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SMART 10

DESIGN GUIDE EDITION 1

2026

SMARTFRAME® BY TILLING

Smart10 LVL Design Guide

Scope of this publication

This Design Guide and Load Tables assist in the selection of Smart10 LVL for a limited number of common structural arrangements met in domestic construction.

Methods of developing lateral restraint and providing adequate support, adequate anchorage against wind uplift, and overall structural stability are outside the scope of this publication, however some limited examples have been reproduced within this document.

Information on the above matters can be obtained from AS 1684 Residential timber-framed construction or from a structural engineer experienced in timber construction.

Tilling Timber Pty Ltd have structural engineers at the SmartFrame Design Centre who can be contacted for advice on matters concerning the use of its engineered timber products in timber construction at techsupport@tilling.com.au or on the Techsupport HelpLine 1300 668 690.

Substitution of other products

All load tables in this document are designed using in-grade tested properties of Smart10 LVL as distributed by Tilling Timber Pty Ltd. Other manufacturers' LVL may have different properties and therefore cannot be designed using these span tables.

Certification

As a professional engineer, qualified and experienced in timber engineering, I certify that the use of the Smart10 LVL members as shown in these tables, and installed in accordance with the provisions of this Design Guide, complies to the National Construction Code (NCC). These span tables have been prepared in accordance with standard engineering principles, the relevant test reports and Australian standards, ie:

- AS 1720.3 Design criteria for timber-framed residential buildings
- AS 1720.1 Timber structures - design methods
- AS 4055 Wind loads for houses
- AS/NZS 4063 Characterisation of structural timber
- AS/NZS 4357 Structural laminated veneer lumber

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About Smart10 LVL

Description

Smart10 LVL is a structural Laminated Veneer Lumber (LVL) manufactured exclusively for Tilling Timber by toll manufacturers in conformance to the quality controlled process requirements of AS/NZS 4357 - Structural Laminated Veneer Lumber.

SmartLVL 10 has been specifically engineered to meet or exceed all the strength and stiffness characteristics of MGP10 with the added LVL benefits such as consistency (no large knots), straightness and H2S preservative treatment equally distributed throughout the cross section unlike the 2mm envelope H2F dip treatment of softwood framing timber.

In framing applications (excluding truss applications) Smart!0 LVL is a direct substitute for MGP10. Check with the respective nail plate manufacturer for the correct material code within their software before using Smart10 LVL for truss applications.

Forest stewardship

Smart10 LVL is manufactured from wood fibre from sustainably managed plantation forests and is produced under a PEFC certified chain of custody system. CFCC GB/T 28952-2018, PEFC SAT 2002:2013.

Product certification Quality

Compliance with process based quality control requirements is third party audited by CMI Certification, and the audits, together with end product testing is used as the basis for Product Certification by CMI ProdCert as a JAS-ANZ accredited Product Certification body.

CMI ProdCert

JAS-ANZ stands for the government established "Joint Accreditation System of Australia and New Zealand" which exists as the peak organisation for accreditation of Product Certification bodies.

JAS-ANZ

Preservative Treatment options

Smart10 LVL is supplied with H2s glueline preservative treatment for use South of the Tropic of Capricorn or SmartGuard H2 or H3 post production pressure treatment, with all treatments in conformance to AS/NZS 1604.1:2021.

Sustainability

Wood is the right choice for a host of construction applications. It is the earth's natural, energy-efficient, and renewable building material. The miracle in today's engineered wood products is that they make more efficient use of the wood fibre resource to make stronger Plywood, Oriented Strand Board (OSB), I-joists, Glued Laminated Timber (GLT) and Laminated Veneer Lumber (LVL). That is good for the environment and good for designers seeking strong, efficient, and striking building design.

For every tonne of wood grown, a young forest produces 1.07 tonnes of oxygen and absorbs approximately 1.47 tonnes of carbon dioxide. This is good news for a healthy planet. Wood is a perfect material for the environment, for design, and for strong, lasting construction.

Designing with Smart10 LVL

The design information contained within this Design Guide is for the 3rd party certified properties of Smart10 LVL only. Other manufacturers' LVL may have different properties and therefore cannot be designed using this information.

Product specification

Veneers:	Thickness:	1.9 - 3.2 mm
	Species:	Masson Pine (Pinus massoniana) or Red Pine (Pinus sylvestris)
	Grade:	CD (Metriguard graded)
	Joints:	Face scarf and overlap
Dimensional tolerances:	Length:	± 10 mm
	Depth:	≤ 200 mm ± 1 mm
		≥ 201 mm ± 2 mm
	Thickness:	- 0, +2 mm at 12% moisture content
Adhesive:	Phenol Formaldehyde (Type "A", AS 2754.1)	
Formaldehyde emission class:	E_0 (Table 1 AS/NZS 4357)	
Treatment:	H2S Glueline treatment to AS 1604.1	

Limit state design characteristic properties

Timber Strength Properties:(1)			
Bending - Edge	f'_b	36	MPa
Bending - Flat	f'_b	36	MPa
Tension Parallel to grain	f'_t	25	MPa
Tension Perpendicular to grain	f'_{tp}	0.5	MPa
Compression Parallel to grain	f'_c	28	MPa
Compression Perpendicular to grain - Edge	f'_p	10	MPa
Compression Perpendicular to grain - Flat	f'_p	10	MPa
Shear - Edge	f'_s	4.5	MPa
Average Elastic Modulus	E	10,000	MPa
Average Modulus of Rigidity	G	500	MPa
Average Density		580	kg/m^3
Moisture Content		12-15%	
Joint strength	Face	JD4	
	Edge	JD4	
	End (stud screw)	JD4	

(1) Dry conditions

Strength reduction factor

The strength reduction factor for calculating the design capacities of structural members shall be taken from the table below, referenced from AS 1720.1 –2010.

Application of SmartLVL as a structural member		
Category 1	**Category 2**	**Category 3**
Structural members for houses for which failure would be unlikely to affect an area greater than 25 m^2; OR secondary members in structures other than houses	Primary structural members in structures other than houses; OR elements in houses for which failure would be likely to affect an area* greater than 25 m^2	Primary structural members in structures intended to fulfil essential services or post disaster function
Strength reduction factor Ø *		
0.95	0.90	0.80

* AS 1720.1:2010 Table 2.1

Duration of load factor

The duration of load factor k_1 for strength are defined within Table 2.3 and clause 1.2.4.1.1 of AS 1720.1.

The duration of load factors j_2 and j_3 for stiffness is defined within clause 1.2.4.1.2 of AS 1720.1

Moisture effects

When used in dry conditions where the moisture content remains below 15%, no modification for moisture content is required. Where SmartLVL is subjected to conditions, such that the average moisture content for a 12 month period with exceed 15%, the modification factors for strength k_4 and for stiffness j_6 in the following table.

Property	Equilibrium moisture content *(EMC)*		
	≤15%	15% to 25%	≥25%
Bending and compression	$k_4 = 1$	$k_4 = 1.45 - 0.03\ EMC$	$k_4 = 0.7$
Tension and shear	$k_4 = 1$	$k_4 = 1.30 - 0.02\ EMC$	$k_4 = 10.8$
Modulus of elasticity	$J_6 = 1$	$j_6 = 1.30 - 0.02\ EMC$	$J_6 = 0.8$

Temperature

The modification factor for temperature K_6 is described in clause 2.4.3 of AS 1720.1

Length and position of bearing

The bearing area factor k_7 is defined within clause 8.4.5 of AS 1720.1

Load sharing

Because of the reduced variability of strength values of LVL compared to solid timber, the load sharing factors k_9 within clause 2.4.5 of AS 1720.1 do not apply and therefore $k_9 = 1.0$.

Stability

The stability factor k_{12} is defined within clause 3.2.4 and 3.3.3 of AS 1720.1 for dry timber except that the material constant (ρ_b or ρ_c) for beams and columns shall be calculated as per clause 8.4.7 of AS 1720.1.

Size factor

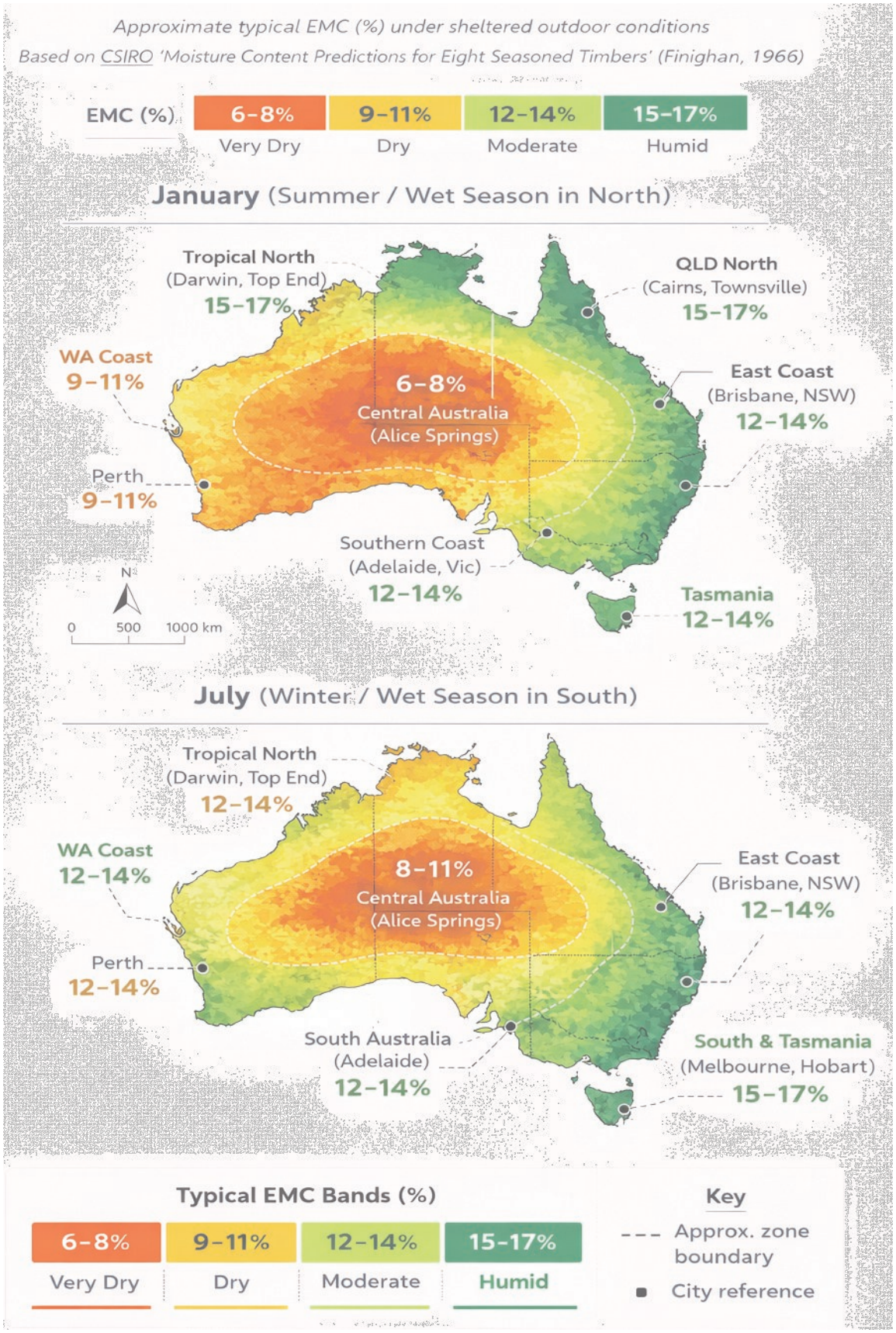
The characteristic values in bending and tension for wood products is affected by a size factor. For SmartLVL, multiply the published characteristic strength and tension values by the size factors shown in the table below.

Bending		
Beam orientation	**Depth of section**	**Strength adjustment**
Edge	≤90 mm	Nil
	> 90 mm	$(90/d)^{0.167}$
Flat	> 45 mm	$(45/t)^{0.333}$
Tension		
	Largest cross sectional dimension	**Strength adjustment**
	≤150 mm	Nil
	> 150mm	$(150/d)^{0.167}$

Where:

d = depth of member on edge
t = thickness of member

Timber equilibrium moisture content (EMC) zones in Australia



Climate description (engineering interpretation)

Term	Meaning for timber	Term	Meaning for timber
Arid	Very low EMC, minimal shrink/swell	Humid coastal	High EMC, low seasonal variation
Semi-arid maritime	Moderated, but still relatively dry	Tropical	High EMC, wet-season driven
Mediterranean	Large seasonal swing	Temperate	Moderate–high EMC, winter dominant

Predicted EMC range of timber for sheltered outdoor conditions by City

City	State	Jan EMC (%)	Jul EMC (%)	EMC band (%)	Climate description
Darwin	NT	16–18	14–16	14–18	Tropical monsoonal (wet/dry season)
Alice Springs	NT	6–8	8–10	6–10	Arid desert interior
Perth	WA	9–11	12–14	9–14	Mediterranean coastal
Carnarvon	WA	9–11	11–13	9–13	Semi-arid maritime coast
Broome	WA	13–15	12–14	12–15	Tropical coastal (monsoonal influence)
Albany	WA	11–13	14–16	11–16	Cool temperate coastal
Geraldton	WA	9–11	12–14	9–14	Semi-arid maritime transition
Kalgoorlie	WA	7–9	10–12	7–12	Arid inland
Adelaide	SA	9–11	13–15	9–15	Mediterranean temperate
Port Lincoln	SA	10–12	14–16	10–16	Southern coastal temperate
Whyalla	SA	8–10	12–14	8–14	Semi-arid coastal
Broken Hill	NSW	6–8	11–13	6–13	Arid inland
Mildura	VIC	8–10	12–14	8–14	Semi-arid inland
Melbourne	VIC	10–12	15–17	10–17	Temperate coastal
Geelong	VIC	10–12	15–17	10–17	Temperate coastal
Ballarat	VIC	10–12	15–17	10–17	Cool inland temperate
Hobart	TAS	11–13	15–17	11–17	Cool temperate maritime
Launceston	TAS	11–13	15–17	11–17	Cool temperate inland
Canberra	ACT	9–11	14–16	9–16	Temperate inland
Sydney	NSW	12–14	14–16	12–16	Humid coastal
Wollongong	NSW	13–15	15–17	13–17	Humid coastal
Newcastle	NSW	12–14	14–16	12–16	Humid coastal
Dubbo	NSW	8–10	13–15	8–15	Inland temperate
Bathurst	NSW	9–11	14–16	9–16	Inland temperate
Brisbane	QLD	14–16	13–15	13–16	Subtropical humid
Gold Coast	QLD	14–16	13–15	13–16	Subtropical coastal
Townsville	QLD	14–16	13–15	13–16	Tropical coastal (seasonal dry)
Cairns	QLD	15–17	14–16	14–17	Tropical humid
Mackay	QLD	15–17	14–16	14–17	Tropical coastal
Rockhampton	QLD	14–16	13–15	13–16	Subtropical transitional
Toowoomba	QLD	11–13	13–15	11–15	Elevated inland subtropical

1.11 Durability and exposure to moisture

1.11.1 Basis of EMC zone maps

Timber is a hygroscopic material that exchanges moisture with surrounding air until an equilibrium condition is reached. This equilibrium moisture content (EMC) depends primarily on the relative humidity (RH) and temperature of the surrounding environment.

The city-based EMC table has been developed using the CSIRO dataset "Moisture Content Predictions for Eight Seasoned Timbers under Sheltered Outdoor Conditions in Australia and New Guinea" (Finighan, 1966), which provides predicted monthly timber moisture contents for a wide range of Australian localities.

In that study, timber specimens of multiple species and thicknesses were exposed under sheltered outdoor conditions, and their moisture contents were correlated with long-term meteorological data, primarily dry-bulb temperature and relative humidity using regression equations.

The resulting tables present monthly mean moisture contents representative of typical in-service conditions for protected structural timber.

For each city, January and July EMC ranges were derived to capture seasonal variation, recognising that Australia exhibits two distinct moisture regimes: a monsoonal pattern in the north where summer (wet season) EMC exceeds winter values, and a temperate pattern in the south where winter EMC is higher due to increased relative humidity. The ranges presented are not single-point estimates but envelopes that account for inter-species variation, short-term climatic fluctuation, and the statistical spread inherent in the CSIRO regression models.

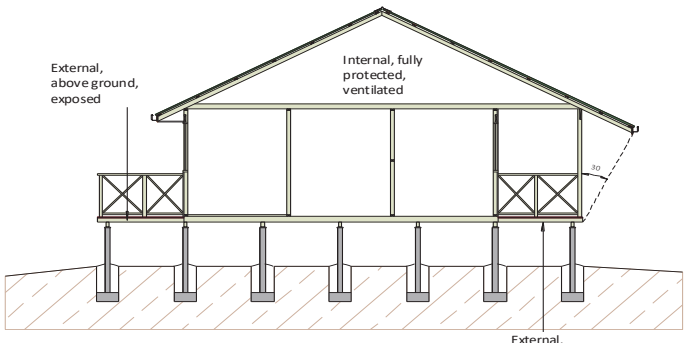
This approach aligns with the original study, which demonstrated that predicted moisture contents typically fall within a narrow band (generally within ±1–2%) of observed values under comparable conditions.

Finally, an annual EMC band has been assigned to each location, representing the practical range between seasonal minima and maxima. These bands are intended for design application, such as assessing timber shrinkage, serviceability, and durability risk. The associated climate descriptions further group cities into coherent moisture regimes, enabling designers to extrapolate beyond individual locations and apply EMC assumptions at a regional scale.

1.11.2 LVL Durability and exposure to moisture

SmartLVL is manufactured from softwood veneers which have a durability rating of class 4, which is the same rating as some Ash type Eucalypts.

Definitions of exposure zones within a structure



External timbers are regarded as protected in AS 1684 if they are covered by a roof projection (or similar) at 30° to the vertical and they are well detailed and maintained (painted and kept well ventilated).

Untreated SmartLVL should not be used where the equilibrium moisture content is likely to remain above 20% for an extended period.

Untreated and H2s SmartLVL is suitable in the ***internal, fully protected, ventilated*** and the ***external above ground, protected*** zones of the structure as shown below. Untreated or H2s SmartLVL is not suitable for ***external above ground, exposed*** or humid indoor conditions, such as swimming pool enclosures.

SmartLVL, like all wood products, is hygroscopic, which means it has an affinity for water, and being a LVL, should be considered as a composite of many pieces of wood, each with different potential swelling. Moisture exposure will ultimately lead to dimensional change.

SmartLVL is supplied WITH a new generation short term construction water repellent (H_2O Shield™) and once framed into a structure may be exposed to the weather for a limited time (usually not greater than 3 months) without negative affect, BUT, it may exhibit some effects of this exposure such as swelling and checking (especially at cut ends), depending upon the weather conditions.

While offering significant water short term repellency comparable to wax coatings, the H_2O Shield™ does NOT totally WATER PROOF the LVL. While the products will withstand normal exposure, excessive exposure during distribution, storage or construction may lead to dimensional changes that affect serviceability. These changes include cupping, bowing or expansion to dimensions to beyond the specified tolerance of the product in the "as-manufactured" condition.

Individual members of a vertically laminated multi member may exhibit some cupping if water becomes trapped between the laminates. This cupping produces more of a visual and possible fixity problem rather than being structurally significant. If not properly dried out, this moisture between laminated members may lead to decay.

As an organic material, mould and mildew may grow on untreated wood products if moisture is present. Prolonged periods of high moisture may also support the growth of wood decay fungi. The H_2O Shield™ does provide some resistance to mould and fungi attack, but it is NOT equivalent to H3 treatment.

In critical applications where dimensional change due to moisture exposure is to be absolutely minimised ((e.g. truss applications in wet humid conditions) it is recommended that the remedial H_2O shield available from Tilling Timber in spray cans (or bulk for airless spray guns) be used to recoat any cut ends or notches etc.

The table below shows the moisture content of LVL as a function of humidity.

1.11.3 Dimensional Change

Moisture content of wood products % (1)	
Relative Humidity %	LVL MC
10	1.2
20	2.8
30	4.6
40	5.8
50	7.0
60	8.4
70	11.1
80	15.3
90	19.4

1. Approx. moisture content at 21^{0}C

SmartLVL will shrink and swell in proportion to the moisture content between 0 and 28% fibre saturation point.

1.11 Durability and exposure to moisture

The most significant moisture movement will occur across the grain (tangential and radial directions within a log). Longitudinal (movement in the grain direction) may be a factor depending upon the type of structure. Detailing of SmartLVL to be used where moisture contents will cycle should allow for dimensional instability.

The AVERAGE amount of dimensional change in a piece of LVL changes in moisture content can be APPROXIMATED by the following formula:

$\Delta D = D_i S\,(MC_i - MC_f)/FSP$

Where:

ΔD = change in dimension
D_i = Initial dimension
S = Shrinkage coefficient = approximately 6%
MC_i = Initial moisture content
MC_f = final moisture content
FSP = fibre saturation point approximately 28%

HOWEVER, these dimensional effects are quite variable. Thickness swell in LVL is erratic along the length because of the densification of the lap joints during manufacture tends to "relieve" when saturated and the total swell in sections containing two (2) laps can be as much as 3 mm.

Worked example

Estimating timber movement from EMC change

If a 300 × 63 LVL13 roof beam that is at equilibrium in Perth is instead used in Broome in January, how much increase in depth and width could be expected?

Step 1 — EMC difference

Use the midpoint of the two EMC bands:

- Perth January EMC ≈ 10 %
- Broome January EMC ≈ 12.%

So:

$\Delta MC = 12 - 10 = 2.0\%$

That means the LVL would be expected to gain moisture and therefore swell slightly in Broome relative to Perth.

Step 2 — Movement formula

Use:

$\Delta d = d \times 0.0027 \times \Delta MC$

where d is the relevant cross-sectional dimension in mm.

Step 3 — Change in depth

For the 300 mm depth:

$\Delta d = 300 \times 0.0027 \times 2.0 = 1.62\ mm$

Expected increase in depth ≈ 1.6 mm

Step 4 — Change in width

For the 63 mm width:

$\Delta b = 63 \times 0.0027 \times 2.0 = 0.34\ mm$

Expected increase in width ≈ 0.3 mm

For a 300 × 63 LVL13 roof beam moving from Perth January conditions to Broome January conditions, a reasonable worked-example estimate is:

- Depth increase: about 1.6 mm
- Width increase: about 0.3 mm

Because the EMC values are bands, there is a reasonable range around that midpoint result:

- If the EMC difference were only 1%, the beam would increase by about 0.8 mm in depth and 0.2 mm in width
- If the EMC difference were 3%, the beam would increase by about 2.4 mm in depth and 0.5 mm in width

1.11.4 Change in characteristic strengths

Changes in moisture content in wood results in changes in mechanical properties, with higher properties at lower moisture contents. Estimates of the effect of moisture differentials on the properties of clear wood may be obtained by the following equation:

$$P = P_{12}\left(\frac{P_{12}}{P_g}\right)^{\left(\frac{12-M}{M_p-12}\right)}$$

Where:

P= Characteristic property at moisture content
P_{12} = same Characteristic property at 12% moisture content
P_g = same Characteristic property for Green wood
M_p = Intersection moisture content = 24%

APPROXIMATE affect upon key characteristic design properties of LVL by changes in MC are outlined in the table below:

Characteristic Property		% Reduction in characteristic strength at % MC					
		14	16	18	20	22	24
MOE (Stiffness)	E	3.3	6.5	9.7	12.7	15.6	18.4
MOR (Bending)	F'_b	8.4	16.1	23.1	29.6	35.5	40.9
Compression perpendicular to grain	f'_p	9.9	18.9	27.0	34.2	40.8	46.7
Compression parallel to grain	f'_c	11.0	20.7	29.4	37.2	44.1	50.2
Shear	f'_s	6.6	12.8	18.6	24.0	29.0	33.7

The design Characteristic properties of SmartLVL can therefore be considerably reduced by severe increase in MC of the LVL.

If the SmartLVL is being built into structures (such as Prefabricated trusses) that are:

1. Likely to experience large increase in MC due to weather exposure or stored on the ground
2. Likely to be loaded to at/or close to design loads while in the high MC state

then the reduced Characteristic Strengths as detailed above NEED to be used in the design or members may require temporary propping.

Once covered, the SmartLVL will ultimately dry and re-equilibrate to the ambient humidity conditions, but some expansion or swelling will remain after re-drying. The thickness swelling in laps will never fully shrink back and a large piece of LVL can have a final thickness variation along the length of 3-4 mm.

Estimating timber deflection change from EMC change

For a 300 × 63 timber member designed in Perth to have a long-term deflection of 10 mm under $G=0.4$ and $Q=1.5$, with $j_2=2$,

corresponding member in Broome may be expected to deflect about 11.0 mm under the same loading.

Worked example:

Summary- In this worked estimate, the increase arises from two sources: a small increase in immediate elastic deflection due to reduced stiffness at higher service moisture content, and a larger increase in the mechano-sorptive / creep component associated with the wetter Broome service environment.

The net increase is about 0.95 mm, or about 10%.

Step 1 — Back-calculate the Perth load-deflection constant

Item	Perth	Broome	Comment
Member size	300 × 63	300 × 63	Same section
Permanent action, G	0.4	0.4	Same load
Imposed action, Q	1.5	1.5	Same load
Adopted creep factor j_2	2.0	2.35	Broome increased for higher EMC
Representative service EMC	11.5%	13.5%	From the Perth/Broome climate bands previously derived
Relative stiffness factor	1.00	0.96	Assumed 4% lower E in Broome
Assumed long-term Deflection (mm)	10.00	—	

Given:

$10=k[Q+(1+j_2)G]$

$10 = k[1.5+(1+2)x0.4]$

$10=k(2.7)$

$k=3.7037$ mm per load unit

Step 2 — Split the Perth deflection into elastic and mechano-sorptive parts

Perth component	Calculation	Deflection
Immediate dead-load deflection	0.4×3.7037	1.48 mm
Immediate live-load deflection	1.5×3.7037	5.56 mm
Total immediate elastic deflection	$1.48+5.56$	7.04 mm
Mechano-sorptive / creep increment	$j_2\times\Delta G_{inst}=2\times1.48$	2.96 mm
Total long-term deflection	$7.04+2.96$	10.00 mm

Step 3 — Adjust the elastic part for Broome

Assume Broome service EMC is about 2 percentage points higher, giving a 4% reduction in stiffness:

$E_{Broome}=0.96 \times E_{Perth}$

So deflection increases by:

$1/0.96=1.0417$

Step 4 — Adjust the mechano-sorptive part for Broome

Broome elastic component	Calculation	Deflection
Immediate dead-load deflection	1.48×1.0417	1.54 mm
Immediate live-load deflection	5.56×1.0417	5.79 mm
Total immediate elastic deflection	7.04×1.0417	7.33 mm

Using the EMC ratio:

$13.5/11.5=1.174$

$J_{2,Broome}=2.0\times1.174\approx2.35$

Then:

$\Delta_{ms,Broome}=2.35\times1.54=3.62$ mm

Step 5 — Total Broome long-term deflection

Broome total	Calculation	Deflection
Immediate elastic	—	7.33 mm
Mechano-sorptive / creep increment	—	3.62 mm
Total long-term deflection	$7.33+3.62$	10.95 mm

Note: These example are illustrative only.

The assumed relationship between EMC, dimensional change, stiffness reduction and creep / mechano-sorptive behaviour is simplified for worked-example purposes and should not be taken as a product-specific design rule.

Actual values may vary with species, product type, load duration, moisture cycling amplitude, and service exposure.

1.11.5 Design for durability

1. The use of building overhangs and other structures which protect the beams from excessive moisture movement and sun exposure.
2. All beams should be provided with adequate ventilation so that moisture content within beams will not exceed 15% and moisture gradients across the beam will not occur.
3. The use of arrised or round edges on beams to reduce the likelihood of coating failures on sharp edges.
4. The use of drip edges or other devices which provide a path for free moisture flow away from the timber beam.
5. Joint detailing should, wherever possible, comply with the following:
   - I. Keep horizontal contact areas to a minimum, in favour of self draining vertical surfaces.
   - II. Ventilate joint surfaces by using spacers, wherever possible
   - III. Always use compatible fasteners which have adequate corrosion protection and do not cause splitting during installation e.g. hot dipped galvanic coatings or stainless steel
   - IV. Ensure any moisture entering a joint is not trapped but can adequately drain away from the joint.

Allow for thermal expansion/contraction in the joint design.

1.11.6 Post-Production treatment

SmartLVL is supplied glue-line H2S* treated or can be supplied either LOSP treated or Tru-Core® treated to either H2 or H3 hazard class levels, as per AS/NZS 1604.4. (Tru-Core® is a registered trade mark of Kop-Coat Australia PTY Limited)

To maintain effective treatment it is a requirement that any cuts, notches or penetrations made in post production treated LVL be painted with a suitable "brush/spray on" preservative.

The hazard class number selected is based upon the specific exposure condition for the proposed end use of the SmartLVL, as shown in the table on the next page.

1.11 Durability and exposure to moisture (Cont'd)

Hazard class selection guide				
Hazard class	Exposure	Specific service conditions	Biological hazard	Typical uses
H1†	Inside, above ground	Completely protected from the weather and well ventilated, and protected from termites	Lyctid borers	Interior beams, staircases, stringers
H2S*	Inside, above ground	Protected from wetting Nil leaching	Borers and termites	Interior beams, staircases, trusses, joists
H2	Inside, above ground	Protected from wetting Nil leaching	Borers and termites	Interior beams, staircases, trusses, joists
H3	External, above ground	Subject to periodic moderate wetting and leaching	Moderate decay, borers and termites	Exterior beams (1)

† The timber species in SmartLVL are not susceptible to Lyctid Borer attack
* H2S treatment is only suitable South of the Tropic of Capricorn

A more comprehensive Hazard Class Table is available in AS/NZS 1604.4, but it is NOT recommended that SmartLVL be used in end uses with exposures requiring treatment in excess of H3.

Experience is showing that post production treated LVL in the **external above ground, exposed** (H3 Hazard Class) may experience some leaching of the active ingredients of the treatment. To minimise the possibility of timber degradation in these situations, it is recommended that H3 treated Smart LVL NOT be used where the surface is horizontally exposed AND unprotected from water entrapment OR where post-treatment protection cannot be maintained.

Post treatment protection may include:

I. Protectadeck or Vapour Seal high density water proof joist/ bearer cover or malthoid capping

and

I. An impervious membrane such as regularly maintained painting or staining

II. Construction detailing to prevent water entrapment.

H3 treated SmartLVL is NOT recommended for fascia's, pergolas or other similar external above ground, exposed applications due to mechanical degradation of the wood fibre causing checking and cracking which is both aesthetically unacceptable and allows ingress of water to inner veneers.

1.11.7 Fasteners for H3 LVL

For any H3 Smart LVL to be used in exposed exterior applications, it is recommended that either hot dipped galvanised or stainless steel fasteners are used.

Specifically, If the Tru-Core® Copper Quat H3 treatment process is used, high grades (304, 305 and 316) of stainless steel materials perform the best.

1.11.8 Painting of treated SmartLVL

General

To provide the longest service life of the SmartLVL it is recommended the LVL is painted with an exterior paint with a Light Reflectance Value (LRV) greater than 30%. Heat reduction exterior paints should be used where the desired colour is dark or has a LRV of less than 30% The heat reflective paint's colours should be limited to a Total Solar Reflectance (TSR) value greater than 29%.

Any paint or stain must be recommended by the manufacturer as being suitable for the proposed application and must be applied in a manner in strict compliance to the manufacturer's recommendations.

LOSP Treated

Wait until excess solvents have evaporated and timber is dry. The pressure of the solvent (white spirits) from the LOSP treatment may affect the drying and hardening of paints if there has been insufficient evaporation time after the treatment. It is strongly recommended that the treated timber is left to recondition for at least 7 days in the end use situation before painting.

One coat of premium quality primer as a minimum should be applied to all surfaces prior to erection of beam and to any cuts or holes drilled. If the first coat of primer, sealant paint or stain fails to dry or adhere within the time expected, do not proceed to any further coats until the first coat has achieved satisfactory dryness and adhesion. If the first coat fails to dry it may be necessary to strip back to bare timber and allow it to weather for another week or two.

a. Paint

Exterior solid colour acrylic finish. One coat of oil based primer followed by one or two coats of the exterior acrylic finish as required.

or

Exterior solid colour oil based enamel. One coat of oil based primer followed by one coat of oil based under-coat (if required) then two coats of the oil based enamel.

b. Stains

Exterior semi-transparent or solid colour penetrating oil based stain or similar. Two or three coats of the stain as required or recommended by the manufacturer.

Water based stains and un-pigmented sealants, oil or water repellents are NOT recommended.

Tru-Core® Treated

1. The wood must be dry and clean prior to applying any finish coating. If initial cleaning of the treated wood is needed, it is recommended that the project be cleaned with a deck cleaning product and allow to fully dry.
2. At this time, a clear water repellent may be added to the project. If applied, allow 8 weeks prior to the application of a semi-transparent stain or paint
3. If no water repellent is added, an oil based stain can be applied to the clean, dry wood in 30-60 days from treatment date. A water based stain can be applied to the clean, dry wood in 45-70 days from treatment date.
4. Depending on the treatment method used, if the wood is left uncoated and without UV protection:
   I. The typical brown colour of the Copper Quat treated wood will naturally weather to a grey colour over long-term exposure to the sun
   II. The Azole treated wood has no colouration so it will naturally weather to a grey colour over long-term exposure to the sun.

Users must always conduct their own tests on coatings in inconspicuous areas of the project to determine acceptability of colour, adhesion and appearance.

SmartLVL Design/effective span

Normal structural analysis uses the centreline representation of the member. The term "span" can be defined in a number of ways and these are defined as follows:

Clear Span. This is the distance between the faces of any support. It is generally the one easiest to measure and read from the drawings.

Nominal span/centre-line span. This is the distance between the centre of the supports. This span is used to determine bending moments and deflections for continuous spanning members.

Design span/Effective span. This is the span used for single span members to determine the bending moment, the slenderness of bending members and the deflections. In NZS 3603 this is the dimension referred to as "L", and is defined below.

Design span/Effective span is the distance between -

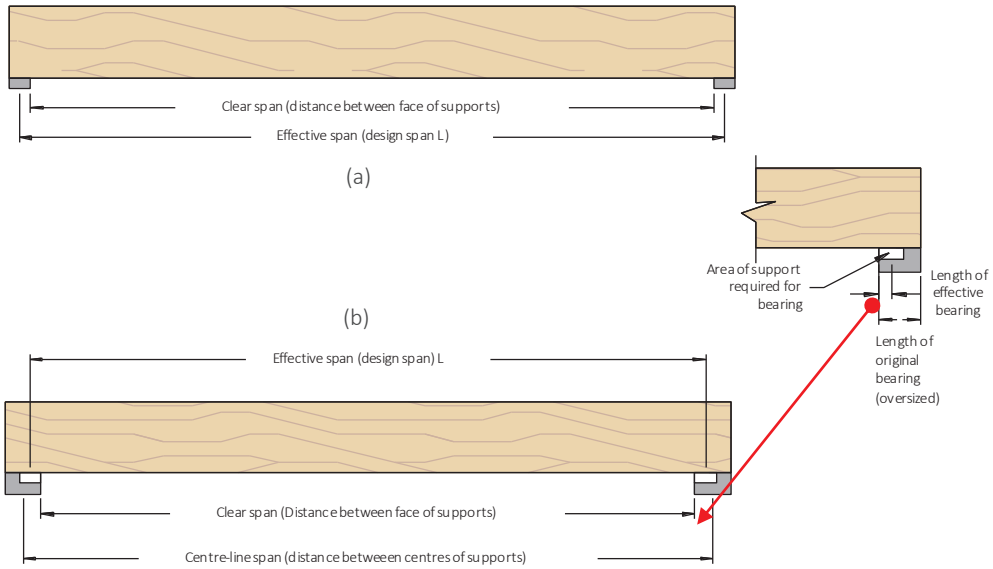
- The centre of the bearing at each end of a beam where the bearing lengths have **NOT** been conservatively sized
- The centre of notional bearing that have been sized appropriately, where the size of the bearing **IS** conservative.

Diagram (a) shows beam where bearings have been designed appropriately. The effective span is taken as the distance between the centre of each bearing area

Diagram (b) shows beam where bearings at each end have been oversized. (This is frequently the case for beams that bear onto brickwork or concrete walls where the thickness of the wall is in excess of the area required to give the beam bearing capacity).

To find the correct effective span:

1. Calculate the minimum bearing required to carry the loads satisfactorily
2. Add minimum bearing length to "clear span" distance.



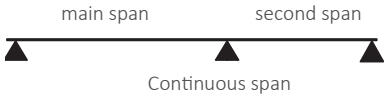
Continuous spans

For beams continuous over two (2) unequal spans, the design span and the "Resultant Span Description" depend upon the percentage difference between the two spans as shown below:

Note, for continuous spans, the Design Span is taken as the distance between the centre of the supports, as shown in **"Design Span"** on page 1 of the Design Guide.

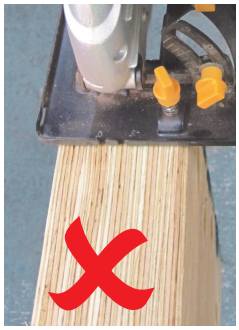
Span Difference %	Effective span	Resultant span Description
10% max	Main span	Continuous
10 - 30%	1.1 x Main span	Continuous
above 30%	Main span	Single

$$\text{span difference} = \frac{(\text{main span} - \text{second span}) \times 100}{(\text{main span} + \text{second span})}$$

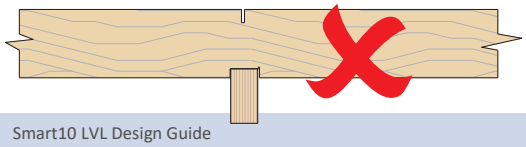


Rip sawing Smart10 LVL

One of the unique properties of Smart LVL is that it may be ripped through the depth to the smaller section sizes as those given in these span tables without affecting the basic strength properties. It is important that the new members are not cut undersized if the maximum spans in these tables are to be used.



The sawing through the thickness to produce sections of a lesser thickness may decrease the integrity of the SmartLVL and is therefore NOT recommended under any circumstances.



Joist and bearer span tables do NOT allow for the practice of notching the top of the member over a support

Multiple Smart10 LVL section beams

Vertical laminations may be achieved by adopting the procedures described in clause 2.3 of AS1684, however these procedures should be considered as the minimum requirements to achieve the desired effect.

Experience with Smart10 LVL beams indicates that this degree of fixing may not satisfactorily prevent cupping of individual components as a result of the ingress of moisture between laminates during construction.

The suggested methods of vertical lamination below provide a greater level of fixity between individual components, and with the use of an elastomeric adhesive, also prevents moisture penetration between the laminates.

Maximum floor load width tables for multiple member laminations of Smart10 LVL:

1. Nail lamination
2. Type 17 screw lamination
3. Bolt lamination

are shown below

1. Nailing

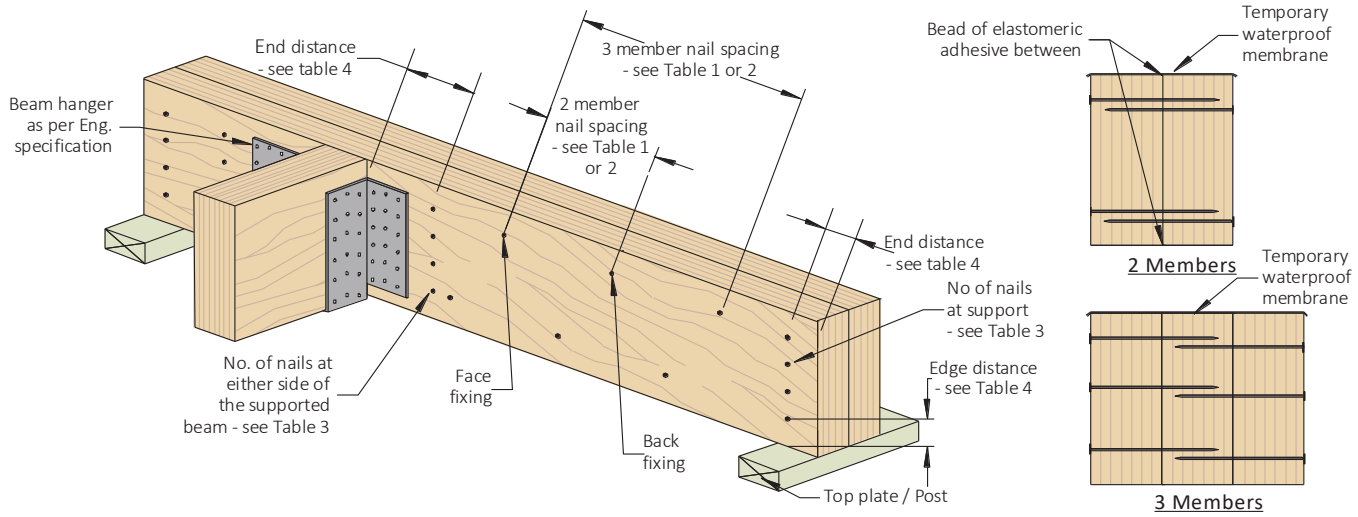


Table 1

Top (symmetrically) loaded beam			
Section width	Nail type	No of nail rows (both sides)	Nail spacing (mm)
2/35	3.15 x 65	2 or 3*	300
3/35 & 2/45	3.30 x 90	2 or 3*	300
2/42	3.06 x 75	2 or 3*	200
3/42, 3/45 & 2/58 3/58, 2/65 & 3/65	Nail lamination is not suitable, requires screws or bolts		

* Beam depth ≥ 300 mm 3 rows of nails

Table 2

Side (non-symmetrically) loaded beam					
Section width	Nail type	No of nail rows at 300mm ctrs (both sides)	Max. floor joist span supported by outer member (mm)*	No of nail rows at 300mm ctrs (both sides)	Max. floor joist span supported by outer member (mm)*
2/35	3.15 x 65	2	2150	3	3250
3/35	3.30 x 90	2	5100	3	7600
2/45	3.30 x 90	2	2550	3	3800
2/42	3.06 x 75	2	2300	3	3400
3/42 & 3/45	3.30 x 90	2	2550	3	3800
2/58 & 3/58	3.30 x 100	2	2500	3	3800
2/65 & 3/65	3.30 x 100	2	1350	3	2050

* Floor loads G = 62 kg/m^2, Q = 1.5 kPa

Table 3

Beam depth (mm)	Min. number of nails required	
	At support	At either side of supported beam
90 –150	3	3
160—300	5	6
> 300	6	8

Table 4

Nail dia. (mm)	Min. edge distance (mm)	Min. end distance (mm)	Min. distance between nails (across the grain) (mm)
3.06 & 3.15	20	70	40
3.30	20	75	45

On-site cutting, notching and drilling of Smart10 LVL

The cutting, notching and drilling details within Fig 4.1 of AS 1684 pre-date both the introduction of LVL and the common use of roof trusses, and therefore presents deemed-to-satisfy solutions based upon the solid section timber types/sizes and systems commonly used to frame a typical Class 1 and 10a building at that time.

Contemporary open plan building styles with larger spans and deeper/thinner beams made possible by the introduction of LVL combined with the near universal practice of building with roof trusses that typically load only to external walls have now rendered some of these deemed-to-satisfy solutions non- conservative, especially in cyclonic wind loadings.

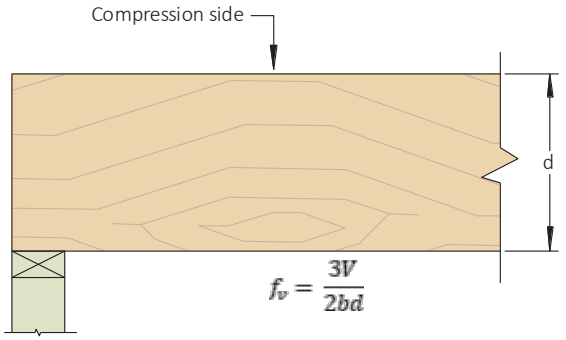
It is for this reason that it is recommended that on-site cutting, notching and drilling of Smart10 LVL be limited to the provisions shown below.

Further information about the effects of cutting and notching of timber elements can be found in Appendix E of AS 1720.1.

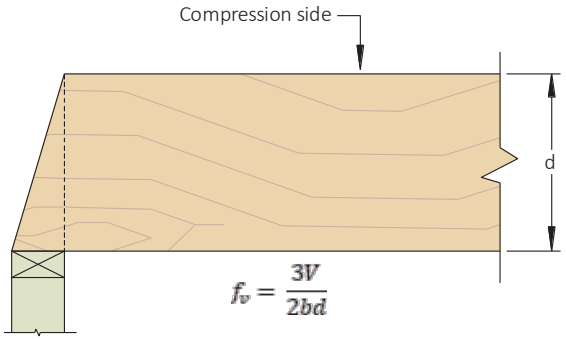
Notching of LVL beams should be avoided whenever possible, especially on the tension side of a member. Tension-side notching of LVL beams is not recommended except at end bearings and then only under specific conditions. The notching of LVL beams on the tension side results in decreased strength caused by stress concentrations that develop around the notch and a reduction of the net cross section resisting the bending and shear forces. Such notches induce perpendicular-to-grain tensile stresses which, in conjunction with horizontal shear forces, can cause splitting along the grain, typically starting at the inside corner of the notch. Stress concentrations, due to notches, can be reduced by using a gradually tapered notch configuration in lieu of a square-cornered notch.

All onsite notches should be accurately cut. Avoid over cutting at the corners of the notch. Drilling a 16 mm ϕ pilot hole in a member at the interior corner of a notch as a stop point for the saw blade provides both a rounded corner and minimizes over cutting at the corner and reduces stress concentrations in these areas.

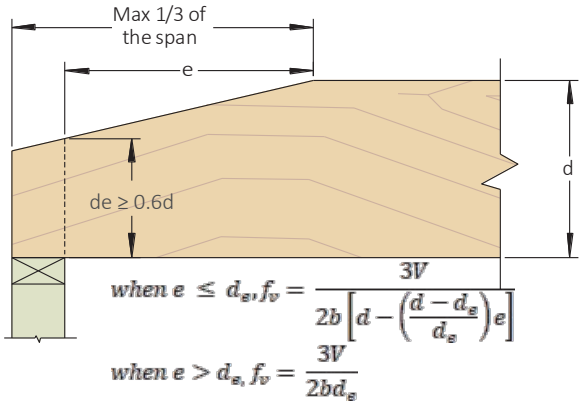
1. Notching



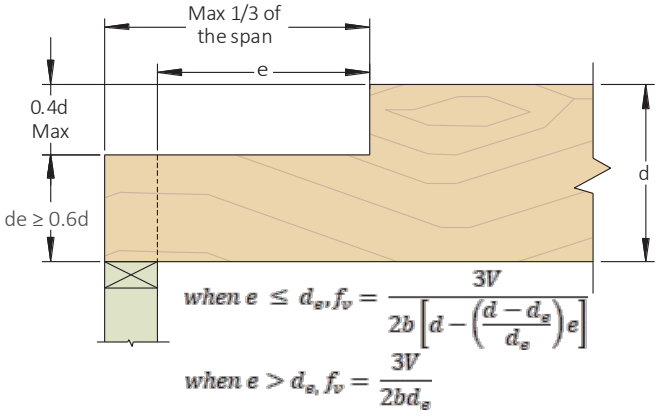
(a) Square end bearing



(b) Slope end bearing

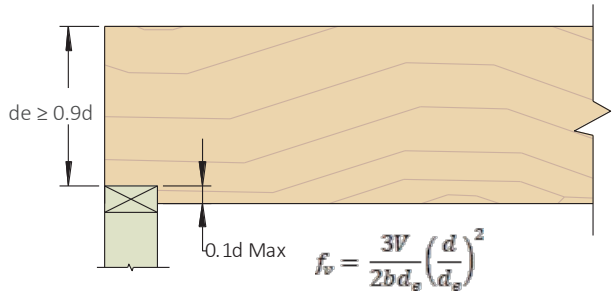


(c) Taper cut end bearing



(d) Compression-side notch

Where LVL beams are notched at the ends for bearing over a support, the notch depth is recommended to not exceed 1/10 of the beam depth (Figure 1(e)).



(e) Tension-side notch

Figure 1

f_v = shear stress (MPa)
d = depth of LVL beam (mm)
V = shear force at notch location (kN)
d_e = effective depth as shown (mm)
b = width of LVL beam (mm)
e = length of notch as shown (mm)

On-site cutting, notching and drilling of Smart10 LVL (cont'd)

For notches on the compression side, a less severe condition exists and equations for the analysis of the effects of these notches are also given in Figure 1. The equations given are empirical in nature and were developed for the conditions shown.

As the notching provisions given in this Note are limited to uniformly loaded simple span beams, the notches shown in Figure 1 occur in areas of high shear and lower moment. For this reason, the design equations given are shear equations.

When necessary to cut a small notch in the top of an LVL beam (in the compression side) to provide passage for small-diameter pipe or conduit, the cut should be made in an area of the beam stressed to less than 50% of the allowable bending stress. The net section in this area should be checked for shear and bending stresses to ensure adequate performance.

It should be recognized that the top of an LVL beam might not always be stressed in compression and the bottom of an LVL beam might not always be stressed in tension. For example, if the LVL beam is designed for wind uplift, the top of the LVL will be stressed in tension and the bottom of the LVL will be stressed in compression.

In this case, the recommendations given above should be applied accordingly. Furthermore, when evaluating the effect of notching, the shear force within a distance from supports equal to the beam depth should not be neglected, as typically permitted by the design of rectangular wood members in accordance with the AS 1720.1.

Horizontal Holes

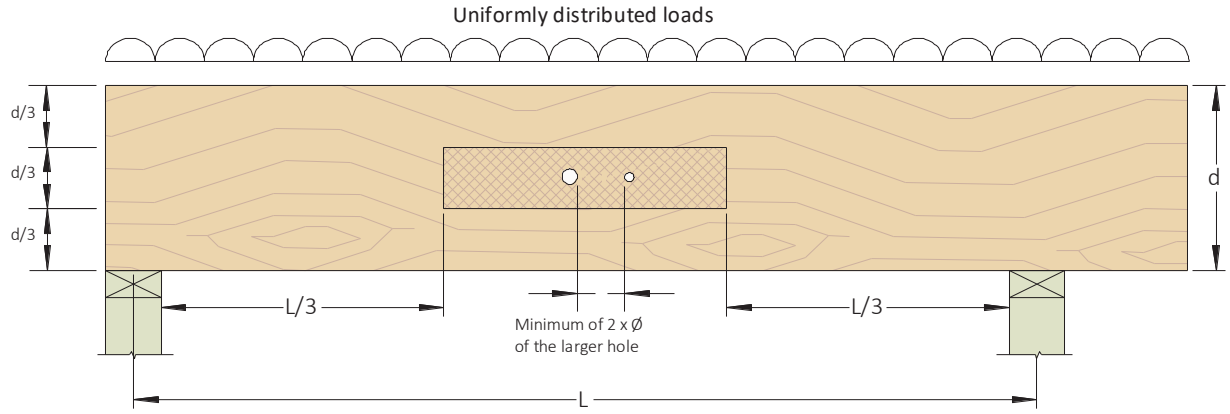
Like notches, holes in an LVL beam reduce the net section of the beam at the hole location and introduce stress concentrations. This causes a reduction in the beam capacity. For this reason, horizontal holes in LVL are limited in size and location to maintain the structural integrity of the beam. Figure 2 shows the zones of a uniformly loaded beam in simple or multiple spans, where the onsite drilling of holes may be considered. The requirements given

consider the effect of the horizontal hole on the shear and moment capacities of an LVL beam, and may be applied to multiple-piece built-up LVL beams.

Where larger horizontal holes than those specified in this document cannot be avoided in design, in some circumstances larger penetrations may be specifically designed by a structural engineer experienced in timber engineering.

Figure 2

Permissible horizontal round hole locations for LVL beams under uniform loads



Zone where horizontal holes are permitted for the passage of wires, conduits etc.

Beam depth (mm)	Hole Ø (mm)
90	20
150	30
200	40
> 200	Max 50 (unless specifically designed by an engineer)

a) Maximum of three (3) holes per span

b) Holes should not be cut in cantilevers

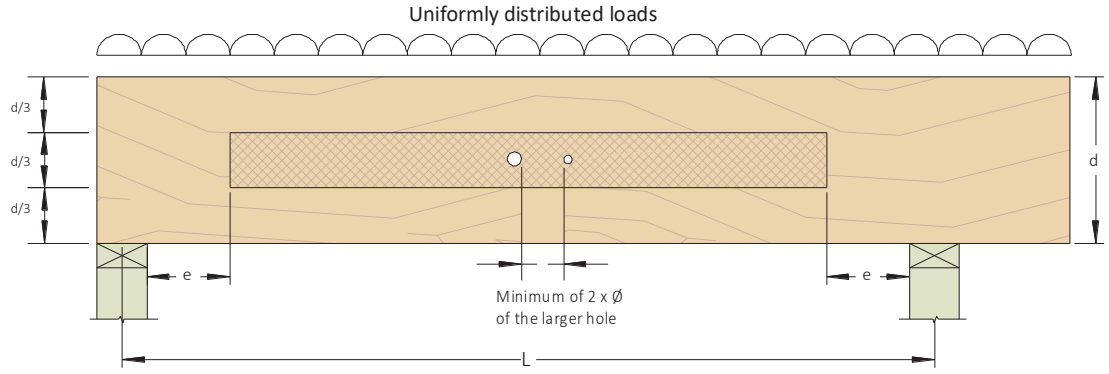
A 25 mm Ø or smaller hole may be cut at the middle ⅓ of the beam depth anywhere along the span, except for the area that is within 150 mm of clear distance between the face of the support and the nearest edge of the hole (see Figure 3 on next page), provided the following conditions are all met:

1. The beam is at least 190 mm in depth
2. The beam is subject to uniform loads only
3. The span-to-depth ratio (l/d) is at least 11
4. The maximum number of holes for each span is limited to three
5. The horizontal spacing must be a minimum of two diameters clear distance between adjacent holes based on the diameter of the larger hole
6. The hole must not be cut in cantilevers.

On-site cutting, notching and drilling of Smart10 LVL (cont'd)

Figure 3

Zones where a 25 mm or smaller diameter horizontal holes are permitted in a uniformly loaded LVL beam of depth ≥ 190 mm



Zone where a maximum of 25 mm Ø holes are permitted for the passage of wires, conduits etc.

a) Maximum of three (3) holes per span

b) No holes permitted in cantilever

e = 150 mm where L/d ≥ 11, or L/6 where L/d < 11

Beam depth (mm)	Span when L/d = 11 (mm)
200	2200
240	2640
300	3300
360	3960
400	4400
450	4950
525	5775
600	6600

The L/d of 11, is the span to depth ratio that segments the expected failure modes between shear and bending. When L/d < 11, the span is short, and it is expected that shear strength rather than bending will govern.

Onsite-drilled horizontal holes should be used for access only and should not be used as attachment points for brackets or other load bearing hardware unless specifically designed as such by an engineer. Examples of access holes include those used for the passage of wires, electrical conduit, small-diameter sprinkler pipes, fibre-optic cables and other small, lightweight materials.

For LVL beams that have been over-sized, the guidelines given above may be relaxed based on an engineering analysis. When holes are required to be drilled outside the allowable zones, an engineering analysis should be conducted and approved by a structural engineer experienced in timber engineering.

Regardless of the hole location, holes drilled horizontally through a member should be positioned and sized with the understanding that the beam will deflect (creep) more over a period of time under in-service loading conditions. This deflection could overstress supported equipment or piping unless properly considered.

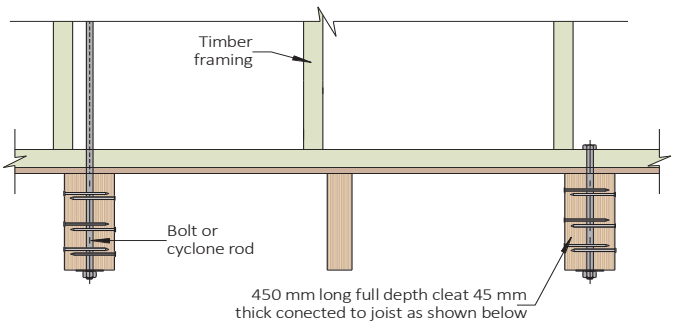
Vertical Holes

Whenever possible, avoid drilling vertical holes through LVL beams unless the beam width is at least 58 mm. For SmartLVL elements ≤ 58 mm thick, a 450 mm long cleat should be added as shown below, to avoid drilling vertical hole through thinner member.

Use a drill guide to minimize "wandering" of the bit to ensure a true alignment of the hole through the depth of the beam. The vertical hole should be centred in the beam width.

As a rule of thumb, vertical holes drilled through the depth of an LVL beam cause a reduction in the capacity at that location directly proportional to the ratio of 1½ times the diameter of the hole to the width of the beam. For example, a 12 mm hole drilled in a 58 mm wide LVL beam would reduce the beam capacity at that section by approximately (12 x 1.5)/58 = 31%

450 mm long reinforcement cleat



Nails/screws/bolts	Design Capacity
6 off 3.75 ø nails each side with min 40 mm penetration into adjacent joist/cleat	20 kN Wind uplift
6 off No 12 Type 17 screws with min 40 mm penetration into joist	
5 off No 14 Type 17 screws with min 45 mm into joist	
3 off M10 bolts	

Holes for support of suspended equipment

Heavy equipment or piping suspended from LVL beams should be attached such that the load is applied to the top of the beam to avoid inducing tension perpendicular-to-grain stresses.

Any horizontal holes required for support of significant weight, such as suspended heating and cooling units or main water lines, should be located above the neutral axis of the beam and in a zone stressed to less than 50% of the allowable bending stress. The beam capacity should be checked for all such loads to ensure proper performance.

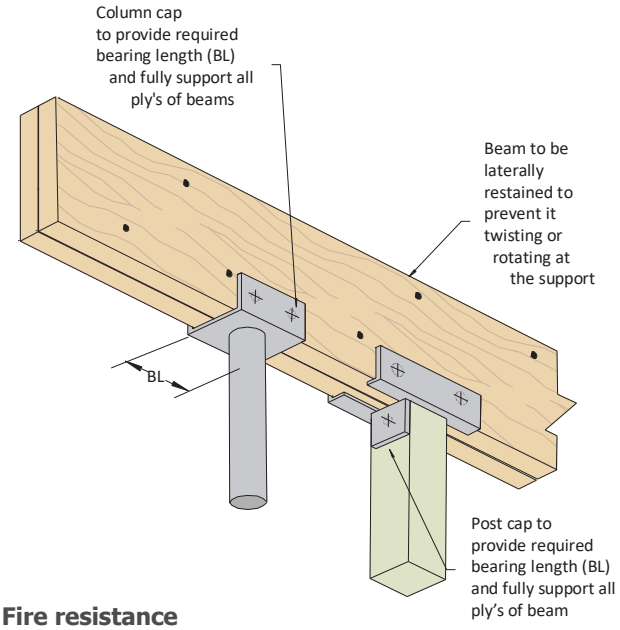
Protection of onsite-cut notches and holes

Frequently, LVL beams are provided by the manufacturer with the ends sealed by a protective coating. This sealer is applied to the end grain of the LVL to retard the migration of moisture in and out of the beam ends during transit and job site storage. Onsite cutting a notch at the end of a beam can change the moisture absorption characteristics of LVL at the notch location. This can result in localized splitting at the corners of the notch. To minimize this possibility, all notches should be sealed with a water-repellent sealer immediately after cutting. Sealing other onsite cuts as well as onsite-drilled holes is also recommended. These sealers can be applied with a brush, swab, roller or spray gun.

Further Information

Further information about the provision of larger holes, or advice about dealing with holes that have been cut into the LVL that are outside these guideline can be obtained by contacting the techsupport helpline on 1300 668 690 or at techsupport@tilling.com.au.

Steel and timber post fixing to SmartLVL



Fire resistance

The Fire Resistance Level (FRL) is the performance criteria for fire resistance, i.e. the grading periods (in minutes) for the following criteria as specified in the BCA:

a. Structural adequacy: (the duration for which the elements can carry its designated load)

b. Integrity: (the duration for which the element can

maintain its integrity to prevent the spread of fire to/ from the compartment)

and

c. Insulation: (the duration for which the element is insulating the adjacent space from excessive temperature rise)

and is expressed in that order e.g. 30/30/30. The method for determining the structural component of the Fire Resistance Period for timber (including LVL and Glulam) is described in AS / NZS 1720.4 - 2019 Timber Structures Part 4: Fire resistance of timber elements.

$$c = 0.4 + \left(\frac{280}{\delta}\right)^2 \qquad \text{Equation 2.5.2}$$

where:

c = notional charring rate, in mm per minute

d = timber density of Smart10 LVL - ~ 600 kg/m^3

The effective depth of charring (d_c) after a period of time (t) shall be calculated in accordance with Clause 2.6.1 for surfaces exposed to fire and in accordance with Clause 2.6.2 for surfaces behind fire- resistant protective insulation.

The examples detailed below contain generic fire detailing principles related to a non-rated floor abutting a rated wall where separation walls require a FRL not less than 60/60/60, commonly found in class 1a applications.

They have been included only to demonstrate that the type of joists within the non-rated floor do not effect the FRL of the rated wall junction, provided the wall is correctly detailed.

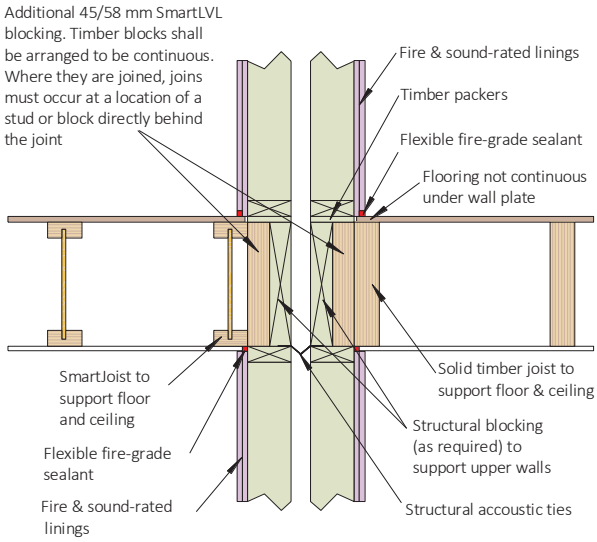
It is mandatory that those designing fire separation walls seek out and specify the latest relevant details either from a Fire Engineer, WoodSolutions® Technical Design Guides available at www.woodsolutions.com.au and Regulatory Authorities.

If using a tested and certified proprietary system, that system must be followed without variation.

Further information about using SmartFrame product in fire rated applications can be obtained by contacting the Techsupport Helpline on 1300 668 690.

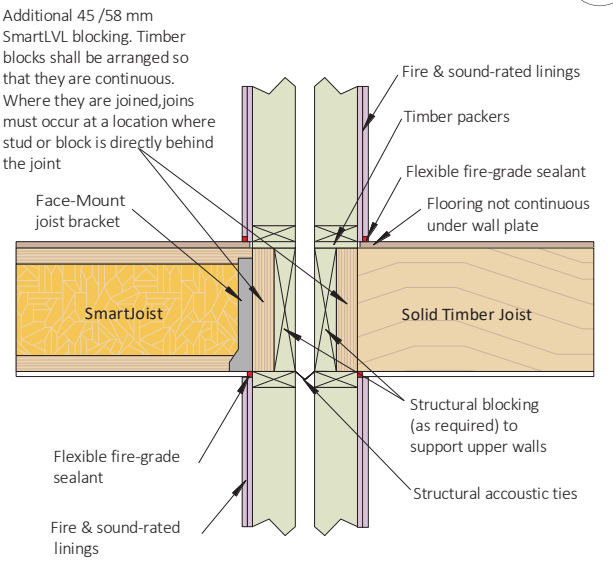
Floor joists parallel to the wall

CB2

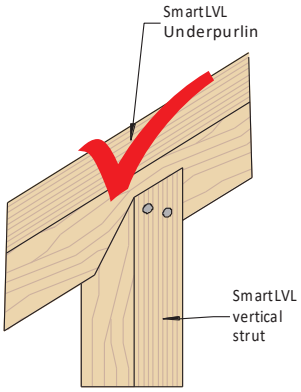


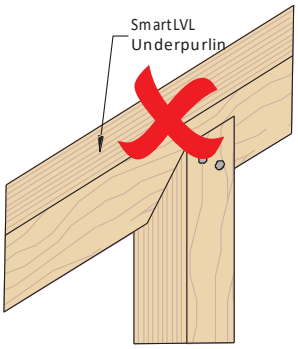
Floor joists perpendicular to the wall

CB1



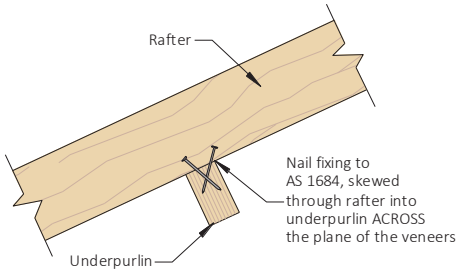
Roof construction detailing





DO NOT cut the birdsmouth in the direction of the SmartLVL veneers

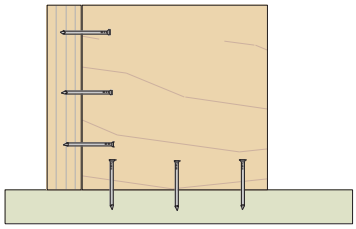
Vertical Smart10 LVL roof struts



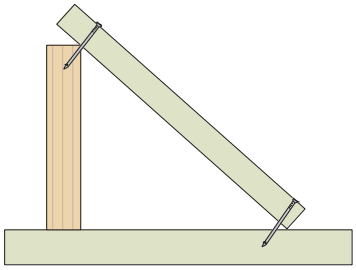
Rafters are NOT to be skew nailed to the underpurlin with the nails parallel to the direction of the veneers

Rafter underpurlin fixing

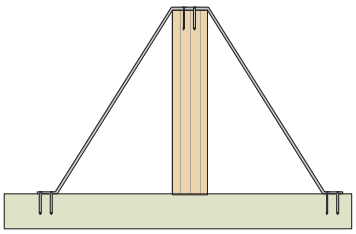
Lateral restraint of Hanging, Counter, Strutting, Strutting/hanging beams, Strutting/counter beams



(a) Block skew nailed to beam and to support with 3/75 mm skew nails to each member.



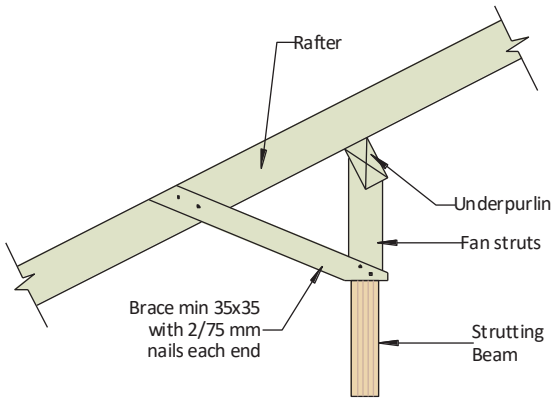
(b) Min 35 x 32 mm tie nailed to top of beam and to support with 2/75 mm nails at each end.

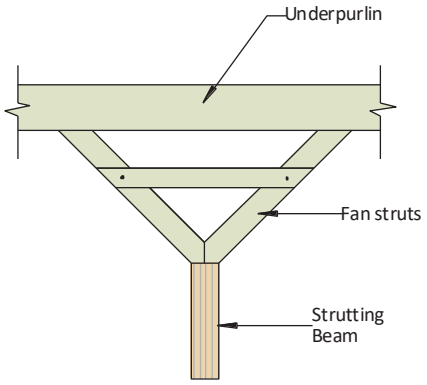


(c) Galvanised strap nailed to support and top of beam with 2/30 x 2.8 ϕ mm nails each end and to beam.

Notes:

1. Method used depends upon whether ceiling joists are perpendicular or parallel to the beam
2. Methods given in (b) and (c) are particularly suitable for restraining strutting beams and strutting/hanging beams at the intermediate points where the beams are supported, as they also permit these beams to be supported up clear of the ceiling joists by packing under at their supports.





Chemical resistance

SmartLVL (wood in general) has a definite advantage over steel members when exposed to corrosive environments. Timber and wood products are able to withstand mild acid conditions and are more resistant to degradation.

The behaviour of SmartLVL in chemical environments depends upon a number of factors, including PH and temperature. Wood essentially responds by either swelling (Category S), similar to moisture response, or by chemical degradation (Category D). Damage due to swelling is essentially reversible, but chemical degradation results in breakdown of the wood structure and is non-reversible. Category S agents include alcohol and other polar agents.

These agents swell dry wood causing a strength (and stiffness) loss proportional to the swelling.

Category D agents include acids, alkalis and salts and result in a loss of strength and stiffness directly related to the loss of member cross-section. The table below provides a rough guide to performance of SmartLVL in chemical environments.

Chemical resistance (cont'd)

The effect of chemicals on wood will generally be worsened by increased exposure time, temperature, extremes of pH and chemical concentration.

Wood generally offers considerably less resistance to alkalis than acids. Softwoods (includes SmartLVL) generally have better resistance to acids than hardwoods.

Where there is the possibility of chemical attack on Smart10 LVL members, designers should seek expert advice.

Agent category	Chemical agent	Mode of attack	Damage - reversible or permanent	Severity - (loss of strength and/or stiffness)
Neutral	Non-polar liquids such as petroleum hydrocarbons	None	Negligible	Negligible
S (swelling)	Alcohol and other polar solvents	Swelling	Reversible	Proportional to volumetric swelling
D (degrading)	Inorganic acids	Hydrolysis of cellulose	Permanent	Slight to moderate
D	Organic acids such as: Formic, acetic, propionic and lactic acid	Hydrolysis of cellulose	Permanent	Slight (pH 3-6)
D	Alkalis such as: sodium, calcium and magnesium hydroxide	De-lignification of wood and dissolving of hemicellulose	Permanent	Moderate (pH > 9.5) Severe (pH > 11)
D	Salts (considered as weak acids)	Hydrolysis of cellulose	Permanent	Slight

Table reference Williamson T.G. 2002 APA Engineered Wood Handbook

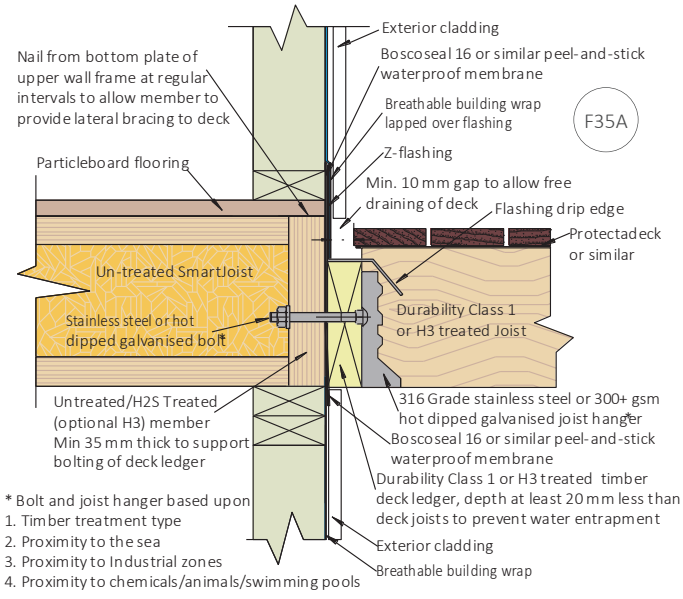
Deck ledger attachments

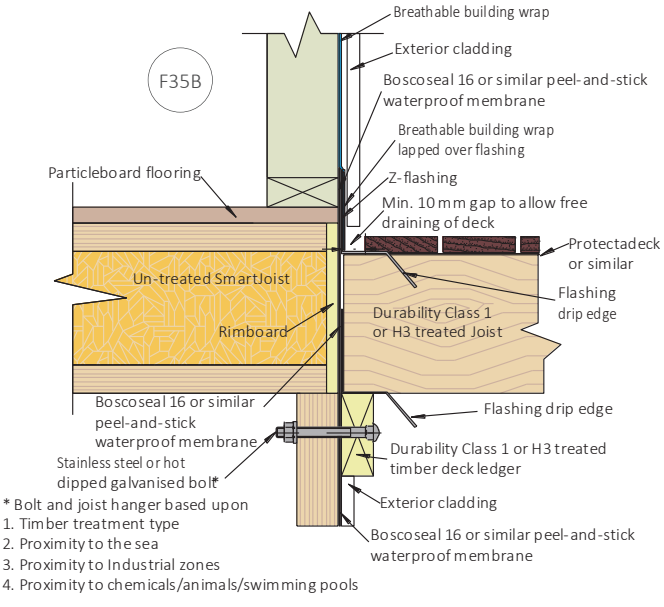
As with window and door installations in walls, paying careful attention to flashing details for decks attached to the house exterior is critical to avoid potential rot and mould of inner non treated wall frames and floor systems. Water from direct rainfall, splash from decks and runoff from incorrectly sloped deck surfaces can leak into the exterior wall where the deck attaches to the house.

Several conditions contribute to the water problem:

- The ledger board is simply attached to the house with numerous lag screws or other hardware that penetrate the wall's cladding and drainage plane, but no flashing has been installed to protect these areas
- Water is often trapped behind the ledger board
- Upward splashing of rain from the deck adds significant wetting to the cladding, and inadequate flashing results in wetting and rot in the wall's framing and other internal elements.
- Integrating the attachment of the ledger board with the drainage plane behind the wall's cladding and adding proper flashing will maintain the integrity of the drainage plane and channel water away from the wall's surface.

Example flashing of deck ledger connection to un-treated house frame





Design of wall studs to AS 1684 (Wall height from 3.0 - 3.6 m)

Background

Figure 1.1 and Clause 1.6.6 in AS 1684 Parts 2 and 3 mandates a maximum external wall height (floor to ceiling) of 3000 mm. (measured at common external walls, not gable of skillion ends). The corresponding deemed-to-satisfy (DTS) data and tables within the standard is based upon this maximum wall height, especially in the areas of:

1. **Racking forces - Clause 8.3.4** Total racking force is a function of area of elevation and racking pressures (the maximum wall height assumed to generate the pressures given in Tables 8.1 to 8.5 was 2700 mm even though it was permitted to be used for walls up to 3000 mm high). The pressures in Tables 8.1 to 8.5 are a function of the building geometry such as height to width ratio. Increasing the assumed external wall heights from 2700 mm to 3600 mm increased a significant percentage of the pressures on the projected areas of elevation.

2. **Bottom plate fixing - Clause 8.3.6.10** Fixing of bottom of bracing walls requires consideration of the uplift at ends of bracing walls which in turn is a function of wall height. Table 8.23 (Table 8.24 in Part 3) therefore requires extension to cater for walls up to 4800 mm high.

3. **Net wind uplift pressures - Clause 9.6.4** The net wind uplift pressures in Table 9.5 and the uplift forces in Tables 9.6 to 9.11 (Tables 9.6 to 9.10 in Part 3) may be influenced by the overturning forces on the building (see note to Table 9.5). The overturning forces are caused by a combination of both direct uplift and the lateral forces on the building. The taller the building, then the higher the overturning forces will be. The equivalent net uplift pressures are significantly higher for taller buildings (3600 mm high external walls).

4. **Shear forces on exterior load bearing walls** - Clause 9.7.6 and Table 9.29. The values in Table 9.29 will need to be modified if the wall heights are modified

5. **Bracing force value in Appendix G** The bracing force values given in the Tables in this Appendix are only applicable to wall heights of 2700 mm. It is not appropriate to apply a simple % increase to cater for wall heights from 3000 mm to 3600 mm, therefore this Appendix should not be used for walls higher than 3000mm.

The overriding 3000 mm height limitation was included in AS 1684 to ensure that other design assumptions and requirements listed above in the Code would not be compromised.

Designing external wall heights from 3.0 to 3.6 m

The AS 1684 User Guide No 4 June 2012 was developed to provide a recommended Procedure for Wall Heights 3.0 to 3.6 m and is available from WoodSolutions.com.au. The recommendations for wall heights from 3.0 to 3.6 m in this Design Guide listed below are reproduced from that document, and therefore Tilling Timber Pty Ltd will not accept responsibility for the values contained therein.

1. Member Sizes

The size of studs, plates and lintels in external load-bearing walls can be determined directly from the relevant span tables in this document.

2. Racking Force

The total racking force shall be determined from Clause 8.3.4 but for external wall heights above 3000 mm up to 3600 mm, the lateral pressures determined from Tables 8.2 to 8.5 for roof pitches 5° to 20° shall be increased by 10%.

Note:- Pressures for other roof pitches or for vertical surface elevations (Table 8.1) do not require to be increased.

Determine the capacity of bracing walls greater than 2700 mm high from Table 8.19.

3. Fixing of Bottom of Bracing Walls

Include the following additional lines in Table 8.23 of Part 2 and Table 8.24 of Part 3:-

Wall Height (mm)	Uplift force at ends of bracing walls (kN) For modified bracing wall capacity rated at (kN/m)											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	8.0
3300	1.7	3.3	5.0	6.6	8.3	9.9	12	13	15	17	18	20	26
3600	1.8	3.6	5.4	7.2	9.0	11	13	14	16	18	20	22	29
3900	2.0	3.9	5.9	7.8	9.8	12	14	16	18	20	21	23	31
4200	2.1	4.2	6.3	8.4	11	13	15	17	19	21	23	25	34
4800	2.4	4.8	7.2	9.6	12	14	17	19	23	24	26	29	38

4. Wind Uplift Forces

In Clause 9.6.4, the wind uplift forces calculated by multiplying the net uplift pressure by the area of roof contributing to tie-down, shall be determined from Table 9.5 using the following net uplift pressures for the tie-down positions described:-

Part 2 - Non cyclonic

Connection/tie-down position	Net uplift pressure (kPa) Wind classification							
	N1		N2		N3		N4	
	Sheet Roof	Tile roof	Sheet roof	Tile roof	Sheet roof	Tile roof	Sheet roof	Tile roof
Single or upper storey floor frame to supports	-	-	0.25	-	1.2	0.8	2.4	2.0
Lower storey wall frame to floor Frame or Slab	-	-	0.25	-	1.2	0.8	2.4	2.0
Lower storey floor frame to supports	-	-	-	-	-	-	1.4	1.0

Part 3 - Cyclonic

Connection/tie-down position	Net uplift pressure (kPa) Wind classification					
	C1		C2		C3	
	Sheet roof	Tile roof	Sheet roof	Tile roof	Sheet roof	Tile roof
Single or upper storey floor frame to supports	1.5	1.3	2.93	2.7	4.3	4.3
Lower storey wall frame to floor frame or slab	1.5	1.3	2.93	2.7	4.3	4.3
Lower storey floor frame to supports	0.6	0.5	2.0	1.8	4.3	4.3
Note: The uplift forces given in Tables 9.6 to 9.10 shall not be uses for determination of uplift forces, however they could be recalculated using the net uplift pressure given above						

5. Shear forces on External Non-loadbearing Walls

Table 9.29 needs to have additional notes added to cater for 3300 mm and 3600 mm high walls:-

NOTES:

For 3300 mm high external walls, multiply the above values by 1.3.

For 3600 mm high external walls, multiply the above by 1.3

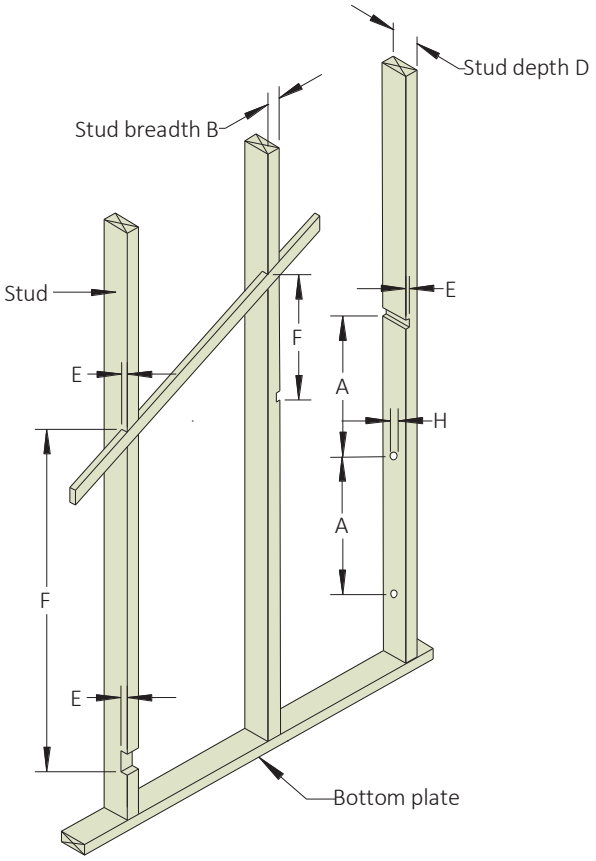
6. Appendix G

Appendix G shall **NOT** be used to determine racking forces for wall heights from 3000 to 3600 mm.

Notching and holes in Smart10 LVL studs

The following diagram and tables are reproduced from AS 1684.2: 2021, and focused where necessary to only deal with studs.

The paragraph (b) below was introduced into the 2021 edition of AS 1684 to allow for larger holes/notches in non loadbearing walls, and given the higher characteristic strength values of Smart10 LVL over solid sawn timber studs provides a conservative solution.



Symbol	Description	Limits	
		Notched	Not notched
A	Distance between holes and/ or notches in stud breadth	Min. 3D	Min. 3D
H	Hole diameter (studs and plates)	Max. 25 mm (wide face only)	Max. 25 mm (wide face only)
C	Notch into stud breadth	Max. 10 mm	Max. 10 mm
E	Notch into stud depth	Max. 20 mm (for diagonal cut in bracing only) (see Notes 1 and 2)	Not permitted (see Note 1)
F	Distance between notches in stud depth	Min. 12B	N/A

NOTES

1. A horizontal line of notches up to 25 mm may be provided for the installation of baths
2. Except as permitted for diagonal cut in bracing, notches up to 20 mm may occur in every fifth individual stud.
3. For additional jamb stud requirements, see Figures 6.5, 6.9(A) and 6.9(B) of AS 1684.2:2021
4. Top and bottom plates in internal non-loadbearing and non-bracing walls may be discontinuous up to 60 mm (cut or drilled) to permit installation of services provided that, at the discontinuity, the plates are trimmed or otherwise reinforced either side of the discontinuity to maintain the lateral and longitudinal integrity of the wall.

(a) General (external walls, loadbearing walls and braced sections of internal non-loadbearing walls)

The maximum size and spacing of cuts, holes, notches and similar section reductions in studs shall be in accordance with the above diagram.

i) Holes in studs and plates shall be located within the middle half of the depth and breadth of the member, respectively.

ii) A longitudinal groove up to 18 mm wide × 10 mm deep may be machined into the middle third depth of a stud to accept full-length anchor rods. Where the groove exceeds this dimension, the remaining net breadth and depth of the stud shall be not less than the minimum size required.

iii) Studs may be designed as notched or not-notched. For common studs, the maximum notch depth for single or upper storey or lower storey construction shall be 20 mm.

iv) Jamb studs in external walls and other loadbearing walls shall not be notched within the middle half of their height or within the height of the opening. A notch up to a maximum of 20 mm in depth is permissible outside this region at the top and/or the bottom of the stud.

(b) Internal non-loadbearing walls (excluding sections of wall that have diagonal or structural sheet bracing installed)

The general requirements for internal non-loadbearing walls (excluding sections of wall that have diagonal or structural sheet bracing installed) shall be as specified in Item (a) above. The following additional allowances are permitted:

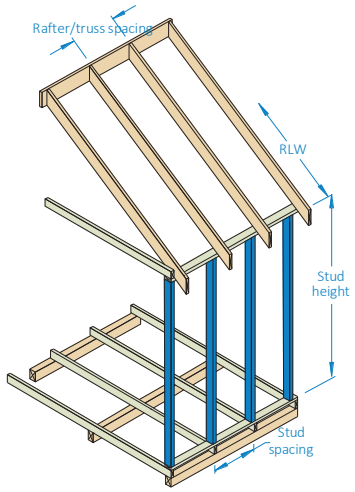
i) Holes in plates and noggings of diameter up to 52 mm may be located on the centre-line of the wide face provided they are spaced a minimum of 1 800 mm apart and are not located adjacent to significant timber defects.

ii) A single hole in a stud of diameter up to 52 mm may be located on the centre-line of the wide face provided they are not located adjacent to significant timber defects and can only occur not closer than in every fourth stud.

iii) A single notch in a stud up to 50 % of the stud depth may be used. The notch can only occur not closer than in every fourth stud.

Index of span tables

Common Stud at 450 mm ctrs - single/upper storey walls - un-notched
AS 4055 Classification N1 -N4



EXAMPLE:

Sheet roof

Stud spacing = 450 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6500 mm

Enter sheet roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6500 mm in a 2700 mm stud height.

ADOPT:

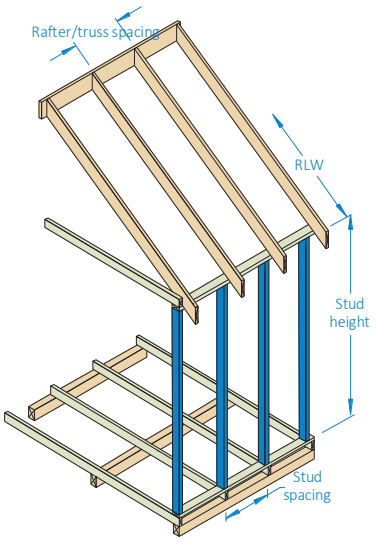
Smart10 LVL - 70 x 45

Rafter/Truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud Height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 450 mm									
70x35	2400	7500	7500	6500	4500	7500	6500	4500	3000
	2700	6500	5500	3500	2500	4500	3500	2500	1800
	3000	3500	2500	1800	NS	2500	2000	NS	NS
70x45	2400	7500	7500	7500	6500	7500	7500	6500	4500
	2700	7500	7500	5500	4500	7500	6000	4000	3000
	3000	6500	5500	3500	2500	4500	3500	2500	1800
	3600	*1500*	*1500*	*NS*	*NS*	*1500*	*NS*	*NS*	*NS*
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	6500
	3000	7500	7500	7500	5500	7500	7500	5500	4000
	3600	*7500*	*5500*	*3500*	*2500*	*4500*	*3500*	*2500*	*1500*
2/70x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	6000
	3600	*7500*	*7500*	*5500*	*3500*	*7500*	*5500*	*3500*	*2500*
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	5500
	3000	7500	7500	7500	5500	7500	7500	5000	4000
	3600	5500	4500	2500	1500	3500	2500	1500	1500
90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	5500
	3600	*7500*	*7500*	*4500*	*3500*	*6500*	*5500*	*3500*	*2500*
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*5500*
2/90x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*5500*
120x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
140x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
140x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
170x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud not notched
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering

Common Stud at 600 mm ctrs - single/upper storey walls—un-notched
AS 4055 Classification N1 - N4



EXAMPLE:

Sheet roof

Stud spacing = 600 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6500 mm

Enter sheet roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6500 mm in a 2700 mm stud height.

ADOPT:

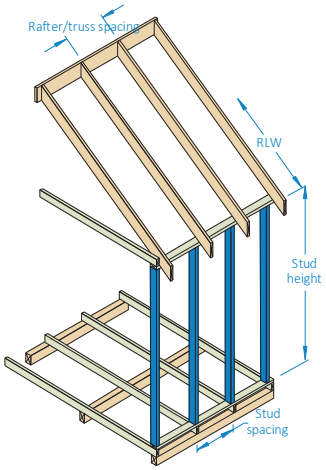
Smart10 LVL - 70 x 45

Rafter/Truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud Height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 600 mm									
70x35	2400	6500	6500	4500	3000	4500	4500	3000	2000
	2700	2500	2500	1500	NS	1500	1500	NS	NS
70x45	2400	7500	7500	7500	5500	7500	7500	5500	4000
	2700	6500	6500	4000	3000	4500	4500	3000	2000
	3000	2500	2500	2000	1500	2000	2000	1500	NS
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	5500
	3000	7500	7500	6500	4500	6500	6500	4500	3500
	3600	*3500*	*3500*	*2500*	*1500*	*2500*	*2500*	*1500*	*NS*
2/70x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7000	5500
	3600	*6500*	*6500*	*4500*	*3500*	*4500*	*4500*	*2500*	*2500*
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	6500	7500	7500	6500	4500
	3000	7500	7500	5500	4000	5500	5500	3500	3000
	3600	*1500*	*1500*	*NS*	*NS*	*1500*	*1500*	*NS*	*NS*
90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	6500	7500	7500	6500	4500
	3600	*4500*	*4500*	*3500*	*2500*	*3500*	*3500*	*2500*	*1500*
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*6500*	*7500*	*7500*	*6500*	*4500*
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*6500*
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*6500*	*7500*	*7500*	*6500*	*4500*
120x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
140x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
140x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
170x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud not notched
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering

Common Stud at 450 mm ctrs - single/upper storey walls - un-notched
AS 4055 Classification C1 - C3



EXAMPLE:

Sheet roof

Stud spacing = 450 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6300 mm

Enter sheet roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6300 mm in a 2700 mm stud height.

ADOPT:

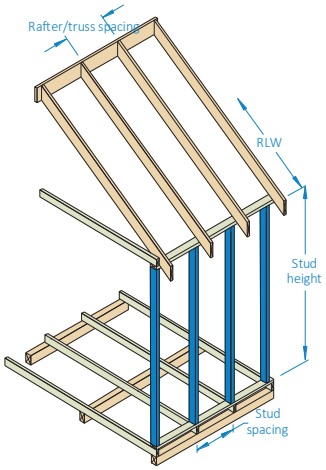
Smart10 LVL - 2/70 x 35

Rafter/Truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud Height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 450 mm									
70x45	2400	4500	3500	2500	1500	3500	2500	2000	1500
	2700	1500	NS	NS	NS	NS	NS	NS	NS
2/70x35	2400	7500	7500	7500	5500	7500	7500	5500	4500
	2700	7500	6500	4000	3000	6500	5500	3500	2500
	3000	4500	3500	2200	1800	3500	2500	2000	1500
2/70x45	2400	7500	7500	7500	7500	7500	7500	7500	6500
	2700	7500	7500	6500	5000	7500	7500	5500	4000
	3000	7500	6500	4000	3000	6500	5000	3500	2500
	3600	*2500*	*1500*	*NS*	*NS*	*1500*	*1500*	*NS*	*NS*
90x35	2400	7500	7500	5500	4500	7500	7500	4500	3500
	2700	6500	4500	3000	2000	4500	3500	2500	2000
	3000	2500	1500	NS	NS	1500	1500	NS	NS
90x45	2400	7500	7500	7500	7500	7500	7500	7500	5500
	2700	7500	7500	5500	4500	7500	6500	4500	3500
	3000	6500	4500	3000	2500	5500	3500	2500	2000
2/90x35	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	6500	7500	7500	6500	5000
	3600	*6500*	*5500*	*3500*	*2500*	*5500*	*4500*	*2500*	*1500*
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	7500	7500	5500	4500	7500	6500	4500	3500
120x35	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	6500	7500	7500	7500	5500
	3600	*6500*	*4500*	*2500*	*2500*	*5500*	*3500*	*2500*	*1500*
120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*5500*	*4500*	*7500*	*7500*	*4500*	*3500*
2/120x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
2/120x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*5500*	*7500*	*7500*	*6500*	*4500*
140x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
170x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud not notched
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Common Stud at 600 mm ctrs - single/upper storey walls - un-notched
AS 4055 Classification C1 - C3



EXAMPLE:

Sheet roof

Stud spacing = 600 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6300 mm

Enter sheet roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6300 mm in a 2700 mm stud height.

ADOPT:

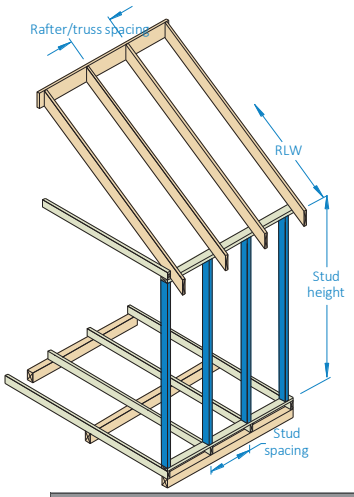
Smart10 LVL - 2/70 x 35

Rafter/Truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud Height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 600 mm									
2/70x35	2400	7500	7500	5500	3500	6500	6500	4500	3500
	2700	3500	3500	2500	2000	3000	3000	2000	1500
2/70x45	2400	7500	7500	7500	6500	7500	7500	7500	5500
	2700	7500	7500	4500	3500	6500	6500	4000	3000
	3000	3500	3500	2500	2000	3500	3500	2000	1500
90x35	2400	5500	5500	3500	2500	4500	4500	2500	2000
90x45	2400	7500	7500	7500	5500	7500	7500	5500	4500
	2700	5500	5500	3500	2500	4500	4500	2500	2000
	3000	1500	1500	NS	NS	1500	1500	NS	NS
2/90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	6500
	3000	7500	7500	6500	4500	7500	7500	5500	4000
	3600	*2500*	*2500*	*1500*	*1500*	*2500*	*2500*	*1500*	*NS*
2/90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	6500
	3600	*6500*	*6500*	*3500*	*2500*	*5500*	*5500*	*3500*	*2500*
120x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	6500
	3000	7500	7500	5500	4500	7500	7500	4500	3500
120x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	6500
	3600	*5500*	*5500*	*3500*	*2500*	*4500*	*4500*	*2500*	*1500*
2/120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*6500*
2/120x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*4500*	*3500*	*6500*	*6500*	*3500*	*2500*
140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*6500*	*7500*	*7500*	*7500*	*5500*
170x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud not notched
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Common Stud at 450 mm ctrs –single/upper storey walls - 20 mm notched
AS 4055 Classification N1- N4



EXAMPLE:

Sheet roof

Stud spacing = 450 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6300

Enter sheet roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6300 mm in a 2700 mm stud height.

ADOPT:

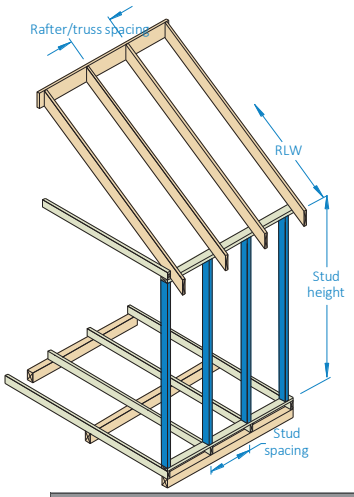
Smart10 LVL - 70 x 45

Rafter/truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 450 mm									
70x35	2400	7500	7500	4500	3500	7500	5500	3500	2500
	2700	4500	3500	2500	2000	3500	2500	1500	NS
70x45	2400	7500	7500	7500	5500	7500	7500	5500	4000
	2700	7500	6500	4500	3000	6500	4500	3000	2200
	3000	4500	3500	1500	1500	2500	2500	1500	NS
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	6500	7500	7500	6500	4500
	3000	7500	7500	5500	4500	7500	5500	4000	3000
2/70x45	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	6500
	3000	7500	7500	7500	6500	7500	7500	5500	4500
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	6500	7500	7500	6500	4500
	3000	7500	7500	5500	4000	7500	5500	3500	3000
90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	6500	7500	7500	5500	4500
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*5500*	*7500*	*7500*	*5500*	*3500*
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*5500*
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	7500	7500	7500	5500	7500	7500	5500	4500
120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*6500*
140x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
140x45	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*
170x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud notch 20 mm maximum
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Common Stud at 600 mm ctrs –single/upper storey walls - 20 mm notched
AS 4055 Classification N1- N4



EXAMPLE:

Sheet roof

Stud spacing = 600 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6300

Enter roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6300 mm in a 2700 mm stud height.

ADOPT:

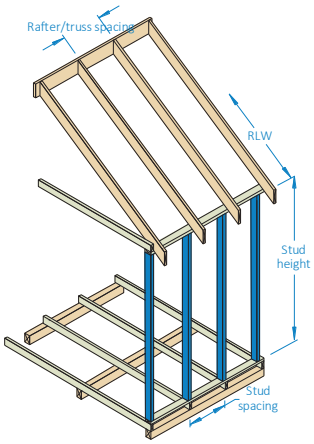
Smart10 LVL - 2/70 x 35

Rafter/truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 600 mm									
70x35	2400	5500	5500	3500	2500	3500	3500	2500	2000
70x45	2400	7500	7500	6500	4500	6500	6500	4500	3500
	2700	4500	4500	2500	2000	3000	3000	2000	1500
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	6500
	2700	7500	7500	7500	5500	7500	7500	5500	4000
	3000	6500	6500	4500	3500	4500	4500	3000	2500
2/70x45	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	5500
	3000	7500	7500	6500	5500	7500	7500	5000	3500
90x35	2400	7500	7500	7500	7500	7500	7500	7500	6500
	2700	7500	7500	7500	5500	7500	7500	5500	3500
	3000	5500	5500	3500	2500	3500	3500	2500	2000
90x45	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	6500
	3000	7500	7500	6500	4500	7500	7500	4500	3500
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	7500	7500	7500	6500	7500	7500	6500	4500
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	7500	7500	5500	4500	5500	5500	3500	2500
120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	7500	7500	7500	7500	7500	7500	7500	5500
2/120x35	3600	7500	7500	7500	7500	7500	7500	7500	7500
2/120x45	3600	7500	7500	7500	7500	7500	7500	7500	7500
140x35	3600	7500	7500	7500	7500	7500	7500	7500	7500
140x45	3600	7500	7500	7500	7500	7500	7500	7500	7500
2/140x35	3600	7500	7500	7500	7500	7500	7500	7500	7500
2/140x45	3600	7500	7500	7500	7500	7500	7500	7500	7500
170x35	3600	7500	7500	7500	7500	7500	7500	7500	7500

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud notch 20 mm maximum
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Common Stud 450 ctrs - single/upper storey walls - 20 mm notched
AS 4055 Classification C1 – C3



EXAMPLE:

Sheet roof

Stud spacing = 450 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6500 mm

Enter sheet roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6500 mm in a 2700 mm stud height.

ADOPT:

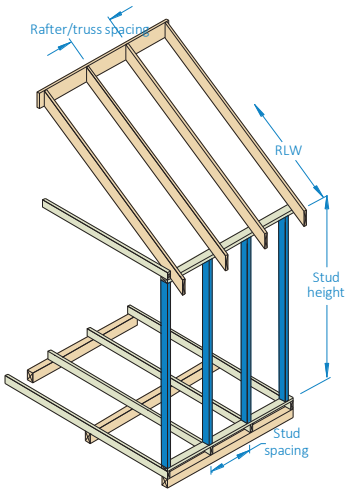
Smart10 LVL - 2/70 x 45

Rafter/truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 450 mm									
70x35	2400	1500	NS	NS	NS	1500	NS	NS	NS
70x45	2400	4500	3500	2000	1500	3500	2500	1500	NS
2/70x35	2400	7500	7500	5500	4500	7500	7500	4500	3500
	2700	6500	4500	3000	2500	5500	3500	2500	2000
	3000	2500	1500	NS	NS	1500	1500	NS	NS
2/70x45	2400	7500	7500	7500	6500	7500	7500	7500	5500
	2700	7500	7500	4500	3500	7500	6500	4000	3000
	3000	5500	3500	2500	2000	4500	3500	2000	1500
90x35	2400	7500	7500	5500	3500	7500	6500	4500	3500
	2700	4500	3500	2500	1500	3500	2500	1500	1500
90x45	2400	7500	7500	7500	6500	7500	7500	7500	5500
	2700	7500	6500	4500	3500	7500	5500	3500	2500
	3000	3500	2500	1500	1500	3500	2500	1500	NS
2/90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	6500
	3000	7500	7500	6500	4500	7500	7500	5500	4000
2/90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	5500
	3600	*6500*	*5500*	*3500*	*2500*	*5500*	*4500*	*2500*	*1500*
120x35	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	6500	4500	7500	7500	5500	4500
	3600	*1500*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
120x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	6500
	3600	*6500*	*4500*	*2500*	*2500*	*5500*	*3500*	*2500*	*1500*
2/120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*5500*
2/120x45	3600	7500	7500	7500	7500	7500	7500	7500	7500
140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	7500	6500	4500	3500	7500	5500	3500	2500
140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*6500*	*7500*	*7500*	*6500*	*5500*
170x35	*3600*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud notch 20 mm maximum
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Common Stud at 600 mm ctrs - single/upper storey walls - 20 mm notched
AS 4055 Classification C1 – C3



EXAMPLE:

Sheet roof

Stud spacing = 450 mm

Rafter truss spacing = 600 mm

Stud height = 2700 mm

Roof load width = 6500 mm

Enter sheet roof column, 600 mm in rafter/truss spacing column, read down to a span roof load width of 6500 mm in a 2700 mm stud height.

ADOPT:

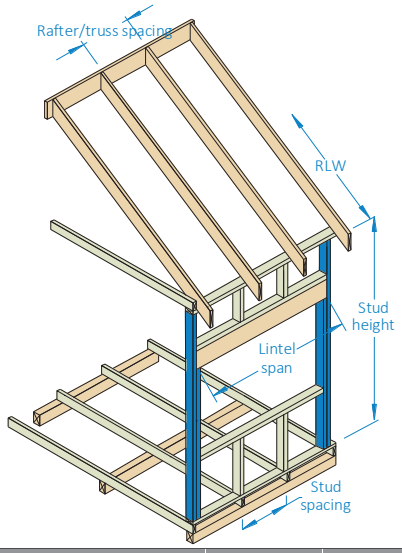
Smart10 LVL - 2/90 x 35

Rafter/truss spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxB (mm)	Stud height (mm)	Maximum recommended roof load width (mm)							
		Sheet Roof				Tile Roof			
Stud spacing 600 mm									
2/70x35	2400	6500	6500	4500	3500	5500	5500	3500	2500
	2700	2500	2500	1500	1500	2500	2500	1500	NS
2/70x45	2400	7500	7500	7500	5500	7500	7500	5500	4500
	2700	5500	5500	3500	2500	4500	4500	3000	2500
	3000	1500	1500	1500	NS	1500	1500	NS	NS
90x35	2400	5500	5500	3500	2500	4500	4500	2500	2000
90x45	2400	7500	7500	6500	4500	7500	7500	5500	3500
	2700	3500	3500	2500	1500	3500	3500	2000	1500
2/90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	6500	7500	7500	7500	5500
	3000	6500	6500	4500	3500	5500	5500	3500	2500
2/90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	5500	7500	7500	6500	4500
120x35	2400	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	6500	7500	7500	7500	5500
	3000	6500	6500	3500	2500	4500	4500	3500	2500
120x45	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	6500	7500	7500	6500	4500
2/120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	7500	7500	7500	5500	7500	7500	5500	4500
2/120x45	3600	7500	7500	7500	7500	7500	7500	7500	7500
140x35	2700	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	6500
	3600	*1500*	*1500*	*1500*	*NS*	*1500*	*1500*	*NS*	*NS*
140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*5500*	*3500*	*6500*	*6500*	*4500*	*2500*
170x35	3000	7500	7500	7500	7500	7500	7500	7500	7500
	3600	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*7500*	*5500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud notch 20 mm maximum
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Jamb Stud - single of upper load bearing walls
AS 4055 Classification N1-N4



EXAMPLE:

Sheet roof

Width of opening = 1800 mm

Jamb stud height = 2700 mm

Roof load width = 4100 mm

Enter table at 4500 mm roof load width, sheet roof column, read down to a width of opening of 1800 mm in a 2700 mm stud height row with a roof mass of 40 kg/m^2.

ADOPT:

Smart10 LVL - 2/70 x 45

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Size DxB (mm)	Stud height (mm)	Sheet roof					Tile roof				
		Width of opening (mm)					Width of opening (mm)				
70x45	2400	900	900	900	NS	NS	900	900	NS	NS	NS
2/70x35	2400	2100	2100	1800	1500	1400	2100	2100	1600	1400	1100
	2700	1200	1200	1100	1000	1000	1200	1200	1100	900	NS
2/70x45	2400	2700	2700	2500	2000	1800	2700	2700	2200	1700	1400
	2700	1800	1800	1800	1400	1400	1800	1800	1600	1300	1000
	3000	900	900	900	900	900	900	900	900	900	NS
90x35	2400	2200	2000	1600	1400	1200	2200	1800	1500	1200	900
	2700	1400	1400	1200	1000	NS	1400	1300	1000	NS	NS
90x45	2400	3200	2700	2200	1800	1700	3200	2500	1800	1500	1400
	2700	1800	1800	1600	1400	1300	1800	1800	1400	1200	900
	3000	1100	1100	1100	1000	900	1100	1100	1000	NS	NS
2/90x35	2400	4500	4500	4000	3300	2700	4500	4500	3400	2700	2300
	2700	3600	3600	3200	2500	2200	3600	3300	2700	2200	1800
	3000	2200	2200	2200	2000	1600	2200	2200	2000	1600	1500
2/90x45	2400	4500	4500	4500	4500	3600	4500	4500	4500	3600	3000
	2700	4500	4500	4000	3400	2900	4500	4500	3600	2900	2300
	3000	3200	3200	3000	2700	2300	3200	3200	2700	2300	1800
	3600	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*
120x35	2400	4500	4500	3900	3300	2700	4500	4000	3300	2700	2500
	2700	4500	3600	3000	2500	2200	4000	3200	2500	2200	1800
	3000	2700	2700	2300	2000	1700	2700	2500	2000	1700	1500
	3600	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*NS*
120x45	2400	4500	4500	4500	4200	3600	4500	4500	4500	3600	3300
	2700	4500	4500	3900	3400	2900	4500	4200	3400	2900	2500
	3000	4000	3600	3200	2700	2300	4000	3300	2700	2300	2000
	3600	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*
2/120x35	2400	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	2700	4500	4500	4500	4500	4500	4500	4500	4500	4500	4200
	3000	4500	4500	4500	4500	3900	4500	4500	4500	3900	3400
	3600	*2700*	*2700*	*2700*	*2700*	*2700*	*2700*	*2700*	*2700*	*2700*	*1800*
2/120x45	3000	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	3600	*3600*	*3600*	*3600*	*3600*	*3600*	*3600*	*3600*	*3600*	*3600*	*2700*
140x35	2400	4500	4500	4500	4500	4500	4500	4500	4500	4500	3900
	2700	4500	4500	4500	3900	3400	4500	4500	4000	3400	3000
	3000	4500	4200	3600	3200	2700	4500	3900	3200	2700	2300
	3600	*1800*	*1800*	*1800*	*1800*	*900*	*1800*	*1800*	*1800*	*900*	*900*

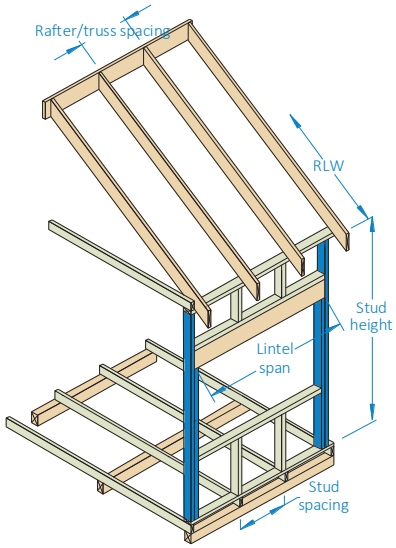
Jamb Stud—single of upper load bearing walls
AS 4055 Classification N1-N4

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Size DxB (mm)	Stud height (mm)	Sheet roof					Tile roof				
		Width of opening (mm)					Width of opening (mm)				
140x45	2400	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	2700	4500	4500	4500	4500	4500	4500	4500	4500	4500	3900
	3000	4500	4500	4500	4200	3600	4500	4500	4200	3600	3200
	3600	*2700*	*2700*	*2700*	*2700*	*1800*	*2700*	*2700*	*2700*	*1800*	*1800*
2/140x35	3000	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	3600	*4500*	*4500*	*4500*	*4500*	*3600*	*4500*	*4500*	*4500*	*3600*	*3600*
2/140x45	3600	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
170x35	2700	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	3000	4500	4500	4500	4500	4500	4500	4500	4500	4500	4200
	3600	*4500*	*4500*	*3600*	*2700*	*2700*	*4500*	*3600*	*3600*	*2700*	*2700*
170x45	3000	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	3600	*4500*	*4500*	*4500*	*4500*	*3600*	*4500*	*4500*	*4500*	*3600*	*3600*
2/170x35	*3600*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*
2/170x45	*3600*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*	*4500*

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud not notched
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Jamb Stud - single of upper load bearing walls
AS 4055 Classification C1-C3



EXAMPLE:

Sheet roof

Width of opening = 1800 mm

Jamb stud height = 2700 mm

Roof load width = 4100 mm

Enter table at 4500 mm roof load width, sheet roof column, read down to a width of opening of 1800 mm in a 2700 mm stud height row with a roof mass of 40 kg/m^2.

ADOPT:

Smart10 LVL - 2/90 x 45

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Size DxB (mm)	Stud height (mm)	Sheet roof					Tile roof				
		Width of opening (mm)					Width of opening (mm)				
2/70x45	2400	900	900	900	900	NS	900	900	900	NS	NS
90x45	2400	1200	1100	900	NS	NS	1200	1100	NS	NS	NS
2/90x35	2400	2200	2100	1800	1500	1400	2200	2100	1600	1400	1200
	2700	1400	1400	1300	1200	1000	1400	1400	1200	1000	NS
2/90x45	2400	3200	3000	2500	2000	1800	3200	3000	2200	1800	1700
	2700	2100	2100	1800	1500	1400	2100	2100	1600	1400	1300
	3000	1200	1200	1100	1000	1000	1200	1200	1100	1000	900
120x35	2400	2500	2000	1700	1500	1400	2500	2000	1600	1400	1200
	2700	1800	1400	1300	1200	900	1800	1400	1200	1000	NS
	3000	900	900	900	NS	NS	900	900	NS	NS	NS
120x45	2400	3600	2700	2300	2000	1800	3300	2700	2200	1800	1700
	2700	2400	2200	1800	1500	1400	2400	2000	1600	1400	1300
	3000	1500	1500	1300	1200	1000	1500	1400	1200	1000	900
2/120x35	2400	4500	4500	4200	3600	3000	4500	4500	3900	3300	2700
	2700	4500	3900	3300	2700	2300	4500	3600	3000	2500	2200
	3000	2700	2700	2500	2200	1800	2700	2700	2300	2000	1700
	3600	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*
2/120x45	2400	4500	4500	4500	4500	4000	4500	4500	4500	4500	3600
	2700	4500	4500	4200	3600	3200	4500	4500	4000	3400	2900
	3000	4000	4000	3300	2900	2600	4000	3900	3200	2700	2300
	3600	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*
140x35	2400	3900	3300	2700	2300	2000	3600	3000	2500	2200	1800
	2700	3000	2500	2000	1800	1600	2900	2300	1800	1700	1500
	3000	2100	1800	1500	1400	1200	2100	1800	1400	1300	1100
140x45	2400	4500	4200	3600	3000	2700	4500	4000	3300	2900	2500
	2700	4000	3300	2700	2300	2200	3900	3200	2500	2200	2000
	3000	3000	2500	2200	1800	1700	3000	2500	2000	1700	1600
	3600	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*	*900*
2/140x35	2400	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	2700	4500	4500	4500	4200	3600	4500	4500	4500	3900	3400
	3000	4500	4500	3900	3400	2900	4500	4500	3600	3200	2700
	3600	*1800*	*1800*	*1800*	*1800*	*1800*	*1800*	*1800*	*1800*	*1800*	*1800*
2/140x45	2700	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	3000	4500	4500	4500	4500	3900	4500	4500	4500	4200	3600
	3600	*2700*	*2700*	*2700*	*2700*	*1800*	*2700*	*2700*	*2700*	*2700*	*1800*

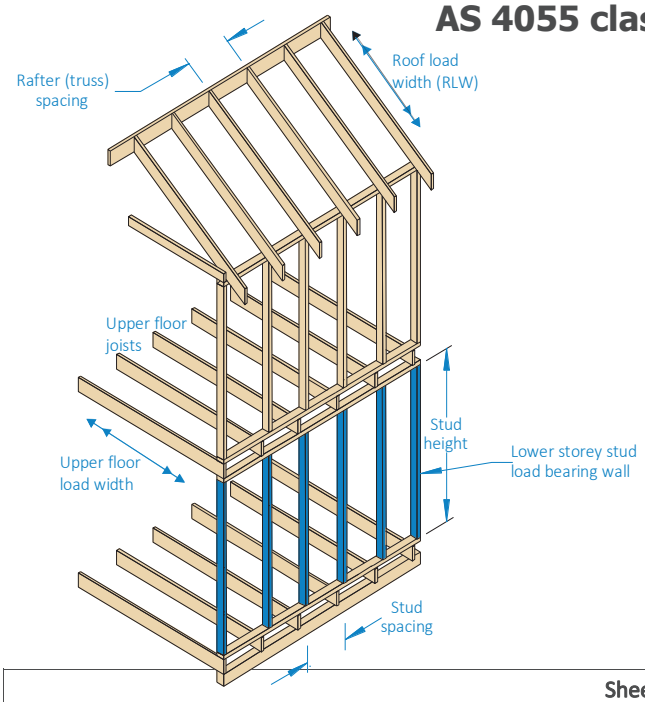
Jamb Stud—Single of upper load bearing walls
AS 4055 Classification N1-N4

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Size DxB (mm)	Stud height (mm)	Sheet roof					Tile roof				
		Width of opening (mm)					Width of opening (mm)				
170x35	2400	4500	4500	4200	3900	3400	4500	4500	4200	3600	3200
	2700	4500	4000	3400	3000	2700	4500	3900	3300	2900	2500
	3000	3900	3200	2700	2400	2200	3600	3200	2600	2300	2000
	3600	1800	1800	1800	900	900	1800	1800	900	900	900

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum wall mass of 37 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Stud not notched
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
6. If design stud length (not gable end walls) is > 3000 mm, as a minimum, the DTS provisions within AS 1684 for the racking force (clause 8.3.4), fixing of bottom plate (clause 8.3.6.10), uplift and shear force provisions (clause 9.7.6 and Table 9.2) need to be modified to allow for the extra wall height - See page 13
7. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Wall studs - lower storey load bearing walls - Non notched
AS 4055 classification N1 - N4



EXAMPLE:

Un - notched stud

Stud spacing = 450 mm

Floor joist spacing = 600 mm

Stud height = 3000 mm

Floor load width = 4100 mm

Roof load width = 7500 mm

Enter table at 450 mm stud spacing column, 600 mm joist spacing column, 4800 floor load width column, read down to a roof load width of 7500 mm in a 3000 mm stud height row.

ADOPT:

Smart10 LVL - 90x45

Sheet roof 40 kg/m^2													
Stud spacing (mm)		450						600					
Floor joist spacing (mm)		450			600			450			600		
Upper floor load width (mm)		1800	3600	4800	1800	3600	4800	1800	3600	4800	1800	3600	4800
Size DxB (mm)	Stud height (mm)	Roof load width (RLW) (mm)											
70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	6500	5500	6500	4500	3500	6500	4500	3500
	3000	6500	4500	3500	4500	2500	NS	NS	NS	NS	NS	NS	NS
70x45	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	5500	4500	NS	NS	NS	NS	NS	NS
2/70x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/70x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
170x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
Tiled roof 90 kg/m^2													
70x35	2400	7500	7500	7500	7500	7500	6500	7500	7500	6500	7500	7500	6500
	2700	7500	6500	5500	5500	4500	2500	4500	3500	2500	4500	3500	2500
	3000	4500	2500	2500	2500	1500	NS	NS	NS	NS	NS	NS	NS
70x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	6500	5500	7500	6500	5500	7500	6500	5500
	3000	7500	5500	4500	5500	3500	2500	NS	NS	NS	NS	NS	NS
2/70x35	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	7500	6500	7500	7500	6500
2/70x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500

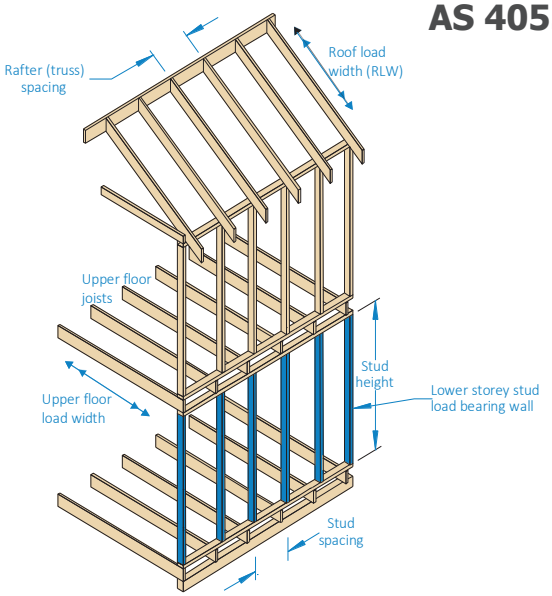
Wall studs - lower storey load bearing walls - Non notched
AS 4055 classification N1 - N4

Tile roof 90 kg/m^2													
Stud spacing (mm)		450						600					
Floor joist spacing (mm)		450			600			450			600		
Upper floor load width (mm)		1800	3600	4800	1800	3600	4800	1800	3600	4800	1800	3600	4800
Size DxB (mm)	Stud height (mm)	Roof load width (RLW) (mm)											
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
170x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500

NOTES :

1. D = member depth, B = member breadth, NS = not suitable.
2. Total upper floor mass of 40 kg/m^2, total wall mass of 37 kg/m^2, floor live load of 1.5 kPa.
3. Stud not notched. Maximum tension load in stud not to exceed 8.5 kN.
4. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
5. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering

Wall studs - lower storey load bearing walls - Non notched
AS 4055 classification C1 - C3



EXAMPLE:

Un - notched stud

Stud spacing = 450 mm

Floor joist spacing = 600 mm

Stud height = 3000 mm

Floor load width = 4100 mm

Roof load width =

Enter table at 450 mm stud spacing column, 600 mm joist spacing column, 4800 mm floor load width, read down to a roof load width of 7500 mm in a 3000 mm stud height row.

ADOPT:

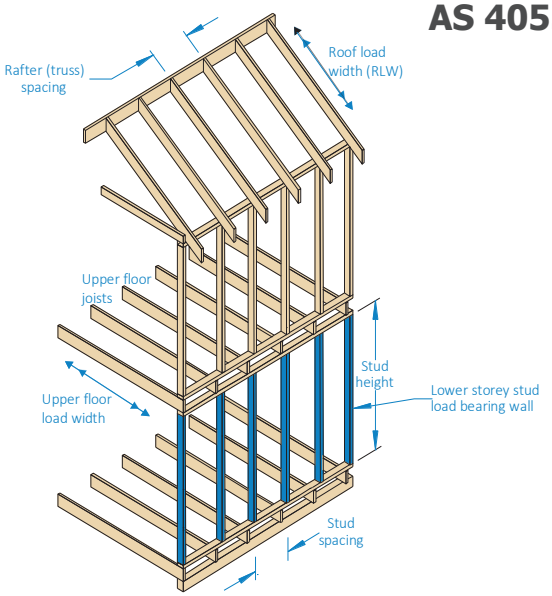
Smart10 LVL - 2/70 x 35

Sheet roof 40 kg/m^2													
Stud spacing (mm)		450						600					
Floor joist spacing (mm)		450			600			450			600		
Upper floor load width (mm)		1800	3600	4800	1800	3600	4800	1800	3600	4800	1800	3600	4800
Size DxB (mm)	Stud height (mm)	Roof load width (RLW) (mm)											
70x35	2400	7500	7500	6500	5500	4500	4500	3500	3500	2500	3500	3500	2500
	2700	3500	2500	1500	2500	1500	NS	NS	NS	NS	NS	NS	NS
70x45	2400	7500	7500	7500	7500	7500	7500	7500	6500	5500	7500	6500	5500
	2700	6500	5500	5500	4500	3500	3500	2500	2500	1500	2500	2500	1500
2/70x35	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	6500	5500	5500	5500	4500	3500	5500	4500	3500
2/70x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	6500	7500	7500	6500
	3000	7500	7500	6500	5500	4500	4500	3500	2500	1500	3500	2500	1500
90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	6500	5500	7500	6500	5500
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
170x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500

NOTES :

1. D = member depth, B = member breadth, NS = not suitable.
2. Total upper floor mass of 40 kg/m^2, total wall mass of 37 kg/m^2, floor live load of 1.5 kPa
3. Stud not notched. Maximum tension load in stud not to exceed 8.5 kN.
4. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
5. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering**

Wall studs - lower storey load bearing walls - Non notched
AS 4055 classification C1 - C3



EXAMPLE:

Un - notched stud

Stud spacing = 450 mm

Floor joist spacing = 600 mm

Stud height = 3000 mm

Floor load width = 4100 mm

Roof load width =

Enter table at 450 mm stud spacing column, 600 mm joist spacing column, 4800 mm floor load width, read down to a roof load width of 7500 mm in a 3000 mm stud height row.

ADOPT:

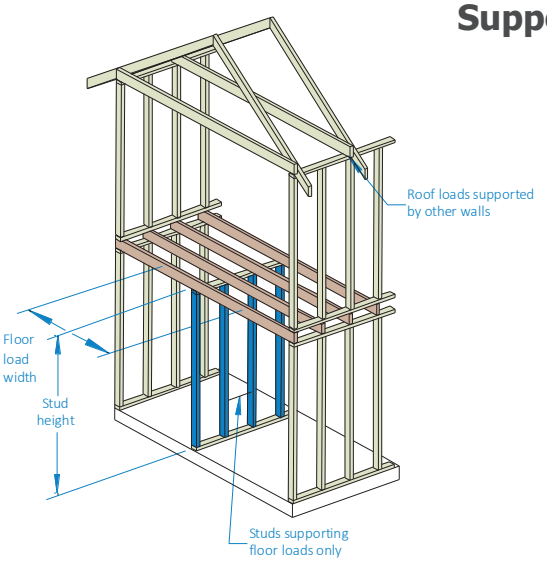
Smart10 LVL - 2/70 x 35

Tile roof 90 kg/m^2													
Stud spacing (mm)		450						600					
Floor joist spacing (mm)		450			600			450			600		
Upper floor load width (mm)		1800	3600	4800	1800	3600	4800	1800	3600	4800	1800	3600	4800
Size DxB (mm)	Stud height (mm)	Roof load width (RLW) (mm)											
70x35	2400	6500	5500	5500	4500	3500	3500	3500	2500	1500	3500	2500	1500
	2700	2500	1500	1500	1500	NS	NS	NS	NS	NS	NS	NS	NS
70x45	2400	7500	7500	7500	7500	6500	6500	5500	5500	4500	5500	5500	4500
	2700	5500	4500	4500	3500	3000	2500	2500	1500	NS	2500	1500	NS
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	6500	6500	7500	6500	6500
	3000	7500	6500	6500	5500	4500	3500	3500	3500	2500	3500	3500	2500
2/70x45	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	6500	6500	6500	5500	6500	6500	5500
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	6500	5500	5500	6500	5500	5500
	3000	6500	5500	5500	4500	3500	3500	2500	1500	1500	2500	1500	1500
90x45	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	6500	6500	5500	5500	4500	5500	5500	4500
2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/120x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/140x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
170x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500

NOTES :

1. D = member depth, B = member breadth, NS = not suitable.
2. Total upper floor mass of 40 kg/m^2, total wall mass of 37 kg/m^2, floor live load of 1.5 kPa
3. Stud not notched. Maximum tension load in stud not to exceed 8.5 kN.
4. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN.
5. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering**

Studs lower storey of two (2) storey walls
Supporting floor loads only



EXAMPLE:

Un - notched stud

Stud spacing = 450 mm

Floor joist spacing = 600 mm

Stud height = 2700 mm

Floor load width = 4100 mm

Enter table at 450 mm stud spacing column, 600 mm joist spacing column, read down to a floor load width of 4100 mm in a 2700 mm stud height row.

ADOPT:

Smart10 LVL - 70 x 35

Un-notched

Stud spacing (mm)		450		600	
Floor joist spacing (mm)		450	600	450	600
Size DxB (mm)	Stud height (mm)	Maximum recommended floor load width (mm)			
70x35	2400	8000	8000	8000	8000
70x45	2400	8000	8000	8000	8000
	2700	8000	8000	NS	NS
2/70x35	3000	8000	8000	8000	8000
2/70x45	3000	8000	8000	8000	8000
90x35	3000	8000	8000	8000	8000
90x45	3000	8000	8000	8000	8000
2/90x35	3000	8000	8000	8000	8000
2/90x45	3000	8000	8000	8000	8000
120x35	3000	8000	8000	8000	8000
120x45	3000	8000	8000	8000	8000
2/120x35	3000	8000	8000	8000	8000
2/120x45	3000	8000	8000	8000	8000
140x35	3000	8000	8000	8000	8000
140x45	3000	8000	8000	8000	8000
2/140x35	3000	8000	8000	8000	8000
2/140x45	3000	8000	8000	8000	8000
170x35	3000	8000	8000	8000	8000

20 mm notch

Stud spacing (mm)		450		600	
Floor joist spacing (mm)		450	600	450	600
Size DxB (mm)	Stud height (mm)	Maximum recommended floor load width (mm)			
70x35	2400	6000	6000	6000	6000
2/70x35	2700	6000	6000	6000	6000
	3000	6000	6000	NS	NS
70x45	2400	6000	6000	6000	6000
	2700	6000	4800	NS	NS
2/70x45	3000	6000	6000	6000	6000
90x35	3000	6000	6000	6000	6000
2/90x35	3000	6000	6000	6000	6000
90x45	3000	6000	6000	6000	6000

Studs lower storey of two (2) storey walls
Supporting floor loads only (Cont'd)

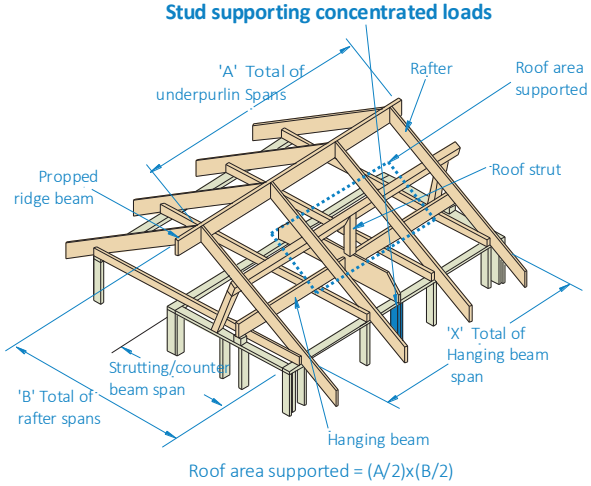
20 mm notch					
Stud spacing (mm)		450		600	
Floor joist spacing (mm)		450	600	450	600
Size DxB (mm)	Stud height (mm)	Maximum recommended floor load width (mm)			
2/90x45	3000	6000	6000	6000	6000
120x35	3000	6000	6000	6000	6000
2/120x35	3000	6000	6000	6000	6000
120x45	3000	6000	6000	6000	6000
2/120x45	3000	6000	6000	6000	6000
140x35	3000	6000	6000	6000	6000
2/140x35	3000	6000	6000	6000	6000
140x45	3000	6000	6000	6000	6000
2/140x45	3000	6000	6000	6000	6000
170x35	3000	6000	6000	6000	6000

NOTES :

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum upper floor mass of 40 kg/m^2, total wall mass of 15 kg/m^2, floor live load of 1.5 kPa
3. Multiple studs to be nail laminated as per AS 1684
4. Wall stud notched to a maximum depth of 20 mm.
5. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering

Studs supporting Concentrated roof loads
AS 4055 Wind classifications N1-N4 & C1-C3

Stud supporting concentrated loads



EXAMPLE:

Sheet roof

AS 4055 Classification N3

Jamb stud height = 2700 mm

Roof area = 12 m^2

Enter table N1-N3 wind classification, 2700 stud height, sheet roof column, read down to a roof area of 12

ADOPT:

Smart10 LVL - 90 x 35 or 2/70 x 35

AS 4055 Classification N1-N4								
Stud height (mm)	2400	2700	3000	3600	2400	2700	3000	3600
Member size (mm)	Roof area supported (m^2)							
	Sheet Roof				Tile Roof			
70x35	13	9	7	2	8	6	4	2
70x45	15	11	8	4	10	7	5	2
2/70x35	26	18	13	6	15	11	8	4
2/70x45	31	23	17	8	20	14	10	6
90x35	26	18	14	8	17	12	8	4
90x45	34	26	18	10	20	15	11	6
2/90x35	40	37	29	15	33	23	17	10
2/90x45	40	40	37	20	40	31	23	10
120x35	40	40	34	15	28	24	20	10
120x45	40	40	40	20	40	37	29	15
2/120x35	40	40	40	20	40	40	40	20
2/120x45	40	40	40	40	40	40	40	20
140x35	40	40	40	20	33	30	26	15
140x45	40	40	40	20	40	40	40	20
2/140x35	40	40	40	40	40	40	40	20
2/140x45	40	40	40	40	40	40	40	40
170x35	40	40	40	40	40	40	40	20

AS 4055 Classification C1-C3								
Stud height (mm)	2400	2700	3000	3600	2400	2700	3000	3600
Member size (mm)	Roof area supported (m^2)							
	Sheet Roof				Tile Roof			
70x35	7	5	4	2	6	4	3	NS
70x45	9	6	4	2	7	5	4	2
2/70x35	14	10	7	4	11	8	6	2
2/70x45	18	13	9	4	15	10	7	4
90x35	15	10	7	4	11	8	6	2
90x45	18	14	10	4	15	11	8	4

Studs supporting Concentrated roof loads
AS 4055 Wind classifications N1-N4 & C!-C3

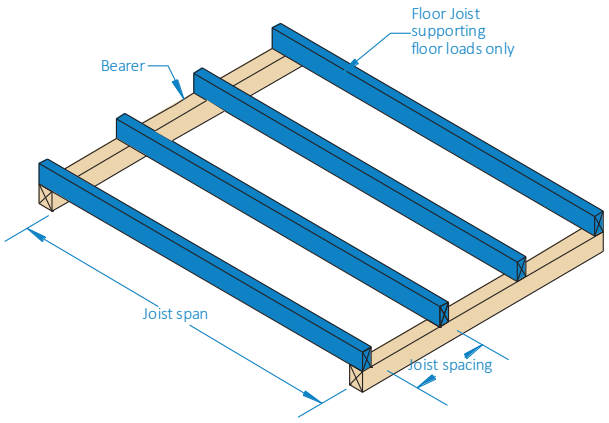
AS 4055 Classification C1-C3								
Stud height (mm)	2400	2700	3000	3600	2400	2700	3000	3600
Member size (mm)	Roof area supported (m^2)							
	Sheet Roof				Tile Roof			
2/90x35	30	20	15	8	23	17	13	6
2/90x45	37	29	20	10	31	23	15	8
120x35	27	23	18	10	24	20	15	8
120x45	40	34	26	10	32	25	18	10
2/120x35	40	40	37	20	40	40	31	15
2/120x45	40	40	40	20	40	40	37	20
140x35	31	28	25	15	28	25	21	10
140x45	40	40	37	20	40	40	31	15
2/140x35	40	40	40	20	40	40	40	20
2/140x45	40	40	40	40	40	40	40	20
170x35	35	31	28	20	32	29	26	20

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum sheet roof mass of 40 kg/m^2, tile roof mass of 90 kg/m^2
3. Multiple studs to be laminated as per AS 1684
4. Support crushing check is not considered, minimum of 2 studs under concentrated loads is highly recommended to avoid crushing of the bottom plates
5. Maximum tension load in stud not to exceed 8.5 kN. Where studs are nailed laminated the tension load in each stud shall not exceed 8.5 kN
6. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering**

Floor joists supporting floor loads only

Floor mass - 40 kg/m^2



EXAMPLE:

Domestic floor loads

Continuous span

Joist spacing = 450 mm

Joist span = 2000 mm

Enter continuous span table at 450 mm in joist spacing column, read down to a span equal to or greater than 2000 mm

ADOPT:

Smart10 LVL - 120x35

Loadings: permanent - self weight + 40 kg/m^2 + 0.5 kPa of the live load, live load - 1.5 kPa or floor point load of 1.8 kN

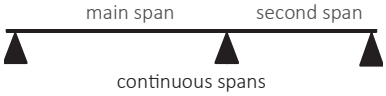
Joist spacing (mm)	300	450	600	300	450	600
Member size DxB (mm)	Maximum recommended span (mm)					
	Single span			Continuous span		
90x35	1400	1300	1300	1800	1600	1500
120x35	2400	2000	1800	3100	2300	2100
140x35	3000	2300	2200	3700	2800	2500
170x35	3800	2900	2700	4500	3500	3100
190x35	4200	3300	3000	4800	4100	3500
240x35	5000	4400	3900	5800	5200	4600
290x35	5700	5200	4800	6700	6000	5600
90x45	1700	1500	1500	2100	1800	1700
120x45	2700	2200	2000	3400	2600	2300
140x45	3500	2600	2400	4100	3100	2800
170x45	4100	3200	2900	4700	3900	3400
190x45	4400	3700	3300	5200	4500	3900
240x45	5300	4800	4300	6100	5600	5100
290x45	6100	5500	5100	7100	6400	6000
300x45	6300	5700	5300	7300	6600	6100

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. Spans are suitable for solid timber, particle board and ply flooring. floor sheeting glued and nailed to joists will improve floor rigidity. Where heavy overlay material is to be applied, such as a mortar bed tiled or slate floor, the permanent load allowance should be increased to 1.2 kPa. A reduction of joist spacing may be used to accommodate this extra permanent load. A satisfactory result can be achieved by adopting the maximum spans for 600 mm and 450 mm spacing but installing the joists at 450 and 300 mm spacing respectively
3. For beams which are continuous over two unequal spans, the design span and the 'resultant span description' depend upon the percentage span differences between the two spans as shown below

Span Difference %	Effective span	Resultant span Description
10% max	Main span	Continuous
10 - 30%	1.1 x Main span	Continuous
above 30%	Main span	Single

$$\text{span difference} = \frac{(\text{main span} - \text{second span})}{(\text{main span} + \text{second span})} \times 100$$

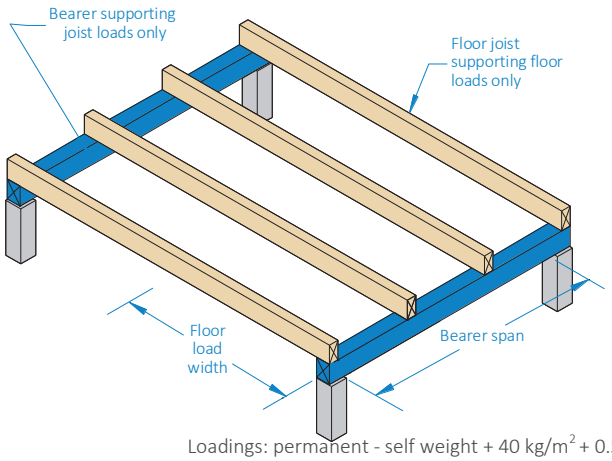


continuous spans

4. End bearing lengths = 42 mm at end supports and 58 mm at internal supports for continuous members
5. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

Floor bearers supporting floor loads only

Floor mass - 40 kg/m^2



EXAMPLE:

Domestic floor loads

Single span

Bearer span = 3000 mm

Floor load width = 4000 mm

Enter single span table at 4200 mm floor load width column and read down to a span equal to or greater than 3000 mm

ADOPT:

Smart10 LVL - 300x45

Loadings: permanent - self weight + 40 kg/m^2 + 0.5 kPa of the live load, live load - 1.5 kPa or floor point load of 1.8 kN

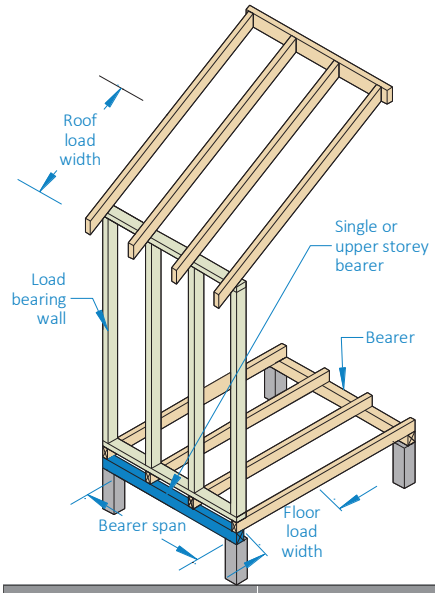
Floor load width (mm)	1200	1800	2400	3000	3600	4200	4800	5400	6000	6600
Size DxB (mm)	Maximum recommended bearer span (mm)									
	Single span									
120x45	1900	1700	1500	1400	1300	1200	1200	1100	1100	1000
140x45	2200	1900	1700	1600	1500	1400	1400	1300	1200	1200
170x45	2700	2400	2100	2000	1800	1700	1700	1600	1500	1500
190x45	3000	2600	2400	2200	2100	1900	1800	1800	1700	1600
240x45	3700	3300	3000	2800	2600	2500	2300	2200	2100	2000
290x45	4300	3900	3600	3400	3200	3000	2800	2700	2500	2400
300x45	4400	4000	3700	3500	3300	3100	2900	2800	2600	2500_{5}
2/90x45	1800	1600	1400	1300	1200	1100	1100	1000	1000	NS
2/120x45	2400	2100	1900	1700	1600	1500	1500	1400	1300	1300
2/140x45	2800	2400	2200	2000	1900	1800	1700	1600	1600	1500
2/170x45	3400	3000	2700	2500	2300	2200	2100	2000	1900	1800
2/190x45	3700	3300	3000	2800	2600	2500	2300	2200	2100	2100
2/240x45	4400	4000	3700	3500	3300	3100	3000	2800	2700	2600
2/290x45	5100	4600	4300	4000	3900	3700	3600	3400	3300	3200
2/300x45	5200	4700	4400	4200	4000	3800	3700	3500	3400	3300
Continuous span										
120x45	2400	2100	1800	1600	1500	1300	1200	1200	1100	1000
140x45	2800	2400	2100	1900	1700	1500	1400	1400	1300	1200
170x45	3300	2900	2500	2200	2000	1900	1700	1600	1500	1500_{5}
190x45	3600	3200	2800	2500	2200	2100	1900	1800_{5}	1700_{10}	1600_{15}
240x45	4300	3900	3400	3100	2800_{5}	2600_{15}	2400_{20}	2200_{30}	2100_{35}	2000_{50}
290x45	5000	4500	4100_{5}	3600_{15}	3300_{25}	3100_{35}	2800_{55}	2700_{70}	2500_{75}	2400_{85}
300x45	5100	4600	42005	3800_{20}	3400_{30}	3200_{45}	2900_{65}	2800_{75}	2600_{80}	2500_{90}
2/90x45	2200	2000	1800	1600	1500	1500	1400	1300	1300	1200
2/120x45	3000	2600	2400	2200	2100	2000	1900	1800	1700	1600
2/140x45	3400	3100	2800	2600	2400	2300	2200	2100	2000	1900
2/170x45	4000	3600	3300	3100	3000	2800	2600	2500	2300	2200
2/190x45	4300	3900	3600	3400	3300	3100	2900	2700	2600	2500
2/240x45	5200	4700	4300	4100	3900	3800	3600	3400	3200_{5}	3100_{10}
2/290x45	6000	5400	5000	4700	4500	4400	4200_{5}	4000_{15}	3800_{25}	3600_{30}
2/300x45	6100	5500	5100	4900	4600	4500	4300_{10}	4200_{20}	4000_{30}	3800_{35}

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based upon a maximum DL of 40 kg/m^2 + 0.5 kPa of LL, Floor live load of 1.5 kPa, floor point load of 1.8 kN
3. End bearing lengths = 42 mm at end supports and 58 mm at internal supports for continuous members. Subscript values indicate the minimum additional bearing length required to be greater at 42 mm end supports and 58 mm internal supports
4. Restraint values for slenderness calculation is 600 mm (floor joist at 600 mm centres Max)
5. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering**

Floor bearers supporting single storey load bearing wall - sheet and tiled roof

Floor mass - 40 kg/m^2



EXAMPLE:

sheet roof - 40 kg/m^2

roof load width = 1950 mm

bearer span = 2500 mm (single span)

floor load width = 2200 mm

Enter single span table at 2400 mm in floor load width column, 4500 roof load width column, read down to a span equal to or greater than 2500 mm in the 40 kg/m^2 row.

ADOPT:

Smart10 LVL —290x45

Floor load width (mm)		1200			2400			4800		
Roof load width (mm)		1500	4500	7500	1500	4500	7500	1500	4500	7500
Member size DxB (mm)	Roof mass (kg/m^2)	Maximum recommended single span floor bearer supporting single storey load bearing wall span (mm)								
140x45	40	1600	1400	1200	1500	1300	1200	1200	1100	1100
	90	1500	1200	1100	1400	1200	1000	1200	1000	NS
170x45	40	2000	1700	1500	1800	1600	1400	1500	1400	1300
	90	1800	1500	1300	1700	1400	1200	1400	1300	1200
190x45	40	2200	1900	1700	2000	1800	1600	1700	1600	1400
	90	2100	1700	1500	1900	1600	1400	1600	1400	1300
240x45	40	2800	2400	2200	2500	2300	2000	2100	2000	1800
	90	2600	2100	1800	2400	2000	1800	2100	1800	1700
290x45	40	3400	3000	2600	3100	2700	2500	2600	2400	2200
	90	3200	2600	2200	2900	2400	2200	2500	2200	2000_{5}
300x45	40	3600	3100	2700	3200	2800	2600	2700	2500	2300
	90	3300	2700	2300	3000	2500	2200	2600	2300	2100_{10}
2/140x45	40	2100	1800	1600	1800	1600	1500	1600	1400	1300
	90	1900	1500	1300	1700	1500	1300	1500	1300	1200
2/170x45	40	2500	2200	1900	2200	2000	1800	1900	1800	1600
	90	2300	1900	1600	2100	1800	1600	1800	1600	1500
2/190x45	40	2800	2400	2200	2500	2200	2000	2100	2000	1800
	90	2600	2100	1800	2400	2000	1800	2000	1800	1600
2/240x45	40	3600	3100	2700	3200	2800	2600	2700	2500	2300
	90	3300	2700	2300	3000	2500	2200	2600	2300	2100
2/290x45	40	4100	3700	3300	3800	3400	3100	3300	3000	2800
	90	3900	3200	2800	3600	3100	2700	3100	2800	2500
2/300x45	40	4200	3800	3400	3900	3600	3200	3400	3100	2900
	90	4000	3400	2900	3700	3200	2800	3200	2900	2600
	Maximum recommended single span floor bearer supporting single storey load bearing wall span (mm)									
140x45	40	2200	1900	1600	1800	1700	1500	1300	1300	1200
	90	2100	1600	1300	1700	1500	1200	1300	1200	1100
170x45	40	2700	2400	2000	2200	2000	1800	1600	1500	1400_{5}
	90	2500	1900	1600	2100	1700	15005	1600	1400_{10}	1300_{20}
190x45	40	3100	2600	2200	2400	2200	2000	1800_{5}	1700_{10}	1600_{20}
	90	2800	2100	1700_{10}	2300	1900	1600_{15}	1700_{10}	1600_{20}	1400_{30}
240x45	40	3800	3200	2700_{10}	3000	2700_{5}	2500_{20}	2200_{30}	2100_{40}	2000_{55}
	90	3600	2600_{15}	2100_{40}	2900_{5}	2400_{20}	2000_{50}	2200_{35}	2000_{60}	1800_{75}
290x45	40	4400	3800_{5}	3200_{30}	3600_{15}	3300_{30}	2900_{45}	2700_{70}	2500_{75}	2400_{90}
	90	4100	3100_{30}	2600_{75}	3400_{20}	2900_{50}	2400_{85}	2600_{70}	2300_{90}	2100_{105}
300x45	40	4500	4000_{10}	3300_{35}	3700_{20}	3400_{30}	3000_{55}	2800_{75}	2600_{80}	2400_{95}
	90	4200	3300_{40}	2600_{80}	3500_{25}	3000_{65}	2500_{90}	2700_{80}	2400_{95}	2200_{110}

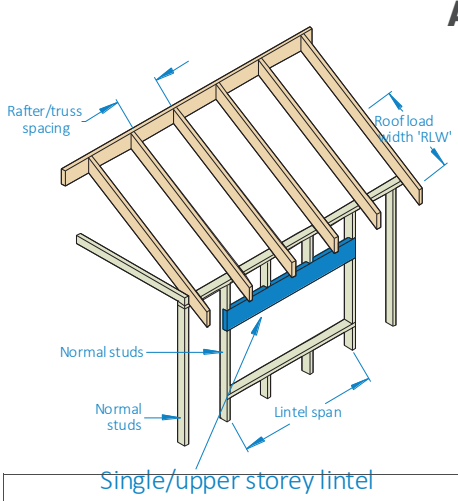
Floor bearers supporting single storey load bearing wall - sheet and tiled roof (cont'd)

Floor load width (mm)		1200			2400			4800		
Roof load width (mm)		1500	4500	7500	1500	4500	7500	1500	4500	7500
Member size DxB (mm)	Roof mass (kg/m^2)	Maximum recommended single span floor bearer supporting single storey load bearing wall span (mm)								
2/140x45	40	2800	2400	2200	2500	2200	2000	2100	1900	1800
	90	2600	2100	1800	2400	2000	1800	2000	1800	1600
2/170x45	40	3400	3000	2600	3100	2700	2500	2500	2300	2200
	90	3200	2600	2200	2900	2400	2200	2400	2200	2000
2/190x45	40	3800	3300	2900	3400	3100	2800	2700	2600	2400
	90	3600	2900	2500	3200	2700	2400	2600	2400	2200
2/240x45	40	4500	4000	3700	4100	3800	3500	3400	3200_{5}	3000_{10}
	90	4200	3600	3200	3900	3500	3100_{10}	3300	3000_{10}	2700_{20}
2/290x45	40	5200	4600	4200	4700	4400	4100	4000_{20}	3800_{25}	3600_{30}
	90	4900	4200	3800_{20}	4500	4000_{5}	3600_{30}	3900_{20}	3500_{35}	3200_{55}
2/300x45	40	5300	4800	4400	4900	4500	4200	4200_{20}	3900_{30}	3700_{35}
	90	5000	4300	3900_{25}	4700	4100_{5}	3800_{35}	4000_{25}	3700_{40}	3300_{65}

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on total ground floor mass of 40 kg/m^2 + 0.5 kPa of LL, wall mass of 37 kg/m^2, floor live load of 1.5 kPa, floor point load of 1.8 kN
3. The above table was based on a wall height of 2700 mm
4. End bearing lengths = 70 mm at end supports and 70 mm at internal supports for continuous members. Subscript values indicate the minimum additional bearing length where required to be greater than 70 mm at end supports and 70 mm at internal supports.
5. Restraint value for slenderness calculations is 600 mm
6. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering**

Single span lintels in single/upper storey walls
AS 4055 classification N1-N4



EXAMPLE:

wind speed = N3

sheet roof - 40 kg/m^2

rafter/truss spacing = 600 mm

lintel span = 1300 mm

roof load width = 3900 mm

Enter span table at 4500 roof load width column, rafter/truss spacing 600 mm, and read down to a span equal to or greater than 1300 mm in the 40 kg/m^2 row

ADOPT:

Smart10 LVL - 120 x 35

Wind classification N1-N4

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Size DxB (mm)	Roof mass (kg/m^2)	Maximum recommended lintel span (mm)									
90x35	40	1500	1400	1200	NS	1000	NS	NS	NS	NS	NS
	90	1200	1000	NS	NS	NS	NS	NS	NS	NS	NS
120x35	40	2100	2100	1600	1500	1400	1100	1200	NS	1100	NS
	90	1600	1500	1300	1100	1100	NS	NS	NS	NS	NS
120x35	40	2100	2100	1600	1500	1400	1100	1200	NS	1100	NS
	90	1600	1500	1300	1100	1100	NS	NS	NS	NS	NS
140x35	40	2400	2500	1900	1900	1600	1500	14005	1100	1300_{10}	NS
	90	1900	1900	1500	1300	1300	1100	1100	NS	1000_{5}	NS
170x35	40	3000	3000	2300	2300	2000	2000_{5}	1700	1600_{10}	1600_{10}	1300_{10}
	90	2300	2300	1800	1800	1500	1400_{15}	1400_{10}	1200_{10}	1300_{20}	1000_{20}
2/90x35	40	2000	2000	1500	1400	1300	1100	1200	1000	1000	NS
	90	1500	1400	1200	1000	1000	NS	NS	NS	NS	NS
2/120x35	40	2600	2700	2000	2000	1700	1700	1500	1500	1400	1300
	90	2000	2000	1600	1500	1400	1200	1200	1000	1100	NS
2/120x35	40	2600	2700	2000	2000	1700	1700	1500	1500	1400	1300
	90	2000	2000	1600	1500	1400	1200	1200	1000	1100	NS
2/140x35	40	3000	3000	2400	2400	2100	2000	1800	1800	1600	1600
	90	2400	2400	1900	1900	1600	1500	1400	1300	1300	1200
2/170x35	40	3500	3500	2900	2900	2500	2500	2200	2200	2000	2000
	90	2900	2900	2300	2300	2000	1900	1800	1700	1600	1500_{5}
90x45	40	1700	1600	1300	1100	1100	NS	1000	NS	NS	NS
	90	1300	1100	1000	NS	NS	NS	NS	NS	NS	NS
120x45	40	2300	2300	1700	1700	1500	1400	1400	1000	1200	NS
	90	1700	1700	1400	1200	1200	1000	1000	NS	NS	NS
120x45	40	2300	2300	1700	1700	1500	1400	1400	1000	1200	NS
	90	1700	1700	1400	1200	1200	1000	1000	NS	NS	NS
140x45	40	2700	2700	2100	2000	1800	1700	1600	1400_{5}	1400_{5}	1100
	90	2100	2000	1600	1500	1400	1200	1200	11005	1100	NS
170x45	40	3200	3100	2500	2600	2200	2100	1900	1900_{5}	1700	1600_{10}
	90	2500	2600	2000	1900	1700	1600	1500_{5}	1400_{5}	1400_{10}	1200_{10}
190x45	40	3400	3400	2800	2800	2400	2400_{5}	2100_{5}	2100_{5}	1900_{5}	1900_{15}
	90	2800	2800	2200	2200	1900	1900	1700	1700_{15}	1600_{15}	1500_{30}
240x45	40	4100	4100	3400	3400	3000	3000_{5}	2700_{10}	2700_{25}	2500_{20}	2500_{30}
	90	3400	3400	2800	2800_{5}	2400_{10}	2400_{15}	2200_{20}	2100_{15}	2000_{10}	2000_{25}
290x45	40	4700	4700	3900	3900	3500_{10}	3500_{10}	3200_{10}	3200_{20}	3000_{25}	3000_{35}
	90	3900	3900	3300	3200	2900_{15}	2900_{20}	2600_{25}	2600_{35}	2400_{35}	2400_{50}
300x45	40	4800	4800	4000	4000	3600_{10}	3600_{10}	3300_{10}	3300_{20}	3100_{25}	3000_{40}
	90	4000	4000	3400	3300	3000_{10}	3000_{20}	2700_{25}	2800_{25}	2500_{25}	2500_{50}

Single span lintels in single/upper storey walls (cont'd)
AS 4055 classification N1-N4

Wind classification N1-N4											
Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Size DxB (mm)	Roof mass (kg/m^2)	Maximum recommended lintel span (mm)									
2/90x45	40	2100	2100	1600	1600	1400	1300	1300	1100	1100	1000
	90	1600	1600	1300	1100	1100	NS	1000	NS	NS	NS
2/120x45	40	2800	2800	2200	2200	1900	1900	1700	1600	1500	1500
	90	2200	2200	1700	1700	1500	1400	1400	1200	1200	1000
2/120x45	40	2800	2800	2200	2200	1900	1900	1700	1600	1500	1500
	90	2200	2200	1700	1700	1500	1400	1400	1200	1200	1000
2/140x45	40	3200	3200	2600	2600	2200	2200	2000	2000	1800	1800
	90	2600	2600	2000	2000	1700	1700	1600	1500	1400	1300
2/170x45	40	3700	3700	3100	3100	2700	2700	2400	2400	2200	2200
	90	3100	3100	2500	2500	2100	2100	1900	1900	1800	1700
2/190x45	40	4000	4000	3400	3300	3000	3000	2700	2700	2500	2500
	90	3400	3300	2800	2800	2400	2400	2200	2100	2000	1900
2/240x45	40	4800	4700	4000	4000	3600	3600	3300	3300	3100	3100
	90	4000	4000	3400	3300	3000	3000	2700	2800_{5}	2500	2500_{10}
2/290x45	40	5400	5400	4600	4600	4100	4100	3800	3800	3600_{5}	3500_{5}
	90	4600	4600	3900	3900	3500	3500	3200	3200	3000_{5}	3000_{10}
2/300x45	40	5600	5600	4700	4700	4200	4200	3900	3900	3800_{5}	3800_{5}
	90	4700	4700	4000	4000	3600	3500	3300	3300	3100_{5}	3100_{10}

Single span lintels in single/upper storey walls
AS 4055 classification C1-C3

Wind classification C1-C3											
Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Size DxB (mm)	Roof Mass (kg/m^2)	Maximum recommended lintel span (mm)									
90x35	40	1300	NS	NS	NS	NS	NS	NS	NS	NS	NS
	90	1200	NS	NS	NS	NS	NS	NS	NS	NS	NS
120x35	40	1800	1500	1200	NS	NS	NS	NS	NS	NS	NS
	90	1600	1500	1300	NS	NS	NS	NS	NS	NS	NS
120x35	40	1800	1500	1200	NS	NS	NS	NS	NS	NS	NS
	90	1600	1500	1300	NS	NS	NS	NS	NS	NS	NS
140x35	40	2100	2000	1400	1000	1200_{10}	NS	NS	NS	NS	NS
	90	1900	1900	1400_{5}	1000_{5}	1200_{20}	NS	NS	NS	NS	NS
170x35	40	2600	2600	1800	1500_{15}	1400_{20}	NS	1300_{30}	NS	NS	NS
	90	2300	2300	1800_{5}	1500_{20}	1400_{30}	1000_{20}	1300_{40}	NS	NS	NS
2/90x35	40	1900	1900	1400	NS	1100	NS	NS	NS	NS	NS
	90	1500	1400	1200	1000	1000	NS	NS	NS	NS	NS
2/120x35	40	2600	2700	1900	1700	1500	1100	1300	NS	1200_{5}	NS
	90	2000	2000	1600	1500	1400	1100	1200	NS	1100	NS
2/120x35	40	2600	2700	1900	1700	1500	1100	1300	NS	1200_{5}	NS
	90	2000	2000	1600	1500	1400	1100	1200	NS	1100	NS
2/140x35	40	3000	3000	2300	2200	1800	1500	1500	1100	1400_{10}	NS
	90	2400	2400	1900	1900	1600	1500_{5}	1400_{5}	1100_{5}	1300_{10}	NS
2/170x35	40	3500	3500	2800	2700	2300	2200_{5}	1900	1700_{10}	1700_{5}	1400_{10}
	90	2900	2900	2300	2300	2000	1900_{5}	1800_{5}	1700_{15}	1600_{15}	1300_{15}

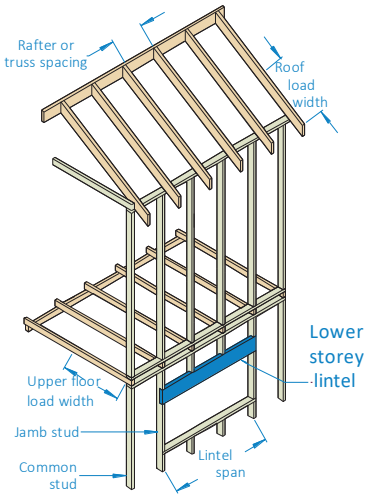
Single span lintels in single/upper storey walls
AS 4055 classification C1-C3

Wind classification C1-C3											
Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Size DxB (mm)	Roof Mass (kg/m^2)	Maximum recommended lintel span (mm)									
90x45	40	1500	1000	1000	NS	NS	NS	NS	NS	NS	NS
	90	1300	1100	1000	NS	NS	NS	NS	NS	NS	NS
120x45	40	2000	1900	1400	NS	1100	NS	NS	NS	NS	NS
	90	1700	1700	1400	1000	1100	NS	NS	NS	NS	NS
120x45	40	2000	1900	1400	NS	1100	NS	NS	NS	NS	NS
	90	1700	1700	1400	1000	1100	NS	NS	NS	NS	NS
140x45	40	2400	2300	1600	1300	1300	NS	1200_{15}	NS	NS	NS
	90	2100	2000	1600	1300	1300_{10}	NS	1200_{20}	NS	NS	NS
170x45	40	3000	2900	2100	1900	1600_{5}	1300_{5}	1400_{20}	NS	1300_{25}	NS
	90	2500	2600	2000	1900_{10}	1600_{10}	1300_{10}	1400_{20}	NS	1300_{35}	NS
190x45	40	3300	3200	2400_{5}	2200_{5}	1800_{5}	1600_{20}	1600_{20}	1200_{15}	1400_{25}	NS
	90	2800	2800	2200_{5}	2200_{10}	1800_{10}	1600_{25}	1600_{30}	1200_{25}	1400_{35}	NS
240x45	40	4100	4100	3000_{10}	2900_{15}	2400_{25}	2300_{25}	2100_{20}	1900_{30}	1800_{30}	1500_{30}
	90	3400	3400	2800_{15}	2800_{30}	2400_{35}	2300_{30}	2000_{25}	1900_{40}	1800_{40}	1500_{40}
290x45	40	4700	4700	3600_{20}	3500_{15}	2900_{30}	2800_{50}	2600_{45}	2500_{60}	2300_{60}	2000_{50}
	90	3900	3900	3300_{15}	3200_{20}	2900_{45}	2800_{50}	2500_{60}	2400_{75}	2200_{75}	2200_{65}
300x45	40	4800	4800_{5}	3400_{10}	3200_{15}	2700_{25}	2700_{40}	2400_{45}	2300_{35}	2100_{30}	2100_{50}
	90	4700	4700	4000	4000	3600_{15}	3500_{10}	3300_{15}	3300_{15}	3100_{30}	3100_{40}
2/90x45	40	2100	2100	1600	1200	1300	NS	1100	NS	NS	NS
	90	1600	1600	1300	1100	1100	NS	1000	NS	NS	NS
2/120x45	40	2800	2800	2200	2100	1700	1400	1500	1100	1400	NS
	90	2200	2200	1700	1700	1500	1400	1400	1100	1200	NS
2/120x45	40	2800	2800	2200	2100	1700	1400	1500	1100	1400	NS
	90	2200	2200	1700	1700	1500	1400	1400	1100	1200	NS
2/140x45	40	3200	3200	2600	2600	2100	2000	1800	1500	1600	1200
	90	2600	2600	2000	2000	1700	1700	1600	1500_{5}	1400_{5}	1200_{5}
2/170x45	40	3700	3700	3100	3000	2600	2500_{5}	2300	2100_{5}	2000	1800_{10}
	90	3100	3100	2500	2500	2100	2100	1900	1900_{5}	1800_{5}	1700_{15}
2/190x45	40	4000	4000	3400	3300	2900	2800_{5}	2500_{5}	2400_{15}	2300_{10}	2100_{15}
	90	3400	3300	2800	2800	2400	2400_{10}	2200_{5}	2100_{10}	2000_{5}	1900_{20}
2/240x45	40	4800	4700	4000	4000	3600_{10}	3500_{5}	3200_{10}	3100_{15}	2800_{20}	2800_{35}
	90	4000	4000	3400	3300	3000	3000_{10}	2700_{20}	2800_{30}	2500_{25}	2500_{35}
2/290x45	40	5400	5400	4600	4600	4100_{10}	4100_{20}	3800_{25}	3700_{20}	3500_{35}	3300_{30}
	90	4600	4600	3900	3900	3500_{15}	3500_{10}	3200_{15}	3200_{25}	3000_{30}	3000_{40}
2/300x45	40	5600	5600	4700_{5}	4700	4200_{10}	4200_{15}	3900_{25}	3900_{20}	3600_{30}	3400_{30}
	90	4700	4700	4000	4000	3600_{15}	3500_{10}	3300_{15}	3300_{25}	3100_{30}	3100_{40}

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. Minimum bearing length = 35 mm at end supports. Subscript values indicate the minimum additional bearing length where required to be greater than 35 mm.
3. Restraint value for slenderness calculations is 600 mm.
4. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering

Single span lintels in lower storey walls
AS 4055 classification up to C3



EXAMPLE:

wind speed = N3

sheet roof - 40 kg/m^2

rafter/truss spacing = 600 mm

lintel span = 1100 mm

roof load width = 3900 mm

floor load width = 1200 mm

Enter span table at 4500 roof load width column, floor load width 1200 mm, and read down to a span equal to or greater than 1100 mm in the 40 kg/m^2 row

ADOPT:

Smart10 LVL -2/90 x 45 or 120 x 35

Roof load width (mm)		1500			3000			4500			6000		
Upper floor load width (mm)		1200	2400	3600	1200	2400	3600	1200	2400	3600	1200	2400	3600
Size DxB (mm)	Roof mass (kg/m^2)	Maximum recommended lintel span (mm)											
120x35	40	1300	1100	1100	1200	1100	1000	1100	1100	1000	1100	1000	NS
	90	1200	1100	1000	1100	1000	NS	1000	NS	NS	NS	NS	NS
140x35	40	1500	1300	1200	1400	1300	1200	1300	1200	1200	1300	1200	1100
	90	1400	1300	1200	1300	1200	1100	1200	1100	1000_{5}	1100	1000_{5}	1000_{5}
170x35	40	1800	1600	1500_{5}	1700	1600	1500_{5}	1600	1500	1400_{5}	1600	1500	1400_{5}
	90	1700	1600	1400_{5}	1500	1400	1400_{5}	1400	1400_{5}	1300_{10}	1300_{10}	1300_{10}	1200_{15}
190x35	40	2100	1800	1700_{5}	1900	1800	1600_{10}	1800	1700	1600_{10}	1800	1600_{5}	1500_{10}
	90	1900	1800	1600_{10}	1700	1600_{5}	1500_{10}	1600_{5}	1500_{10}	1400_{15}	1500_{10}	1400_{15}	1400_{20}
240x35	40	2600	2300_{10}	2200_{20}	2500	2200_{10}	2100_{20}	2300_{5}	2200_{10}	2000_{20}	2200_{10}	2100_{15}	2000_{20}
	90	2400_{5}	2200_{10}	2100_{20}	2200_{10}	2100_{15}	1900_{25}	2000_{20}	1900_{25}	1800_{30}	1900_{25}	1800_{30}	1700_{35}
290x35	40	3100_{5}	2800_{15}	2600_{30}	3000_{10}	2700_{15}	2500_{30}	2800_{15}	2600_{20}	2400_{30}	2700_{15}	2500_{25}	2400_{35}
	90	2900_{10}	2700_{20}	2500_{30}	2700_{20}	2500_{25}	2300_{35}	2500_{25}	2300_{35}	2200_{40}	2300_{35}	2200_{40}	2100_{50}
2/90x35	40	1200	1100	1000	1100	1000	NS	1100	1000	NS	1000	1000	NS
	90	1100	1000	NS	1000	NS	NS	NS	NS	NS	NS	NS	NS
2/120x35	40	1600	1500	1300	1500	1400	1300	1500	1300	1300	1400	1300	1200
	90	1500	1400	1300	1400	1300	1200	1300	1200	1100	1200	1100	1100
2/140x35	40	1900	1700	1600	1800	1600	1500	1700	1600	1500	1600	1500	1400
	90	1800	1600	1500	1600	1500	1400	1500	1400	1300	1400	1300	1300
2/170x35	40	2300	2100	1900	2200	2000	1800	2100	1900	1800	2000	1900	1700
	90	2200	2000	1800	2000	1800	1700	1800	1700	1600	1700	1600	1600
2/190x35	40	2600	2300	2100	2400	2200	2100	2300	2200	2000	2200	2100	2000
	90	2400	2200	2100	2200	2000	1900	2000	1900	1800	1900	1800	1700
2/240x35	40	3200	3000	2700	3100	2800	2600	3000	2700	2500	2800	2600	2500
	90	3000	2800	2600	2800	2600	24005	2600	24005	23005	24005	2300_{5}	2200_{10}
2/290x35	40	3700	3400	3200_{5}	3500	3300	3100_{5}	3400	3200	3100_{10}	3300	3100_{5}	3000_{10}
	90	3500	3300	3100_{5}	3300	3100_{5}	3000_{10}	3100_{5}	3000_{10}	2800_{15}	2900_{10}	2800_{15}	2700_{20}
120x45	40	1400	1300	1100	1300	1200	1100	1300	1200	1100	1200	1100	1000
	90	1300	1200	1100	1200	1100	1000	1100	1000	1000	1000	1000	NS
140x45	40	1600	1500	1300	1500	1400	1300	1500	1400	1300	1400	1300	1200
	90	1500	1400	1300	1400	1300	1200	1300	1200	1100	1200	1100	1100
170x45	40	2000	1800	1600	1900	1700	1600	1800	1700	1500	1700	1600	1500
	90	1900	1700	1600	1700	1600	1500	1600	1500	1400_{5}	1500	1400_{5}	1300_{5}
190x45	40	2200	2000	1800	2100	1900	1800	2000	1900	1700_{5}	1900	1800	1700_{5}
	90	2100	1900	1800	1900	1800	1700_{5}	1700	1700_{5}	1600_{10}	1600_{5}	1600_{10}	1500_{10}
240x45	40	2800	2500	2300_{10}	2700	2400_{5}	2300_{10}	2500	2400_{5}	2200_{10}	2400_{5}	2300_{5}	2100_{15}
	90	2600	2400_{5}	2200_{10}	2400_{5}	2200_{10}	2100_{15}	2200_{10}	2100_{15}	2000_{20}	2100_{15}	2000_{20}	1900_{25}

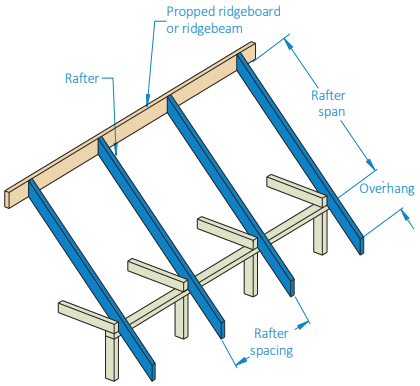
Single span lintels in lower storey walls
AS 4055 classification up to C3

Roof load width (mm)		1500			3000			4500			6000		
Upper floor load width (mm)		1200	2400	3600	1200	2400	3600	1200	2400	3600	1200	2400	3600
Size DxB (mm)	Roof mass (kg/m^2)	Maximum recommended lintel span (mm)											
290x45	40	3300	3100_{10}	2800_{20}	3200	3000_{10}	2700_{20}	3100_{5}	2800_{15}	2700_{20}	3000_{10}	2800_{15}	2600_{25}
	90	3100_{5}	2900_{10}	2700_{20}	2900_{10}	2700_{15}	2600_{25}	2700_{20}	2500_{25}	2400_{30}	2500_{25}	2400_{30}	2300_{35}
300x45	40	3400	3100_{10}	2900_{20}	3200_{5}	3000_{10}	2800_{25}	3100_{5}	2900_{15}	2800_{25}	3000_{10}	2900_{20}	2700_{25}
	90	3200_{5}	3000_{10}	2800_{20}	3000_{15}	2800_{20}	2600_{25}	2800_{20}	2600_{25}	2500_{30}	2600_{25}	2500_{30}	2400_{40}
2/90x45	40	1300	1200	1100	1200	1100	1000	1200	1100	1000	1100	1000	1000
	90	1200	1100	1000	1100	1000	1000	1000	1000	NS	NS	NS	NS
2/120x45	40	1800	1600	1500	1700	1500	1400	1600	1500	1400	1500	1400	1300
	90	1600	1500	1400	1500	1400	1300	1400	1300	1200	1300	1200	1200
2/140x45	40	2100	1900	1700	2000	1800	1700	1900	1700	1600	1800	1700	1600
	90	1900	1800	1600	1700	1600	1500	1600	1500	1500	1500	1400	1400
2/170x45	40	2500	2300	2100	2400	2200	2000	2300	2100	2000	2200	2000	1900
	90	2300	2100	2000	2100	2000	1900	2000	1900	1800	1900	1800	1700
2/190x45	40	2800	2500	2300	2700	2400	2300	2500	2300	2200	2400	2300	2100
	90	2600	2400	2200	2400	2200	2100	2200	2100	2000	2100	2000	1900
2/240x45	40	3400	3100	3000	3300	3000	2900	3100	3000	2800	3000	2900	2700
	90	3200	3000	2800	3000	2800	2700	2800	2700	2500	2600	2500	2400_{5}
2/290x45	40	3900	3600	3400	3800	3500	3300	3600	3400	3200	3500	3300	3200
	90	3700	3500	3300	3500	3300	3200_{5}	3300	3100_{5}	3000_{5}	3100_{5}	3000_{10}	2900_{10}
2/300x45	40	4000	3700	3500	3800	3600	3400	3700	3500	3300	3600	3400	3300
	90	3800	3600	3400	3600	3400	32005	3400	3200_{5}	3100_{10}	3200_{5}	3100_{10}	3000_{10}

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. Minimum bearing length = 35 mm at end supports. Subscript values indicate the minimum additional bearing length where required to be greater than 35 mm.
3. Restraint value for slenderness calculations is 600 mm.
4. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Single/continuous span roof rafter - with ceiling attached
AS 4055 classification N1-N3



Maximum Birdsmouth = 30% of rafter depth

EXAMPLE:

wind speed = N3

sheet roof - 40 kg/m^2

rafter/truss spacing = 600 mm

rafter span = 3000 mm (single span)

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 3000 mm in the 40 kg/m^2 row

ADOPT:

Smart10 LVL - 140 x 35

Rafter spacing (mm)		450		600		900		1200		450		600		900		1200	
Size DxB (mm)	Roof & ceiling mass (kg/m^2)	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
90x35	30	2600	450	2400	350	2100	300	1900	250	3100	450	3000	350	2800	300	2400	250
	40	2400	450	2200	350	1900	300	1700	250	3100	450	2900	350	2600	300	2300	250
	75	1900	400	1800	350	1500	250	1400	250	2600	400	2400	350	2100	250	1900	250
	90	1800	400	1700	300	1500	250	1300	250	2500	400	2200	300	2000	250	1800	250
120x35	30	3400	950	3100	700	2800	550	2500	450	4600	950	4200	700	3700	550	3300	450
	40	3100	900	2900	700	2500	500	2300	450	4200	900	3900	700	3400	500	3100	450
	75	2600	750	2400	600	2100	450	1900	400	3500	750	3200	600	2800	450	2500	400
	90	2400	700	2200	600	1900	450	1800	400	3300	700	3000	600	2600	450	2400	400
140x35	30	4000	1150	3600	1000	3200	750	3000	650	5300	1150	4900	1000	4300	750	3900	650
	40	3600	1000	3300	950	3000	700	2700	600	4900	1100	4500	950	4000	700	3600	600
	75	3000	900	2800	800	2400	650	2200	550	4100	1000	3700	800	3300	650	3000	550
	90	2800	800	2600	700	2300	600	2100	500	3800	950	3500	800	3100	600	2800	500
170x35	30	4800	1400	4400	1300	3900	1000	3600	950	6300	1500	5900	1350	5300	1000	4800	950
	40	4400	1300	4000	1200	3600	1000	3300	900	5900	1500	5400	1250	4800	1000	4400	900
	75	3700	1100	3300	900	2900	850	2700	750	4900	1300	4500	1050	4000	900	3600	750
	90	3500	1050	3200	950	2800	800	2500	700	4600	1250	4200	1000	3700	850	3400	700
200x35	30	5500	1650	5100	1500	4600	1350	4200	1150	7000	1750	6600	1650	6100	1350	5600	1150
	40	5100	1500	4700	1400	4200	1250	3800	1050	6600	1750	6200	1650	5600	1300	5200	1050
	75	4300	1200	3900	1150	3500	1050	3100	900	5700	1700	5300	1350	4600	1050	4200	950
	90	4000	1200	3700	1100	3300	900	3000	900	5400	1600	5000	1300	4400	1000	4000	900
240x35	30	6400	1900	6100	1800	5400	1600	5000	1450	8000	2100	7500	1950	6900	1700	6500	1450
	40	6100	1800	5600	1600	5000	1500	4600	1300	7500	2100	7100	1950	6500	1650	6100	1450
	75	5100	1500	4700	1400	4100	1200	3800	1100	6600	1900	6200	1800	5600	1400	5100	1150
	90	4800	1400	4400	1300	3900	1150	3600	1000	6300	1800	6000	1700	5300	1300	4800	1100
300x35	30	7400	2200	7100	2100	6500	1950	6100	1800	9200	2600	8800	2400	8100	2100	7700_{10}	1800
	40	7000	2100	6700	2000	6100	1800	5700	1700	8800	2600	8300	2450	7600	2050	7200_{10}	1750
	75	6200	1850	5800	1700	5200	1550	4700	1400	7800	2300	7300	2100	6600	1900	6200_{10}	1600
	90	6000	1800	5500	1650	4900	1450	4400	1300	7500	2250	7000	2100	6400	1750	6000_{15}	1450
90x45	30	2800	600	2600	500	2300	400	2100	350	3500	600	3400	500	3000	400	2700	350
	40	2600	600	2300	500	2100	400	1900	350	3400	600	3200	500	2800	400	2500	350
	75	2100	550	1900	450	1700	350	1500	300	2800	550	2600	450	2300	350	2100	300
	90	2000	500	1800	400	1600	350	1400	300	2700	500	2400	400	2100	350	1900	300
120x45	30	3700	1100	3400	1000	3000	750	2700	600	4900	1100	4500	1000	4000	750	3700	600
	40	3400	1000	3100	900	2700	700	2500	600	4500	1050	4200	950	3700	700	3400	600
	75	2800	800	2600	700	2200	600	2000	500	3800	1000	3400	800	3000	600	2800	500
	90	2600	700	2400	700	2100	600	1900	500	3600	950	3300	750	2900	600	2600	500
140x45	30	4200	1250	3900	1150	3500	1000	3200	850	5700	1350	5300	1250	4700	1000	4300	850
	40	3900	1150	3600	1000	3200	950	2900	800	5300	1350	4900	1150	4300	950	3900	800
	75	3300	900	3000	900	2600	700	2400	700	4400	1200	4000	1000	3500	800	3200	700
	90	3100	900	2800	800	2500	750	2200	650	4100	1150	3800	1000	3300	750	3000	650

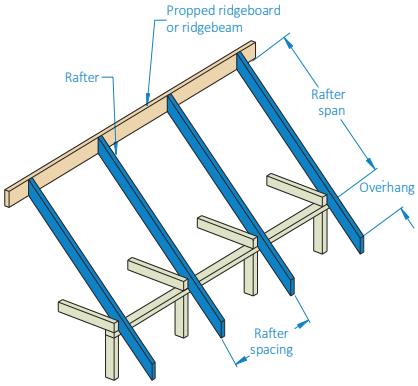
Single/continuous span roof rafter - with ceiling attached (Cont'd)
AS 4055 classification N1-N4

Rafter spacing (mm)		450		600		900		1200		450		600		900		1200	
Size DxB (mm)	Roof & ceiling mass (kg/m^2)	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
170x45	30	5100	1500	4700	1400	4200	1250	3900	1100	6600	1600	6200	1500	5600	1350	5200	1100
	40	4700	1400	4300	1200	3900	1150	3500	1050	6200	1600	5800	1500	5200	1250	4800	1050
	75	3900	1150	3600	1000	3200	950	2900	850	5300	1500	4900	1350	4300	1050	3900	950
	90	3700	1100	3400	1000	3000	900	2700	800	5000	1500	4600	1300	4000	1000	3700	900
200x45	30	5900	1750	5500	1650	4900	1450	4500	1350	7400	1900	7000	1750	6400	1600	6000	1400
	40	5500	1650	5100	1500	4500	1350	4200	1250	7000	1900	6600	1750	6000	1550	5600	1350
	75	4600	1300	4200	1250	3700	1100	3400	1000	6100	1800	5700	1700	5000	1350	4600	1150
	90	4400	1300	4000	1200	3500	1050	3200	950	5900	1750	5400	1600	4700	1250	4300	1050
240x45	30	6700	2000	6300	1800	5800	1700	5400	1600	8300	2250	7900	2100	7300	1900	6900	1650
	40	6300	1800	6000	1800	5400	1600	5000	1500	7900	2250	7500	2100	6900	1850	6500	1600
	75	5500	1650	5100	1500	4500	1350	4100	1200	7000	2100	6600	1900	6000	1750	5500	1450
	90	5200	1550	4800	1400	4200	1250	3900	1150	6700	2000	6300	1800	5700	1600	5200	1350
300x45	30	7700	2300	7400	2200	6800	2000	6500	1950	9600	2800	9200	2650	8500	2350	8100	2050
	40	7400	2200	7000	2100	6500	1950	6100	1800	9200	2750	8700	2600	8100	2300	7600	2000
	75	6500	1950	6200	1850	5600	1600	5100	1500	8200	2450	7700	2300	7000	2100	6600	1850
	90	6300	1800	5900	1750	5300	1500	4800	1400	7900	2350	7400	2200	6800	2000	6300	1800
360x45	30	8700	2600	8400	2500	7800	2300	7400	2200	10800	3200	10400	3100	9700	2800	9200_5	2400
	40	8300	2400	8000	2400	7300	2100	6900	2050	10400	3100	9900	2950	9200	2700	8600_5	2350
	75	7400	2200	7000	2100	6400	1900	6100	1800	9300	2700	8800	2600	8000	2400	7500_5	2200
	90	7200	2150	6800	2000	6200	1850	5800	1700	8900	2650	8400	2500	7700	2300	7200_{10}	2150

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a batten spacing of 900 mm
3. Minimum backspan = 200% of overhang
4. Maximum overhang =30% of backspan
5. Maximum birdsmouth depth = 25 mm
6. End bearing lengths = 45 mm at end supports and 45 mm at internal supports for continuous members. Subscript values Indicate the minimum additional bearing length where required to be greater than 35 mm at end supports and 35 mm at Internal supports
7. Construction loads shall not be applied to overhangs until a 190x19 (minimum) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
8. Rafter spacing up to 1200 mm
9. Not all sizes of SmartLVL in this table are stocked in each state.

Single/continuous span roof rafter - with ceiling attached
AS 4055 classification C1-C3



Maximum Birdsmouth = 30% of rafter depth

EXAMPLE:

wind speed = N3

sheet roof - 40 kg/m^2

rafter/truss spacing = 600 mm

rafter span = 3000 mm (single span)

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 3000 mm in the 40 kg/m^2 row

ADOPT:

Smart10 LVL - 140 x 35

		450		600		900		1200		450		600		900		1200	
Size DxB (mm)	Roof & ceiling mass (kg/m^2)	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
90x35	30	2600	450	2300	350	1800	300	1500	250	2800	450	2300	350	1800	300	1500	250
	40	2400	450	2200	350	1800	300	1500	250	2800	450	2400	350	1800	300	1500	250
	75	1900	400	1800	350	1500	250	1400	250	2600	400	2400	350	1900	250	1600	250
	90	1800	400	1700	300	1500	250	1300	250	2500	400	2200	300	1800	250	1600	250
120x35	30	3400	950	3100	700	2500	550	2100	450	3700	950	3200	700	2500	550	2100	450
	40	3100	900	2900	700	2500	500	2100	450	3800	900	3200	700	2500	500	2100	450
	75	2600	750	2400	600	2100	450	1900	400	3500	750	3200	600	2600	450	2200	400
	90	2400	700	2200	600	1900	450	1800	400	3300	700	3000	600	2500	450	2100	400
140x35	30	4000	1150	3600	1000	2900	750	2400	650	4400	1150	3700	1000	2900	750	2400	650
	40	3600	1000	3300	950	3000	700	2400	600	4400	1100	3800	950	3000	700	2400	600
	75	3000	900	2800	800	2400	650	2200	550	4100	1000	3700	800	3100	650	2600	550
	90	2800	800	2600	700	2300	600	2100	500	3800	950	3500	800	3000	600	2500	500
170x35	30	4800	1400	4400	1250	3600	1000	3000	900	5300	1450	4600	1250	3600	1000	3000	900
	40	4400	1300	4000	1200	3600	1000	3100	850	5400	1400	4600	1250	3700	1000	3100	850
	75	3700	1100	3300	900	2900	850	2700	750	4900	1300	4500	1050	3800	900	3200_{5}	750
	90	3500	1050	3200	950	2800	800	2500	700	4600	1250	4200	1000	3700	850	3100_{5}	700
200x35	30	5400	1600	5000	1450	4300	1200	3600	1050	6300	1700	5400	1450	4300	1200	3600	1050
	40	5100	1500	4700	1400	4200	1200	3700	1000	6400	1650	5500	1450	4400	1200	3700_{5}	1000
	75	4300	1200	3900	1150	3500	1050	3100	900	5700	1600	5300	1350	4500_{5}	1050	3800_{15}	950
	90	4000	1200	3700	1100	3300	900	3000	900	5400	1550	5000	1300	4400_{10}	1000	3700_{15}	900
240x35	30	6200	1850	5800	1700	5200	1450	4400	1250	7600	2000	6500	1750	5200_{5}	1450	4400_{15}	1250
	40	6100	1800	5600	1600	5000	1400	4500	1200	7500	2000	6600	1700	5300_{10}	1400	4500_{20}	1200
	75	5100	1500	4700	1400	4100	1200	3800	1100	6600	1900	6200	1650	5400_{20}	1350	4600_{30}	1150
	90	4800	1400	4400	1300	3900	1150	3600	1000	6300	1850	6000	1600	5300_{20}	1300	4500_{30}	1100
300x35	30	7300	2100	6800	2000	6200	1750	5600	1550	9200	2500	8200_{10}	2150	6600_{25}	1750	5600_{30}	1550
	40	7100	2100	6700	2000	6100	1750	5600	1500	8800	2450	8300_{15}	2100	6600_{25}	1750	5600_{35}	1500
	75	6200	1850	5800	1700	5200	1550	4700	1400	7800	2300	7300_{10}	2000	6600_{35}	1650	5800_{50}	1450
	90	6000	1800	5500	1650	4900	1450	4400	1300	7500	2250	7000_{10}	1950	6400_{35}	1600	5700_{50}	1400
90x45	30	2800	600	2500	500	2100	400	1700	350	3200	600	2700	500	2100	400	1700	350
	40	2600	600	2300	500	2100	400	1800	350	3200	600	2700	500	2100	400	1800	350
	75	2100	550	1900	450	1700	350	1500	300	2800	550	2600	450	2200	350	1800	300
	90	2000	500	1800	400	1600	350	1400	300	2700	500	2400	400	2100	350	1800	300
120x45	30	3700	1100	3400	1000	2800	750	2300	600	4200	1100	3600	1000	2800	750	2300	600
	40	3400	1000	3100	900	2700	700	2400	600	4300	1050	3700	950	2900	700	2400	600
	75	2800	800	2600	700	2200	600	2000	500	3800	1000	3400	800	3000	600	2500	500
	90	2600	700	2400	700	2100	600	1900	500	3600	950	3300	750	2900	600	2400	500
140x45	30	4200	1250	3900	1150	3400	950	2800	800	5000	1350	4300	1150	3400	950	2800	800
	40	3900	1150	3600	1000	3200	950	2800	800	5000	1300	4300	1150	3400	950	2800	800
	75	3300	900	3000	900	2600	700	2400	700	4400	1200	4000	1000	3500	800	2900	700
	90	3100	900	2800	800	2500	750	2200	650	4100	1150	3800	1000	3300	750	2900	650

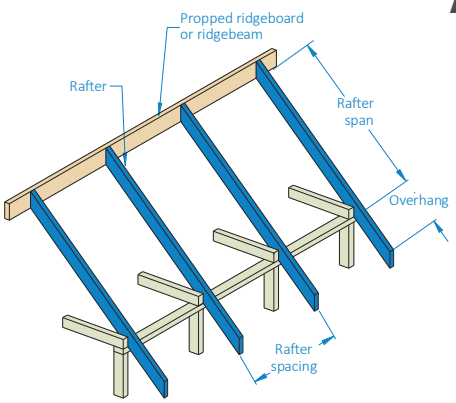
Single/continuous span roof rafter - with ceiling attached (Cont'd)
AS 4055 classification C1-C3

Size DxB (mm)	Roof & ceiling mass (kg/m^2)	450		600		900		1200		450		600		900		1200	
		Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
170x45	30	5100	1500	4700	1400	4100	1150	3500	1000	6100	1600	5200	1400	4100	1150	3500	1000
	40	4700	1400	4300	1200	3900	1150	3500	1000	6100	1600	5300	1400	4200	1150	3500	1000
	75	3900	1150	3600	1000	3200	950	2900	850	5300	1500	4900	1300	4300	1050	3600	950
	90	3700	1100	3400	1000	3000	900	2700	800	5000	1500	4600	1300	4000	1000	3600	900
200x45	30	5800	1700	5400	1600	4800	1350	4100	1200	7200	1900	6200	1650	4900	1350	4100	1200
	40	5500	1650	5100	1500	4500	1350	4200	1150	7000	1900	6200	1650	5000	1350	4200	1150
	75	4600	1300	4200	1250	3700	1100	3400	1000	6100	1800	5700	1550	5000	1250	4300_{5}	1100
	90	4400	1300	4000	1200	3500	1050	3200	950	5900	1750	5400	1500	4700	1250	4200_{10}	1050
240x45	30	6600	1900	6200	1850	5600	1600	5000	1400	8300	2250	7400	2000	5900	1600	5000_{5}	1400
	40	6400	1900	6000	1800	5400	1600	5000	1400	7900	2250	7500	1950	6000	1600	5100_{10}	1400
	75	5500	1650	5100	1500	4500	1350	4100	1200	7000	2100	6600	1850	6000_{10}	1500	5200_{20}	1300
	90	5200	1550	4800	1400	4200	1250	3900	1150	6700	2000	6300	1800	5700_{10}	1500	5100_{20}	1300
300x45	30	7700	2300	7300	2100	6600	1900	6100	1750	9600	2800	9100	2450	7500_{15}	2000	6400_{25}	1750
	40	7400	2200	7000	2100	6500	1950	6100	1700	9200	2750	8700	2400	7600_{20}	1950	6400_{25}	1700
	75	6600	1900	6200	1850	5600	1600	5100	1500	8200	2450	7700	2250	7000_{20}	1850	6600_{35}	1600
	90	6300	1800	5900	1750	5300	1500	4800	1400	7900	2350	7400	2200	6800_{20}	1800	6300_{35}	1600
360x45	30	8700	2600	8400	2500	7500	2250	7000	2050	10800	3200	10400_{10}	2850	9100_{30}	2350	7700_{40}	2050
	40	8400	2500	7900	2350	7400	2200	6900	2000	10400	3100	9900_{10}	2800	9100_{30}	2300	7800_{45}	2000
	75	7500	2250	7000	2100	6400	1900	6100	1800	9300	2700	8800_{10}	2600	8000_{30}	2200	7500_{50}	1900
	90	7200	2150	6800	2000	6200	1850	5800	1700	8900	2650	8400_{10}	2500	7700_{30}	2150	7200_{50}	1850

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a batten spacing of 900 mm
3. Minimum backspan = 200% of overhang
4. Maximum overhang =30% of backspan
5. Maximum birdsmouth depth = 25 mm
6. End bearing lengths = 45 mm at end supports and 45 mm at internal supports for continuous members. Subscript values Indicate the minimum additional bearing length where required to be greater than 35 mm at end supports and 35 mm at Internal supports
7. Construction loads shall not be applied to overhangs until a 190x19 (minimum) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
8. Rafter spacing up to 1200 mm
9. Not all sizes of SmartLVL in this table are stocked in each state.

Single/continuous span roof rafter - without ceiling attached
AS 4055 classification N1-N4



Maximum Birdsmouth = 30% of rafter depth

EXAMPLE:

wind speed = N3

sheet roof - 40 kg/m^2

rafter/truss spacing = 600 mm

rafter span = 2400 mm (single span)

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 2400 mm in the 40 kg/m^2 row

ADOPT:

Smart10 LVL - 120 x 35

Rafter spacing (mm)		450		600		900		1200		450		600		900		1200	
Size DxB (mm)	Roof & ceiling mass (kg/m^2)	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
90x35	10	2600	500	2600	400	2300	300	2100	250	3100	500	3000	400	2700	300	2200	250
	20	2600	450	2600	350	2300	300	2100	250	3100	450	3000	350	2800	300	2300	250
	40	2400	450	2200	350	1900	300	1700	250	3100	450	2900	350	2600	300	2300	250
	60	2100	400	1900	350	1700	300	1500	250	2800	400	2600	350	2200	300	2000	250
120x35	10	3900	1000	3600	800	3100	600	2800	500	4800	1000	4700	800	3700	600	3100	500
	20	3800	1000	3500	750	3100	550	2800	500	4800	1000	4700	750	3800	550	3200	500
	40	3100	900	2900	700	2500	500	2300	450	4200	900	3900	700	3400	500	3100	450
	60	2800	800	2500	650	2200	500	2000	400	3700	800	3400	650	3000	500	2700	400
140x35	10	4600	1250	4200	1000	3600	850	3300	700	5700	1250	5300	1000	4400	850	3700	700
	20	4400	1250	4100	1000	3600	800	3300	650	5700	1250	5300	1000	4500	800	3800	650
	40	3600	1000	3300	950	3000	700	2700	600	4900	1100	4500	950	4000	700	3600	600
	60	3200	950	3000	850	2600	650	2400	550	4300	1000	4000	850	3500	650	3200	550
170x35	10	5300	1500	4900	1400	4400	1150	4000	1000	6600	1500	6100	1400	5400	1150	4500	1000
	20	5300	1500	4900	1400	4400	1100	4000	1000	6600	1500	6100	1400	5500	1100	4700	1000
	40	4400	1300	4000	1200	3600	1000	3300	900	5900	1500	5400	1250	4800	1000	4400	900
	60	3900	1150	3600	1000	3200	950	2900	800	5300	1450	4800	1150	4200	950	3900	800
200x35	10	6000	1750	5600	1650	5000	1500	4700	1300	7400	1750	6900	1650	6200	1500	5400	1300
	20	6000	1750	5600	1650	5000	1450	4700	1250	7400	1750	6900	1650	6200	1450	5500	1250
	40	5100	1500	4700	1400	4200	1250	3800	1050	6600	1750	6200	1650	5600	1300	5200	1050
	60	4600	1300	4200	1250	3700	1100	3400	1000	6100	1750	5600	1500	5000	1150	4600	1000
240x35	10	6800	2000	6400	1900	5700	1700	5400	1550	8500	2100	7900	1950	7200	1800	6500	1550
	20	6900	2050	6400	1900	5700	1700	5400	1500	8500	2100	7900	1950	7200	1750	6700	1500
	40	6100	1800	5600	1600	5000	1500	4600	1300	7500	2100	7100	1950	6500	1650	6100	1450
	60	5400	1600	5000	1500	4400	1300	4100	1200	7000	2100	6500	1950	6000	1500	5400	1250
300x35	10	8100	2400	7500	2250	6800	2000	6300	1800	10100	2600	9400	2450	8500	2200	7900	1900
	20	7900	2350	7500	2250	6800	2000	6300	1850	9800	2600	9400	2450	8500	2150	7900_5	1850
	40	7000	2100	6700	2000	6100	1800	5700	1700	8800	2600	8300	2450	7600	2050	7200_{10}	1750
	60	6500	1950	6100	1800	5500	1650	5100	1500	8100	2400	7700	2300	7000	1950	6600_{10}	1700
90x45	10	3000	650	2900	500	2500	400	2300	350	3500	650	3400	500	3100	400	2600	350
	20	3000	650	2900	500	2500	400	2300	350	3500	650	3400	500	3200	400	2700	350
	40	2600	600	2300	500	2100	400	1900	350	3400	600	3200	500	2800	400	2500	350
	60	2300	550	2100	450	1800	350	1600	300	3000	550	2800	450	2400	350	2200	300
120x45	10	4300	1150	3900	1000	3400	800	3100	700	5300	1150	5000	1000	4300	800	3600	700
	20	4100	1150	3800	1000	3400	800	3100	650	5300	1150	5000	1000	4400	800	3700	650
	40	3400	1000	3100	900	2700	700	2500	600	4500	1050	4200	950	3700	700	3400	600
	60	3000	900	2700	800	2400	650	2200	550	4000	1000	3700	850	3300	650	3000	550
140x45	10	4900	1350	4500	1250	4000	1050	3600	1000	6100	1350	5600	1250	5000	1050	4200	1000
	20	4700	1350	4400	1250	3900	1000	3600	900	6100	1350	5600	1250	5100	1000	4300	900
	40	3900	1150	3600	1000	3200	950	2900	800	5300	1350	4900	1150	4300	950	3900	800
	60	3500	1050	3200	950	2800	800	2600	750	4700	1300	4300	1050	3800	850	3500	750

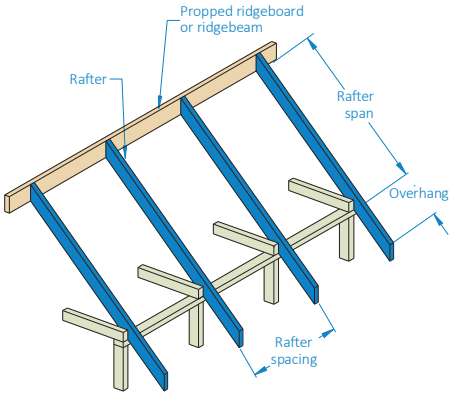
Single/continuous span roof rafter - without ceiling attached
AS 4055 classification N1-N4

Rafter spacing (mm)		450		600		900		1200		450		600		900		1200	
Size DxB (mm)	Roof & ceiling mass (kg/m^2)	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
170x45	10	5600	1600	5200	1500	4700	1400	4400	1250	7000	1600	6500	1500	5900	1400	5200	1250
	20	5600	1600	5200	1500	4700	1400	4300	1200	7000	1600	6500	1500	5900	1400	5300	1200
	40	4700	1400	4300	1200	3900	1150	3500	1050	6200	1600	5800	1500	5200	1250	4800	1050
	60	4200	1250	3900	1150	3400	1000	3100	900	5600	1600	5200	1450	4600	1100	4200	1000
200x45	10	6300	1800	5900	1750	5300	1500	5000	1450	7900	1900	7400	1750	6700	1650	6200	1450
	20	6300	1800	5900	1750	5300	1500	5000	1400	7900	1900	7400	1750	6700	1650	6200	1400
	40	5500	1650	5100	1500	4500	1350	4200	1250	7000	1900	6600	1750	6000	1550	5600	1350
	60	4900	1450	4500	1350	4000	1200	3700	1100	6400	1900	6000	1750	5400	1450	4900	1200
240x45	10	7300	2100	6800	2000	6100	1800	5700	1700	9100	2250	8400	2100	7600	1950	7100	1750
	20	7100	2100	6800	2000	6100	1800	5700	1700	8900	2250	8500	2100	7600	1950	7100	1700
	40	6300	1800	6000	1800	5400	1600	5000	1500	7900	2250	7500	2100	6900	1850	6500	1600
	60	5800	1700	5400	1600	4800	1400	4400	1300	7300	2100	6900	2050	6300	1800	5900	1550
300x45	10	8600	2500	8000	2400	7200	2150	6700	2000	10700	2800	10000	2650	9000	2450	8400	2150
	20	8200	2450	7900	2350	7200	2150	6700	2000	10200	2800	9900	2650	9000	2400	8400	2100
	40	7400	2200	7000	2100	6500	1950	6100	1800	9200	2750	8700	2600	8100	2300	7600	2000
	60	6800	2000	6500	1950	5900	1750	5500	1650	8500	2550	8100	2400	7400	2200	6900	1900
360x45	10	9800	2900	9200	2750	8300	2400	7700	2300	12000	3350	11500	3150	10300	2900	9600	2550
	20	9200	2750	8900	2650	8300	2400	7700	2300	11500	3350	11100	3150	10300	2850	9600	2450
	40	8300	2400	8000	2400	7300	2100	6900	2050	10400	3100	9900	2950	9200	2700	8600_5	2350
	60	7800	2300	7400	2200	6800	2000	6400	1900	9700	2900	9200	2750	8400	2500	7900_5	2250

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a batten spacing of 900 mm
3. Maximum birdsmouth depth = 30 % of rafter depth
4. End bearing lengths = 35 mm at end supports and 35 mm at internal supports for continuous members. Subscript values Indicate the minimum additional bearing length where required to be greater than 35 mm at end supports and 35 mm at Internal supports
5. Construction loads shall not be applied to overhangs until a 190x19 (minimum) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
6. Rafter spacing up to 1200 mm
7. Not all sizes of SmartLVL in this table are stocked in each state.

Single/continuous span roof rafter - without ceiling attached
AS 4055 classification C1-C3



Maximum Birdsmouth = 30% of rafter depth

EXAMPLE:

wind speed = N3

sheet roof - 40 kg/m^2

rafter/truss spacing = 600 mm

rafter span = 2400 mm (single span)

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 2400 mm in the 40 kg/m^2 row

ADOPT:

Smart10 LVL - 120 x 35

Rafter spacing (mm)		450		600		900		1200		450		600		900		1200	
Size DxB (mm)	Roof & ceiling mass (kg/m^2)	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
90x35	10	2600	450	2300	400	1700	300	1500	250	2700	450	2300	400	1700	300	1500	250
	20	2600	450	2300	350	1800	300	1500	250	2700	450	2300	350	1800	300	1500	250
	40	2400	450	2200	350	1800	300	1500	250	2800	450	2400	350	1800	300	1500	250
	60	2100	400	1900	350	1700	300	1500	250	2800	400	2400	350	1800	300	1600	250
120x35	10	3500	1000	3100	800	2400	600	2000	500	3600	1000	3100	800	2400	600	2000	500
	20	3500	1000	3100	750	2400	550	2000	500	3700	1000	3100	750	2400	550	2000	500
	40	3100	900	2900	700	2500	500	2100	450	3800	900	3200	700	2500	500	2100	450
	60	2800	800	2500	650	2200	500	2000	400	3700	800	3300	650	2600	500	2100	400
140x35	10	4000	1200	3700	1000	2900	850	2400	700	4300	1200	3700	1000	2900	850	2400	700
	20	4000	1200	3700	1000	2900	800	2400	700	4300	1200	3700	1000	2900	800	2400	700
	40	3600	1000	3300	950	3000	700	2400	600	4400	1100	3800	950	3000	700	2400	600
	60	3200	950	3000	850	2600	650	2400	550	4300	1000	3900	850	3000	650	2500	550
170x35	10	4800	1400	4500	1300	3500	1050	3000	900	5200	1500	4500	1300	3500	1050	3000	900
	20	4800	1400	4500	1250	3600	1050	3000	900	5300	1450	4500	1250	3600	1050	3000	900
	40	4400	1300	4000	1200	3600	1000	3100	850	5400	1400	4600	1250	3700	1000	3100	850
	60	3900	1150	3600	1000	3200	950	2900	800	5300	1400	4700	1150	3700	950	3100	800
200x35	10	5400	1600	5000	1500	4200	1250	3500	1050	6200	1750	5300	1500	4200	1250	3500	1050
	20	5400	1600	5000	1500	4300	1200	3600	1050	6200	1700	5300	1500	4300	1200	3600	1050
	40	5100	1500	4700	1400	4200	1200	3700	1000	6400	1650	5500	1450	4400	1200	3700_{5}	1000
	60	4600	1300	4200	1250	3700	1100	3400	1000	6100	1600	5600	1400	4400	1150	3700_{10}	1000
240x35	10	6200	1850	5800	1700	5100	1500	4300	1200	7400	2100	6400	1800	5100	1500	4300_{10}	1200
	20	6200	1850	5800	1700	5200	1450	4400	1250	7500	2050	6400	1800	5200_{5}	1450	4400_{10}	1250
	40	6100	1800	5600	1600	5000	1400	4500	1200	7500	2000	6600	1700	5300_{10}	1400	4500_{20}	1200
	60	5400	1600	5000	1500	4400	1300	4100	1200	7000	1900	6500	1650	5400_{15}	1350	4600_{25}	1200
300x35	10	7300	2100	6800	2000	6200	1850	5500	1600	9100	2550	8000_{5}	2250	6400_{15}	1850	5500_{25}	1600
	20	7300	2100	6800	2000	6200	1800	5500	1550	9200	2550	8100_{10}	2200	6500_{20}	1800	5500_{25}	1550
	40	7100	2100	6700	2000	6100	1750	5600	1500	8800	2450	8300_{15}	2100	6600_{25}	1750	5600_{35}	1500
	60	6500	1950	6100	1800	5500	1650	5100	1450	8100	2350	7700_{15}	2050	6800_{35}	1700	5800_{45}	1450
90x45	10	2800	650	2500	500	2000	400	1700	350	3100	650	2600	500	2000	400	1700	350
	20	2800	650	2500	500	2000	400	1700	350	3100	650	2600	500	2000	400	1700	350
	40	2600	600	2300	500	2100	400	1800	350	3200	600	2700	500	2100	400	1800	350
	60	2300	550	2100	450	1800	350	1600	300	3000	550	2800	450	2100	350	1800	300
120x45	10	3800	1100	3400	1000	2800	800	2300	600	4200	1150	3500	1000	2800	800	2300	600
	20	3800	1100	3400	1000	2800	800	2300	650	4200	1150	3600	1000	2800	800	2300	650
	40	3400	1000	3100	900	2700	700	2400	600	4300	1050	3700	950	2900	700	2400	600
	60	3000	900	2700	800	2400	650	2200	550	4000	1000	3700	850	2900	650	2400	550
140x45	10	4400	1300	4000	1200	3300	900	2700	800	4900	1350	4200	1200	3300	900	2700	800
	20	4400	1300	4000	1200	3300	950	2800	800	4900	1350	4200	1200	3300	950	2800	800
	40	3900	1150	3600	1000	3200	950	2800	800	5000	1300	4300	1150	3400	950	2800	800
	60	3500	1050	3200	950	2800	800	2600	750	4700	1250	4300	1050	3500	850	2900	750

Single/continuous span roof rafter - without ceiling attached
AS 4055 classification C1-C3

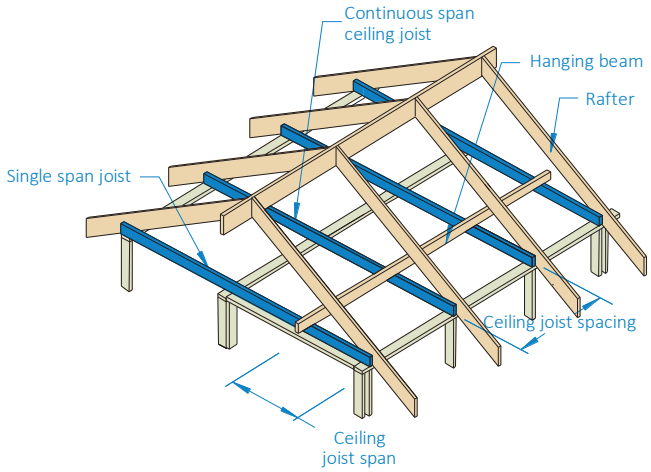
Rafter spacing (mm)		450		600		900		1200		450		600		900		1200	
Size DxB (mm)	Roof & ceiling mass (kg/m^2)	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
		Maximum recommended single span								Maximum recommended continuous span							
170x45	10	5100	1500	4700	1400	4100	1200	3400	1000	6000	1600	5100	1450	4100	1200	3400	1000
	20	5100	1500	4700	1400	4100	1200	3400	1000	6000	1600	5100	1450	4100	1200	3400	1000
	40	4700	1400	4300	1200	3900	1150	3500	1000	6100	1600	5300	1400	4200	1150	3500	1000
	60	4200	1250	3900	1150	3400	1000	3100	900	5600	1550	5200	1350	4300	1100	3600	950
200x45	10	5800	1700	5400	1600	4800	1400	4100	1200	7000	1900	6000	1700	4800	1400	4100	1200
	20	5800	1700	5400	1600	4800	1400	4100	1200	7100	1900	6100	1700	4900	1400	4100	1200
	40	5500	1650	5100	1500	4500	1350	4200	1150	7000	1900	6200	1650	5000	1350	4200	1150
	60	4900	1450	4500	1350	4000	1200	3700	1100	6400	1800	6000	1600	5100	1300	4300_{5}	1100
240x45	10	6600	1900	6200	1850	5600	1650	4900	1450	8300	2250	7300	2050	5800	1650	4900	1450
	20	6600	1900	6200	1850	5600	1650	5000	1450	8300	2250	7300	2000	5900	1650	5000_{5}	1450
	40	6400	1900	6000	1800	5400	1600	5000	1400	7900	2250	7500	1950	6000	1600	5100_{10}	1400
	60	5800	1700	5400	1600	4800	1400	4400	1300	7300	2150	6900	1900	6100_{10}	1550	5200_{15}	1350
300x45	10	7800	2300	7300	2100	6600	1900	6100	1800	9700	2800	9100	2500	7300_{10}	2050	6200_{15}	1800
	20	7800	2300	7300	2100	6600	1900	6100	1750	9700	2800	9100	2450	7400_{10}	2050	6300_{20}	1750
	40	7400	2200	7000	2100	6500	1950	6100	1700	9200	2750	8700	2400	7600_{20}	1950	6400_{25}	1700
	60	6900	2050	6500	1950	5900	1750	5500	1650	8500	2550	8100	2300	7400_{20}	1900	6600_{35}	1650
360x45	10	9000	2700	8300	2400	7500	2250	7000	2100	11200	3350	10400_{5}	2950	8900_{20}	2450	7600_{30}	2100
	20	9000	2700	8300	2400	7500	2250	7000	2100	11200	3350	10400_{10}	2900	9000_{25}	2400	7600_{35}	2100
	40	8400	2500	7900	2350	7400	2200	6900	2000	10400	3100	9900_{10}	2800	9100_{30}	2300	7800_{45}	2000
	60	7800	2300	7400	2200	6800	2000	6400	1900	9700	2900	9200_{10}	2750	8400_{30}	2250	7900_{50}	1950

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a batten spacing of 900 mm
3. Maximum birdsmouth depth = 30 % of rafter depth
4. End bearing lengths = 35 mm at end supports and 35 mm at internal supports for continuous members. Subscript values Indicate the minimum additional bearing length where required to be greater than 35 mm at end supports and 35 mm at Internal supports
5. Construction loads shall not be applied to overhangs until a 190x19 (minimum) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
6. Rafter spacing up to 1200 mm
7. Not all sizes of SmartLVL in this table are stocked in each state.

Ceiling joists
AS 4055 wind classification N1-N4 and C1-C3

Ceiling mass 20 kg/m^2



EXAMPLE:

wind speed = N3

ceiling mass = 20 kg/m^2

ceiling Joist span = 3000 mm (single span)

ceiling Joist spacing = 450 mm

Enter single span table at 450 mm in joist spacing column, read down to a span equal to or greater than 3000 mm

ADOPT:

Smart10 LVL - 120 x 35

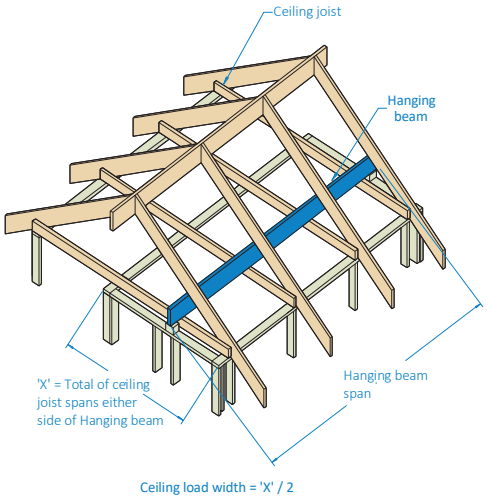
Ceiling joist spacing (mm)	450	600	900	1200	450	600	900	1200
Size DxB (mm)	Maximum recommended single span (mm)				Maximum recommended continuous span (mm)			
70x35	1900	1900	1600	1400	2500	2200	1700	1400
90x35	2600	2400	2100	1800	3300	2800	2200	1800
120x35	3500	3200	2900	2500	4500	3800	3000	2500
140x35	4000	3700	3300	3000	5200	4500	3600	3000
170x35	4800	4500	4000	3700	6000	5500	4400	3700
190x35	5200	4900	4400	4100	6500	6100	4900	4200
240x35	6000	5800	5300	5000	7600	7300	6300	5300
70x45	2200	2000	1800	1600	2900	2500	1900	1600
90x45	2800	2600	2300	2100	3800	3200	2500	2100
120x45	3700	3400	3100	2800	5000	4400	3500	2900
140x45	4300	4000	3600	3300	5500	5100	4100	3400
170x45	5000	4800	4300	4000	6300	6000	5000	4200
190x45	5400	5100	4800	4400	6800	6500	5600	4800
240x45	6300	6000	5600	5300	7900	7600	7000	6100
290x45	7100	6800	6400	6000	8900	8600	8000	7400

NOTES:

1. D = member depth, B = member breadth
2. Do not walk on joists during construction unless a construction plank is in place or over batten minimum of 35 x 70 F5
3. Minimum end/internal bearing length of 70 mm
4. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

Hanging beam supporting ceiling loads only
AS 4055 classification N1 - N4 & C1 - C3

ceiling mass - 20 kg/m^2



EXAMPLE:

wind speed = N4

hanging beam span = 3500 mm

X = 5000 mm

ceiling load width = X/2 = 5000/2 = 2500 mm

Enter column at 3000 mm ceiling load width & read down

to a span greater than or equal to 3500 mm

ADOPT:

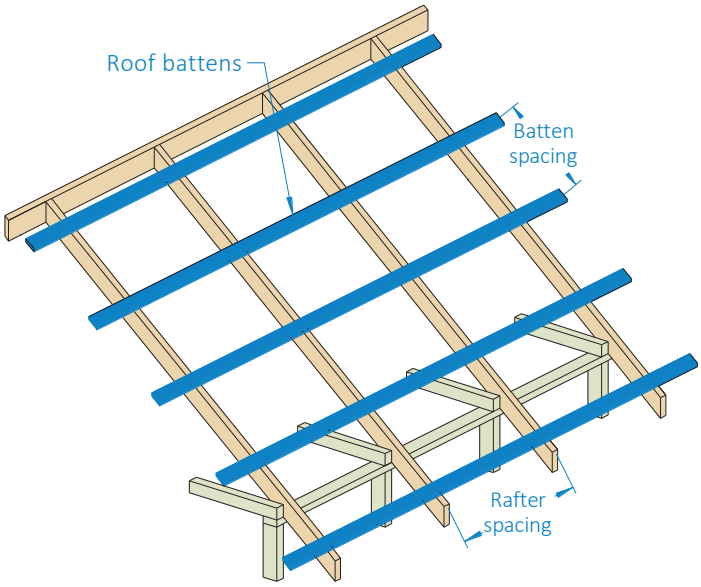
Smart10 LVL - 240x35

	Wind classification N1-N4						Wind classification C1-C3					
Ceiling load width (mm)	1800	2400	3000	3600	4200	4800	1800	2400	3000	3600	4200	4800
Size DxB (mm)	Maximum recommended hanging beam span (mm)						Maximum recommended hanging beam span (mm)					
90x35	1650	1650	1500	1400	1300	1200	1650	1450	1300	1150	1050	1000
120x35	2450	2200	2000	1850	1750	1650	2200	1900	1700	1550	1450	1350
140x35	2850	2550	2350	2150	2050	1900	2600	2250	2000	1800	1700	1550
170x35	3400	3100	2800	2600	2450	2300	3150	2700	2400	2200	2050	1900
190x35	3750	3450	3150	2950	2750	2600	3500	3050	2700	2450	2250	2100
240x35	4450	4100	3850	3650	3450	3250	4400	3800	3400	3100	2850	2700
90x45	1850	1750	1600	1500	1400	1350	1850	1650	1450	1300	1200	1150
120x45	2650	2350	2150	2000	1900	1800	2500	2150	1950	1750	1650	1500
140x45	3050	2750	2550	2350	2200	2100	2950	2550	2250	2050	1900	1750
170x45	3650	3350	3050	2850	2650	2500	3550	3050	2750	2500	2300	2150
190x45	4000	3650	3400	3150	3000	2800	3950	3450	3050	2800	2600	2400
240x45	4700	4350	4100	3900	3700	3550	4700	4350	3850	3500	3250	3050
290x45	5350	5000	4700	4450	4250	4100	5350	5000	4650	4250	3950	3650

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum ceiling mass of 20 kg/m^2
3. Minimum bearing length = 70 mm at end supports
4. Restraint value for slenderness calculations is 1500 mm
5. Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.

Roof battens - Supporting sheet roof
AS 4055 wind classification N1-N4



EXAMPLE:

wind speed = N3

Battens in general area of roof

Rafter spacing = 900 mm

Batten spacing = 600 mm

Enter span table in General area of roof column, 600 mm batten spacing column, read down to a span equal to or greater than 900 mm in the wind classification N3 rows

ADOPT:

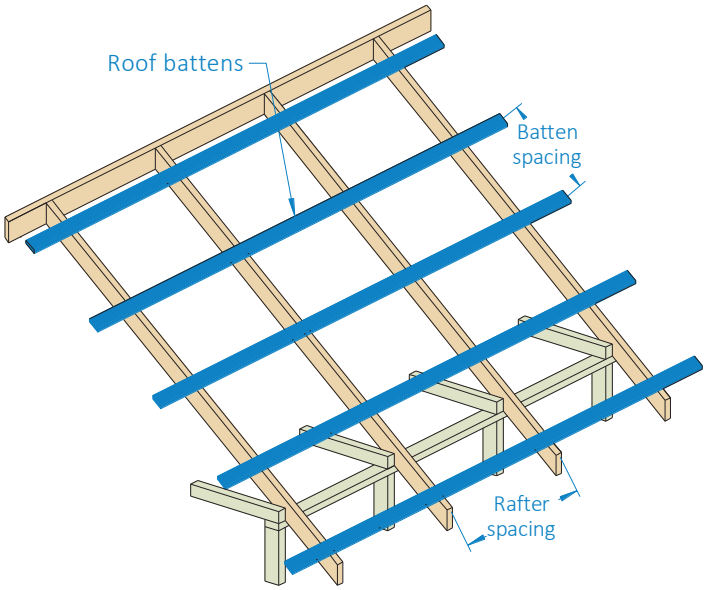
Smart10 LVL - 35 x 70

	General areas						Areas within 1.2 m of an edge						Area within 1.2 m of an eaves corner					
Batten Spacing (mm)	600		900		1200		600		900		1200		600		900		1200	
Size DxB (mm)	Maximum recommended Batten span (mm)																	
	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
Wind classification N1 - N2																		
35 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300
35 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300
45 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300
45 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300
Wind classification N3																		
35 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1100	200	1000	200
35 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1100	200
45 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300
45 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300
Wind classification N4																		
35 x 70	1200	300	1200	300	1200	300	1200	300	1100	200	900	200	1100	200	900	200	800	100
35 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1100	200	1200	300	1000	200	900	200
45 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1000	200
45 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1100	200

NOTES :

1. Minimum of two (2) spans over three (3) supports. Maximum rafter spacing = 1200 mm
2. D = member depth, B = member breadth, NS = not suitable, O/H = overhang
3. Spans have been limited to 1200 mm maximum (Clause 2.1.1 AS 1720.3:2016)
4. Minimum backspan = 150 % of overhang. Maximum overhang = 25 % of backspan
5. End and internal bearing lengths = 35 mm
6. During construction, roof battens should only be walked on at support points
7. Overhangs shall not exceed 50% of actual spans
8. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

Roof battens - Supporting sheet roof
AS 4055 wind classification C1-C3



EXAMPLE:

wind speed = C1

Battens in general area of roof

Rafter spacing = 900 mm

Batten spacing = 600 mm

Enter span table in General area of roof column, 600 mm batten spacing column, read down to a span equal to or greater than 900 mm in the wind classification N3 rows

ADOPT:

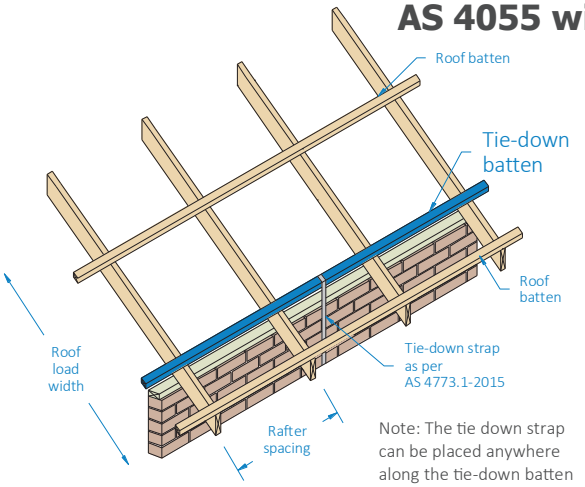
Smart10 LVL - 35 x 70

	General areas						Areas within 1.2 m of an edge						Area within 1.2 m of an eaves corner					
Batten Spacing (mm)	600		900		1200		600		900		1200		600		900		1200	
Size DxB (mm)	Maximum recommended Batten span (mm)																	
	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H
Wind classification C1																		
35 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1000	200	1200	300	1000	200	900	200
35 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1000	200
45 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1100	200
45 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300
Wind classification C2																		
35 x 70	1200	300	1200	300	100	200	1200	300	1000	200	800	200	1000	200	800	200	700	100
35 x 90	1200	300	1200	300	1200	300	1200	300	1100	200	1000	200	1200	300	900	200	800	200
45 x 70	1200	300	1200	300	1200	300	1200	300	1200	300	1100	200	1200	300	1100	200	900	200
45 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1200	300	1100	200
Wind classification C3																		
35 x 70	1200	300	1000	200	900	200	1000	200	800	200	700	100	800	200	700	100	600	100
35 x 90	1200	300	1200	300	1200	300	1100	200	900	200	800	200	900	200	800	200	700	100
45 x 70	1200	300	1200	300	1200	300	1200	300	1000	200	900	200	1100	200	900	200	800	200
45 x 90	1200	300	1200	300	1200	300	1200	300	1200	300	1000	200	1200	300	1000	200	900	200

NOTES :

1. Minimum of two (2) spans over three (3) supports. Maximum rafter spacing = 1200 mm
2. D = member depth, B = member breadth, NS = not suitable, O/H = overhang
3. Spans have been limited to 1200 mm maximum (Clause 2.1.1 AS 1720.3:2016)
4. Minimum backspan = 150 % of overhang. Maximum overhang = 25 % of backspan
5. End and internal bearing lengths = 35 mm
6. During construction, roof battens should only be walked on at support points
7. Overhangs shall not exceed 50% of actual spans
8. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

Roof battens - Tie down batten for double brick walls
AS 4055 wind classification N1-C3



Note: The tie down strap can be placed anywhere along the tie-down batten

EXAMPLE:

wind speed = N1

Roof load width = 1500 mm

Rafter/truss spacing = 600 mm

Tie-down spacing = 1200 mm

Enter span table in 2000 mm roof load width column, 600 mm rafter/truss spacing and read down to a tie-down spacing equal to or greater than 1200 mm in the wind classification N1 rows

ADOPT:

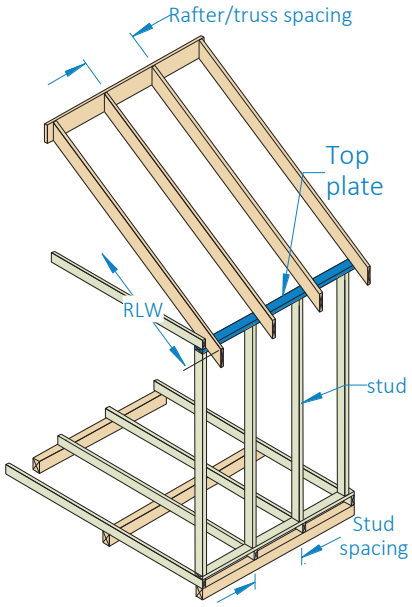
Smart10 LVL - 35 x 70

Roof load width (mm)		2000		2200		2400		2600		2800		3000	
Rafter/truss spacing		600	900	600	900	600	900	600	900	600	900	600	900
Size DxB (mm)	Roof mass (kg/m^2)	Maximum tie-down spacing (mm)											
Wind classification N1													
35x70	10	1400	1400	1400	1300	1300	1300	1200	1300	1300	1200	1300	1100
35x90		1500	1500	1500	1400	1500	1400	1400	1400	1400	1400	1300	1300
45x70		1900	1900	1800	1800	1700	1800	1700	1700	1600	1600	1600	1600
45x90		2000	2200	1900	1900	1900	1900	1800	1900	1800	1800	1700	1800
Wind classification N2													
35x70	10	1300	1200	1200	1100	1200	1100	1200	1000	1200	1000	1100	1000
35x90		1400	1400	1300	1300	1300	1300	1300	1200	1300	1100	1200	1100
45x70		1600	1600	1600	1500	1500	1500	1500	1400	1500	1400	1400	1400
45x90		1800	1900	1700	1800	1700	1700	1600	1600	1600	1500	1500	1500
Wind classification N3													
35x70	10	1100	1000	1000	900	1000	800	900	800	900	700	900	700
35x90		1200	1100	1200	1000	1100	1000	1100	900	1000	900	1000	800
45x70		1400	1400	1400	1300	1300	1300	1300	1200	1300	1100	1200	1100
45x90		1500	1500	1500	1400	1500	1400	1400	1400	1400	1300	1300	1300
Wind classification N4													
35x70	10	900	700	800	NS	800	NS	700	NS	600	NS	600	NS
35x90		1000	800	900	800	900	700	900	700	800	NS	800	NS
45x70		1200	1100	1100	1000	1000	900	1000	800	900	800	900	800
45x90		1300	1300	1300	1200	1300	1100	1200	1100	1100	1000	1000	900
Wind classification C1													
35x70	10	900	700	800	NS	800	NS	800	NS	700	NS	600	NS
35x90		1000	900	1000	800	900	800	900	700	900	NS	800	NS
45x70		1300	1100	100	100	1100	900	1000	800	1000	800	900	800
45x90		1400	1300	1300	1300	1300	1200	1300	110	1200	10	1100	900
Wind classification C2													
35x70	10	600	NS	600	NS	NS	NS	NS	NS	NS	NS	NS	NS
35x90		800	NS	800	NS	700	NS	600	NS	600	NS	NS	NS
45x70		900	800	900	700	900	NS	800	NS	800	NS	700	NS
45x90		1100	900	1000	900	100	800	900	800	900	700	900	600
Wind classification C3													
35x70	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
35x90		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
45x70		700	NS	600	NS	600	NS	NS	NS	NS	NS	NS	NS
45x90		900	700	800	NS	800	NS	700	NS	600	NS	600	NS

NOTES :

1. Minimum of two (2) spans over three (3) supports. Maximum rafter spacing = 1200 mm
2. D = member depth, B = member breadth, NS = not suitable
3. RLW calculation assumes that roofing is NOT fastened to the tie-down batten. Span is conservative if roofing is fastened to the batten.
4. End and internal bearing lengths = 35 mm
5. During construction, roof battens should only be walked on at support points.
6. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

Top plates - Not trenched - Single or upper storey loadbearing walls
AS 4055 wind classification N1-N4



EXAMPLE:

Sheet roof (40 kg/m^2)

Wind speed = N3

Rafter/truss spacing = 600 mm

Tie down spacing = 1200 mm

Roof load width = 5000 mm

Stud spacing = 450 mm

Enter span table at 600 mm rafter/truss spacing column, 1200 mm tie down spacing column, read down to a span equal to or greater than 5000 mm in the 450 mm stud spacing row.

ADOPT:

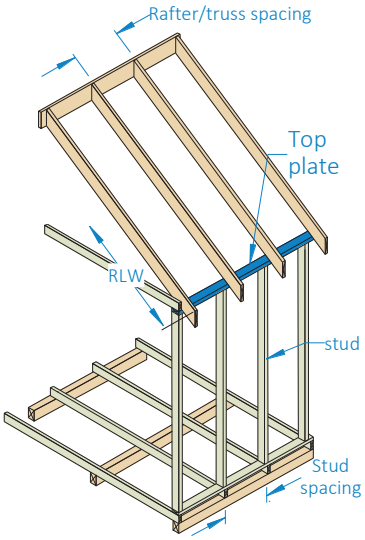
Smart10 LVL - 45 x 90

Rafter/truss spacing (mm)		600					900					1200				
Tie-down spacing (mm)		0	600	900	1200	1800	0	600	900	1200	1800	0	600	900	1200	1800
Size DxB (mm)	Stud spacing (mm)	Maximum recommended roof load width (mm)														
Sheet roof - 40 kg/m^2																
35x90	450	7500	7500	7100	4900	2000	6800	6100	4800	3400	2000	4700	4000	3300	2600	1900
	600	7500	7500	6800	4700	1900	4100	4100	4100	3200	1800	2800	2800	2800	2300	1700
45x90	450	7500	7500	7500	6500	2800	7500	7500	6400	5000	3500	7500	6200	4900	3400	2800
	600	7500	7500	7500	6300	2700	7500	7500	6200	4800	3400	5600	5600	4600	3200	2600
2/35x90	450	7500	7500	7500	7500	3600	7500	7500	7500	6400	4200	7500	7500	5600	4900	3400
	600	7500	7500	7500	7500	3400	7500	7500	7500	6200	4100	5800	5800	5300	4600	3200
2/45x90	450	7500	7500	7500	7500	5100	7500	7500	7500	7500	5800	7500	7500	7500	7200	4300
	600	7500	7500	7500	7500	4900	7500	7500	7500	7500	5600	7500	7500	7500	7000	4100
Tiled roof - 90 kg/m^2																
35x90	450	5500	5500	5500	5500	2700	3000	3000	3000	3000	2400	2400	2400	2400	2400	1800
	600	3500	3500	3500	3500	2400	1800	1800	1800	1800	1800	NS	NS	NS	NS	NS
45x90	450	7500	7500	7500	7500	3500	5900	5900	5900	5900	4100	4800	4800	4800	4600	2600
	600	7500	7500	7500	7500	3300	3900	3900	3900	3900	3800	2700	2700	2700	2700	2300
2/35x90	450	7500	7500	7500	7500	4200	6000	6000	6000	6000	4700	5000	5000	5000	5000	3900
	600	7100	7100	7100	7100	4000	3700	3700	3700	3700	3700	2600	2600	2600	2600	2600
2/45x90	450	7500	7500	7500	7500	6500	7500	7500	7500	7500	7100	7500	7500	7500	7500	5600
	600	7500	7500	7500	7500	6300	7500	7500	7500	7500	6800	5400	5400	5400	5400	5300

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above tables are based on a maximum roof mass of 40 and 90 kg/m^2
3. Minimum bearing length = 35 mm at end supports
4. Plate sizes may be trenched up to a maximum of 3 mm. Where trenching exceeds this depth, the minimum net depth of the plate remaining shall be used when determining the allowable design limits
5. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

Top plates - Not trenched - Single or upper storey loadbearing walls
AS 4055 wind classification C1-C3



EXAMPLE:

Sheet roof = 40 kg/m^2

wind speed = C1

Rafter/truss spacing = 600 mm

Tie down spacing = 1200 mm

Roof load width = 5000 mm

Stud spacing = 450 mm

Enter span table at 600 mm rafter/truss spacing column, 1200 mm tie down spacing column, read down to a span equal to or greater than 5000 mm in the 450 mm stud spacing row.

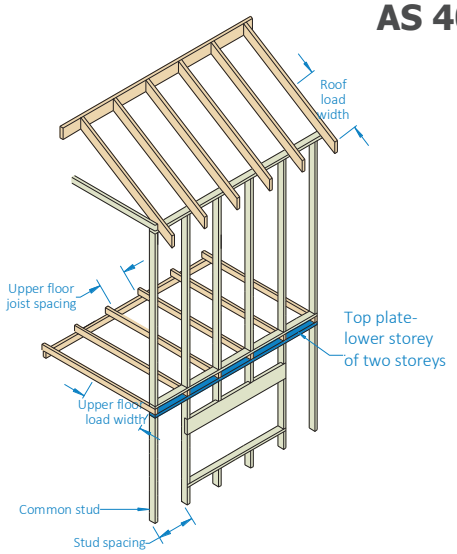
ADOPT: Smart10 LVL - 2/45 x 90

Rafter/truss spacing (mm)		600					900					1200				
Tie-down spacing (mm)		0	600	900	1200	1800	0	600	900	1200	1800	0	600	900	1200	1800
Size DxB (mm)	Stud spacing (mm)	Maximum recommended roof load width (mm)														
Sheet roof - 40 kg/m^2																
35x90	300	7500	5100	3700	2200	NS	6500	2900	2200	2200	NS	4900	2200	NS	NS	NS
	450	6800	4900	3500	2000	NS	4100	2700	2000	2000	NS	3200	1900	NS	NS	NS
	600	5600	4700	3300	1900	NS	3300	2500	1800	1800	NS	2200	1700	NS	NS	NS
45x90	300	7500	6600	4400	2900	NS	7500	3700	2900	2200	NS	6200	2900	2200	2200	NS
	450	7500	6400	4300	2800	NS	5600	3500	2800	2100	NS	4400	2800	2100	2100	NS
	600	7400	6200	4100	2700	NS	4400	3400	2700	2000	NS	3200	2600	1900	1900	NS
2/35x90	300	7500	7500	5900	4400	2200	7500	5200	3700	2900	2200	7500	3700	2900	2200	NS
	450	7500	7500	5700	4300	2100	7200	5000	3500	2800	2100	5700	3400	2700	2000	NS
	600	7500	7500	5600	4100	2000	5800	4800	3300	2700	2000	4100	3200	2600	1900	NS
2/45x90	300	7500	7500	7500	5900	2200	7500	7400	5900	4400	3000	7500	5200	4400	3700	2200
	450	7500	7500	7500	5800	2100	7500	7200	5800	4300	2800	7500	5000	4300	3600	2100
	600	7500	7500	7500	5700	2000	7500	7000	5600	4200	2700	5900	4800	4100	3400	2000
Tiled roof - 90 kg/m^2																
35x90	300	7500	5100	3600	2900	NS	5600	2800	2800	2100	NS	4200	2100	2100	NS	NS
	450	5500	4700	3300	2700	NS	3000	2400	2400	1900	NS	2400	1800	1800	NS	NS
	600	3500	3500	3100	2400	NS	1800	1800	1800	1600	NS	NS	NS	NS	NS	NS
45x90	300	7500	7300	5100	3700	NS	7100	4400	3600	2900	NS	5200	2900	2100	2100	NS
	450	7500	7000	4900	3500	NS	4800	4100	3400	2700	NS	3800	2600	1900	1900	NS
	600	6400	6400	4700	3300	NS	3800	3800	3100	2500	NS	2600	2300	1700	1700	NS
2/35x90	300	7500	7500	5900	4400	2200	7500	5800	4400	3600	2200	7000	3600	2900	2900	NS
	450	7500	7500	5600	4200	2000	6000	5300	4000	3400	2000	4800	3200	2600	2600	NS
	600	7100	7100	5400	4000	1900	3700	3700	3700	3100	1800	2600	2600	2300	2300	NS
2/45x90	300	7500	7500	7500	6700	2900	7500	7500	5900	5200	2900	7500	5800	4400	3600	2200
	450	7500	7500	7500	6500	2800	7500	7500	5700	5000	2800	7200	5500	4100	3400	2000
	600	7500	7500	7500	6300	2700	7100	7100	5500	4700	2600	5000	5000	3900	3200	1900

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above tables are based on a maximum roof mass of 40 and 90 kg/m^2
3. Minimum bearing length = 35 mm at end supports
4. Plate sizes may be trenched up to a maximum of 3 mm. Where trenching exceeds this depth, the minimum net depth of the plate remaining shall be used when determining the allowable design limits
5. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

Top plates - Not trenched –Lower storey of two storey
AS 4055 wind classification N1 - C3



EXAMPLE:

Tiled roof 90 kg/m^2

wind speed = N3

Upper floor load width = 1500 mm

Joist spacing = 450 mm

Roof load width = 5000 mm

Stud spacing = 450 mm

Enter span table at 1800 mm upper floor load width column, 450 mm joist spacing column, read down to a roof load width equal to or greater than 5000 mm in the 450 mm stud spacing row.

ADOPT:

Smart10 LVL - 45 x 70

Upper floor load width (mm)		1800		3600		4800	
Joist spacing (mm)		450	600	450	600	450	600
Size DxB (mm)	Stud spacing (mm)	Maximum recommended roof load width (mm)					
Sheet roof (40 kg/m^2)							
35x70	450	7500	4100	NS	NS	NS	NS
	600	3000	NS	NS	NS	NS	NS
45x70	450	7500	7500	7500	4100	7500	NS
	600	7500	7500	6800	NS	NS	NS
2/35x70	450	7500	7500	7500	7500	7500	6400
	600	7500	6800	7500	2500	4500	NS
2/45x70	600	7500	7500	7500	7500	7500	7500
35x90	450	7500	7000	6800	NS	NS	NS
	600	5500	2400	NS	NS	NS	NS
45x90	450	7500	7500	7500	7500	7500	4800
	600	7500	7500	7500	4300	7500	NS
2/35x90	450	7500	7500	7500	7500	7500	7500
	600	7500	7500	7500	6000	7500	3000
2/45x90	600	7500	7500	7500	7500	7500	7500
Tiled roof (40 kg/m^2)							
35x70	450	4100	1900	NS	NS	NS	NS
45x70	450	7500	5400	6600	2000	3800	NS
	600	5600	3400	3000	NS	NS	NS
2/35x70	450	7500	6000	7500	4100	7100	2800
	600	5200	3000	3200	NS	1800	NS
2/45x70	450	7500	7500	7500	7500	7500	7500
	600	7500	7500	7500	7100	7500	6000
35x90	450	6000	3000	2800	NS	NS	NS
	600	2400	NS	NS	NS	NS	NS
45x90	450	7500	7500	7500	5100	7500	2200
	600	7500	5000	6000	2300	3400	NS
2/35x90	450	7500	7500	7500	6600	7500	5200
	600	7500	4500	5200	2700	4000	NS
2/45x90	600	7500	7500	7500	7500	7500	7500

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above tables are based on a maximum roof mass of 40 and 90 kg/m^2. Total upper floor mass of 50 kg/m2. Floor live load of 1.5 kPa, Floor point load of 1.1 kN
3. Minimum bearing length = 35 mm at end supports
4. Plate sizes may be trenched up to a maximum of 3 mm. Where trenching exceeds this depth, the minimum net depth of the plate remaining shall be used when determining the allowable design limits
5. **Not all sizes of SmartLVL in this table are stocked in each state. Please check with your supplier before ordering.**

SmartFrame Warranty

All SmartFrame Engineered Wood Products (EWP) are covered by our SmartFrame warranty against material and workmanship defects and are guaranteed to perform as specified when stored, installed, and finished in accordance with SmartFrame installation instructions.

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