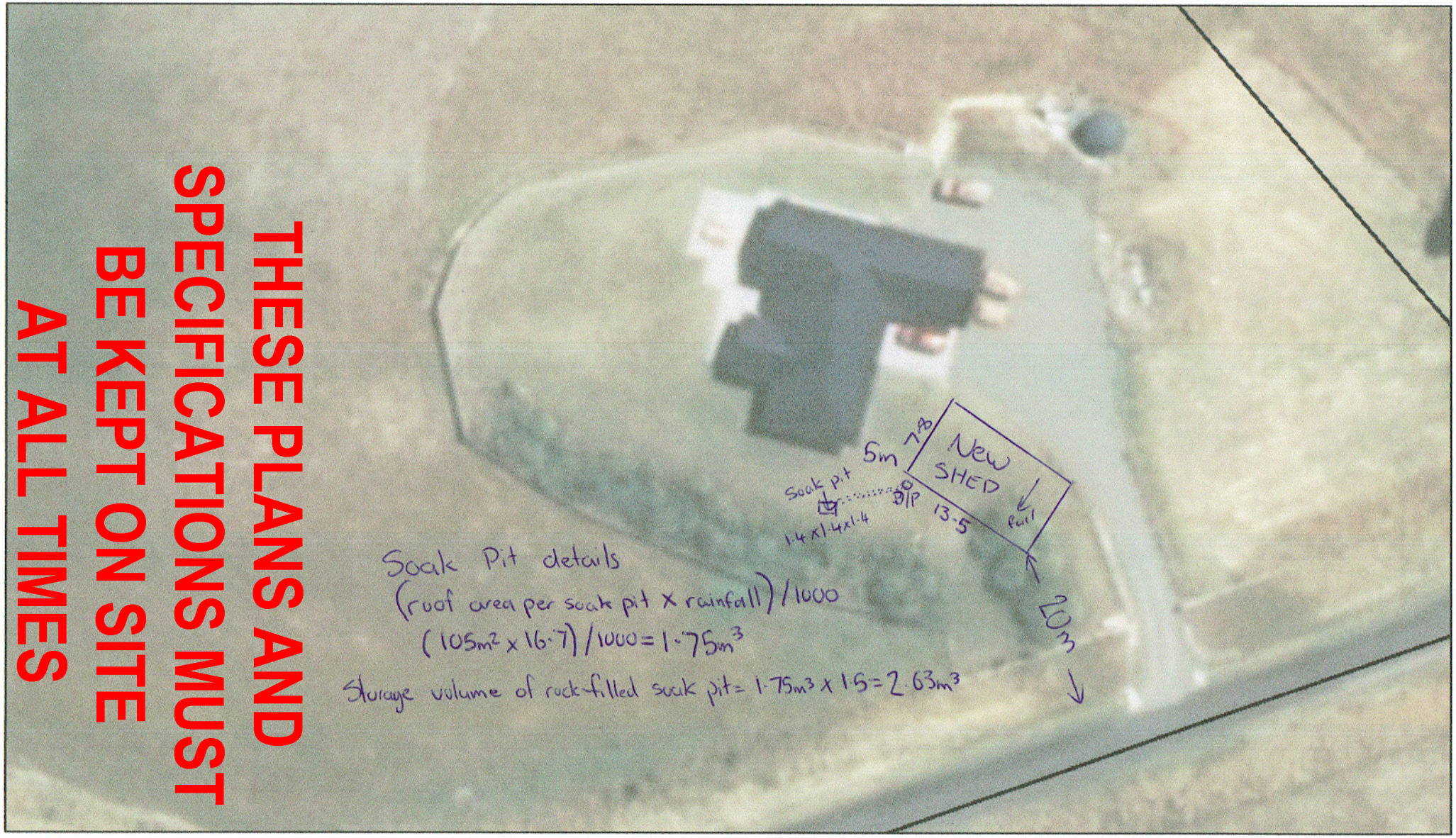
CARTERTON DISTRICT COUNCIL APPROVED B/CNo. 200188 - DATE: 6/08/2020

LocalMaps Print



THESE PLANS AND SPECIFICATIONS MUST BE KEPT ON SITE AT ALL TIMES

July 15, 2020

1:500

0 5 10 20 Metres

engineering new zealand

Te Kāhui Whaihanga New Zealand Institute of Architects

ACENZ

Building Code Clause(s) B1

PRODUCER STATEMENT – PS1 – DESIGN

ISSUED BY: Structural Concepts Limited
(Design Firm)

TO: Matt Patrick
(Owner/Developer)

TO BE SUPPLIED TO: Carterton District Council
(Building Consent Authority)

IN RESPECT OF: Storage Shed
(Description of Building Work)

AT: 395 Te Kopi Road
(Address)

Town/City:..... **LOT**..... **DP**..... **SO**.....
(Address)

We have been engaged by the owner/developer referred to above to provide:

Structural Engineering

(Extent of Engagement)

services in respect of the requirements of Clause(s) B1 of the Building Code for:

☐ All or ■ Part only (as specified in the attachment to this statement), of the proposed building work.

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

■ Compliance Documents issued by the Ministry of Business, Innovation & Employment. B1/VM1 B1/VM4 or
(verification method/acceptable solution)

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

The proposed building work covered by this producer statement is described on the drawings titled:

Timberspan Strong Timber Buildings and numbered SCL Ref 2366-7905 Sheets 1 to 7 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 100kPa unfactored ULS bearing capacity
(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, Arthur Budvietas am: ■ CPEng 165555 # ☐ Reg Arch ..... #
(Name of Design Professional)

I am a member of: ■ Engineering New Zealand ☐ NZIA and hold the following qualifications: BE(Civil), MIPENZ, CPEng
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 Arthur Budvietas (Signature)
(Name of Design Professional)

ON BEHALF OF Structural Concepts Limited Date 17/6/2020
(Design Firm)

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.

IPENZ PRODUCER STATEMENT ATTACHED SHEET

Foundations, Cantilever Poles, Bracing, Girts, Footings, Rafters and Purlins

Relevant Standards

- B1/VM1
- AS/NZS 1170.0
- AS/NZS 1170.1
- AS/NZS 1170.2
- AS/NZS 1170.3
- NZS 1170.5
- NZS 3101
- NZS 3603
- NZS 3404
- B1/VM4 Importance Level 1

The proposed building work covered by this producer statement is described on the drawing titled:

Timberspan Strong Timber Building and numbered Structural Concepts Limited sheet 1-7

GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1991. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional engineers New Zealand, Association of Consulting Engineers New Zealand in consultation with the Building Officials Institute of New Zealand. The original suit of producer statements has been revised at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

PS1 Design Intended for use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;

PS2 Design Review Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;

PS3 Construction Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:2013 or Schedules E1/E2 of NZIA's SCC 2011[2]

PS4 Construction Review Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate.

This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACENZ, IPENZ and NZIA to interpret the Producer Statement.

Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as the Institution of Professional Engineers New Zealand (IPENZ) or the New Zealand Institute of Architects (NZIA), provides additional assurance of the designer's standing within the profession. If the design firm is a member of the Association of Consulting Engineers New Zealand (ACENZ), this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional".

*Professional Indemnity Insurance

As part of membership requirements, ACENZ requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI Insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to $500,000.

Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-CM5 for Engineers[3]). The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project concerned.

Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design firm's engagement.

Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

Refer Also:

1 Conditions of Contract for Building & Civil Engineering Construction NZS 3910: 2013

2 NZIA Standard Conditions of Contract SCC 2011

3 Guideline on the Briefing & Engagement for Consulting Engineering Services (ACENZ/IPENZ 2004)

4 PN Guidelines on Producer Statements

www.acenz.org.nz
www.ipenz.org.nz
www.nzia.co.nz

emajineer
the possibilities are endless
Structural Concepts

TIMBERSPAN
STRONG TIMBER BUILDINGS

Client: Tumu Timbers - Matt Patrick

Project: Garage/lean to

Ref/ON: HA108050
SCL Ref: 2366-7905

SPECIFICATION NOTES

CONTENTS

1 Scope

It should be noted that this is a material specification only and that in regard to workmanship, accuracy and quality the requirements of the New Zealand Building Code and appropriate New Zealand Standards apply.

2 Loads

The building is designed to the following criteria:
Loadings in accordance with ANZS1170 and a "Medium/High" wind speed in accordance with NZS 3604.
Importance level type 1 (ANZS1170) building, therefore non residential.

3 Site Soils

The soil must be "Good Ground" as defined in NZS3604. This shall have a minimum ultimate bearing capacity of 100 Kpa. This needs to be confirmed during construction.
If there is any doubt as to the adequacy of the subsoils a suitably qualified person must be consulted and his/her instructions implemented prior to continuing construction.
Footing depth shall be taken from natural ground level and excludes any uncertified fill.

4 Concrete

All concrete shall develop minimum 28 day cylinder strength of 25MPa.

5 Timber

All timber used is to be in accordance with the 50 years durability performance of NZS 3602 and at least of the following types and qualities:-
Structural grade SG8 Radiata Pine or Douglas Fir:
All round timber to be High density. Treated H5.
All sawn timber treated H3.2
Grading is to be NZS 3631 or NZS 3618.
Sizes referred to in all documents are call dimensions to NZS 3601.
For allowable moisture content refer Table 4. NZS 3602

6 Cladding

Supply and fit 0.40mm "Zincalume" or "Colorsteel" corrugated profile cladding to the new building, all as shown in accordance with the manufacturer's specification.
Provide and fix 0.55 "Zincalume" or "Colorsteel" flashings. Flash the ridge, parapets, barges, gutters, etc. all as shown and as required to properly finish and weatherproof all roofs and metal clad walls. Flash all sides of all doors, building junctions, etc. to completely weatherproof the detail. Take care to only use like metals in contact or close proximity.

7 Hardware

For proprietary fixings, brackets etc use Pryda products or equivalent. Consult engineer if use of another manufacturers product, other than Pryda is desired.
Grade 304 or 316 stainless steel fixings and fasteners shall be used except in "sheltered" locations (open to the air, but not rain washed), in zones B and C. In those situations the fixings may comprise galvanised steel. In zone D use Grade 304 or 316 stainless steel fixings and fastenings. In geothermal areas all fixings require SED, as described in section 4 of NZS3604.

8 Reference Documents

Throughout this specification, reference is made to various New Zealand Building Code Compliance Documents, acceptable solutions and verification methods for criteria and/or methods used to establish compliance with the New Zealand Building Code. Reference is made to various New Zealand standards. The latest edition of these standards (including amendment and provisional editions) at the date of this specification applies.
It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications.
Documents cited both directly and within cited publications are deemed to form part of this specification.

9 DESIGN STATEMENT

This pole shed is one of many that has been designed for Tumu Timbers and is part of an Excel spreadsheet program. They have been specifically designed using the loadings code NZS1170 and the timber code NZS3603. They therefore comply with the building code requirements B1/VM1.

The pole sheds have been designed using importance category level 1 as defined in NZS1170, with a 50 year design working life. Importance level 1 is defined as:-

Farm buildings, isolated structures, towers in rural situations, fences, masts and in-ground swimming pools. "Structures presenting a low degree of hazard to life and other property".

Attached to this sheet should be drawings, details sheet, design sheet and PS1.

The **details sheet** states the dimensions of the shed. It also states the assumed soil type and wind zone. The wind zones and soil types may have been assumed by the user of the spreadsheet program, there are four soil types:- 100kPa Clay (equal to NZS3604), 50kpa (1/2 NZS3604), medium dense gravel or sand and Very dense gravel or sand.

There are two wind zones:- Category 2 and Category 3, these do not relate to NZS3604 wind zones. NZS1170 definition of wind zones:- Category 2 = Water surfaces, open terrain, grassland with few or well scattered obstructions which have a height of 1.5m - 10m. Category 3 = Terrain with numerous closely spaced obstructions 3m -5m high such as areas of suburban housing or level wooded country.

These pole shed designs are based on a Topographical multiplier of 1.0, which means they do not take into account:- Hills, cliffs or escarpments greater than 25m high, valleys where wind acceleration is known to exist, sites greater than 500m in elevation and lee zone affects (which are the same zones stated in NZS3604). This does not exclude "rolling hill country" provided there are no known wind acceleration affects.

Although the seismic load case has been included for the sake of completeness, it is not governing the design. A dynamic frequency analysis has been carried out on the worst case sheds using:- Hazard factor 0.45, Near Fault Factor 1, Soil type D. Deep or soft soil. and at no point does it govern the design of the sheds.

The sheds have not been specifically design for snow load, however they are capable of a snow load to a maximum elevation of 470m, in snow region N1 which is the Southern part of the North Island.

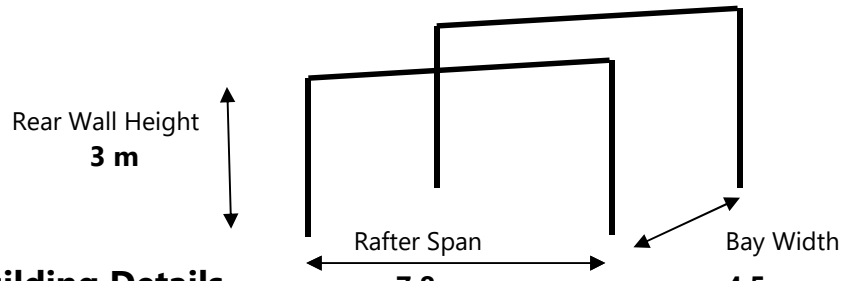
All timber used in the pole sheds complies with the latest stress grades in NZS3603, i.e MSG8, VSG8, MSG10, VSG10 depending on shed type, all poles are based on normal outer zone density of 350 kg/m^3. All sizes are on the **design sheet**. i.e Rafter, purlin, Pole size, embedment depth, hole diameter etc.

Building Summary Sheet

Project: **Garage/lean to**
Project Address: **395 Te Kopi Road, Masterton**

Ref/ON: **HA108050**
Date: **05/08/19**

Local Authority : **Masterton District Council**
Building Use: **Garage/Storage**



Basic Building Details

Rafter span (m)	7.8	**Building Length (m)**	13.5
Rear (Low) wall height (m)	3	**Front wall height (m)**	3.82
Bay width (m)	4.5	**Number of bays**	3

Soil type Clay 100Kpa

Altitude <400 m

Wind Zone REGION A7

Wind - **Topography** - Grassland T2
- OUTSIDE Lee Zone

Cladding Choice - Trimrib Colorsteel Finish

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Client: Tumu Timbers

Owner: Matt Patrick

Project: Garage/lean to
395 Te Kopi Road, Masterton

Ref: HA108050
SCL Ref: 2366-7905
Date: 5 August 2019

CALCULATIONS

BY: GARRY NEWTON
BE (Civil) , MIPENZ, CPEng, IntPE(NZ)

REVIEWED BY: ARTHUR BUDVIETAS
BE (Civil) , MIPENZ, CPEng, IntPE(NZ)

CONTENTS:

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Design Features Summary**

Ref:	Design	Output

Scope

In general terms, the scope of work is as follows:
Erect a timber building constructed of timber purlins on timber rafters on cantilever poles.
The building is to be importance level 1.

Means of compliance

The following standards have been used:
- BiVM1
- B!VM4
- AS/NZS 1170.0:2002
- AS/NZS 1170.1:2002
- AS/NZS 1170.2:2011
- AS/NZS 1170.3:2002
- NZS 1170.5:2004
- NZS 3101:2006
- NZS 3602:2003
- NZS 3603:1993
- NZS 3404:1997

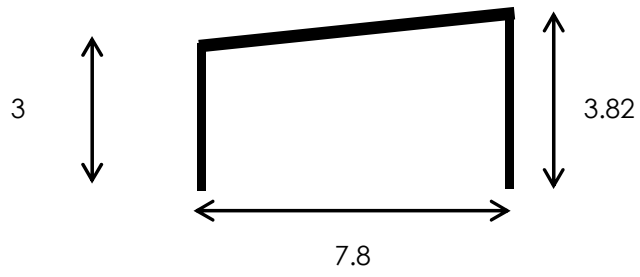
General

Chosen Design Life	50 years	
Chosen Importance Level	1	
Annual Probability of exceedance - Ultimate	1/100	Wind and EQ
	1/50	Snow
Annual Probability of exceedance - Service	Not Applicable	

Soils

It is assumed that soils will meet the conditions of NZS3604 for good ground of 300 kPa.
Reduction factors of 0.5 is to be used in design for bearing and 0.6 for cantiever action.

General Building Dimensions



Bay widths	4.5	m
No. Bays	3	
Total Length	13.5	m

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Design Features Summary**

Ref:	Design	Output

DESIGN LOADS

Vertical loads

Gravity

All Dead and Live loads are listed on the gravity loads sheet 4.

Snow

Region			
Altitude	<	400	m
Design Snow Load	S	0.25	kPa

Lateral Loads

Wind

Wind Zone		
Terrain Category	2	
Hill Shape Multiplier	1.160	
Lee Zone Multiplier	1.2	
Site wind speed	43.28	Ult (m/s)
Site wind pressure	1.12	kPa

Seismic loads

Analysis methodology

The seismic analysis has been completed in accordance with NZS 1170.5:2004. Design Spectra are in accordance with NZS 1170.5:2004 for site sub soil class C. Analysis has been completed using the Equivalent Static Method for bracing.

Across the building

Structural ductility factor (Ultimate)	μ	1.00
Structural Performance factor (Ultimate)	Sp	1.00

Along the building

Structural ductility factor (Ultimate)	μ	1.00
Structural Performance factor (Ultimate)	Sp	1.00

Load Paths

Gravity structure

Load paths:

Roofing → Purlins → Rafters → Poles → Foundations

Lateral load resisting structure

Across the building

Roof/Purlins → Rafters → Poles → Foundations

Along the building

Roof/Purlins → Roof Bracing → Poles → Foundations

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Gravity Loads**

Ref:	Design						Output
	Dead Loads						
	Roof without Rafter			**Wall without Pole**			
	roofing	0.05		Cladding	0.05		
	purlins	0.06		Girts	0.04		
	misc	0.01		misc	0.01		
		0.12	**kPa**		**0.1**	**kPa**	
	Roof with Rafter			**Wall with Pole**			
	roofing	0.05		Cladding	0.05		
	purlins	0.06		Girts	0.06		
	misc	0.01		misc	0.01		
	rafter	0.04		pole	0.03		
		0.16	**kPa**		**0.15**	**kPa**	
	Live Loads						
	Roof UDL	**0.25**	**kPa**				
	Roof Point Load	**1.1**	**kN**				

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Snow Loads**

Ref:	Design				Output
	Snow Loads				
	Maximum elevation of site	ho	400	m	
	Snow Region		N1		
			Southern, North Island		
	Altitude region		Sub-Alpine		
	Design life of building		50 Years		
	Importance Level		1		
	Farm building, isolated structures, towers inrural situations. Fences, masts, walls, in-ground swimming pools.				
	Probability of Exceedance		1/50		
	Probability Factor	kp	1.00		
	Average weight of snow	γ	2.9	kN/m³	
	Characteristic value of snow on the ground	sg	0.360		
	Exposure reduction factor	Ce	1.0		
	Pitch of roof		6	Degrees	
	Shape Coefficients (Balanced snow load)		0.7		
	Design snow load	S	0.25	Kpa	

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Wind Loads**

Ref:	Design				Output
	Wind Loads				
	Wind Speed Assessment				
	Design Height	h1	3.41	m	
	Length of building		13.50	m	
	Width of building		7.80	m	
	Roof pitch		6.0	degrees	
	Wind Region		A7		
			Ultimate		
	Annual Probability of exceedance (inverse)		100		
	Regional Wind Speed	Vr	41.0	m/s	
	Wind directional multiplier (Any direction)	Md	1.0		
	Terrain Category		2		
	Shielding multiplier	Ms	1.0		
	Hill Slope	not greater than	6	degrees	
	Hill Shape Multiplier is	Mh	1.16		
	Lee Zone multiplier	Mt	1.00		
	Topographic multiplier	Mt	1.16		
	Terrain / height multipliers for gust wind speeds				
			0.83		
	The site wind speed Vsit,β for heights above ground level				
	Vr x Md x (Mzcat x Ms x Mt) = Vsit,β		Ult (m/s)		
			43.28		
	The site wind pressure for general purposes is:				
	(.5 Qair) [Vsit,b]² =	q(z) =	1.12	kPa	
			5.06	kN/m per bay width	
	Internal Pressure Coefficient				
	Windward open area		0		
	Other surfaces openings		0		
	Cpi	-0.3 or	0.0		
	External Pressure Coefficients				
	Windward wall	0.7			
	Leeward wall	-0.3			
	Roof	-0.9			
	or	-0.4			

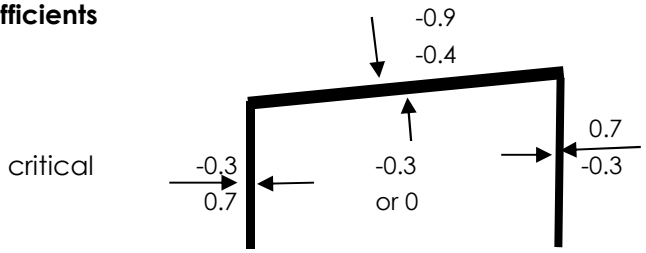
Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

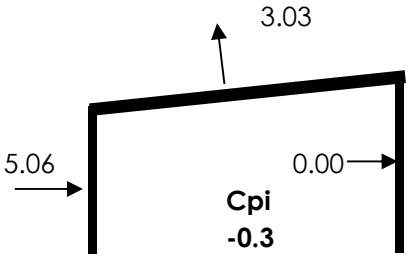
Subject: **Wind Loads**

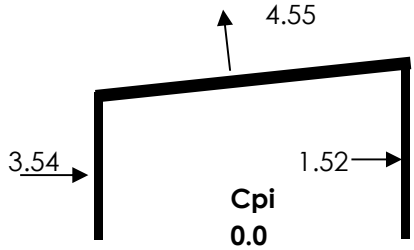
Ref:	Design	Output

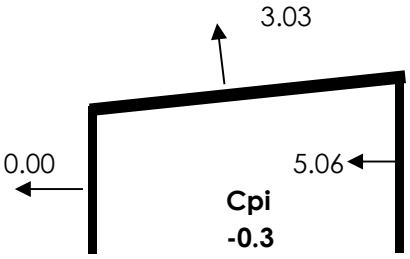
Pressure Coefficients

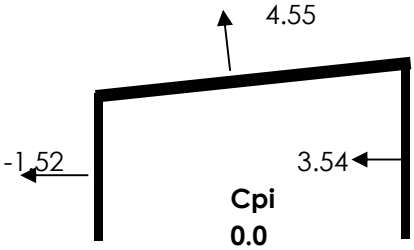


Wind loads (kN/m)









Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Seismic Loads**

Ref:	Design				Output
	Seismic Loads				
	Across/bay				
	Element	**Area/length**	**Load Kpa**	**Total kN**	
	Roof with Rafter	35.10	0.16	5.62	kN
	Wall with Pole	15.35	0.15	2.30	kN
				7.92	kN
	Along Roof				
	Element	**Area/length**	**Load Kpa**	**Total kN**	
	Roof with Rafter	52.65	0.16	8.42	kN
	Wall with Pole	13.30	0.15	1.99	kN
				10.41	kN
	Along Wall				
	Element	**Area/length**	**Load Kpa**	**Total kN**	
	Roof with Rafter	105.30	0.16	16.85	kN
	Wall with Pole	72.63	0.15	10.89	kN
				27.74	kN
	Period of building across the building			0.40	
	Structural ductility factor (Ultimate)		μ =	1.00	
	Hazard Factor (North Island worst case)		Z =	0.42	conservative
	Return period factor		Ru =	0.50	
	Structural Performance factor (Ultimate)		Sp =	1.00	
	Soil Type		Deep or soft	D	
	Spectral Shape Factor (across)		Ch(T) =	3.00	
	Near Fault factor		N(T,D) =	1.0	
	Elastic site spectra (Ultimate)		C(T) =	0.63	
	Ultimate		kμ =	1.00	
	Horizontal design action coefficients (Across)		Cd(T1) =	0.63	But not less than 0.030Ru
	Ultimate force across the building		Cd(T1) x Wi =	4.99	kN Total
	Ultimate force along the building (roof)		Cd(T1) x Wi =	6.56	kN Total
	Ultimate force along the building (wall)		Cd(T1) x Wi =	17.48	kN Total

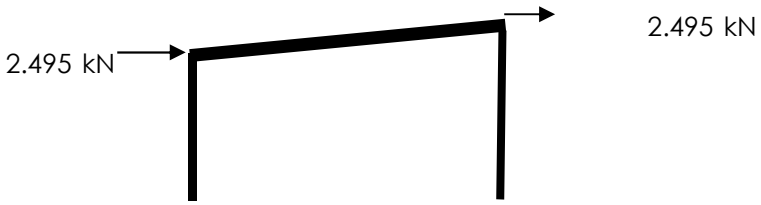
Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Seismic Loads**

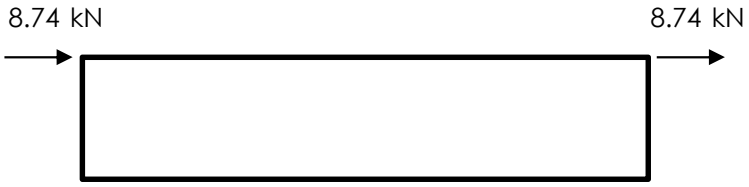
Ref:	Design	Output

Across



Roof Bracing

Wall Bracing



Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Rafter Design**

Ref:	Design	Output

Flexural Demand

$M^* = wl^2/8$

Span	l =	7.8	m	
spacing	s =	4.5	m	

Loads (w)

1.35G	1.35 x 0.16 x 4.5	0.97	kN/m
1.2G + 1.5Q	(1.2 x 0.16 + 1.5 x 0.25) x 4.5	2.55	kN/m
1.2G + S	(1.2 x 0.16 + 0.252) x 4.5	2	kN/m
0.9G + W	(0.9 x 0.16 - 2.17) x 4.5	-1.52	kN/m

(Allowance is made for change in wind pressure across the roof)

$M^*_{1.35G}$	7.38	kNm
$M^*_{1.2G + 1.5Q}$	19.39	kNm
$M^*_{1.2G + S}$	15.21	kNm
$M^*_{0.9G + W}$	11.57	kNm

Flexural Capacity

Mn = K1 x K4 x K5 x K8 x K24 x Z x Fb

Beam depth	D	300	mm
Beam width	B	90	mm
Bending stress from table 2.3	Fb	38	Mpa
Number of sections	N	1	
	Ø	0.9	

Elastic modulus $Z = N \times B \times D^2 / 6$ = 1350 cm³

K4=1 K5=1 K24 = 1

For Gravity Lay is spacing between purlins Lay = 1.4 m

Slenderness factor S1 = 9.49

Stability factor from table 2.8 K8 = 1.000

For Wind Uplift

Purlin depth exceeds half beam depth Lay = 1.4 m

Slenderness factor for uplift S1 = 9.49

Stability factor from table 2.8 K8 = 1

Duration factor

$ØMn_{1.35G}$ =	27.7	kNm	K1=0.6	**OK**
$ØMn_{1.2G+1.5Q}$ =	46.17	kNm	K1=1.0	**OK**
$ØMn_{1.2G+S}$ =	36.94	kNm	K1=0.8	**OK**
$ØMn_{0.9G+W}$ =	46.17	kNm	K1=1.0	**OK**

Shear Capacity

NOT CRITICAL

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TIMBERSPAN STRONG TIMBER BUILDINGS

v19.012

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

Subject: **Main Poles**

Sheet No.: **11**

Ref:	Design			Output
	Flexural Demand	M*	15.50 kNm	
	Shear Demand	V*	10.82 kN	
	Height of pole		3.00 m	
	Use of timber is Wet			
	Pole diameter	SED	175 mm	
	Diameter at base (assuming 7mm tapper/m)	D	196 mm	
	Section properties			
	Outer zone density (table 7.1)		350 kg/m³	
	Modulus of elasticity from table 7.1	E	8.7 GPa	
	Area			
	$3.142 \times (D/2)^2$	= A	30176 mm²	
	Moment of inertia			
	Elastic modulus $\frac{3.142 \times D\text{^}4}{64}$	= I	7245.20 cm^4	
	$\frac{3.142 \times D\text{^}3}{32}$	= Z	739.31 cm³	
	Bending stress from table 7.1	Fb	38 Mpa	
	Shear stress from table 7.1	Fs	3.1 Mpa	
	K Factors for bending			
	Strength reduction factor	Ø	0.80	
	Duration of load	K1	1.00	
	Dry use factor	K22	1.00	
	Shaving or peeling factor	K20	0.85	
	Steaming factor	K21	0.85	
	Bending			
	Nominal strength in bending			
	K1 x K20 x K21 x K22 x Z x Fb	= Mn	20.30 kNm	
	Strength in bending			
	Mn x Ø	= ØMn	16.24 kNm	
	K Factors for shear			
	Strength reduction factor	Ø	0.80	
	Duration of load	K1	1.00	
	Dry use factor	K22	1.06	
	Shaving or peeling factor	K20	1.00	
	Steaming factor	K21	0.90	
	Shear			
	Nominal shear strength			
	K1 x K20 x K21x K22 x A x Fs x 10^-3	= Vn	89.24 kN	
	Shear strength			
	Vn x Ø	= ØVn	71.39 kN	

Subject: **Main Pole Foundation**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Cantilever Action

Sheet No.: **12**

Ref:	Design			Output
	Cantilever Action			
	Undrained shear strength	Su	75 kPa	
	Diameter of the pile shaft below ground	Ds	0.6 m	
	Bending moment at base	M*	15.501 kNm	
	Horizontal shear force	H	10.820 KN	
	Distance above ground H is applied	f	1.43 m	
	Length of pile shaft below ground	L	1.50 m	
	Strength reduction factor	ϕ	0.6	

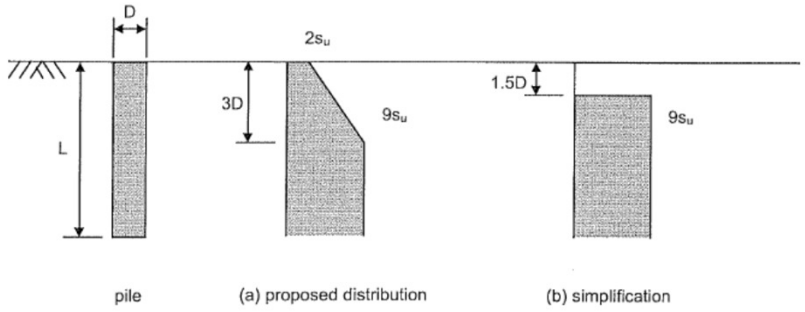

Figure 1 Limiting lateral soil resistance proposed by Broms (1964)

Length of pile shaft assumed to be unsupported = to
1.5Ds = fo 0.6 m
length of stress block L -fo= L' 0.90 m
Nominal lateral pile resistance

$$9su.Ds\left[\sqrt{(2f+L')^2+L'^2}-(2f+L')\right] \quad = Hu \quad 21.8 \text{ kN}$$

Ultimate lateral pile resistance ϕHu 13.1 kN

Lateral pile capacity reduction factors for piles spacings

From Broms (NZ Building Code)
Pile spacing 4.00 m
Isolated pile lateral resistance 100.0 %

Undrained Lateral pile capacity reduction factors for slopes

Correction factor from table 5 (reduction) 1.0

Ultimate lateral pile resistance with reduction factors 13.1 kN **PASS**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Bearing and Uplift

Sheet No.: **13**

Ref:	Design				Output
	Axial load on pad (Ultimate Limit State)		10.94	kN	
	Ultimate bearing capacity of soil		300	kPa	
	Soil density		17	KN/m^3	
	Stength reduction	ϕ	0.5		
	Factored ULS Bearing strength of soil		150	kPa	
	Pad foundation size				
	Diameter	D	0.600	m	
	Depth	L	1.500	m	
	Add the weight of foundation to load minus soil weight		2.97	kN	
	Design load on foundation	Nc*	13.91	kN	
	Bearing pressure below foundation	Nc* / A =	49.2	kPa	49.19 < 150 kPa
					PASS
	Uplift				
	Uplift from sheet 4	R*	13.21	kN	
	Mass of concrete		10.18	kN	NEED FRICTION
	Friction required	$R_{friction}$	3.03	kN	
			1.07	kPa	
		<	37.5	kPa	PASS

Subject: **Purlins**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Ref:	Design	Output

Flexural Demand

$M^* = wl^2/8$

Span	l =	4.41	m
spacing	s =	1.4	m

Loads (w)

1.35G	1.35 x 0.12 x 1.4	0.23	kN/m
1.2G + 1.5Q	(1.2 x 0.12 + 1.5 x 0.25) x 1.4	0.73	kN/m
1.2G + S	(1.2 x 0.12 + 0.252) x 1.4	0.55	kN/m
0.9G + W	-(0.9 x 0.12 - 1.01) x 1.4	1.26	kN/m

$M^*_{1.35G}$	0.56	kNm	
$M^*_{1.2G + 1.5Q}$	1.78	kNm	
$M^*_{1.2G + S}$	1.34	kNm	
$M^*_{0.9G + W}$	3.07	kNm	uplift

Flexural Capacity

$Mn = K1 \times K4 \times K5 \times K8 \times Z \times Fb$

Beam depth	D	200	mm	
Beam width	B	50	mm	
Bending stress from table 2.3	Fb	14	Mpa	SG8
Number of sections	N	1		

Elastic modulus $Z = N \times B \times D^2 / 6$ = 333 cm^3

K4=1 K5=1 Ø = 0.8

Slenderness factor	S1	restrained	<10	Gravity
Stability factor from table 2.8	K8	<10	1	
Slenderness factor	S1	3D/B	12	Uplift
Stability factor from table 2.8	K8	0.960		

			Duration factor	
$ØMn_{1.35G}$ =	2.24	kNm	K1=0.6	**OK**
$ØMn_{1.2G+1.5Q}$ =	3.73	kNm	K1=1.0	**OK**
$ØMn_{1.2G+S}$ =	2.99	kNm	K1=0.8	**OK**
$ØMn_{0.9G+W}$ =	3.58	kNm	K1=1.0	**OK**

Shear Capacity

NOT CRITICAL

Subject: **End Poles**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Ref:	Design				Output
	Flexural Demand		M*	3.45 kNm	
	Shear Demand		V*	3.89 kN	
	Height of pole			3.55 m	
	Use of timber is We				
	Pole diameter		SED	150 mm	
	Diameter at base (assuming 0mm tapper/m)		D	150 mm	
	Section properties				
	Outer zone density (table 7.1)			350 kg/m³	
	Modulus of elasticity from table 7.1		E	8.7 GPa	
	Area				
		3.142 x (D/2)² =	A	17674 mm²	
	Moment of inertia				
	Elastic modulus	$\frac{3.142 \times D\text{^}4}{64}$ =	I	2485.37 cm^4	
		$\frac{3.142 \times D\text{^}3}{32}$ =	Z	331.38 cm³	
	Bending stress from table 7.1		Fb	38 Mpa	
	Shear stress from table 7.1		Fs	3.1 Mpa	
	K Factors for bending				
	Strength reduction factor		Ø	0.80	
	Duration of load		K1	1.00	
	Dry use factor		K22	1.25	
	Shaving or peeling factor		K20	0.85	
	Steaming factor		K21	0.85	
	Bending				
	Nominal strength in bending				
		K1 x K20 x K21 x K22 x Z x Fb =	Mn	11.37 kNm	
	Strength in bending				
		Mn x Ø =	ØMn	9.10 kNm	
	K Factors for shear				
	Strength reduction factor		Ø	0.80	
	Duration of load		K1	1.00	
	Dry use factor		K22	1.06	
	Shaving or peeling factor		K20	1.00	
	Steaming factor		K21	0.90	
	Shear				
	Nominal shear strength				
		K1 x K20 x K21x K22 x A x Fs x 10^-3 =	Vn	52.27 kN	
	Shear strength				
		Vn x Ø =	ØVn	41.81 kN	

Subject: **Side Poles**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Ref:	Design				Output
	Flexural Demand		M*	4.61 kNm	
	Shear Demand		V*	4.83 kN	
	Height of pole			3.82 m	
	Use of timber is Wet				
	Pole diameter		SED	150 mm	
	Diameter at base (assuming 0mm tapper/m)		D	150 mm	
	Section properties				
	Outer zone density (table 7.1)			350 kg/m³	
	Modulus of elasticity from table 7.1		E	8.7 GPa	
	Area				
		3.142 x (D/2)²	= A	17674 mm²	
	Moment of inertia				
	Elastic modulus	$\frac{3.142 \times D\text{^}4}{64}$	= I	2485.37 cm^4	
		$\frac{3.142 \times D\text{^}3}{32}$	= Z	331.38 cm³	
	Bending stress from table 7.1		Fb	38 Mpa	
	Shear stress from table 7.1		Fs	3.1 Mpa	
	K Factors for bending				
	Strength reduction factor		Ø	0.80	
	Duration of load		K1	1.00	
	Dry use factor		K22	1.25	
	Shaving or peeling factor		K20	0.85	
	Steaming factor		K21	0.85	
	Bending				
	Nominal strength in bending				
		K1 x K20 x K21 x K22 x Z x Fb =	Mn	11.37 kNm	
	Strength in bending				
		Mn x Ø =	ØMn	9.10 kNm	
	K Factors for shear				
	Strength reduction factor		Ø	0.80	
	Duration of load		K1	1.00	
	Dry use factor		K22	1.06	
	Shaving or peeling factor		K20	1.00	
	Steaming factor		K21	0.90	
	Shear				
	Nominal shear strength				
		K1 x K20 x K21x K22 x A x Fs x 10^-3 =	Vn	52.27 kN	
	Shear strength				
		Vn x Ø =	ØVn	41.81 kN	

Subject: **Side Girts**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Ref:	Design	Output

Flexural Demand

$M^* = wl^2/8$

Span	l =	4.35	m		
spacing	s =	1	m		
Loads (w)					
Inward		(0.3+0.7)x1.12 x 1		1.12	kN/m
Outward		(0.3+0.65)x1.12x1		1.06	kN/m

M^*_{Inward}	2.65	kNm
$M^*_{Outward}$	2.51	kNm

Flexural Capacity

$Mn = K1 \times K4 \times K5 \times K8 \times Z \times Fb$

Beam depth	D	150	mm		
Beam width	B	50	mm		
Bending stress from table 2.3	Fb	14	Mpa	SG8	
Number of sections	N	1			

Elastic modulus	$Z = N \times B \times D^2 / 6$	188	cm^3	
K4=	K5=1	Ø = 0.8		
Slenderness factor	S1	restrained	<10	Inward
Stability factor from table 2.8	K8	<10	1	
Slenderness factor	S1	3D/B	9	Outward
Stability factor from table 2.8	K8	9	1	

			Duration factor	
$ØMn_{Inward}$ =	2.1	kNm	K1=1.0	**OK**
$ØMn_{Outward}$ =	2.1	kNm	K1=1.0	**OK**

Shear Capacity

NOT CRITICAL

Subject: **End Girts**

Ref:	Design	Output

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v19.012

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

Flexural Demand

$M^* = wl^2/8$

Span	l =	3.75	m	
spacing	s =	1	m	
Loads (w)				
Inward		(0.3+0.7)x1.12 x 1	1.12	kN/m
Outward		(0.3+0.65)x1.12x1	1.06	kN/m

M^*_{Inward}	1.97	kNm
$M^*_{Outward}$	1.86	kNm

Flexural Capacity

$Mn = K1 \times K4 \times K5 \times K8 \times Z \times Fb$

Beam depth	D	150	mm
Beam width	B	50	mm
Bending stress from table 2.3	Fb	14	Mpa
Number of sections	N	1	

Elastic modulus $Z = N \times B \times D^2 / 6$ = 188 cm^3

K4= K5=1 Ø = 0.8

Slenderness factor	S1	restrained	<10	Inward
Stability factor from table 2.8	K8	<10	1	
Slenderness factor	S1	3D/B	9	Outward
Stability factor from table 2.8	K8	9	1	

			Duration factor	
$ØMn_{Inward}$ =	3.733333	kNm	K1=1.0	**OK**
$ØMn_{Outward}$ =	3.733333	kNm	K1=1.0	**OK**

Shear Capacity

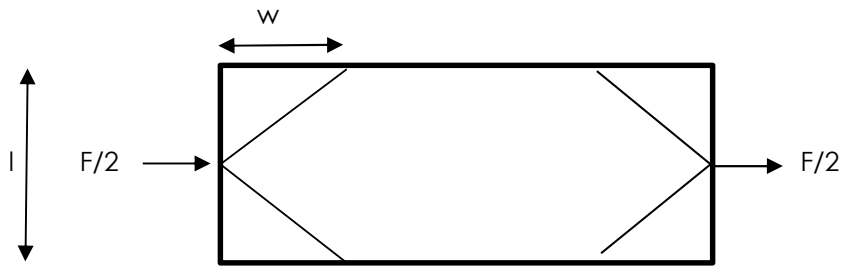
NOT CRITICAL

Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

Subject: **Roof Bracing**

Ref:	Design	Output



h = 3.41 m
l = 7.8 m
w = 4.5 m

Wind Demand

q = 1.12 kPa
Cp = 1

Fw = Cp x q x h x l/2
= 14.95 kN

Seismic Demand

Fe = 6 kN from sheet 9

Maximum Demand

Fmax = 14.95 kN

Roof Brace load

P_{brace} = Fmax /2 x $\sqrt{((l/2)^2 + w^2)}$ /w
= 9.89 kN

Use

$P_{allowable}$ = 13.2 kN From manufacturers data

Number of braces required

N = P_{brace} / $P_{allowable}$
= 0.749186
= 1 per side each direction

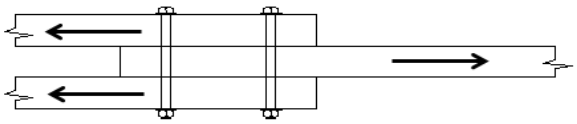
Client: **Tumu Timbers - Matt Patrick**
Project: **Garage/lean to**

SCL Ref: **2366-7905**
Ref: **HA108050**
Date: **5/8/19**
BY: **GN**

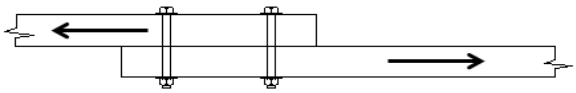
Subject: **Rafter to Pole Joint**

Ref:	Design	Output

Bolt design



Double shear



Single shear

Ultimate load		9.94	kN
Shear type		Double	
Timber group		J5	
Effective thickness of timber Perpendicular		100	mm
Bolt diameter		16	
Ultimate bearing stress perpendicular	fpj	12.9	Mpa
Duration of load	K1	0.8	
Green timber midification	K12	1.0	
Multiple number of fastners	K13	1.0	
Strength reduction factor	ϕ	0.7	
Number of fastners	n	2	

For Perpendicular to grain

	k11 x fcj x da^1.5 =	12.30
	OR	
	.5 x be x fcj x da =	10.32
Nominal strength	Qski	10.32
	Qski x 2	20.64
Design strength of bolt group		23.12

PASS

Edge & End distances

Loaded end distance	128	Unloaded end distance	80
Loaded edge distance	64	Unloaded edge distance	32
Loaded spacing	80		

Client:	Matt Patrick	**Ref No.:**	HA108050
Project:	Garage/lean to 395 Te Kopi Road, Masterton	**Date:** **SCL Ref:**	5/08/19 2366-7905

TIMBERSPAN STRONG TIMBER BUILDINGS

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3 BAY SHED

Sheet No.	Contents
2	Member Legend & Shed Dimensions
3	Floor Plan
4	Front & Rear Elevations
5	End Elevations
6	Roof Framing Plan
7	Front & Rear Wall Framing Elevations
8	End Wall Framing Elevations

BUILDING DETAILS SUMMARY

MEMBER SUMMARY

SED Poles	175 SED H5 Pole
Windpost	150 SED H5 Pole
Mid/Main Rafters	SINGLE 300 x 90 Azotek LVL 11 H1.2
End Rafters	SINGLE 250 x 50 Radiata H3.2 Sawn SG8
Front Wall Girts	200 x 50 Radiata H3.2 Sawn SG8 @ 1m crs
Rear Wall Girts	200 x 50 Radiata H3.2 Sawn SG8 @ 1m crs
End Wall Girts	150 x 50 Radiata H3.2 Sawn SG8 @ 1m crs
Purlins	200 x 50 Radiata H3.2 Sawn SG8 @ 1.4m crs
Foundations	
- Main	1.5 m deep x 600mm dia
- End Poles	400mm deep x 600mm dia
- Mid Poles	400mm deep x 600mm dia
- Roller Door	300mm deep x 400mm dia
- PA Door	300mm deep x 300mm dia
Roof & Wall Cladding	Coloursteel ZR8 / Endura Trimrib Iron 760 mm x .40 mm Gauge
Gutter/Spouting	Stormcloud Spouting
Downpipe	Downpipe Round 80 mm RP80

SHED DIMENSIONS

Length	**X**	13.50	
Bay Width	**Y**	4.5	m
Rafter Span	**Z**	7.80	m
Rear Wall Height	**V**	3.00	m
Front Wall Height		3.82	m
			m

Client:	Matt Patrick	**Ref No.:**	HA108050
Project:	Garage/lean to 395 Te Kopi Road, Masterton	**Date:** **SCL Ref:**	5/08/19 2366-7905

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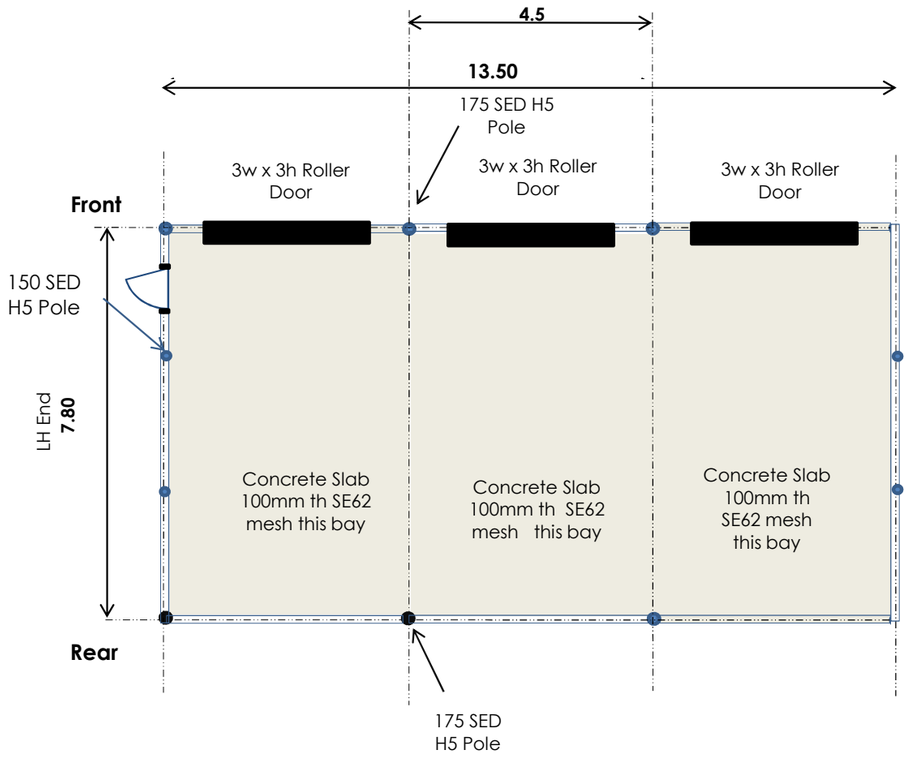

FLOOR PLAN

Client:	Matt Patrick	**Ref No.:**	HA108050
Project:	Garage/lean to 395 Te Kopi Road, Masterton	**Date:** **SCL Ref:**	5/08/19 2366-7905

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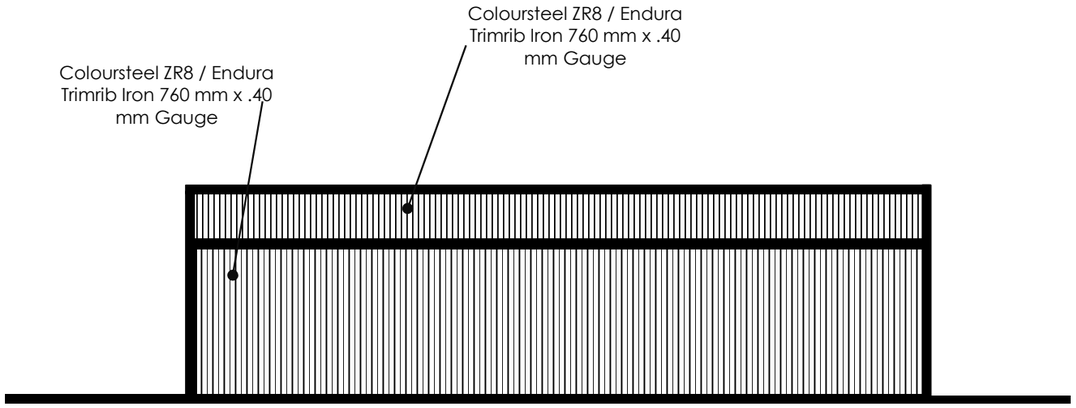
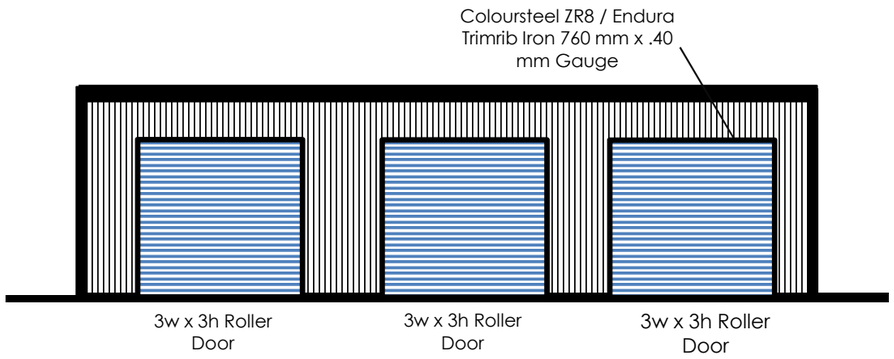


REAR WALL ELEVATION



FRONT WALL ELEVATION

Client: Matt Patrick

Project: Garage/lean to
395 Te Kopi Road, Masterton

Ref No.: HA108050

Date: 5-Aug-19

SCL Ref: 2366-7905

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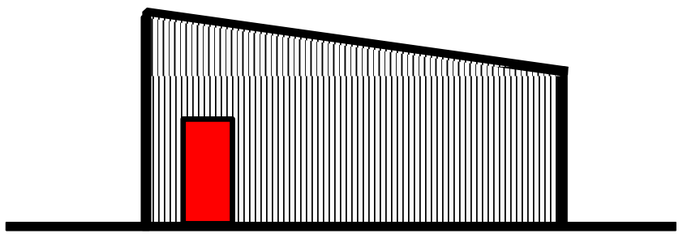
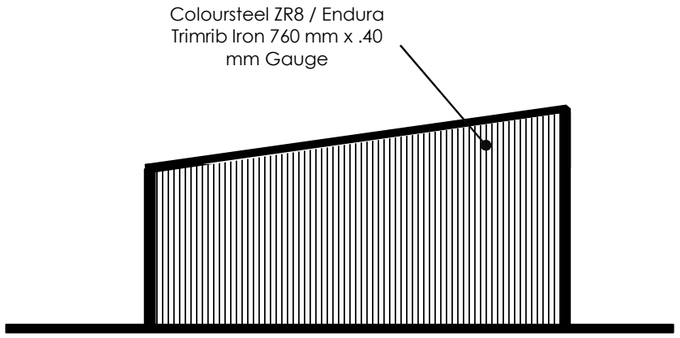


LH END WALL ELEVATION



RH END WALL ELEVATION

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

Date 5-Aug-19

SCL Ref: 2366-7904

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Detail Sheets

Sheet No.	Detail
D502	Apex
D503	Barge and Eaves
D504	Girt Fixing
D505	Purlin Fixing Details
D506	Purlin Fixing Details
D507	Typical Rafter Fixing Details
D508	End Rafter Splice Detail
D509	End Pole Top Fixing Detail
D510	Main Pole Footing Detail
D511	End & Mid Pole Footing Detail
D512	Side Mid Pole Brace Options
D513	Blank
D514	Typical Slab & Thickening

Sheet No.	Detail
D515	Roller Door Framing & Head/Trimmer Details
D516	Roller Door Base Detail
D517	PA Door Framing & Door Head
D518	Door Trimmer Base Details with Slab

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

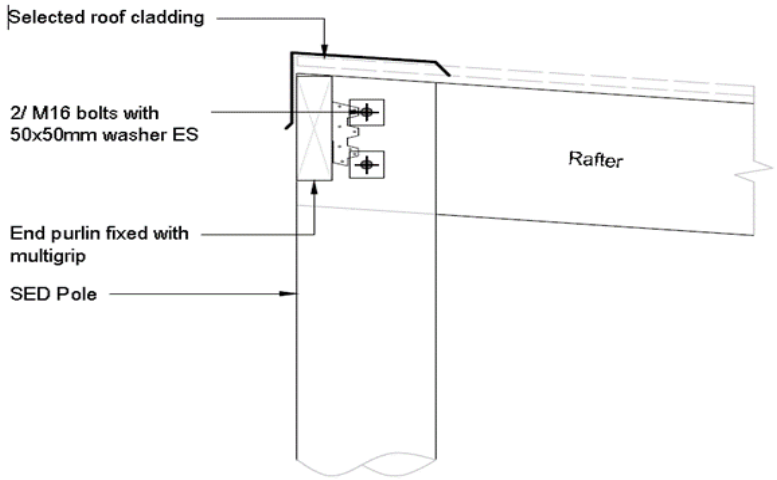
Date 5-Aug-19

SCL Ref: 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet: D502



Apex

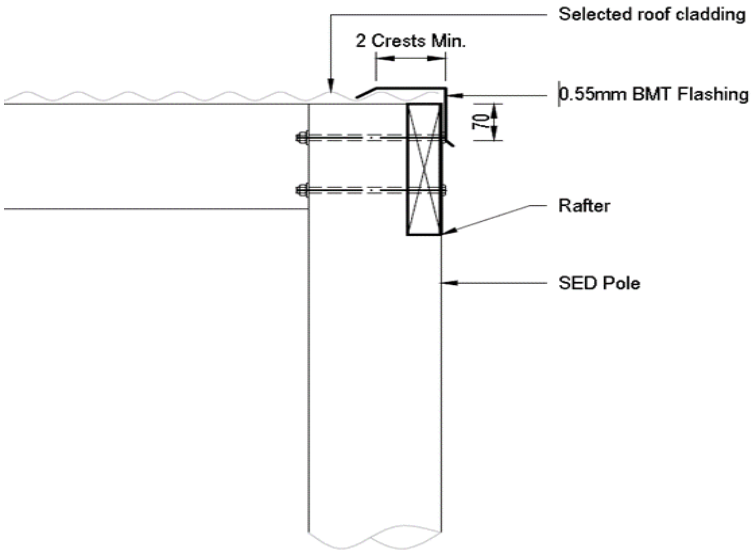
Client: Matt Patrick **Ref/ON:** HA108050

Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

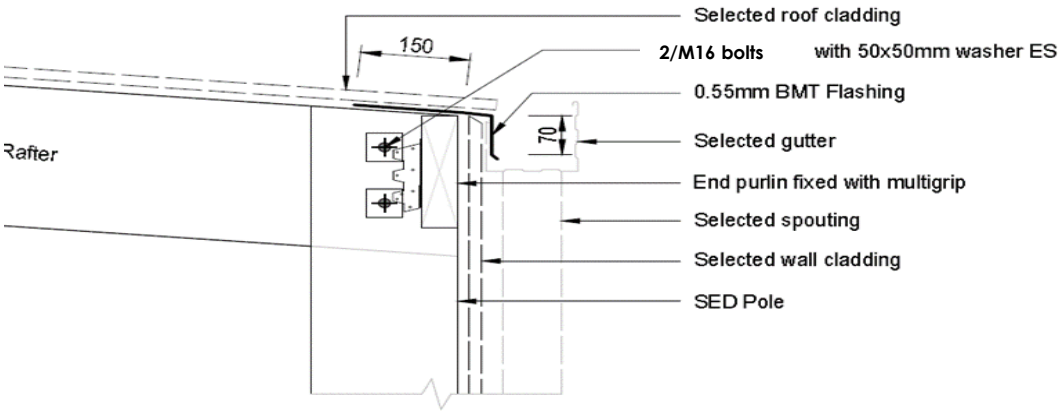
TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet: D503



Barge



Eave

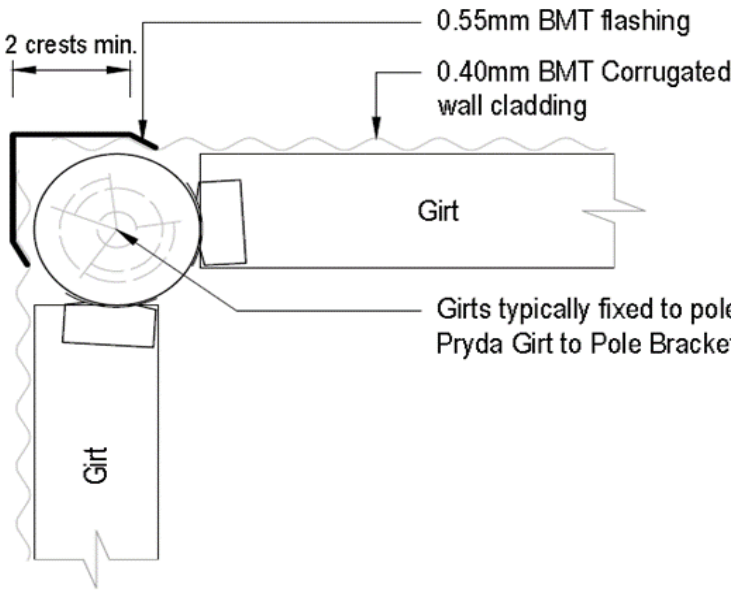
Client: Matt Patrick **Ref/ON:** HA108050

Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

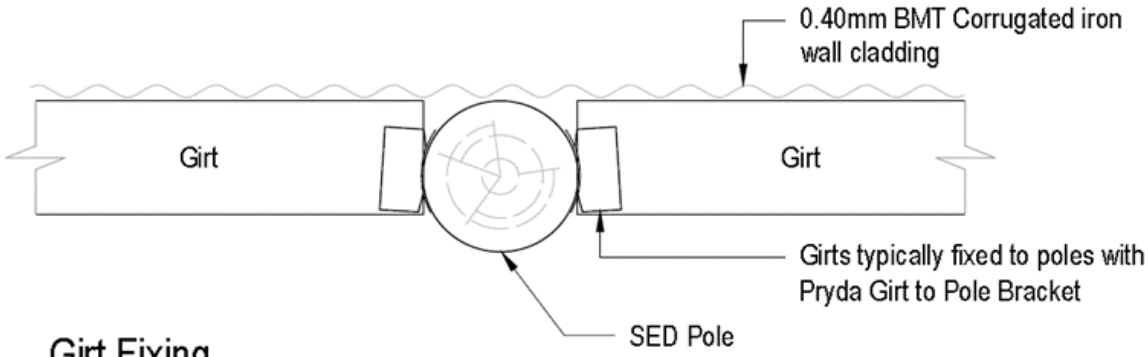
TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D504



Corner Detail



Girt Fixing

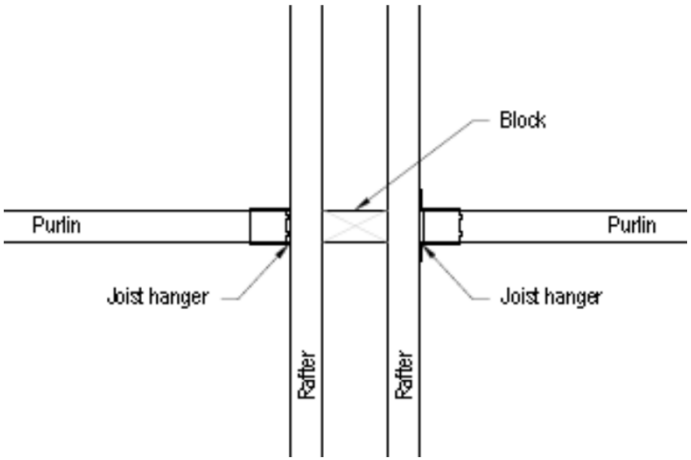
Client: Matt Patrick **Ref/ON:** HA108050

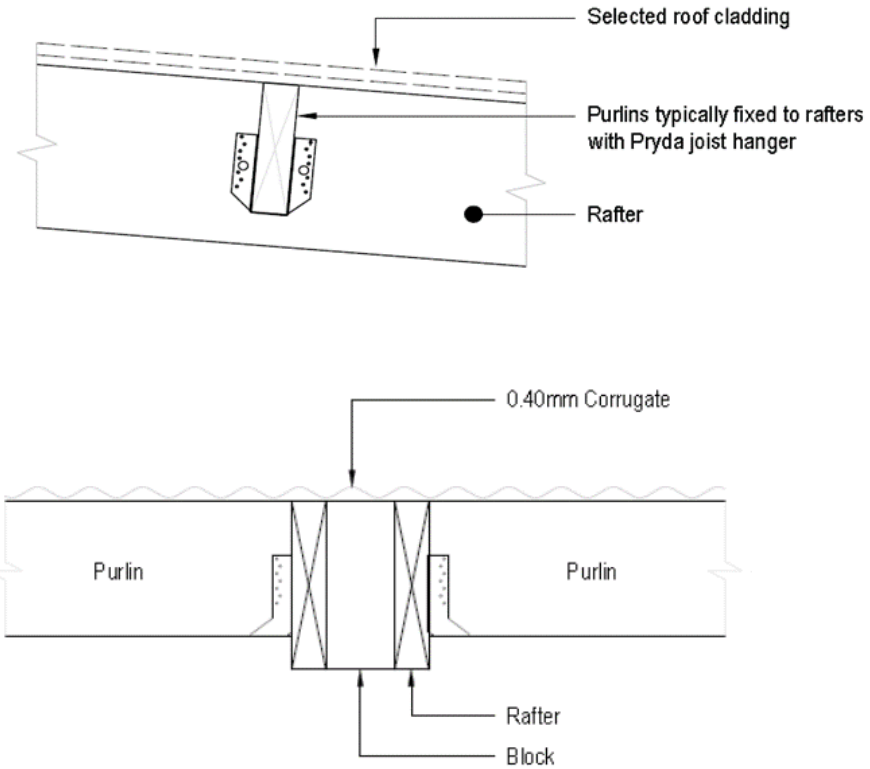
Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D505





Purlin Fixing

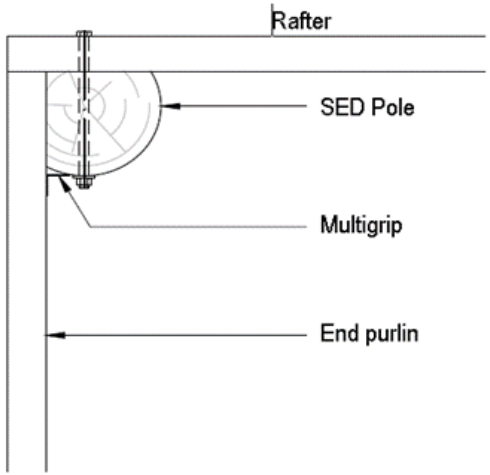
Client: Matt Patrick **Ref/ON:** HA108050

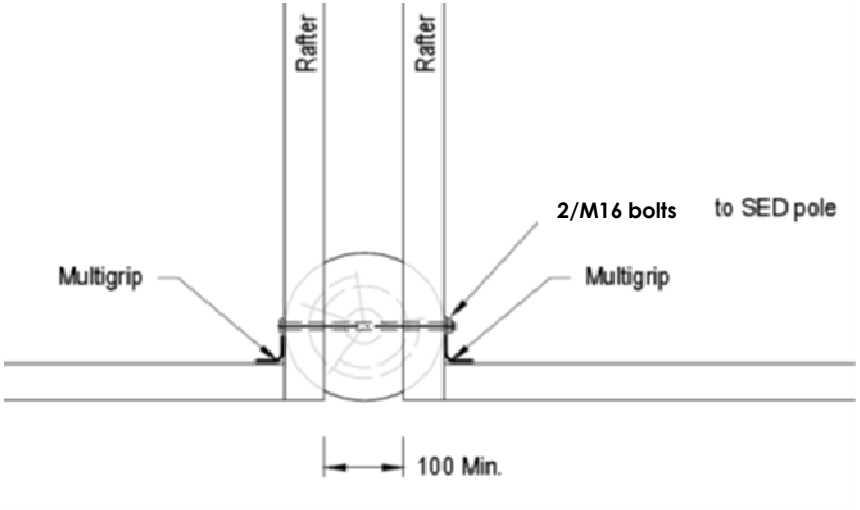
Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D506





End Purlin Fixing

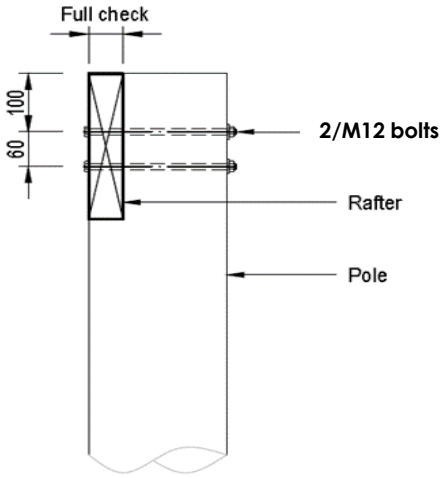
Client: Matt Patrick **Ref/ON:** HA108050

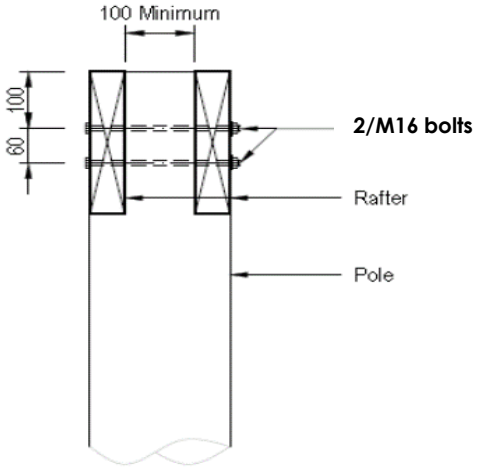
Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D507





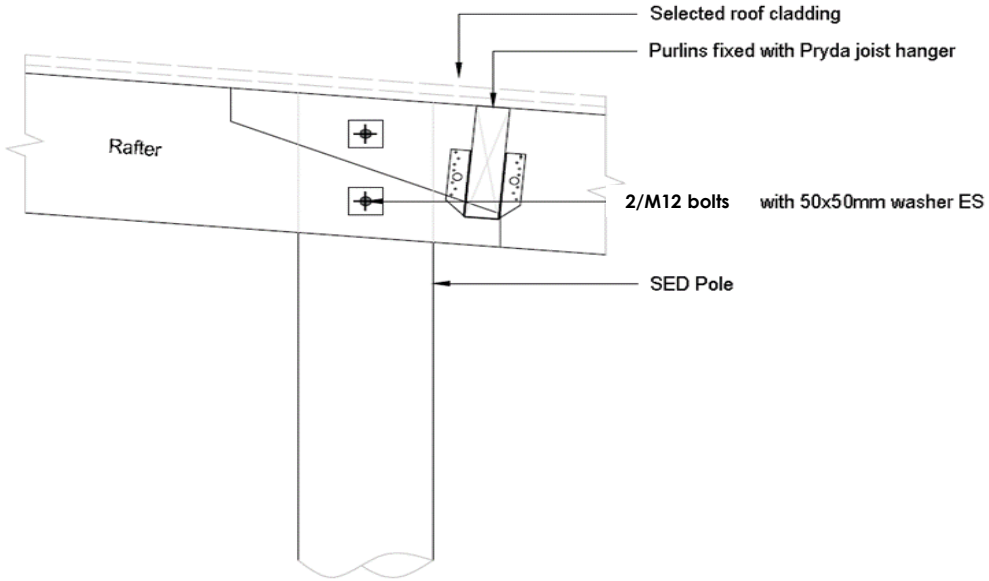
TYPICAL RAFTER FIXING DETAILS

Client: Matt Patrick **Ref/ON:** HA108050

Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts



Splice

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

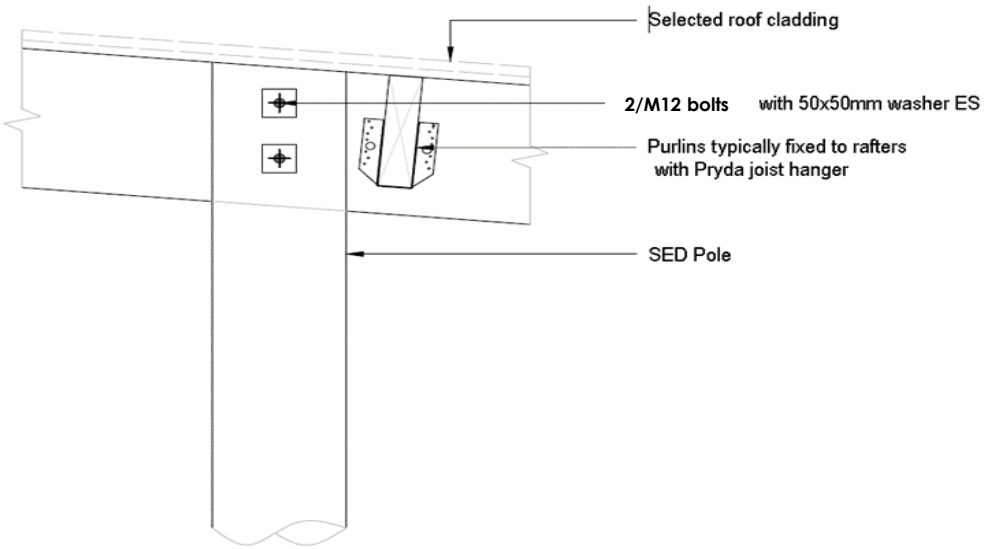
Date 5-Aug-19

SCL Ref: 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D509



Windpost Top

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

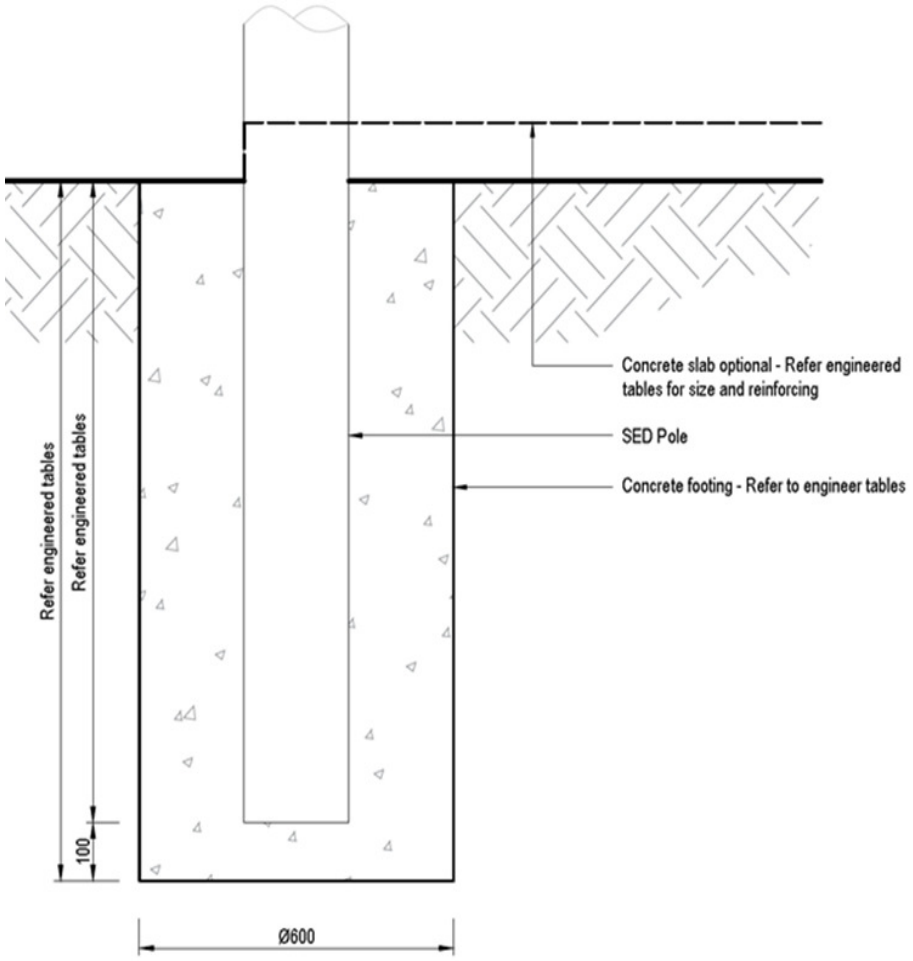
Date 5-Aug-19

SCL Ref: 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D510



Footing Detail

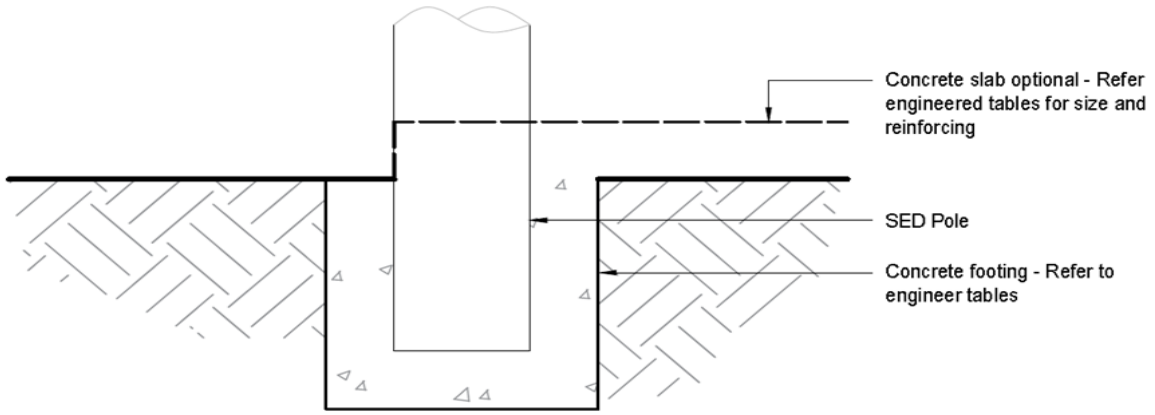
Client: Matt Patrick **Ref/ON:** HA108050

Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D511



Windpost Footing Detail

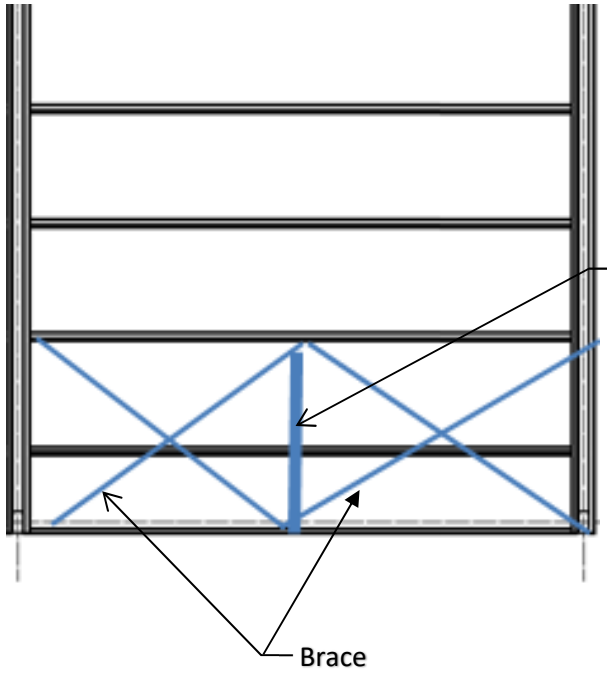
Client: Matt Patrick **Ref/ON:** HA108050

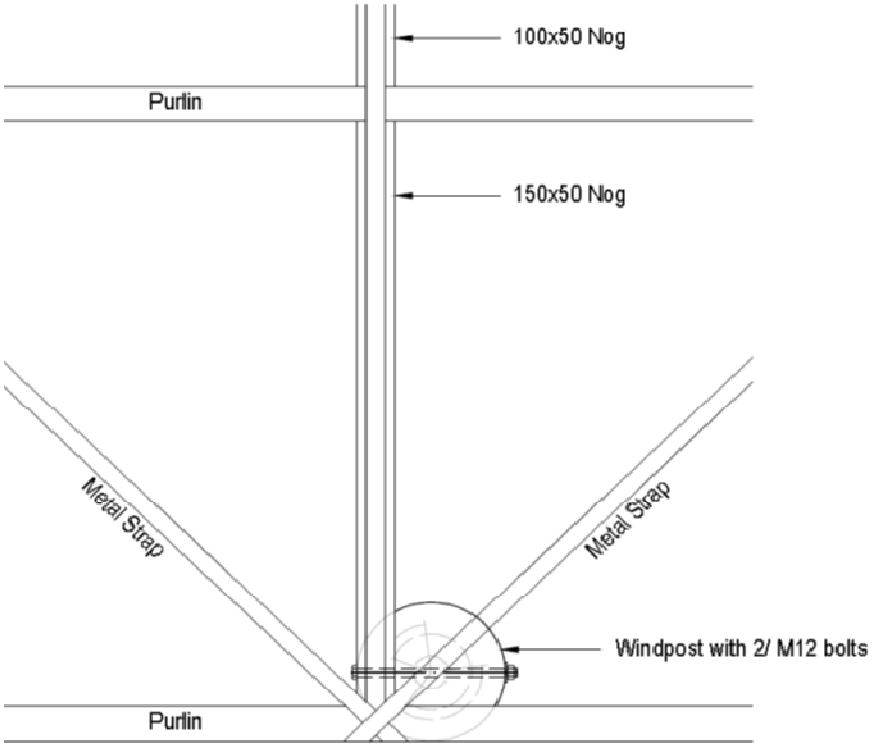
Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet D512





NOTE-
Brace - 25mm flat strap
Nogging - 90x45 G8 with flat strap over

MID POLE BRACING LAYOUT

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

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Sheet: D513

BLANK

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

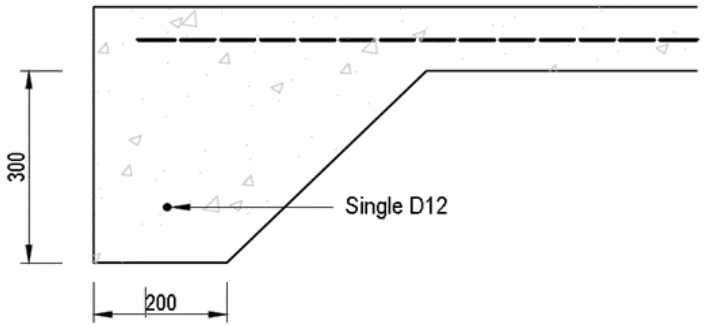
Date 5-Aug-19

SCL Ref: 2366-7904

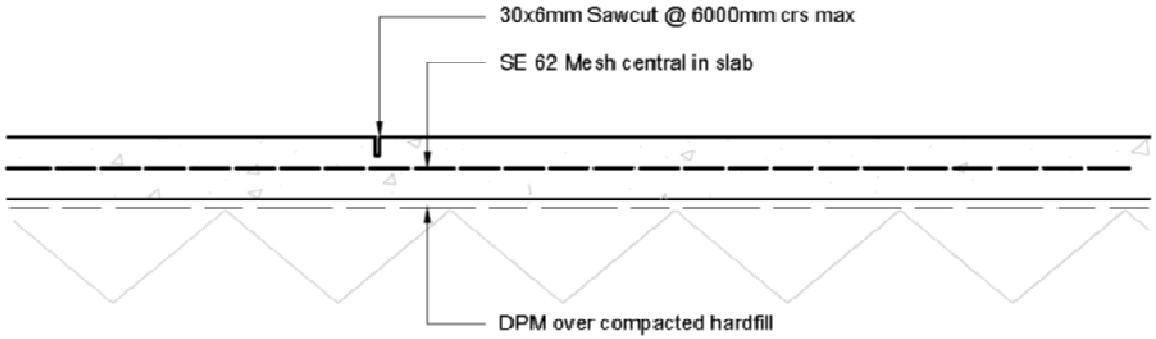
TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet: D514



Typical Slab Thickening



Typical Floor

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

Date 5-Aug-19

SCL Ref: 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

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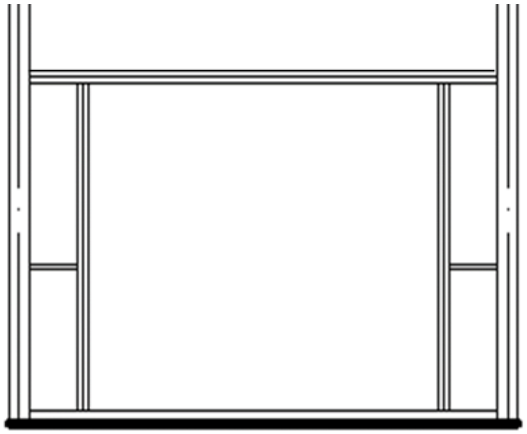
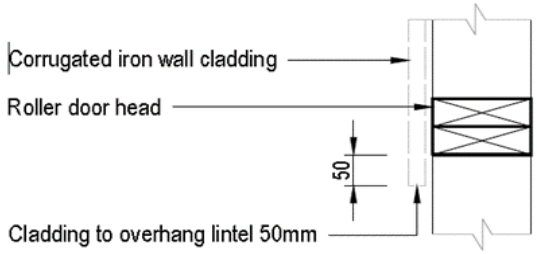
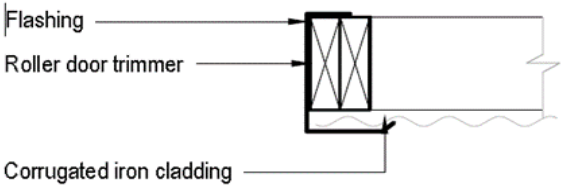
Sheet: D515





Roller Door Head Detail



Roller Door Trimmer Detail

Client: Matt Patrick

Project Garage/lean to
395 Te Kopi Road, Masterton

Ref/ON: HA108050

Date 5-Aug-19

SCL Ref: 2366-7904

TIMBERSPAN STRONG TIMBER BUILDINGS

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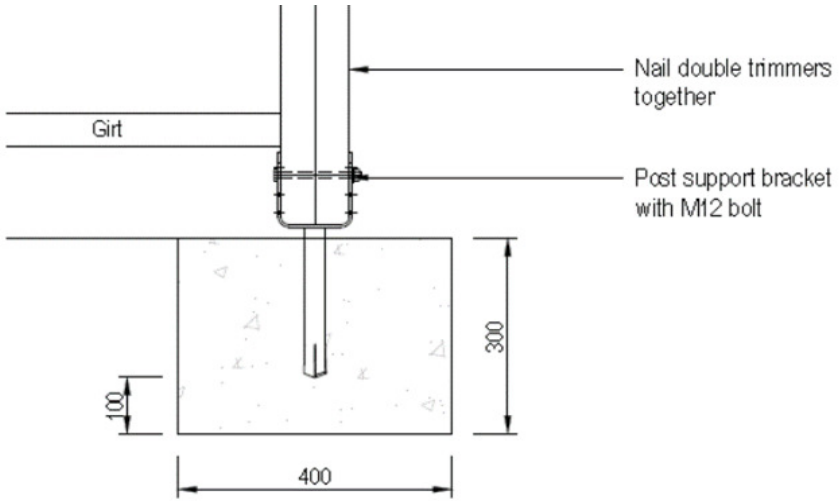
Sheet: D516



Typical Opening Foundation

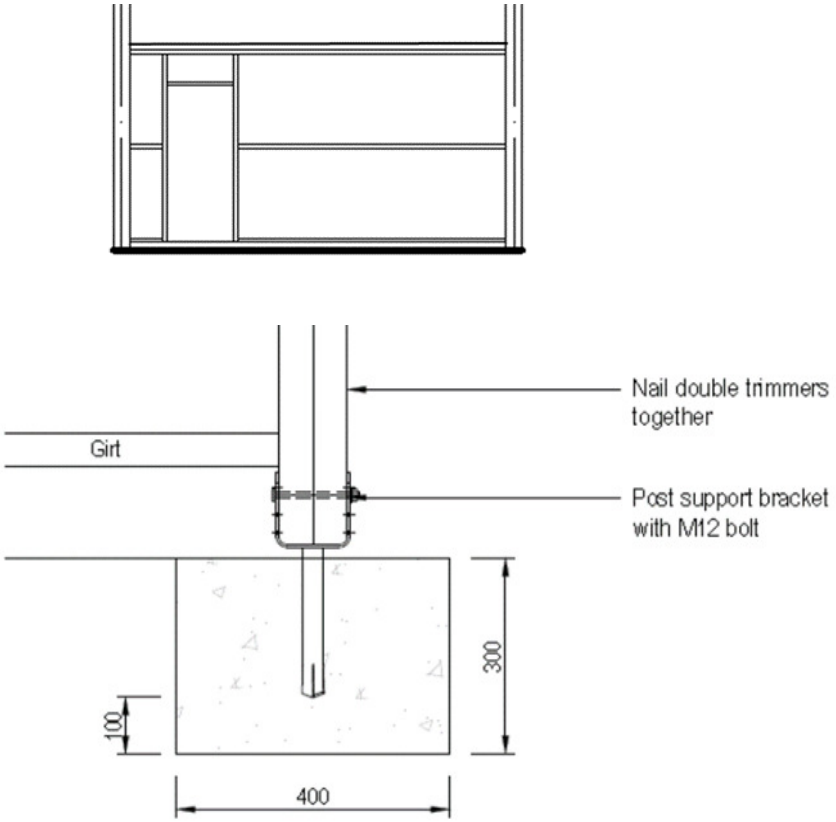
Client: Matt Patrick **Ref/ON:** HA108050

Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

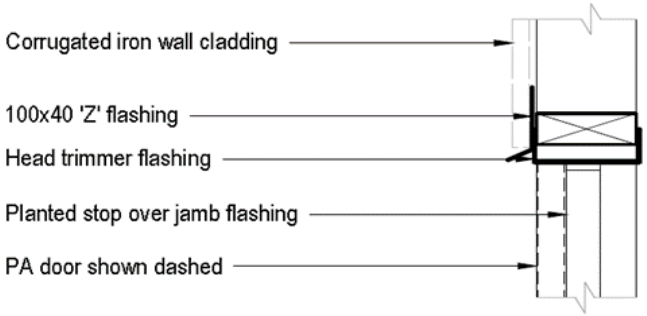
TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet: D517



Typical Opening Foundation



PA Door Head Detail

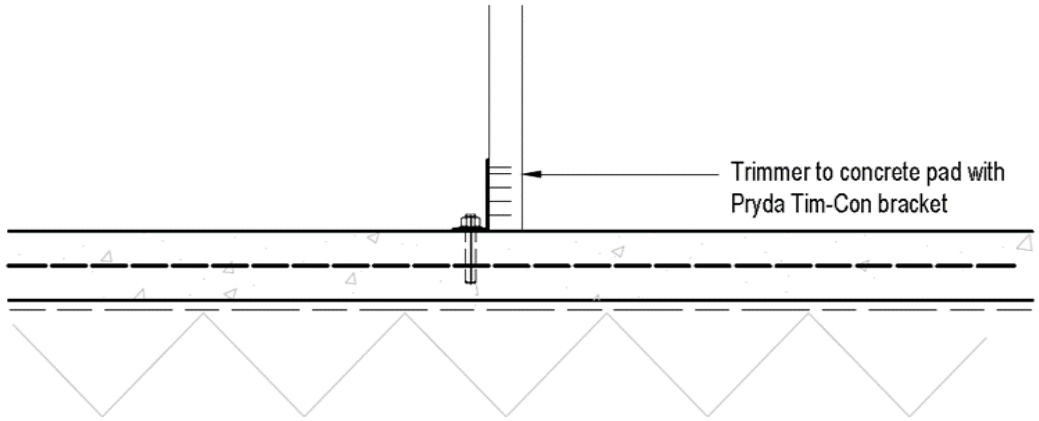
Client: Matt Patrick **Ref/ON:** HA108050

Project Garage/lean to **Date** 5-Aug-19
395 Te Kopi Road, Masterton **SCL Ref:** 2366-7904

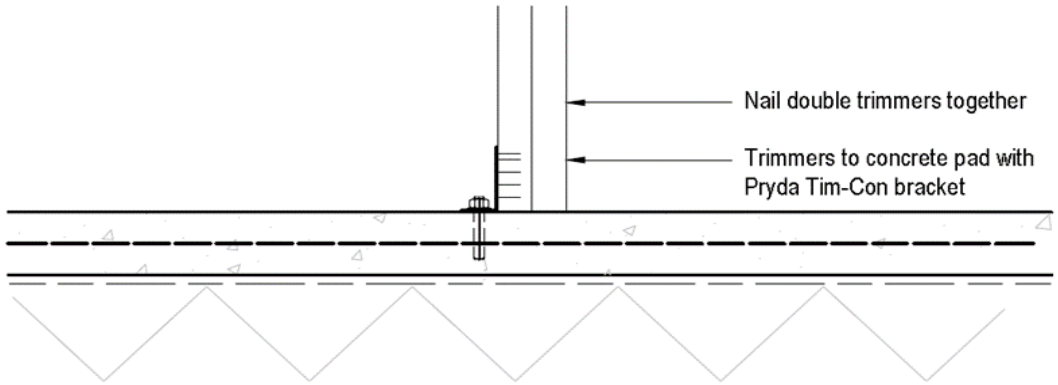
TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

Sheet: D518



Single Trimmer Base

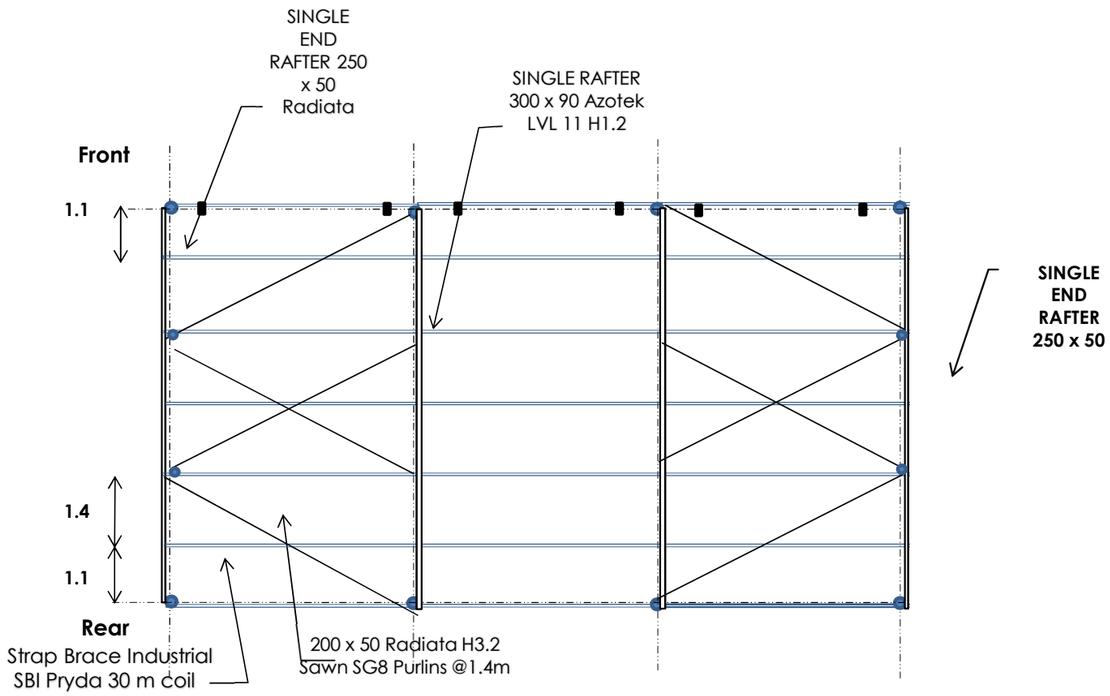


Double Trimmer Base

Client:	Matt Patrick	**Ref No.:**	HA108050
Project:	Garage/lean to 395 Te Kopi Road, Masterton	**Date:** **SCL Ref:**	5/08/19 2366-7905

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts

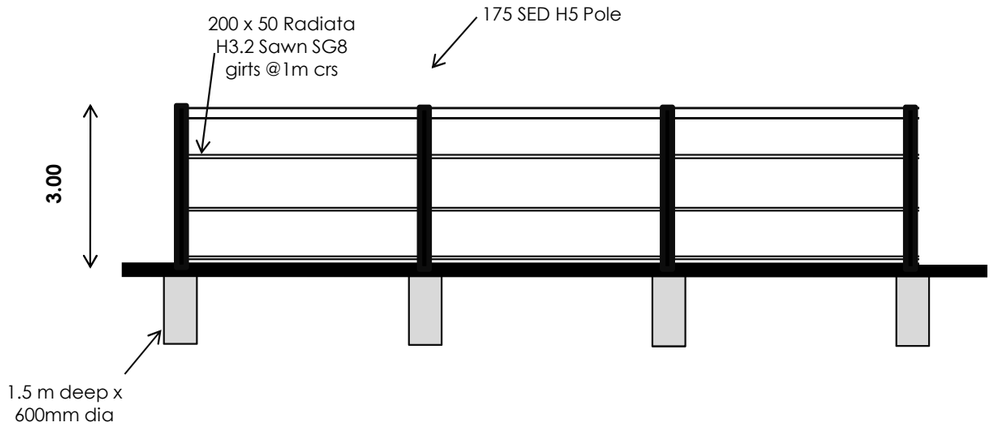


ROOF FRAMING PLAN

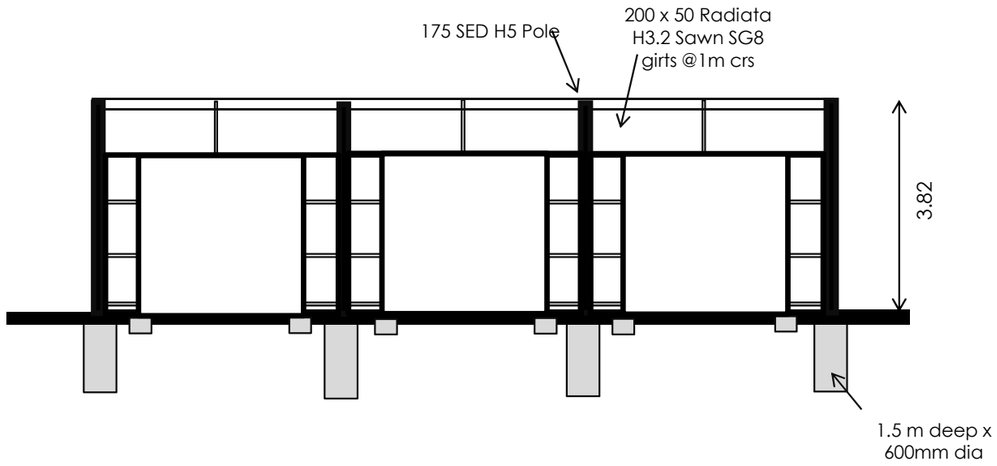
Client:	Matt Patrick	**Ref No.:**	HA108050
Project:	Garage/lean to 395 Te Kopi Road, Masterton	**Date:** **SCL Ref:**	5/08/19 2366-7905

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts



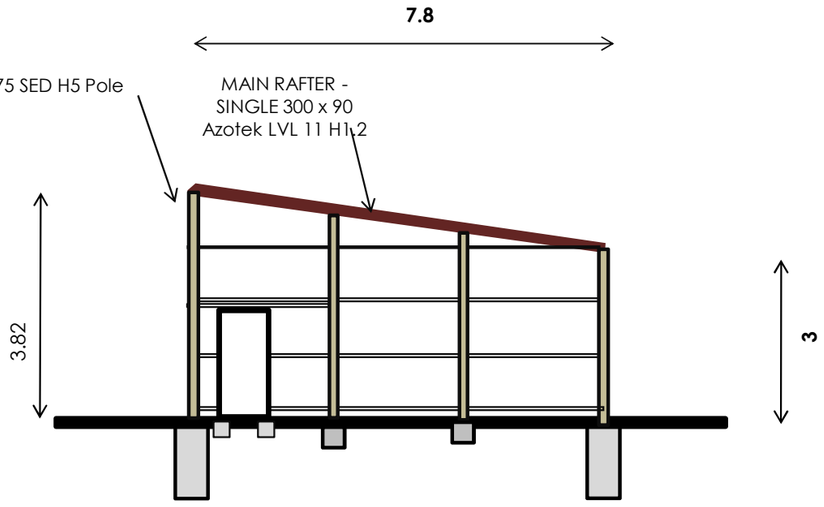
REAR WALL FRAMING



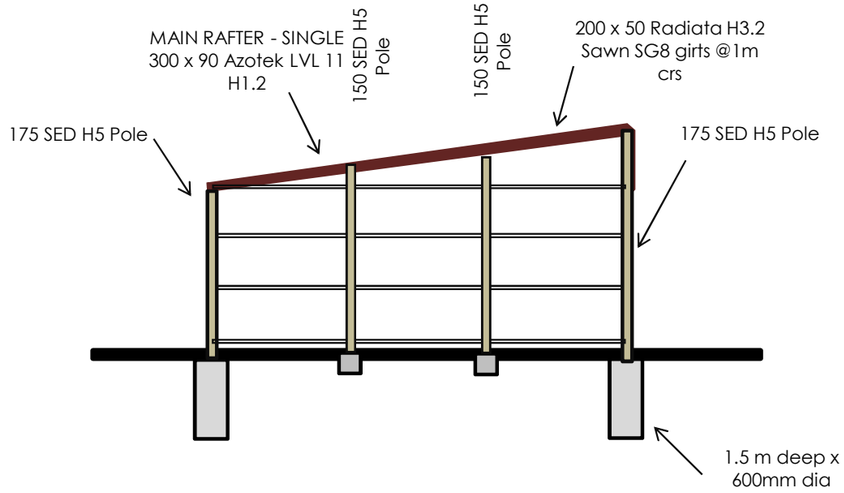
Client:	Matt Patrick	**Ref No.:**	HA108050
Project:	Garage/lean to 395 Te Kopi Road, Masterton	**Date:** **SCL Ref:**	5-Aug-19 2366-7905

TIMBERSPAN STRONG TIMBER BUILDINGS

emajineer Structural Concepts



LH END WALL FRAMING ELEVATION



RH END WALL FRAMING ELEVATION