XLT SPAN

TECHNICAL GUIDE BY XLAM

XLT

XLT is a range of products by XLAM that bring the benefits of mass timber to residential and light commercial construction. The XLT range includes `ready made' panels, structural flooring, beams, columns, bracing and portal structures.

Mass timber is strong, sustainable, durable and offers impressive structural properties. The XLT range is made from Australian grown plantation radiata pine offering painless onsite alterations, easy handling and fast install. Using timber alternatives means that you can minimise the reliance on fabricated steelwork and pair timber XLT products with timber framing.

CodeMark Australia
Certificate CM70140

AUSTRALIAN GROWN & MADE

Responsible Wood

PEFC
PEFC/21-31-15

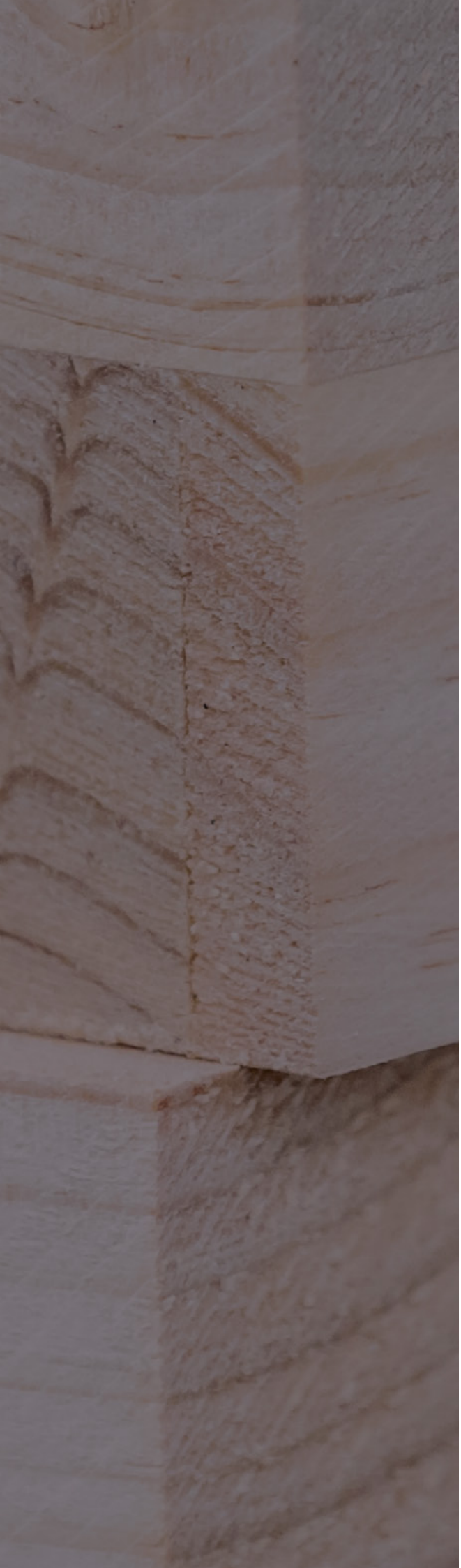
XLAM

XLT SPAN

XLT Span is XLAM's standardised cross laminated timber (CLT) flooring system ideal for floor and roof applications in residential and light commercial construction. XLT Span panels are available in standard thicknesses of 100 & 135mm, standard widths of 600, 900, 1200 & 2400mm, and lengths between 3-9m in standard increments of 0.3m.

XLT Span panels have been developed to provide a standardised solution for residential mass timber construction. As a readymade and standardised product, XLT Span removes the need for shop drawing or bespoke manufacturing lead times. The pre-engineered span tables and parameters noted below allow designers the ability to integrate XLT Span panels into their design in place of traditional applications.

To minimise waste and maximise on-site install efficiencies, it is recommended to set out panels to suit the standard panel sizes.



XLT SPAN

STRUCTURAL PROPERTIES

Average Modulus of Elasticity (parallel to grain)	6000 MPa
Bending Strength (parallel to grain) $f_{b,0}$	12.0 MPa
Compression Strength (parallel to grain) $f_{c,0}$	15.0 MPa
Compression Strength (perpendicular to grain) $f_{c,90}$	6 MPa*
Tension Strength (parallel to grain) $f_{t,0}$	4.0 MPa
Shear Strength (parallel to grain) $f_{s,0}$	2.1 MPa
Rolling Shear Strength (perpendicular to grain) $f_{s,90}$	1.4 MPa
Average Shear Modulus (parallel to grain) G_0	400 MPa
Average Rolling Shear Modulus (perpendicular to grain) G_R	50 MPa
Mean Density $_p$	475 kg/m^3
Characteristic Density $_p$	380 kg/m^3
Density to be used for lifting strategies	530 kg/m^3

Note: Strength values in the following tables are characteristic values. Entry marked with * indicate that, for design in crushing, engineers may use a value of 3 MPa — refer to 'Technical Note 5.2: Sample Structural Calculations – Floor and Wall Design' for more information.

PHYSICAL PROPERTIES

Panel Width	600, 900, 1200 & 2400mm
Panel Length (Standard Sizes)	3-9m in 0.3m increments
Panel Thickness	100 & 135mm
Panel Layup	35/30/35 (100mm), 45/45/45 (135mm)
Wood Species	Radiata Pine
Moisture Content (MC)- Ex Factory	12% ±3%
Bonding Adhesive	Henkel Purbond Loctite HBS Polyurethane - formaldehyde free
Treatment Options	Treated with Hyne T3+ (H3.2 eq- see CodeMark Certification)
Surface Quality	Industrial Grade (IND) refer to Appearance Quality Description
Global Warming Potential	-492 kg CO2-eq. per m^3
Formaldehyde Emissions	Less than 0.1 mg/m^2/hr when tested to ASTM D5116:2017
Joint Group	JD5 - unless product specific testing has been conducted
Strength Group	SD6
Timber Source	PEFC Certified, 100% Australian plantation grown & processed
Declare Red List Status	Declare Red List Free
Average Panel Mass	47 kg/m^2 (XS3/100) and 64kg/m^2(XS3/135)
R-Value	0.83m^2K/w (100mm), 1.08m^2K/w (135mm)
Acoustic Properties	31 (Rw + Ctr), 35 (STC), 91 (Ln,w), -5 (Ci), 19 (IIC) (100mm) & 33 (Rw + Ctr), 36 (STC), 89 (Ln,w), -5 (Ci), 21 (IIC) (135mm)

XLT SPAN

FLOOR SPAN TABLES

	Live Load (Q)	Q = 1.5kPa 150 kg/m2			Q = 2kPa 200 kg/m2			Q = 3kPa 300 kg/m2		
	Dead Load (SDL)	0.5 kPa 50 kg/m²	1 kPa 100 kg/m²	2 kPa 200 kg/m²	0.5 kPa 50 kg/m²	1 kPa 100 kg/m²	2 kPa 200 kg/m²	0.5 kPa 50 kg/m²	1 kPa 100 kg/m²	2 kPa 200 kg/m²
Simply Supported	100	2.8m	2.6m	2.2m	2.7m	2.5m	2.1m	2.5m	2.3m	2.0m
	135	3.5m	3.3m	2.9m	3.4m	3.2m	2.6m	3.1m	2.9m	2.6m
Continuous	100	3.5m	3.2m	2.9m	3.4m	3.2m	2.9m	3.4m	3.2m	2.8m
	135	4.3m	3.9m	3.5m	4.2m	3.9m	3.5m	4.2m	3.9m	3.5m
Cantilevered	100	0.8m	0.7m	0.6m	0.7m	0.6m	0.6m	0.6m	0.6m	0.6m
	135	1.0m	0.9m	0.8m	0.9m	0.8m	0.8m	0.8m	0.8m	0.8m

ROOF SPAN TABLES

	Live Load (Q)	(No Snow) 0 kg/m2			Q = 1kPa (Snow) 100 kg/m2			Q = 3kPa (Snow) 300 kg/m2		
	Dead Load (SDL)	0 kPa 0 kg/m²	0.5 kPa 50 kg/m²	1 kPa 100 kg/m²	0 kPa 0 kg/m²	0.5 kPa 50 kg/m²	1 kPa 100 kg/m²	0 kPa 0 kg/m²	0.5 kPa 50 kg/m²	1 kPa 100 kg/m²
Simply Supported	100	4.1m	3.3m	2.9m	3.4m	2.9m	2.6m	2.6m	2.4m	2.2m
	135	5.1m	4.2m	3.7m	4.3m	3.7m	3.4m	3.4m	3.1m	2.9m
Continuous	100	5.6m	4.5m	4.0m	4.6m	4.0m	3.7m	3.6m	3.3m	3.1m
	135	6.9m	5.8m	5.1m	5.9m	5.2m	4.8m	4.7m	4.4m	4.1m
Cantilevered	100	1.5m	1.3m	1.2m	1.3m	1.1m	0.9m	0.9m	0.9m	0.8m
	135	2.2m	1.8m	1.6m	1.8m	1.6m	1.4m	1.4m	1.4m	1.3m

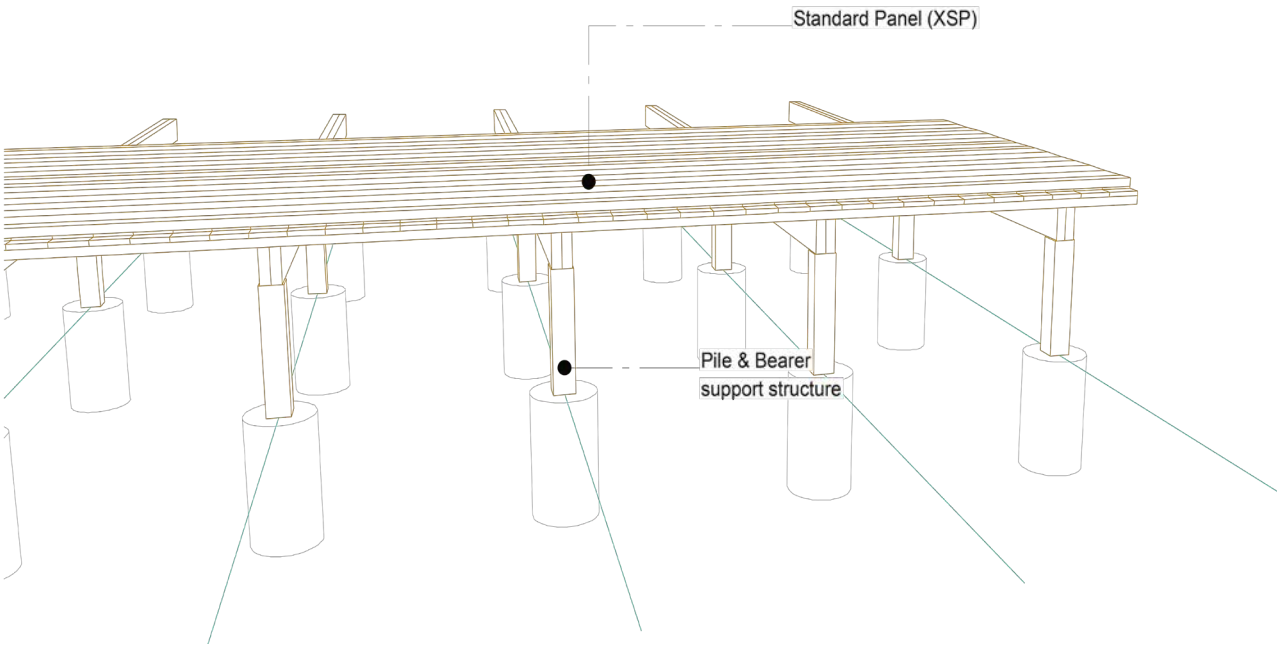
DESIGN PARAMETERS

- Self-weight of the panels is included within the tables. All additional applied dead loads should be included in the value chosen for SDL.
- Span tables assume uniformly distributed loads across the whole panel and no point loads or pattern loadshas been accounted for.
- The cantilever design assumes a back span of 2.0 times the cantilever length. Different back span lengths can have a large effect on the cantilever span.
- Pattern live loading on the cantilever and back span has not been considered in these tables. These tables account only for the uniform load on both cantilever and back span.
- Spans in the table above are deflection limited to the lesser of Span/400 or 9mm. Bearers should be sized to limit overall deflections of the floor to the lesser of Span/300 or 15mm. Cantilevers are limited to Span/200.
- Full responsibility for the design and compliance with the Building Codes of Australia and all relevant Australian Standards rests with the design professional specifying and certifying the product. XLAM will not accept any liability for the failure of any other elements of the building which cause a subsequent failure of an XLAM product.

FIXING & TYPICAL DETAILS

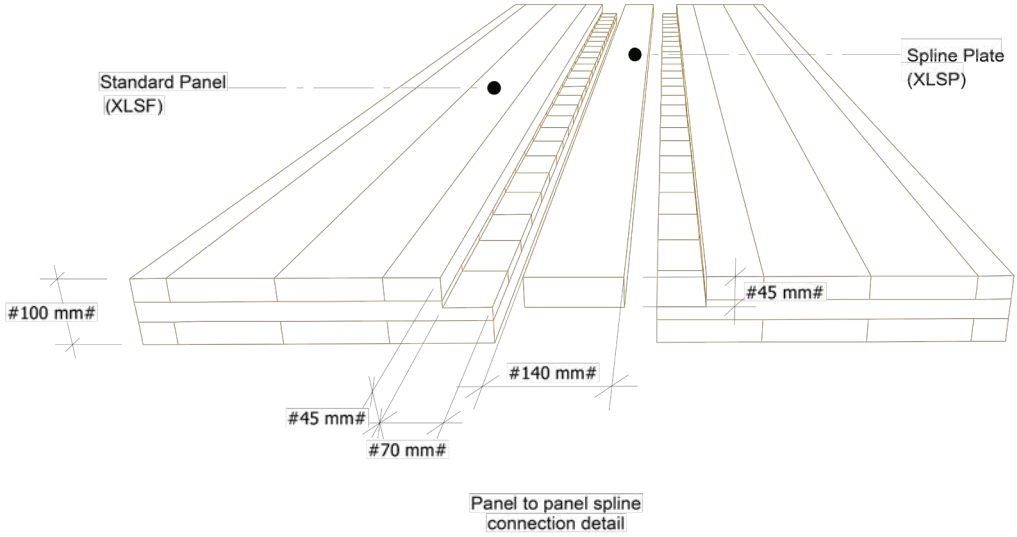
As part of the pre-engineered approach to the XLT Span product, we have provided direction on connection details when used in conjunction with traditional subfloor support structure and light timber frame construction.

PANEL TO BEARER



SCREWS				
XLT Span Panel	**Product**	**Spacing**	**Min. Edge Distance**	**Min. End Distance**
100mm (Thickness)	Rothoblaas HBS8180, Spax 8x180 partially threaded countersunk screws or equivalent approved	300mm c/c	40mm	80mm
135mm (Thickness)	Rothoblaas HBS8220, Spax 8x220 partially threaded countersunk screws or equivalent approved			

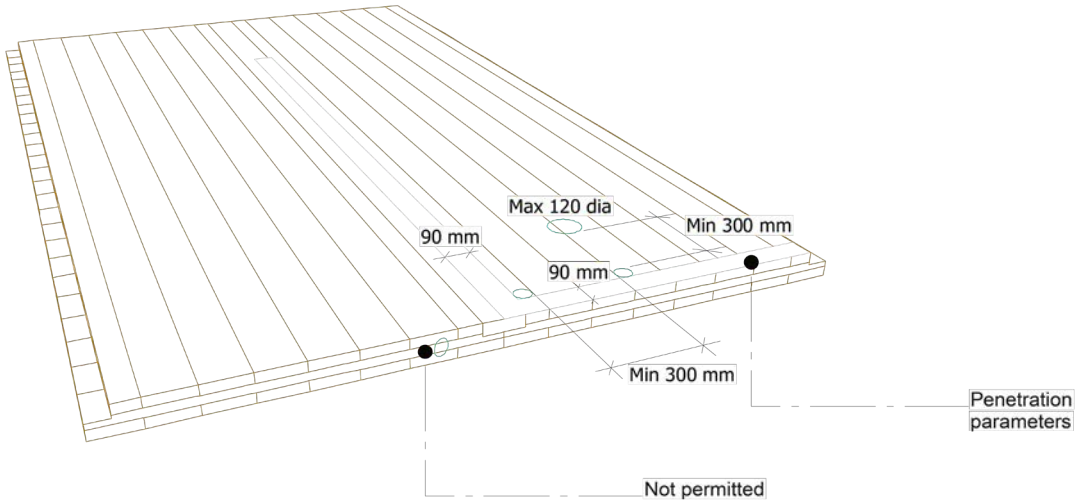
PANEL TO PANEL – SPLINE JOINT



SCREWS			
Spline Plate	**Product**	**Spacing**	**Min. Edge Distance**
70x45 F5 Spline	Rothoblaas HBS680, Spax 6x80 partially threaded countersunk screws or 14g x 75 bugle batten screw	200mm c/c	40mm
140x45 F5 Spline	Rothoblaas HBS680, Spax 6x80 partially threaded countersunk screws or 14g x 75 bugle batten screw		

NAILS			
Spline Plate	**Product**	**Spacing**	**Min. Edge Distance**
70x45 F5 Spline	75 x 3.06mm or 90 x 3.15mm	150mm c/c	40mm
140x45 F5 Spline			

PENETRATIONS & REBATES



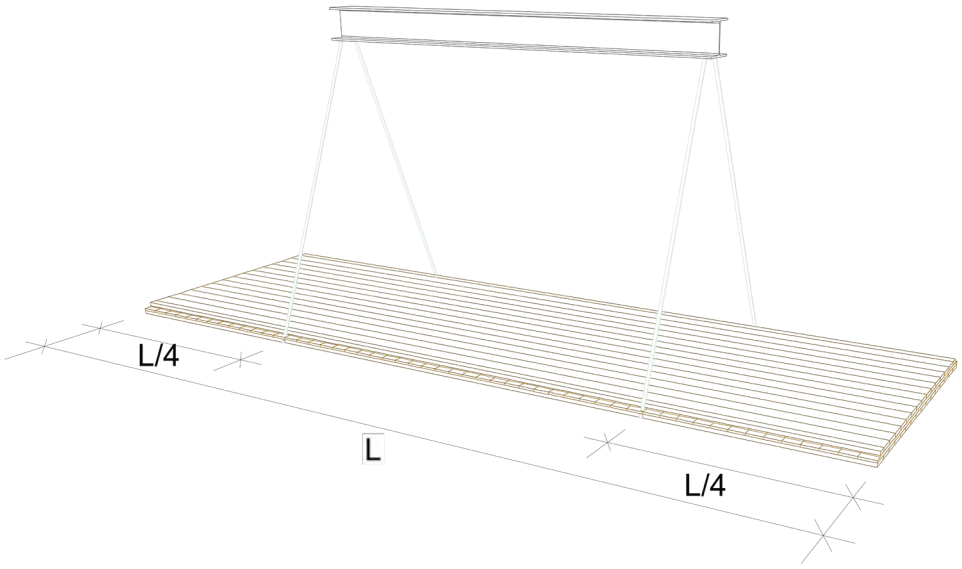
- Penetrations or routing of panels could reduce the allowable spans noted in the tables provided. Project requirements outside this general guidance should be reviewed by the project engineer
- Penetrations should not be formed under load bearing wall elements or through spline joint
- Allow a minimum of 90mm between panel edge/spline centreline & penetration
- Allow a minimum of 300mm between penetrations
- 1 x penetration up to 120 diameter or 2 x 60mm diameter can be accommodated in the noted spans per metre width of the floor panel.
- Forming holes or notches in panel edges is not permitted
- Cutting chases in panel surface is not permitted.

FLOOR DIAPHRAGM

The XLT Span floor system has significant in plane strength, however the CodeMark certification does not nominate a capacity of the floor diaphragm within the standard cases. As a result, the system should be considered as a conventional flooring system with respect to the required placement of bracing walls. Structural engineering guidance is required in order to apply the XLT Span floor system as a diaphragm.

LIFTING

It is recommended that lifting of the XLT Span floor system is by webbed basket slings. Slings should be positioned close to the 1/4 points at each end of the panel. Refer to XLAM Site Guide for alternative lifting options. If alternate lifting options are selected these should be confirmed by the project temporary works engineer.



Access XLAM's Structural Design Guide & Site Guide for detailed information. xlam.co/resources

MASS TIMBER MADE EASY.

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Responsible Wood

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CODEMARK Australia

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