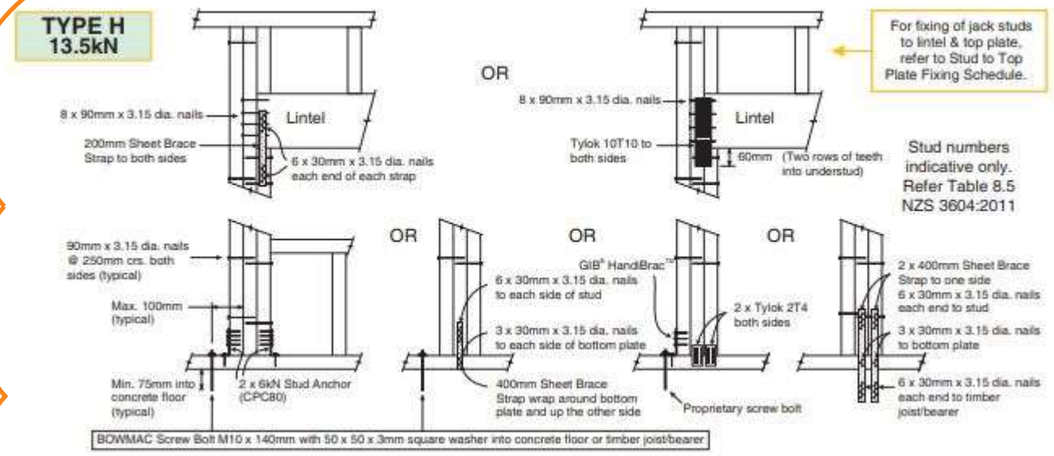






cladding deck detail
scale: Perspective

AA
01



All Lintels fixing Type H

Lintel fixings

AD 01

GIB EzyBrace® Bracing Software

Single Across

To Add Elements, right click when on the Element above which you want to insert the Element.

Import ☑ Limit Element Resistance to 120 BUs/m

Line	Ext. Len. (m)	Element	Length (m)	Angle (degrees	Stud Ht. (m)	Type	Supplier	Wind (BU)	Earthquake
1	1.3	1	1.2	0	3	BLP-H	GIB®	115	115
1	1.7	1	1.6	0	4	BLP-H	GIB®	115	115
4	1.3	1	1.2	0	4	EPBS-1.2	EP Barri	47	50
4	1.7	1	1.6	0	3	BLP-H	GIB®	154	154
3	1.7	1	1.5	0	4	BLP-H	GIB®	108	108

Wind	Earthquake
Demand	
	999
Resistance	
539 ∞%	542 Check
115 OK	115 OK
115 OK	115 OK
47 Check	50 Check
154 OK	154 OK
108 OK	108 OK

GIB EzyBrace® Bracing Software

SubFloor Across

To Add Elements, right click when on the Element above which you want to insert the Element.

Import

Line	Ext. Len. (m)	Element	Length(m) or No.	Angle (degrees	Type	Supplier	Wind (BU)	Earthquake
1	4.8	1	3		Braced Piles	NZS360	480	360
2	4.8	1	3		Braced Piles	NZS360	480	360
3	4.8	1	3		Braced Piles	NZS360	480	360
4	4.8	1	3		Braced Piles	NZS360	480	360

Wind	Earthquake
Demand	
	1301
Resistance	
1920 ∞%	1440 111%
480 OK	360 OK
480 OK	360 OK
480 OK	360 OK
480 OK	360 OK

Single Along

To Add Elements, right click when on the Element above which you want to insert the Element.

Import ☑ Limit Element Resistance to 120 BUs/m

Line	Ext. Len. (m)	Element	Length (m)	Angle (degrees	Stud Ht. (m)	Type	Supplier	Wind (BU)	Earthquake
a	1.2	1	1.2	0	4	BLP-H	GIB®	86	86
a	1	1	1.0	0	4	BL1-H	GIB®	71	62
a	1.5	1	1.5	0	4	BLP-H	GIB®	108	108
a	1.4	1	1.4	0	4	BLP-H	GIB®	101	101
c	1.5	1	1.5	0	4	BLP-H	GIB®	108	108
b	4	1	4	0	3.2	BLP-H	GIB®	360	360
b	4.8	1	4	0	3.2	GSP-H	GIB®	360	360

Wind	Earthquake
Demand	
	999
Resistance	
1194 ∞%	1185 119%
86 Check	86 Check
71 Check	62 Check
108 OK	108 OK
101 OK	101 OK
108 OK	108 OK
360 OK	360 OK
360 OK	360 OK

GIB EzyBrace® Bracing Software

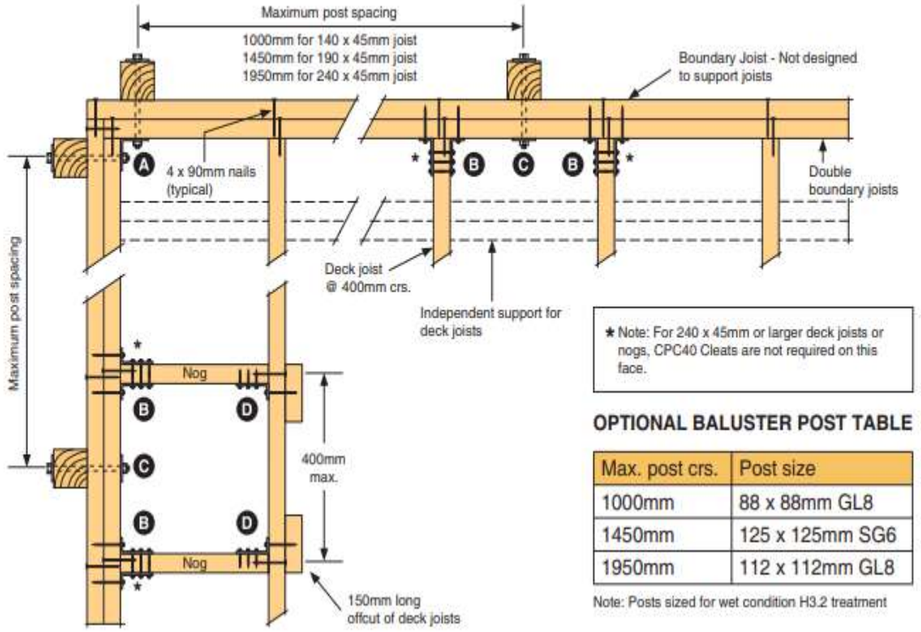
SubFloor Along

To Add Elements, right click when on the Element above which you want to insert the Element.

Import

Line	Ext. Len. (m)	Element	Length(m) or No.	Angle (degrees	Type	Supplier	Wind (BU)	Earthquake
A	7.7	1	4		Braced Piles	NZS360	640	480
B	7.7	1	4		Braced Piles	NZS360	640	480
e	7.7	1	4		Braced Piles	NZS360	640	480

Wind	Earthquake
Demand	
	1301
Resistance	
1920 ∞%	1440 111%
640 OK	480 OK
640 OK	480 OK
640 OK	480 OK

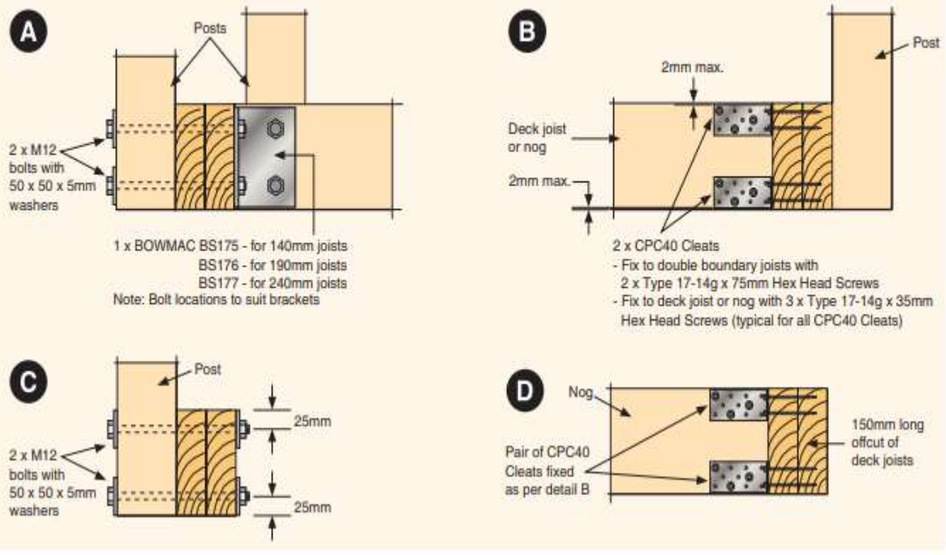


★ Note: For 240 x 45mm or larger deck joists or nogs, CPC40 Cleats are not required on this face.

OPTIONAL BALUSTER POST TABLE

Max. post crs.	Post size
1000mm	88 x 88mm GL8
1450mm	125 x 125mm SG6
1950mm	112 x 112mm GL8

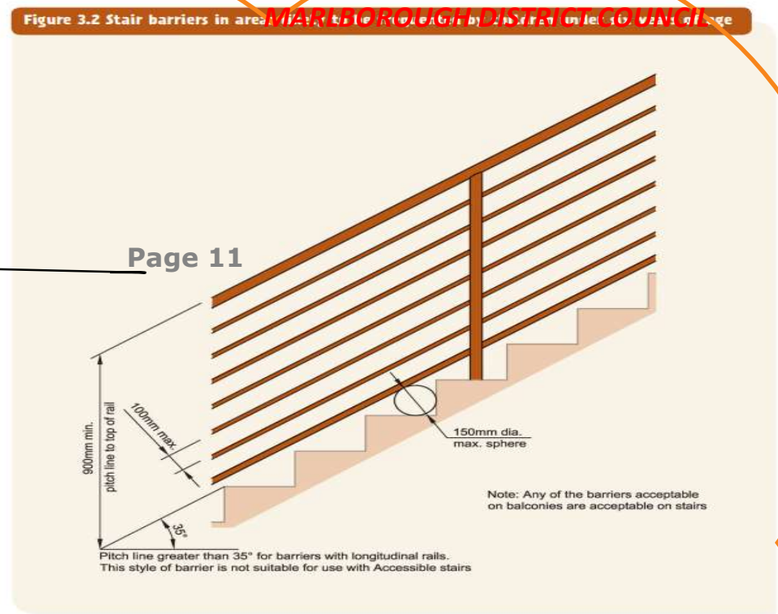
Note: Posts sized for wet condition H3.2 treatment



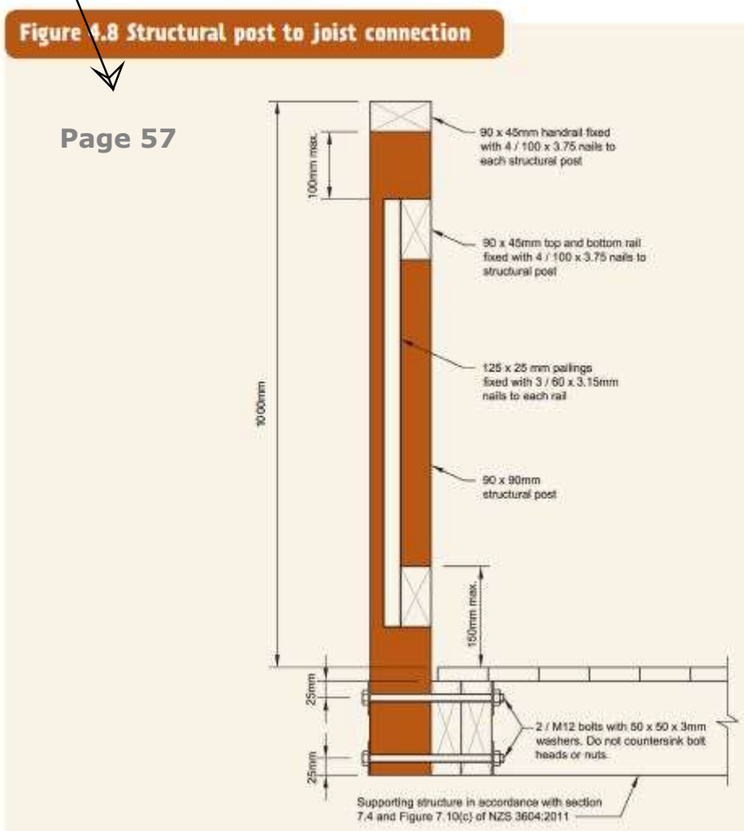
ALTERNATIVE SOLUTION TO CLAUSE 7.4.1.3 NZS 3604:2011

Sourced from Guidance on Barrier Design - March 2012

Page 11



Page 57



Barrier design around deck and stairs

NZS 4218:2009 CALCULATION METHOD TOOL

BRANZ

version 30 Jan 2018

BRANZ NZS 4218:2009 CALCULATION METHOD TOOL

PROJECT SUMMARY

Project name	
Address	
Designer	
Address	
Phone	
Date	
Reference number	
Climate zone	3: South Island, Taupo and Ruapehu Districts, northern part of Rangitikei District, Stewart
Wall construction type	1: Any wall type
If mixed wall types	
If solid timber wall	1: External 75 mm thick solid timber and timber framed internal walls
Is there just one wall construction R-value (R_{Wall}) and one door (R_{Door}) construction R-value (but different to the walls) for the building?	no

Summary of calculation method heat loss

Element	Area (m²)	Proposed building heat loss (W/°C)	Reference building heat loss (W/°C)	
Roofs/ceilings	36.8	11.2	11.2	
Walls	70.4	35.2	35.2	
Floors	37.3	28.7	28.7	
Vertical glazing	12.0	46.2	95.1	
Skylights	0.0	0.0	-	
Doors (Attributable)	0.0	0.0	-	
Total		121.2	170.2	W/°C

Glazing percentage: 15%
Glazing <50%: Yes
Minimum R-values OK: Yes
Issues to check:

PASS/FAIL PASS

NZS 4218:2009 CALCULATION METHOD TOOL

BRANZ

BRANZ NZS 4218:2009 CALCULATION METHOD TOOL

BUILDING ELEMENTS

Roofs/ceilings: Skylights are not included here. Enter them in the skylights table below.

Roof/ceiling element	Description	Area (m²)	Construction R-value	Heat loss
1	roof 1	18.4	3.30	5.6
2	roof 2	18.4	3.30	5.6
3				
4				
5				

Total area 36.8 m²
Total roofs/ceilings heat loss 11.2 W/°C

Skylights: Skylights are at an angle of 60° or less to the horizontal. If the skylight R-value is not known, use a value of 0.15.

Skylight	Description	Area (m²)	Construction R-value	Heat loss
1				
2				
3				
4				
	From Skylight Schedule	0.0		0.0

Total area 0.0 m²
Total skylight heat loss 0.0 W/°C

Walls: Doors are not included here. Enter them in the door table.
Each wall area is the total wall area less the glazing and door area for that wall

Wall element	Description	Area (m²)	Construction R-value	Heat loss
1	backwall 1	10.6	2.00	5.3
2	backwall 2	10.6	2.00	5.3
3	sidewall 1	14.2	2.00	7.1
4	sidewall 2	14.2	2.00	7.1
5	frontwall 1	10.4	2.00	5.2
6	frontwall 2	10.4	2.00	5.2
7				
8				
9				
10				

Total area 70.4 m²
Total wall heat loss 35.2 W/°C

Floors: Only include the ground or exterior floors. Intermediate floors not exposed to the exterior are excluded.
H1/AS1 is not perm

Floor element	Description	Area (m²)	Construction R-value	Heat loss
1	floor 1	18.7	1.30	14.4
2	floor 2	18.7	1.30	14.4
3				
4				
5				

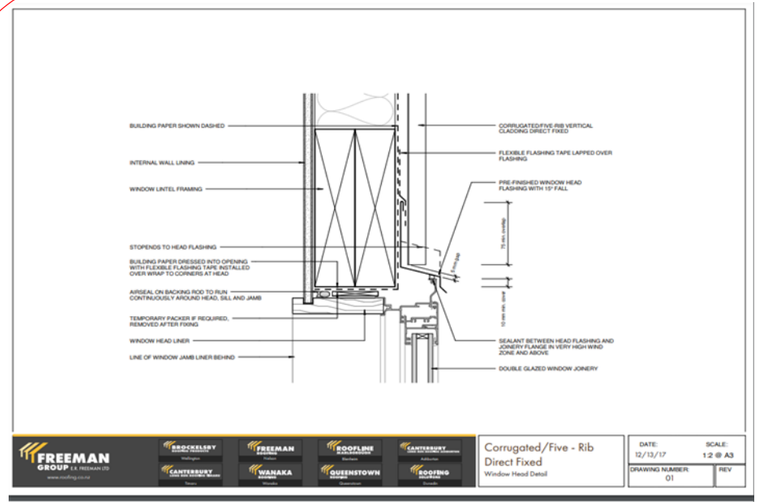
Total area 37.3 m²
Floor heat loss 28.7 W/°C

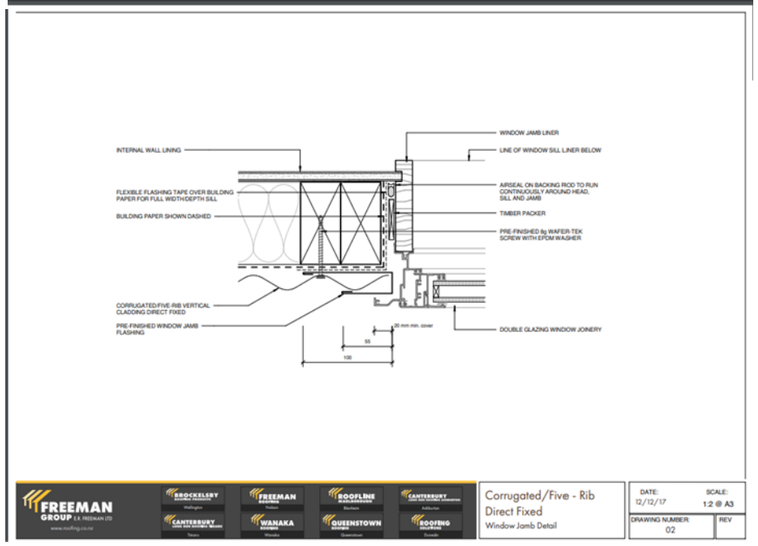
Vertical glazing: Vertical glazing only (steeper than 60°), including glazing in doors. Skylights are on the Skylight table.
If the glazing R-value is not known, use a value of 0.15

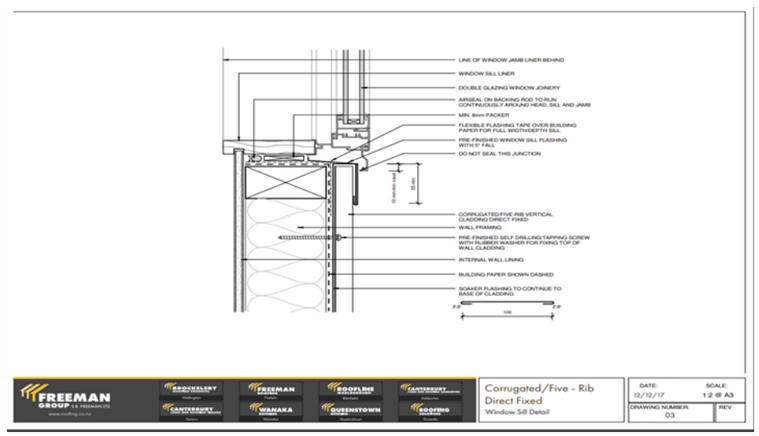
Glazing element	Description	Area (m²)	Construction R-value	Heat loss
1	frenchdoor 1	3.2	0.26	12.3
2	frenchdoor 2	3.2	0.26	12.3
3	top light 1	1.6	0.26	6.2
4	top light 2	1.6	0.26	6.2
5	window 1	1.2	0.26	4.6
6	window 2	1.2	0.26	4.6
7				
8				
9				
10				
	From Glazing Schedule	0.0		0.0

Total area 12.0 m²
Total vertical glazing heat loss 46.2 W/°C

more details in Specifications







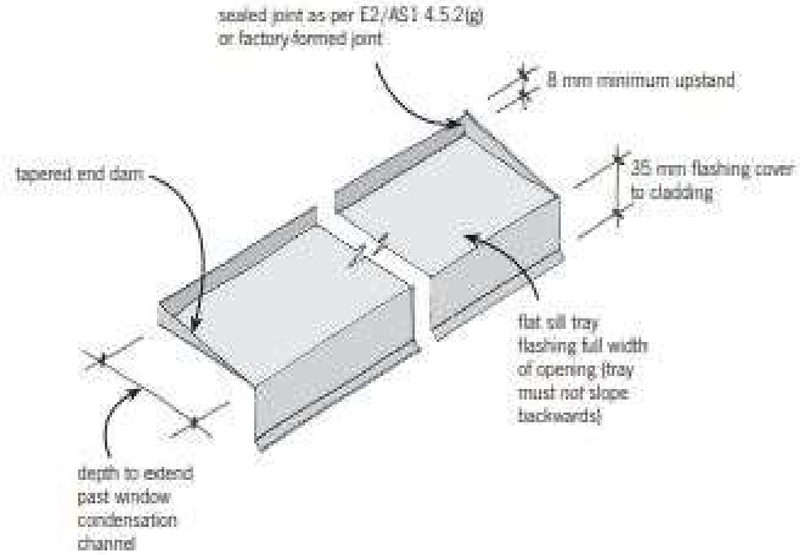
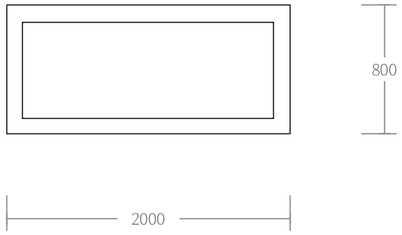


Figure 1: Sill tray flashing

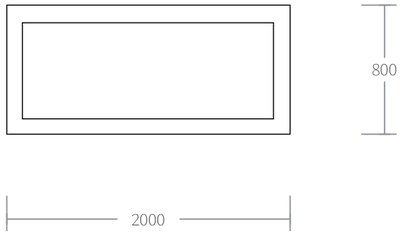
Table 2: Building envelope risk matrix. (From E2/AS1, Table 2.)

Risk factor	Risk severity								
	Low		Medium		High		Very high		Subtotals
Wind zone (per NZS 3604)	0		0		1		2	2	2
Number of storeys	0	0	1		2		4		0
Roof/wall intersection design	0		1	1	3		5		1
Eaves width	0		1	1	2		5		1
Envelope complexity	0		1	1	3		6		1
Deck design	0	0	2		4		6		0
(Enter the appropriate risk severity score for each risk factor in the score columns. Transfer these figures across to the right-hand column. Finally, add up the figures in the right-hand column to get the total risk score.)							Total risk score		5



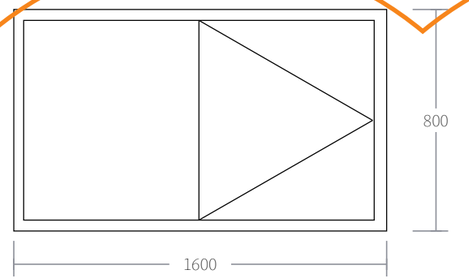
FFL to sill 2750 mm

Fixed window



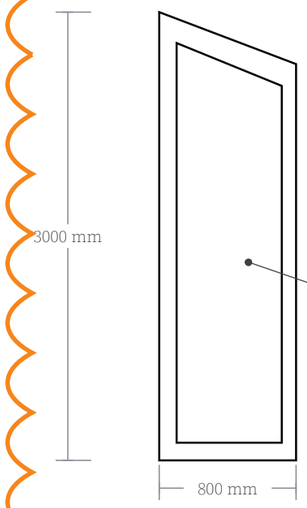
FFL to sill 2750 mm

Fixed window



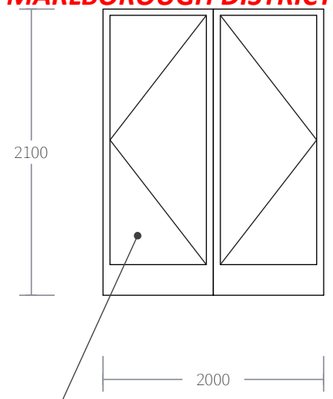
FFL to sill 1200 mm

one casement opening

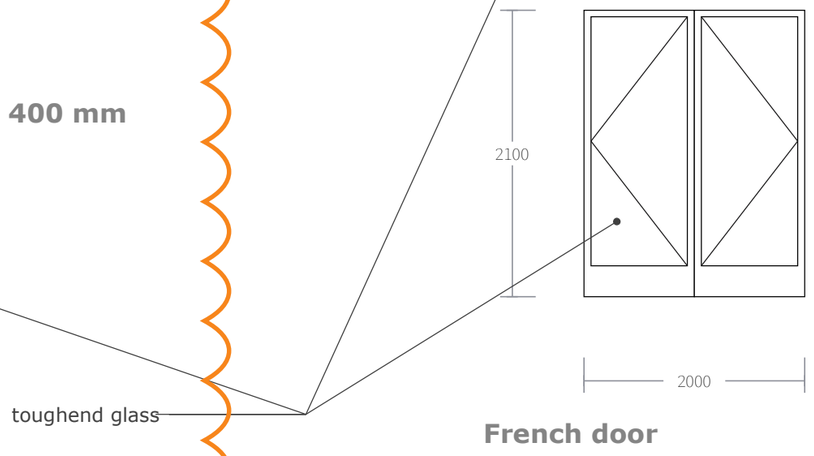


FFL to sill 400 mm

fixed



French door



French door

Table 2: Building envelope risk matrix. (From E2/AS1, Table 2.)									
Risk factor	Risk severity								
	Low		Medium		High		Very high		Subtotals
Wind zone (per NZS 3604)	0		0		1		2	2	2
Number of storeys	0	0	1		2		4		0
Roof/wall intersection design	0		1	1	3		5		1
Eaves width	0		1	1	2		5		1
Envelope complexity	0		1	1	3		6		1
Deck design	0	0	2		4		6		0
(Enter the appropriate risk severity score for each risk factor in the score columns. Transfer these figures across to the right-hand column. Finally, add up the figures in the right-hand column to get the total risk score.)							Total risk score		5

Windows and Doors to be double glazed , thermally broken Aluminum joinery ,
Argon filled double glazed units , lowE max
architrave and reveals paint finish
All bathroom windows and all glass lower than
600 to FFL has to be safety glass

File | Home

GIB EzyBrace® Bracing Software

Job Details

Name:	
Street and Number:	
Lot and DP Number:	
City/Town/District:	
Designer:	
Company:	
Date:	

Building Specification

Number of Storeys	Single
Floor Loading	2 kPa
Foundation Type	Subfloor
Sub Floor Cladding	Light

Single

Cladding Weight	Light
Roof Weight	Light
Room in Roof Space	No
Roof Pitch (degrees)	15
Roof Height above Eaves (m)	0.2
Building Height to Apex (m)	4
Ground to Lower Floor (m)	0.6
Stud Height (m)	2.4
Building Length (m)	10
Building Width (m)	10
Building Area (m²)	100

Building Location

Wind Zone = Extra High		Earthquake Zone	3
Wind Zone or Consent Authority	Extra High	Soil Type	A & B (Rock)
		Annual Prob. of Exceedance	1 in 2500 (x 1.8)

Bracing Units required for Wind

	Along	Across
Single Level	583	552
Subfloor Level	1236	1204

Bracing Units required for Earthquake

	Along and Across
Single	1255
Subfloor Level	1554

Demand | Single Along | Single Across | SubFloor Along | SubFloor Across | Custom

File | Home

GIB EzyBrace® Bracing Software

Single Across

To Add Elements, right click when on the Element above which you want to insert the Element.

To Add Lines, right click when on the Line above which you want to insert the Line.

Import ☐ Limit Element Resistance to 120 BUs/m

Line	Ext. Len. (m)	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BU)	Earthquake (BU)	Wind	Earthquake
										Demand	
										552	1255
										Resistance	
										1186 215%	1330 106%
M	4.7	M1	1.7		3.3	EP1/EPB	EcoPly &	148	167		
		M2	1.3		3.3	EP1/EPB	EcoPly &	113	128		
										262 OK	295 OK
Q	4.7	Q1	3.4		3.3	EP1/EPB	EcoPly &	297	334		
										297 OK	334 OK
P	4.7	P	0.6		3.3	BL1-H	GIB®	43	44		
		P	3.2		3.3	EP1/EPB	EcoPly &	279	314		
										322 OK	358 OK
N	4.7	N	1.6		3.3	EP1/EPB	EcoPly &	140	157		
		N	1.9		3.3	EP1/EPB	EcoPly &	166	187		
										305 OK	344 OK

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GIB EzyBrace® Bracing Software

Single Along

To Add Elements, right click when on the Element above which you want to insert the Element.

To Add Lines, right click when on the Line above which you want to insert the Line.

Import ☐ Limit Element Resistance to 120 BUs/m

Line	Ext. Len. (m)	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BU)	Earthquake (BU)	Wind	Earthquake
										Demand	
										583	1255
										Resistance	
										2051 352%	1697 135%
B	8	B4	1.2		4	BL1-H	GIB®	92	75		
		B3	1.2		4	BL1-H	GIB®	92	75		
		B1	1.2		4	BL1-H	GIB®	92	75		
		B2	1.2		4	BL1-H	GIB®	92	75		
										369 OK	300 OK
C	8	C5	4		2.7	BL1-H	GIB®	455	370		
		C1	4		2.7	BL1-H	GIB®	455	370		
										910 OK	740 OK
A		A	1.6		4	BL1-H	GIB®	123	100		
		A	1.5		4	BL1-H	GIB®	115	94		
										238 OK	193 OK
C		C	8.7		2.7	GS1-N	GIB®	534	464		
										534 OK	464 OK

Table 8.2 – Studs in loadbearing walls (see 8.5.1.1) **– VSG 8 and MSG 8**

1.5 kPa and 2 kPa floor loads

A Single or top storey – Light roof

Wind Zone	Loaded dimension* of wall	Stud sizes for maximum length (height) of: (m)								
		2.4			2.7			3		
		At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:		
		400	480	600	400	480	600	400	480	600
	(m)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)
		(Width x thickness)								
Very high	3.0	90 x 35	90 x 45	90 x 70	90 x 45	90 x 70	90 x 70	90 x 70	90 x 90	90 x 90
	4.5	90 x 35	90 x 45	90 x 70	90 x 45	90 x 70	90 x 70	90 x 70	90 x 90	90 x 90
	6.0	90 x 35	90 x 45	90 x 70	90 x 45	90 x 70	90 x 70	90 x 70	90 x 90	90 x 90
High	3.0	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70	90 x 70	90 x 70	90 x 70
	4.5	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70	90 x 70	90 x 70	90 x 70
	6.0	90 x 35	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70	90 x 70	90 x 70	90 x 70
Medium	3.0	70 x 35	70 x 45	90 x 35	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 45
	4.5	70 x 35	70 x 45	90 x 35	70 x 45	90 x 35	90 x 45	90 x 35	90 x 45	90 x 70
	6.0	70 x 35	70 x 45	90 x 35	70 x 45	70 x 45	90 x 45	90 x 35	90 x 45	90 x 70
Low	3.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 35
	4.5	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
	6.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
Internal walls	3.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 35
	4.5	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
	6.0	70 x 35	70 x 35	70 x 45	70 x 35	70 x 45	90 x 35	90 x 35	90 x 35	90 x 45
		3.6			4.2			4.8		
		At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:			At maximum stud spacing (mm) of:		
		400	480	600	400	480	600	400	480	600
	(m)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)	(mm x mm)
		(Width x thickness)								
Very high	3.0	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70	190 x 70
	4.5	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70	190 x 70
	6.0	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70	190 x 70
High	3.0	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70
	4.5	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70
	6.0	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	190 x 45	190 x 45	190 x 45	190 x 70
Medium	3.0	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	140 x 70	190 x 45
	4.5	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	140 x 70	190 x 45
	6.0	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70	140 x 70	190 x 45
Low	3.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	4.5	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	6.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
Internal walls	3.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	4.5	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70
	6.0	90 x 70	90 x 70	90 x 70	90 x 90	140 x 45	140 x 45	140 x 45	140 x 70	140 x 70

* For definition of loaded dimension see 1.3.

NOTE –

(1) Studs 70 mm and 90 mm thick may be replaced with studs of 35 mm and 45 mm thickness respectively, provided they are placed at no more than one half the spacing required for the 70 mm and 90 mm stud they are replacing.

(2) 140 x 45 may be substituted for 90 x 90. 90 x 35 may be substituted for 70 x 45.

(3) Studs 70 mm and 90 mm thick may be substituted with built-up members sized in accordance with 8.5.1.2 and nailed together in accordance with 2.4.4.7.

Studs 140 x 45 at 200 center
where wall higher than 3.6 m ,
Under 3.6 m height use 140 x 45 , 480 center.
All internal timber shall be H1.2