PLT PANELS woodspan

MANUFACTURED BY TARANAKIPINE

Woodspan PLT (Parallel Laminated Timber) Panels.

Design and Install

DECEMBER 2021 – Version 3.0

Contents

General

Purpose

This guide will help to correctly specify and install Woodspan® PLT panels.

Important documents

This guide must be read in conjunction with these documents:

- Woodspan® PLT Panels pass™ www.thebuildingbusiness.co.nz/pass/woodspan
- Woodspan® PLT Panels standard connection details www.woodspan.co.nz/ cad-resources/, and
- Wood Solutions Floor Diaphragms in Timber Buildings Guide www.woodsolutions.com.au/publications.

Skills required

This guide is suitable for use by licensed building practitioners (or deemed practitioners) licensed to the applicable class.

For more help

Technical assistance is available at info@woodspan.co.nz.

While all reasonable efforts have been made to ensure the accuracy of information provided, this document is a guide only. It may be subject to change.

For our warranty

Refer to www.woodspan.co.nz.

The Woodspan® PLT Panel

Description

Woodspan® PLT (parallel laminated timber) panels are an engineered mass timber product suitable for use as prefabricated floor and roof panels. Manufactured from New Zealand grown Radiata pine, the lamina are finger jointed or solid, treated and then laminated to create large panels where the grain runs parallel to the panel span direction.

Certifications & approvals held by Taranakipine™:

- Grade Right NZ Ltd Member Certificate Producer Grade Verified Structural Timber, valid until 31/03/2023.
- Grade Right NZ Ltd Member of Treat Right Programme, valid until 31/03/2023.
- Grade Right Ltd Member of Grade Right Verified Engineered Wood Products QA Programme, valid until 31/03/2022.

www.graderight.co.nz

- FSC Single Chain of Custody and Controlled Wood NC-COC-005483, NC-CW-005483, 22/12/2020.

www.nz.fsc.org/en-nz

Scope & limitations

For scope and limitations refer to:
Woodspan® Parallel Laminated pass™
www.thebuildingbusiness.co.nz/pass/woodspan

Woodspan® PLT panel physical characteristics

- Timber species: NZ grown Pinus Radiata
- Maximum panel size (finger jointed) 7200 mm × 890 mm
- Maximum panel size (whole timber) 5900 mm x 890 mm
- Panel depths: 90 mm, 117 mm, and 140 mm
- Panel type: Finger jointed (FJ) or Whole Timber (WT)
- Adhesive: Purbond clear polyurethane adhesive, Type 1 for all service classes
- Treatment levels: Untreated, or preservative treated to hazard class H3.1 or H3.2
- Surface protection: Factory-applied water-based surface sealer
- Moisture content: 8-14% (ex-factory)
- Joint strength group: J5
- Panel Mass (Average Density = 450 kg/m3):
  - WS8 - 90 mm PLT = 40.5 kg/m2
  - WS8 - 117 mm PLT = 54 kg/m2
  - WS8 - 140 mm PLT = 63 kg/m2
- Panel Tolerances (ex-factory):
  - Width = +/-3.0 mm
  - Depth WS8-90 mm; +/-1.0 mm
  - Depth WS8-117 mm; +/-1.0 mm
  - Depth WS8-140 mm; +/-1.0 mm
  - Length; -0, +/-2.0 mm
- Appearance grades; visual and non-visual

Property		WS8 (MPa)	WS10 (MPa)[1]
Modulus of Elasticity (average)	MoE	8000	10000
Bending Strength[2,3]	F'b	14.0	20.0
Compression Parallel[2,3]	F'c	18.0	20.0
Compression Strength (perp to grain)[1,3]	F'p	8.9	8.9
Tension Strength[1,3]	F't	6.0	8.0
Shear Strength[1,3]	F's	3.8	3.8

PLT Panel Weight Guide

PLT length (all panels 890 mm wide)	WS8 – 90 mm	WS8 – 117 mm	WS8 – 140 mm
3500 mm	127 kg	169 kg	197 kg
5000 mm	181 kg	241 kg	281 kg
7200 mm	260 kg	346 kg	404 kg

1 WS10 Available on special request from Woodspan®

2 Use Ø = 0.8 Material Strength Reduction Factor

3 Bending, tension, compression and shear strength parallel to grain is to be multiplied by K6 = 1.33 (as per NZS3603)

DESIGN

Woodspan® PLT panels can be used as floor, roof and fire rated structures in buildings including as diaphragms.

The following describes the steps necessary to successfully design and specify a Woodspan PLT panel. Also supplied are tools that will assist in these design steps; span tables, penetration details, passive fire penetration details and fixing options.

Design steps

Select floor or roof

Woodspan PLT panels can be used as floor and roof structures in buildings, including diaphragms.

Determine loads

Determine the loads that apply to the building for:

- Roof loads: wind, snow, weight of roof, seismic, dead and live loads
- Floor loads; dead & live loads, diaphragm loads (if relevant).

Establish fire requirements

Fire resistance ratings (FRR) on Woodspan® PLT floor panels have been established through independent, full scale loadbearing fire testing to test method AS 1530.4:2014. Woodspan® PLT floor assemblies achieve FRR 30/30/30 and FRR 60/60/60 without any additional protective linings. Test results are available on request.

Further information about mass timber fire performance and fire design is covered by WPMA/NZ Wood Design Guides. www.wpma.org.nz/timber-design-guides.html.

Select panel span

Use the span tables provided by Woodspan® to determine panel thickness and maximum span where the PLT panels are to be used as floors, roofs or in fire resistance rated floor assemblies.

Floor span tables Page 10 Roof span tables Page 11 Fire span tables Page 12

Specify fixings

Woodspan® provides recommended fixings for ductile connections.

- Use self-tapping screws for lap-joint panel-panel fixing and for panels-support element fixing.
- Use self-tapping screws or nails for top-spline panel-panel fixing.
- Where connection requires shear capacity, the connection and fixings must be specifically engineered.
- Elastomeric adhesives will improve the performance of the connection.

Panel to panel joint (Top Spline) Page 13
Panel to panel joint (Lap Joint) Page 13
Panel to beams or supporting members Page 14
Fire Rated Panel to panel joint (Top Spline) Page 14

Penetrations

When penetrations through a Woodspan PLT panel are required it is necessary to consider the impact on structure and fire protection.

Maintain Structural integrity

The following must be applied to ensure the continuing structural performance of the panel:

- Refer to page 16 for guidance around un-reinforced penetrations through a Woodspan® PLT Panel
- For penetrations outside of the scope as shown on page 16 please contact Woodspan® for further information.

Ensure passive fire protection

Where a penetration requires passive fire protection Woodspan® provides details that have been independently tested to test method AS 1530.4:2014 and should therefore be used. The details rely on a range of RyanFire fire stopping solutions that meet FRR -/30/30 and FRR -/60/60 requirements. Refer to www.woodspan.co.nz/passive-fire-details/

The details cover penetration seals to

- metal pipes
- mixed combustible services
- combustible and non-combustible pipes, and
- combustible PEX and Kelox pipes.

7 Identify & select relevant details

To assist with specification of Woodspan® PLT Panels, the following typical details are supplied:

- roof
- floor to wall
- mid-floor
- mid-span floor supported
- panel to panel connections
- fire rated panel-panel joint connections

These can be found at www.woodspan.co.nz/cad-resources.

8 Consider other structural design elements

Diaphragms

Woodspan® PLT Panels may be used as a floor or roof diaphragm, transferring loads to bracing elements and creating a cohesive structure. Continuous support must be provided around the perimeter of the panels. All elements, including fixings must be specifically engineered to AS/NZS1170:2002[1].

For diaphragm design within the scope of NZS 3604:2011, a minimum ply spline depth of 17 mm is required. Where the project falls outside the scope of NZS 3604:2011 the spline depth must be specifically engineered..

Dynamics

8hz is the recommended natural frequency for a Woodspan® PLT floor panel for dynamics performance calculation. The Woodspan® PLT design is based on FP Innovations design methodology for CLT [2] .

1 Where a standard is referenced it is to be read as amended by the applicable acceptable solution or verification method.

2 Lignum Engineering compared the performance of CLT and PLT and concluded that reliance on the FP Innovations design methodology was applicable in respect of Woodspan® PLT.

9 Consider other building code requirements

Internal linings fire performance

Woodspan® PLT Panels meet material group number 3. To achieve a lower material group number additional protection such as a plasterboard lining or coating with an intumescent paint system is required.

Thermal performance

Check thermal performance.

R values [m2K/W] for typical panel thicknesses (raw panel values) are:

- 90mm PLT: $R_{PLT}90 = 0.75$
- 117mm PLT: $R_{PLT}117 = 0.98$
- 140mm PLT: $R_{PLT}140 = 1.17$.

Refer Appendix C for formula for calculating thermal resistance properties.

Acoustic performance

Check acoustic performance.

Contact Woodspan® for indicative STC & IIC configurations for inter-tenancy floors.

Where a higher level of acoustic performance is required, an Acoustic Engineer should be engaged.

10 Select visual grade required

Panels are available in visual and non-visual appearance grades.

Visual appearance grade panels are for use where appearance is a primary design consideration. All surface voids are filled, small knots and knot holes are permitted.

Non-visual appearance grade panels are intended for use where appearance is of no consideration; blemishes, knots and knot holes are permitted.

11 Sustainability

Assess sustainability & environmental impact

Choosing Woodspan® in design and construction can help tackle climate change. The combination of carbon sequestration in growing trees and the long-term carbon storage in wood products represents a significant net sink and store of carbon and can significantly reduce the environmental impact of construction.

The environmental impact of the production of Woodspan® has been assessed independently and is available in the form of a New Zealand industry average Environmental Product Declaration (EPD), this can be found at www.woodspan.co.nz/technical

The production of Woodspan® has a negative GWP (global warming potential) of **-596kg CO2 eq/m³**. The incredible advantage of timbers ability to sequester CO^2 and store it as carbon offsets other impacts of production. This compares favourably to average concrete production which is **+350kg CO2 eq/m³**; an almost 1 tonne/m^3 difference in CO^2 released in the atmosphere.

12 Confirm all design requirements are met

Confirm the chosen panel configuration meets all relevant design requirements.

13 Check documentation

Ensure the building consent plans and specifications clearly define:

- thickness of panel.
- fixings; type and placement, and
- relevant details.

The installer will be relying on these, and the Woodspan® shop drawings, to correctly install the Woodspan® PLT panels.

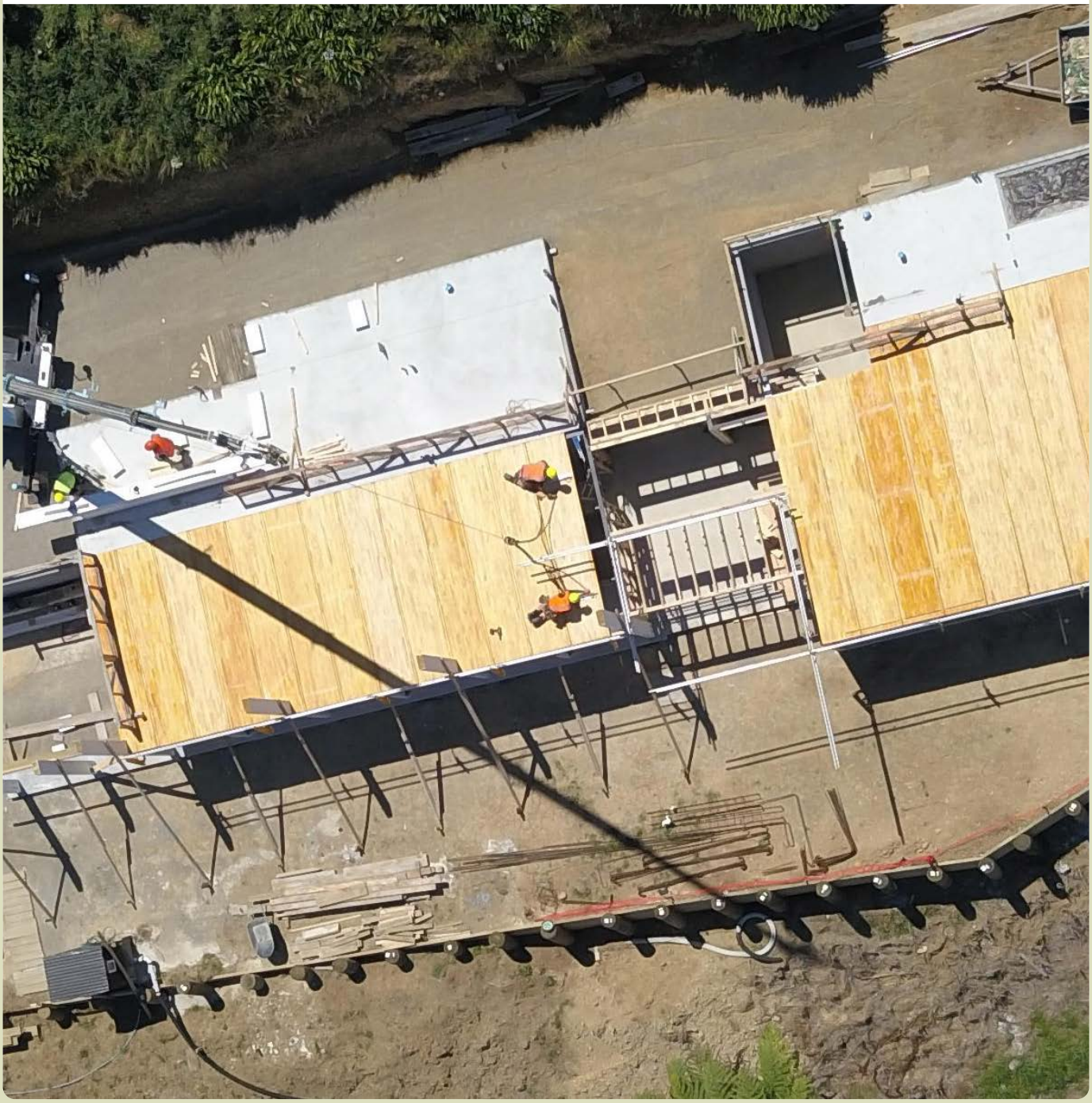
Design tools

Span tables

Woodspan PLT panels can be used as floor and roof structures in buildings, including diaphragms.

Notes:

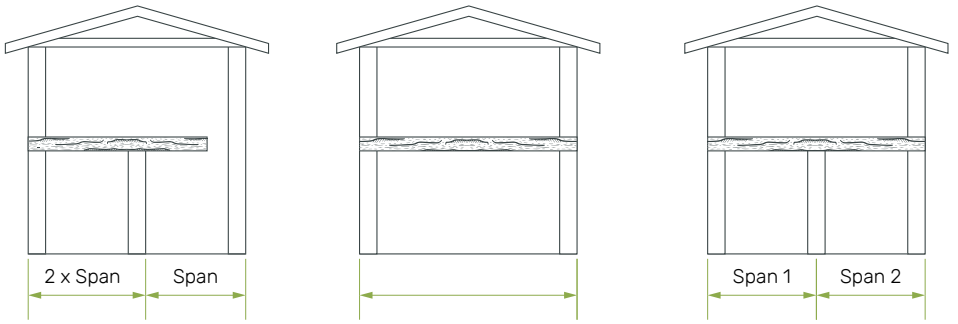
- All dimensions shown in mm.
- Continuous spans over two unequal spans must have the lesser span greater than 0.6 of the longer span.
- The back span for all cantilevers should be at least 2 times the cantilever length.



Floor panels

Design Deflection limits:

- Long term loads – Span/400
- Cantilever – Span/1000
- Dynamic Criteria – FP Innovations methodology



Cantilever Floor Panel **Single Span Floor Panel** **Continuous Span Floor Panel**

Single span

Dead load (kPa) plus self-weight		0.23		0.53		Cantilever
Live load (kPa)		1.5	3.0	1.5	3.0	3.0
Panel	**Depth (mm)**	**Single Max Span (mm)**				
WS8 -90	90	3110	2910	3090	2770	1090
WS8 – 117	117	3790	3700	3790	3530	1380
WS8 - 140	140	4340	4340	4340	4160	1610

Continuous span

Dead load (kPa) plus self-weight		0.23		0.53		Cantilever
Live load (kPa)		1.5	3.0	1.5	3.0	3.0
Panel	**Depth (mm)**	**Continuous Max Span (mm)**				
WS8 -90	90	3380	3380	3380	3380	1090
WS8 – 117	117	4130	4130	4130	4130	1380
WS8 - 140	140	4730	4730	4730	4730	1610

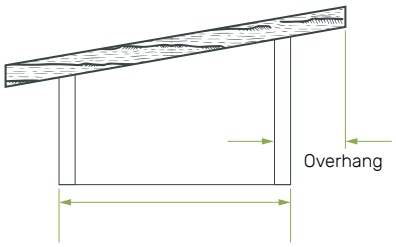
Notes:

- Maximum length of finger jointed panel is 7200 mm, maximum length of whole timber panel is 5900 mm.
- A long-term creep factor K2=2.0 has been used.
- Table is designed for 1.5kPa (residential) and 3.0kPa (commercial) live load.
- Floor Tile loads are an additional 0.3kPa long term dead load.
- Table allows for the dead load from the panel, as well as 0.23kPa super-imposed dead load (allowance for ceiling and light partition non-loadbearing walls).
- No allowance has been made for load bearing walls on the cantilever.

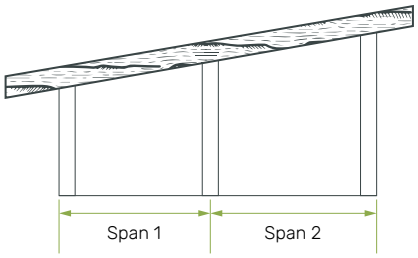
Roof panels

Design Deflection limits:

- Dead Load – Span/400
- Overhang – Span/1600
- Snow Load – Span/300



Single Span Roof Panel



Continuous Span Roof Panel

Single span		Light Roof Load (0.25kPa)		Heavy Roof (0.73kPa)		Overhang eave	
Snow load (kPa)		0	1.0	0	1.0	0	1.0
Panel	**Depth (mm)**	**Single Max Span (mm)**					
WS8 -90	90	4040	3380	3400	3400	1000	920
WS8 – 117	117	4960	4850	4260	4260	1260	1160
WS8 - 140	140	5680	5630	4960	4960	1470	1360

Continuous span		Light Roof Load (0.25kPa)		Heavy Roof (0.73kPa)		Overhang eave	
Snow load (kPa)		0	1.0	0	1.0	0	1.0
Panel	**Depth (mm)**	**Continuous Max Span (mm)**					
WS8 - 90	90	5420	5200	4560	4560	1000	920
WS8 - 117	120	*	*	*	*	1260	1160
WS8 - 140	140	*	*	*	*	1470	1360

Notes:

- Maximum length of finger jointed panel is 7200 mm, maximum length of whole timber panel is 5900 mm.
- Table allows for the dead load from the panel, as well as 0.25kPa light roof and ceiling, or 0.73kPa heavy roof and ceiling.
- Table is based on 1kPa design snow load on the roof.
- All roof panels allow for Very High wind zone (to NZS3604:2011).
- Roof span is plan span. Roof pitch to be between 5 and 30 degrees.

Floor fire span tables

- FRR 30/30/30 & FRR 60/60/60

Dead load (kPa) plus self-weight		0.23		0.53	
Live load (kPa)		1.5	3.0	1.5	3.0
Panel	**Depth (mm)**	**Maximum span (mm)**			
WS8 – 90	90	3110	2910	3090	2770
WS8 – 117	117	3790	3700	3790	3530
WS8 – 140	140	4340	4340	4340	4160

Notes:

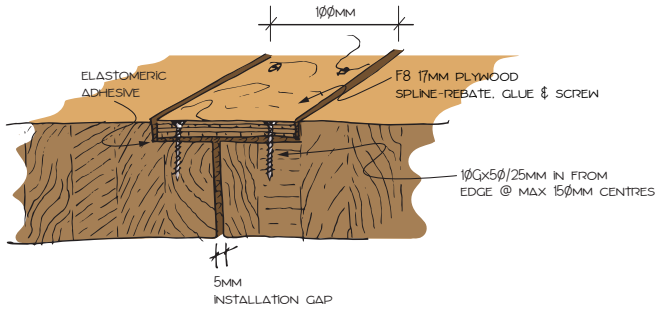
- Fire resistance ratings on Woodspan® PLT Floor panels have been established through independent, full scale, loadbearing fire testing to AS1530.4:2014.
- To achieve tested FRR rating, fire rated panel joints (top-spline) must be used, See page 14 for details.

Fixings

Recommended fixings for ductile construction. Suitability of fixings must be confirmed by a qualified structural engineer.

Panel to panel joint (top spline)

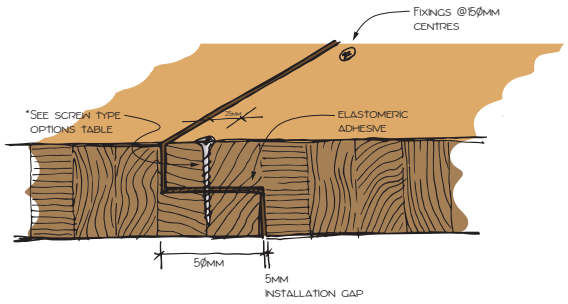
		Screw Type Options					
Panel	**Panel to Panel Plywood (Diaphragm only)**	**Simpson Strong-Tie QD**	**Rothoblaas HBS**	**SPAX Delta seal**	**FH Nail**	**Spacing (mm)**	**Min Edge Distance (mm)**
WS8 – 90	17 x 100 mm F8	10 x 50	5 x 50	6 x 60	60 x 2.8	150	25
WS8 – 117	17 x 100 mm F8	10 x 50	5 x 50	6 x 60	60 x 2.8	150	25
WS8 – 140	17 x 100 mm F8	10 x 50	5 x 50	6 x 60	60 x 2.8	150	25



Top Spline Connection

Panel to panel joint (lap joint)

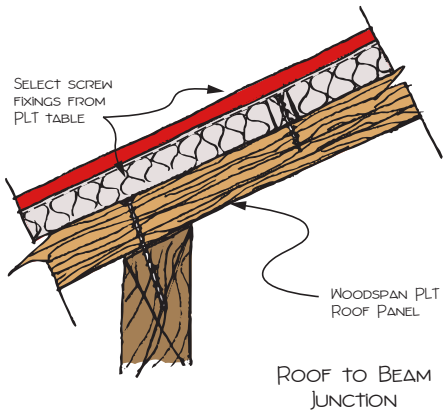
	Screw Type Options				
Panel	**Simpson Strong-Tie ESCRC**	**Rothoblaas HBS**	**SPAX Delta seal**	**Spacing (mm)**	**Min Edge Distance (mm)**
WS8 – 90	8 x 80	5 x 80	6 x 80	150	25
WS8 – 117	8 x 100	5 x 100	6 x 100	150	25
WS8 – 140	8 x 120	5 x 120	6 x 120	150	25



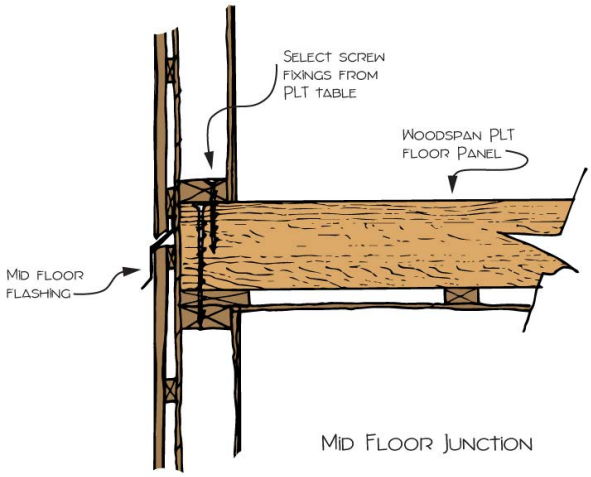
Lap Joint Connection

Panel to beams or supporting members

	Screw Type Options				
Panel	**Simpson Strong-Tie ESCRC**	**Rothoblaas VGZ**	**SPAX Delta seal**	**Spacing (mm)**	**Min Edge Distance (mm)**
WS8 – 90	8 x 180	8 x 180	8 x 180	150	25
WS8 – 117	8 x 220	8 x 220	8 x 220	150	25
WS8 – 140	8 x 240	8 x 240	8 x 240	150	25



ROOF TO BEAM JUNCTION

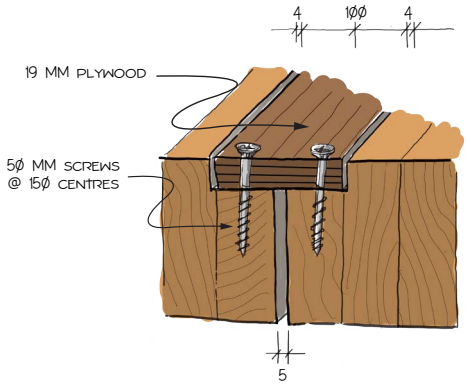


MID FLOOR JUNCTION

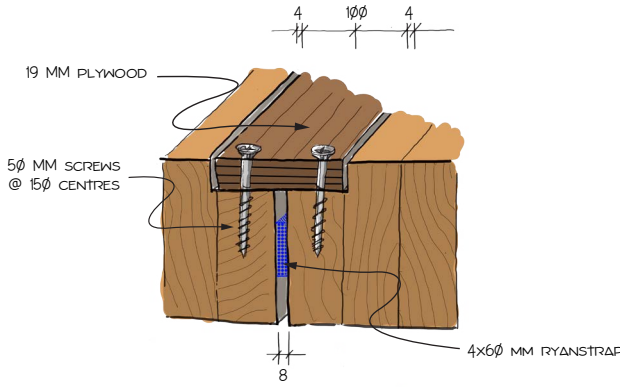
Fire rated panel to panel joint (top spline)

Note these fixings apply to both FRR 30/30/30 and FRR 60/60/60

		Screw Type Options				
Panel	**Panel to Panel Plywood**	**Simpson Strong-Tie QD**	**Rothoblaas HBS**	**SPAX Delta seal**	**Spacing (mm)**	**Min Edge Distance (mm)**
WS8 – 90	19 x 100 mm F8	10 x 50	5 x 50	6 x 60	150	25
WS8 – 117	19 x 100 mm F8	10 x 50	5 x 50	6 x 60	150	25
WS8 – 140	19 x 100 mm F8	10 x 50	5 x 50	6 x 60	150	25



FRR 3Ø/3Ø/3Ø JOINT



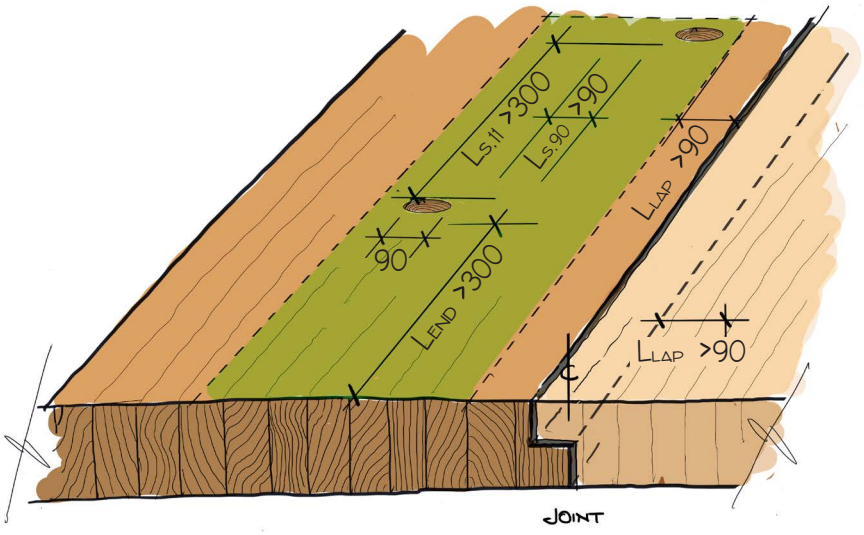
FRR 6Ø/6Ø/6Ø JOINT

Penetrations

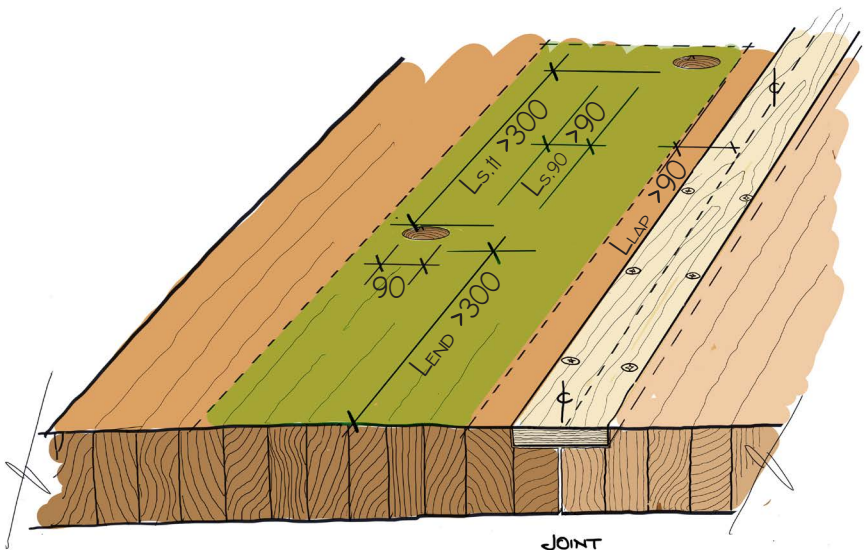
Simplified un-reinforced penetration.

- No penetration allowed in vicinity or below load bearing walls nor directly through panel joint.
- When using more then 2 openings across the panel and more then 2 penetrations within the whole panel – confirm increased stresses within the panel with the designer.
- Allow spacing between the penetrations of Ls,II> 300mm and Ls,90> 90mm
- Allow 90mm distance to panel joints L_{lap} > 90mm
- Minimum distance to load bearing walls/ ends / and intermediate supports Lend>300mm.
- For penetrations outside this scope, please contact Woodspan® for further information.

General penetration details

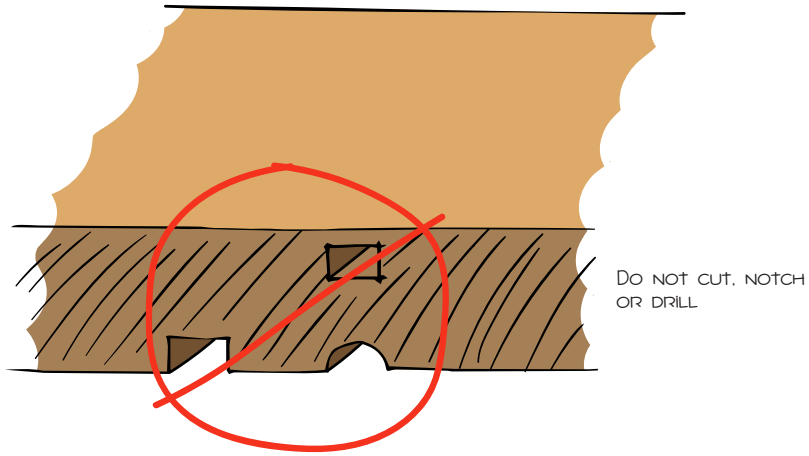


Lap Joint



Spline Joint

Holes and notches



Tested passive fire assemblies

For passive fire assemblies refer to www.woodspan.co.nz/passive-fire-details

INSTALLATION

Pre-installation

Health & safety

Take all necessary steps to ensure your safety and the safety of others:

- check weight of Woodspan® panel and lifting capacity of Hiab/crane
- ensure adequate ventilation or mechanical dust extraction when cutting or drilling
- ensure the timber is well supported when cutting and nailing
- wear appropriate safety equipment, clothing and footwear
- use all tools in accordance with relevant instruction manuals
- plan and monitor a safe approach for working at height; select and use the right equipment
- clear the work area of any obstructions before work starts.

For further information refer to:

- WorkSafe July 2018. Small Construction Sites, The Absolutely Essential Health and Safety Toolkit.
- WorkSafe December 2016. Health and Safety at Work, Quick Reference Guide.

These documents are available at www.worksafe.govt.nz.

Delivery & storage

Delivery

Woodspan® plans the panel delivery sequence to suit the on-site lifting program.

Panels are dispatched pre-coated with a temporary moisture resistant coating, wrapped in moisture-proof packaging and have an equilibrium moisture content (EMC) of 8-14%. They are delivered flat-packed with; assembly plans, lifting brackets and plywood spline (if required) to suit the specified jointing system.

Storage

The panels should be stored in a dry environment; placed horizontally on bearers (no more than 2000 mm apart) which extend across the full width of the pack. Panels stored on or near the ground will absorb moisture. To prevent this a layer of plastic should be laid underneath the bearers.

Where storage inside is not possible remove the weatherproof wrap, place timber spacers on top of the panels then re-wrap and cover with a waterproof cover for additional protection. Storing the panels this way allows airflow to circulate and prevents condensation accumulation.

Installation

Key documents

Building consent plans & specifications

Building consent documentation shows spacing, set out and connection, and fastener type for:

- panel to panel joints
- panel to building structure connections
- passive fire details
- system layout where the panel is part of a system, e.g. acoustic system.

Shop drawings

Shop drawings identify panel set out and assembly sequence.

Moisture control

To maintain the look and functionality of Woodspan® PLT panels, exposure to moisture must be controlled.

During all stages of supply, storage and installation, climatic conditions shall be as close as possible to in-service conditions. Where changes to EMC cannot be avoided, the coefficients for shrinkage and expansion of wood must be taken into consideration.

Managing moisture before a building is weathertight

- Ensure water does not pond on the surface. Sweep ponded water from the surface.
- Cover the construction area where possible.

Note:

- Woodspan® PLT should only be enclosed or lined once EMC is 18% or lower[1].
- 5mm expansion gaps perpendicular to panel edge must be allowed for.
- Ceiling linings susceptible to cracking (e.g. stopped plasterboard) should not be fixed directly to Woodspan® PLT. Instead a layer of battens/strapping should be installed (refer Woodspan® PLT standard details) www.woodspan.co.nz.

1 NZBC E2/AS1 Clause 10.2

Lifting the panels into place

Woodspan® PLT panels should be lifted by crane or hiab.

Panels come with guide holes pre-drilled onto the face of the panel to assist with fast bracket fixing onsite.

Woodspan® recommend the use of screw-on lifting brackets. These are available on-loan from Woodspan®.

The Woodspan® screw-on lifting brackets are supplied with d-shackles for crane to bracket connection, and M-12 coach screws for fixing the bracket to the panel (8 x M12 coach screws per bracket).

The length of the coach screws will depend on the depth of the Woodspan® PLT panel. Woodspan® recommends a minimum thread embedment to be no less than 50% of the panel depth. Screw holes can be filled or plugged after installation.

Figure 1 Tag lines attached to panel.

Figure 2 Tag lines attached to panel.

Figure 3 Bolt on lifting brackets

Tag lines should be used for guiding panels mid-air.

Fixing the panels

Ensure fixing and finishing is in accordance with the plans and specifications and all requirements of this guide.
Woodspan® PLT Panels should be screwed down immediately after placement.
This includes panel to panel jointing and fixing of PLT panels to support structure.

- Information on creating penetrations see page 15 for details.
- Information on passive fire protection of penetrations www.woodspan.co.nz/passive-fire-details.
- Information on screw fixing requirements see page 14 for details.

Finishing the panels

Primarily Woodspan® PLT is used as a structural member and is concealed by floor and ceiling linings. In these situations, no additional finishing or coating system is required.

Woodspan® can supply visual grade PLT for use as an exposed ceiling. If considering the use of PLT in a visual application the effect of weather and moisture needs to be considered. Despite all measures being taken to protect panels, some minor remediation of panels due to watermarking, transport and construction damage is to be expected.

Once any repair and sanding has been completed, Woodspan® recommends that the panels are finished with a protective coating system such as stain, sealer, polyurethane, or oil.

For more technical information please visit www.woodspan.co.nz/technical.

APPENDIX

Appendix A

Basis of engineered span tables

LIGNUM STRUCTURAL LTD

4/50 Meadowbank Rd, Meadowbank, Auckland 1072, NZ
T: +649 952 0001 F: +649 528 4906 M: 6421 259 1903
www.lignumstructural.co.nz

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Woodspan PLT Panels
PO Box 7145
Fitzroy
New Plymouth 4341

Re: Woodspan Parallel Laminated Timber Panels Selection Tables

Woodspan PLT is a glue laminated timber product manufactured in sheets 890mm wide, in depths ranging from 70mm to 140mm, from Radiata Pine grade MSG8.

The Woodspan PLT span tables in the Woodspan PLT Design Guide have been developed by Lignum Structural Ltd in accordance with Compliance Documents and Verification Method B1/VM1 of the NZ Building Code; and in accordance with sound and widely accepted engineering principles. The tables reference the following standards and documents:

AS/NZS1170:2002
NZS3603:1993
FP Innovations CLT Handbook

The tables are a guide to selecting the product and should be used by suitably qualified design professionals.

David Reid
STRUCTURAL ENGINEER, Engineering NZ Member ID 121639.

Structural Timber Engineering
David V Reid, Structural Engineer, BE, Dip Bus, CMEngNZ, CPEng

Appendix B

Thermal performance (insulation)

Timber has a low thermal conductivity, which can aid in designing a building envelope with high resistance to heat flow. At 12% moisture content (which is the expected equilibrium moisture content in service of Woodspan® PLT Panels), the conductivity of Radiata pine is 0.120 W/mK.

The thermal resistance (R-value) is calculated by dividing panel thickness [m] by their thermal conductivity [W/mK].

The total thermal resistance (Rtotal) for an assembly is calculated by adding the R-values of other roof or floor assembly layers, including the internal and external surface values. Rtotal = $R_{se} + R_{PLT} + R_{si}$ [m^2K/W].

Rse = Thermal Insulation attached on the outside (external) of the Woodspan® PLT Panel.

Rsi = Thermal Insulation attached on the inside (internal) of the Woodspan® PLT Panel.

R-values [m2K/W] for typical panel thicknesses[1]:

- 90mm PLT: $R^{PLT}90 = 0.75$
- 117mm PLT: $R^{PLT}117 = 0.98$
- 140mm PLT: $R^{PLT}140 = 1.17$.

1 Raw panel values only: Rse, Rsi; and R-values of other floor assembly layers need be added as required to get a construction R-value.

Appendix C

Sustainability & environmental impact

The combination of carbon sequestration in growing trees and the long-term carbon storage in wood products represents a significant net sink and store of carbon and can significantly reduce the environmental impact of construction.

The environmental impact of the production of Woodspan® has been assessed independently and is available in the form of a New Zealand industry average Environmental Product Declaration (EPD). www.woodspan.co.nz/environmental-product-declaration-epd-released/

An EPD is an independently verified and registered document that communicates transparent and comparable data and other relevant environmental information about the life cycle environmental impact of a product. Building materials are measured using a range of indicators, one of which is Global Warming Potential; this is measured in units of carbon dioxide equivalent (CO^2 e).

The production of Woodspan® has a negative GWP (global warming potential) of -596kg CO^2 eq/m^3. This compares favourably to average concrete production which is +350kg CO^2 eq/m^3, an almost 1 tonne per m^3 difference in CO^2 released in the atmosphere.

Document prepared by TBB December 2021.