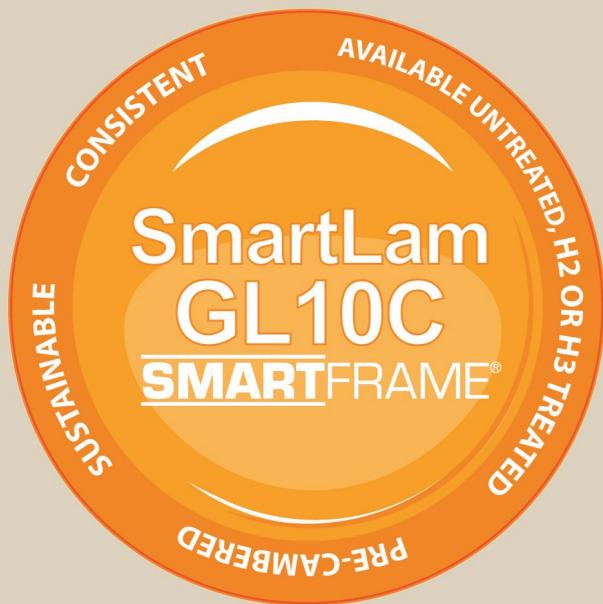


# SmartLam GL10C

(Pre-cambered)

## Design Guide





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### SmartFrame Product Warranty\*

Tilling Timber warrants that its SmartFrame Engineered Wood products will be free from manufacturing defects in workmanship and material.

In addition, provided the product is correctly installed and used, Tilling Timber warrants the adequacy of its design for the normal and expected life of the structure.

This warranty is backed by the full resources of Tilling Timber and by underwritten product liability insurance.

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## Scope of this publication

This Design Guide and Load Tables assist in the selection of SmartLam GL10C for some of the common structural arrangements met in domestic construction.

Other than the limited examples uniquely associated with GLT shown, 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.

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 within the SmartFrame Design Centre who can be contacted for advice on matters concerning the use of its SmartFrame engineered timber products in timber construction via the technical support Helpline on 1300 668 690 or e-mail at [techsupport@tilling.com.au](mailto:techsupport@tilling.com.au)

### Substitution of other products

All load tables in this document are designed using the unique characteristic properties of SmartLam GL10C manufactured to AS/NZS 1328 by quality producers 3<sup>rd</sup> party audited by the GLTAA, and distributed by Tilling Timber Pty Ltd.

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### Certification

As a professional engineer, qualified and experienced in timber engineering, I certify that the use of the SmartLam GL10C members as shown in these tables, and installed in accordance with the provisions of this Design Guide, complies to the Building Code of Australia. These Span Tables have been prepared in accordance with standard engineering principles, the relevant test reports and Australian standards, ie:

- AS 1720.3 Timber structures Part 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 1328 Glue laminated structural timber - performance requirements and minimum production requirements.

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National Product Engineer



The information contained in this product brochure is current as at March 2022 and is based on data available to Tilling Timber Pty Ltd at the time of going to print. Tilling Timber Pty Ltd has used its reasonable endeavours to ensure the accuracy and reliability of the information contained in this document and, to the extent permitted by law, will not be liable for any inaccuracies, omissions or errors in this information nor for any actions taken in reliance on this information. Tilling Timber Pty Ltd reserves the right to change the information contained in this document without prior notice. It is important that you call the technical support customer Helpline on 1300 668 690 to confirm that you have the most up to date information available.

# SmartLam® GL15C

## Introduction

SmartLam GL10C beams are manufactured for Tilling Timber by 3<sup>rd</sup> party audited quality GLT manufacturers to AS/NZS 1328. SmartLam GL10C GLT beams are engineered timber products with high strength, dimensional stability, great load carrying capacity and superior fire resistance.

All timber used for laminating is carefully selected from production and graded according to specification. After trimming to the desired size, all stock is kiln dried to 12% average moisture content, to ensure efficient bonding in the gluing operations. The laminations are finger jointed by machine, with glue being cured by cold press system and controlled temperature.

## Benefits of SmartLam GL10C

**Cost Effectiveness** - SmartLam GL10C beams high strength to weight ratio allows you to design for maximum loads over large spans with the smallest possible end sections.

**Product Quality** - All SmartLam GL10C beams are manufactured in accordance with AS/NZS 1328 Glue Laminated Structural Timber and the Glued Laminated Timber Association (GLTAA) Industry standard GLTAA-4-91.

**Fire safety** - Extensive fire test data shows that large end section timber performs well in fire situations due to the formation of a protective layer of char which usually occurs at a temperature around 250° C. This charred area inhibits the effects of the fire on the inner portion of the timber component, hence it maintains structural load support for measurable periods of time as the fire progresses.

Conversely, steel loses its strength rapidly as the temperature is raised. At about 550°C, it has lost about 50% of its original bending strength, and by 750°C it has lost 90%. Timber does not lose strength in the same way, with the loss of section size through charring the major reason for any strength reduction.

**Fast easy erection** - Timber is a user friendly building material, requiring no special tools other than those a normal builder would use, and with SmartLam GL10C beams, installation is fast, easy and efficient.

**Environmental responsibility** - SmartLam GL10C beams are made from timber from sustainable managed forests.

**Low maintenance** - In most applications, SmartLam GL10C beams will require little or no maintenance other than that which you would ordinarily carry out to any structural material.

**Natural beauty** - The natural beauty of timber is desired and highly appropriate in many architectural applications. Appearance Grade B SmartLam GL10C beams allow you to build timber's natural warmth and beauty into your designs.

## Ordering SmartLam GL10C

Stock SmartLam GL10C GLT has a 600 m radius camber and Appearance Grade B

AS/NZS 1328.2 defines 3 appearance grades:

- Appearance Grade A - Sanded with any voids filled - intended for applications where appearance is important and clear or painted finishes are used
- Appearance Grade B - intended for applications where appearance is important but where a planed finish is acceptable
- Appearance Grade C - intended for applications where appearance is unimportant

## SmartLam GL10C B grade

"C" indicates pre-camber  
"S" indicates no-pre-camber (straight)

Appearance grade

### Protection and handling

Care should be taken during delivery to avoid marking and to avoid damage. Unloading of trucks should be done by hand or with a crane, do not drop or dump members. During unloading with lifting equipment, use fabric or plastic belts or other slings which will not mark the wood. If chains or cables are used, provide protective blocking or padding. Guard against soiling, dirt, footprints, abrasions, or injury to sharp edges or corners.

## Installation

### Preparatory work

Carefully unload and handle the laminated members at job site to prevent surface marking and damage. If laminated timber is to be stored before erection, place it on blocks well off the ground with individual members separated by strips so that air may circulate around all four sides. The top and the sides of storage pile shall be covered with moisture resistant covering. Wrapping shall be left intact, but individual wrappings shall be slit or punctured on the lower side to permit the drainage of water that may have accumulated. Before erection, the assembly should be checked for any damage from water or handling, prescribed camber, and accuracy of anchorage connections.

Laminated beams can be nailed into place in the same way as solid timber beams. Alternatively, a range of plates are available for end fixing. For larger beams, special purpose, engineer designed end fixing should be used.

### Deflection

All structural members deflect downwards when dead loads are applied, and therefore it is important to allow for this deflection structurally and/or aesthetically in the selection of the beam sizes. The "Deflection Limits" table on page 10 details deflection limits for various applications.

### Verticality

SmartLam GL10C members must not be installed out of plumb more than height/500.

### Holes for services

Horizontal Holes - Like notches, holes in a GLT beam remove wood fibre, reduce the net area of the beam at the hole location, and introduce stress concentrations. For this reason, horizontal holes in GLT beams are limited in size and location to maintain the structural integrity of the beam. The diagram on the next page shows the zones of a uniformly loaded, simply supported beam where field drilling of holes may be considered.

Field drilled horizontal holes should be for access only and should not be used as attachment points for brackets or other load bearing hardware unless specifically designed as such by the Engineer/Designer.

Regardless of the hole location, the net section of the beam remaining should be checked for flexure and horizontal shear.

Vertical holes - As a rule of thumb, vertical holes drilled through the depth of a GLT beam cause a reduction in capacity at that location directly proportional to the ratio of 1½ times the diameter of the hole. For example, a 25 mm hole drilled in a 150 mm wide beam would reduce the capacity of the beam at that section by ¼. For this reason, where it is necessary to drill vertical holes through

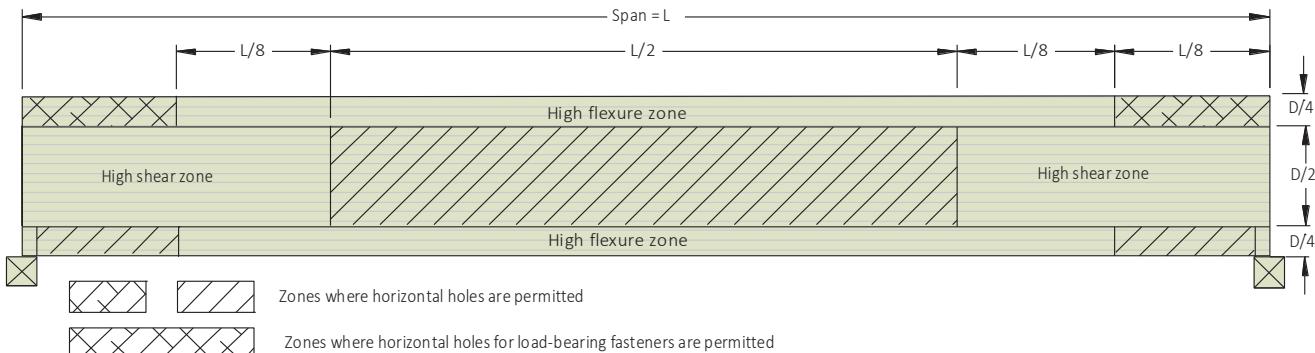
## Installation (cont'd)

a GLT member, the holes should be positioned in areas of the member that are stressed to less than 50% of the design in bending.

Holes for support of heavy equipment - Heavy equipment or piping suspended from GLT should be attached so that the load is applied

to the top of the member to avoid tension perpendicular to the grain stresses. Any horizontal holes required for support of significant weight, such as suspended heating and cooling units or main water lines, must be located above the neutral axis of the member and in a zone stressed to less than 50% of the design flexural stresses.

Zones where horizontal holes are permitted in a uniformly loaded simply supported beam



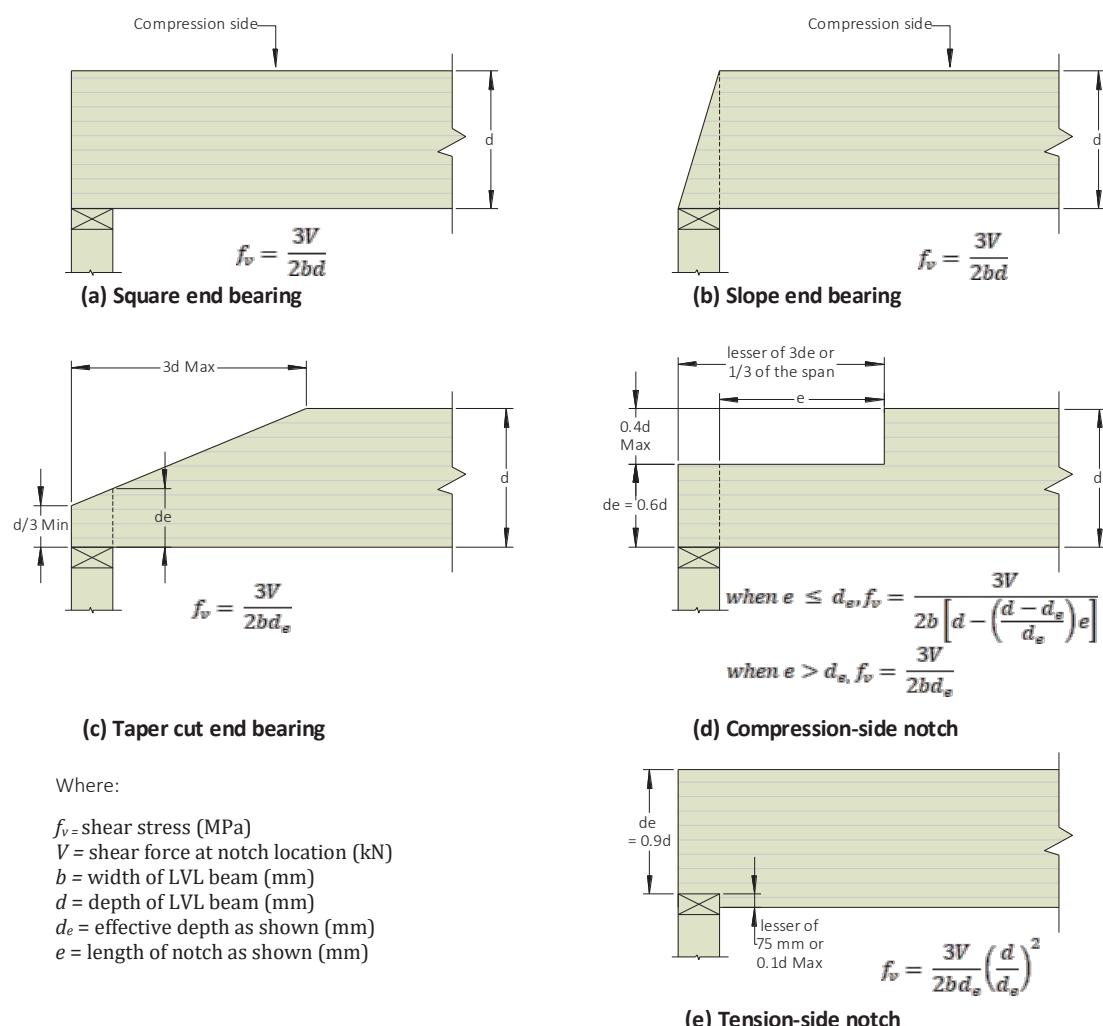
### Notches

Notching of bending members should be avoided whenever possible, especially on the tension side of a member.

Tension-side notching of GLT beams is not permitted except at end bearings and then only under specific conditions. The notching of a bending member on the tension side results in a decrease in strength caused by stress concentrations which develop around the notch, as well as a reduction of the area resisting the bending and shear forces. Such notches induce perpendicular-to-grain tension stresses which, in conjunction with horizontal shear forces, can cause splitting along the grain, typically starting at the inside corner of the notch.

Where GLT members are notched at the ends for bearing over a support, the notch depth shall not exceed 1/10 of the beam depth. Figure (e) is provided to assist in evaluating the associated reductions to beam strength due to notching on the tension side.

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 (a) to (d). The equations given are empirical in nature and were developed for the conditions shown.



As this guideline is limited to single span, simply supported beams, the notches shown in Figure (b) and (c) occur in areas of high shear and effectively zero moment. For this reason, the design equations given are shear equations. In situations where compression side notches extend into areas of significant moment, the bending capacity of the beam should also be checked using the remaining section of the beam and the appropriate allowable

## Installation (cont'd)

stresses for those laminations remaining at the notch location.

When it becomes necessary to cut a small notch in the top of a GLT beams (in the compression zone) to provide passage for small diameter pipe or conduit, this cut should be made in areas of the beam stressed to less than 50% of the design bending stress. The net section in these areas should be checked for shear and bending stresses to ensure adequate performance.

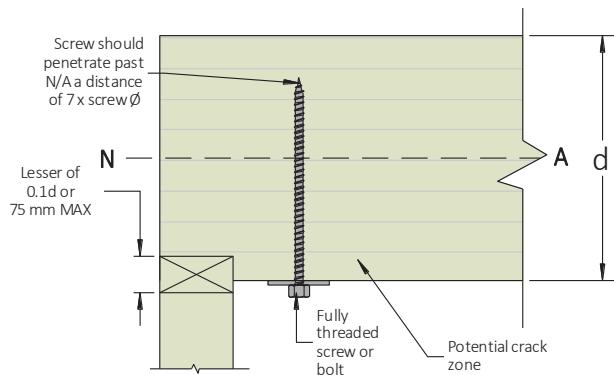
All field notches should be accurately cut. Avoid over-cutting at the root of the notch. Drilling a pilot hole in the member at the interior or corner location of a notch as a stop point for the saw blade provides both a rounded corner and minimizes over-cutting at the corner.

Stress concentrations due to notches can be reduced by using a gradually tapered notch configuration in lieu of a square-cornered notch. Rounding the square corner of a notch with a radius of approximately 12 mm is also recommended to reduce stress concentrations in these areas.

For square-cornered notches occurring at the ends of beams on the tension side, the designer may consider the use of reinforcement, such as full-threaded lag screws, to resist the tendency to split at the notch (See diagram below). A number of design methodologies exist for sizing such screws.

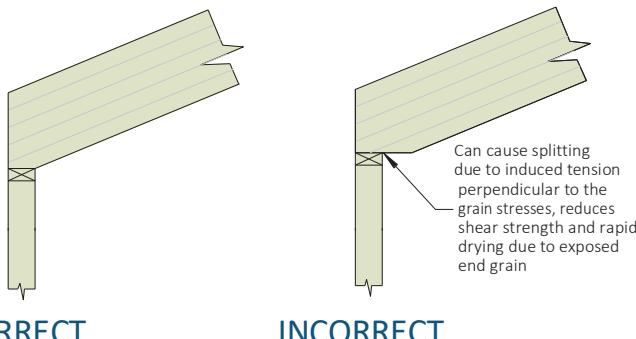
The design methodology selected and subsequent fabrication details are the responsibility of the project designer/engineer .If lag screws are used, lead holes shall be predrilled in accordance with accepted practice. This procedure can also be used as a field remedy to minimize further propagation of an existing crack.

Further information about the use of screw reinforcement can be obtained by contacting the technical support Helpline on 1300 668 690 or e-mail at [techsupport@tilling.com.au](mailto:techsupport@tilling.com.au).



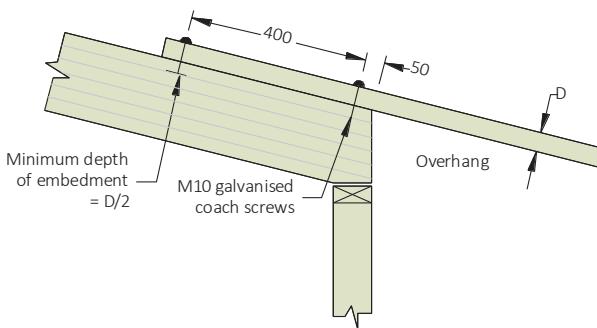
### Birdsmouthing

Figure 3 - Birds mouthing details for SmartLam GL10C



### Eaves overhang

Figure 4 - Eaves over hang details for SmartLam GL10C



Note: Refer to AS 1684 Residential timber-framed construction code for overhang member size.

### Allowable Eaves overhangs

#### 1. Non Cyclonic Areas

Beams for flat or similar roofs - Not Birds mouthed: Eaves overhang shall not exceed 40% of the actual beam span.

Beams with conventional pitched roofs - Birds mouthed to one third their depth:

- I. Sheet roof - 20% of actual beam span
- II. Tiled roof - 30% of actual beam span

#### 2. Cyclonic Areas

Recommendations as per above, but reduced as follows:

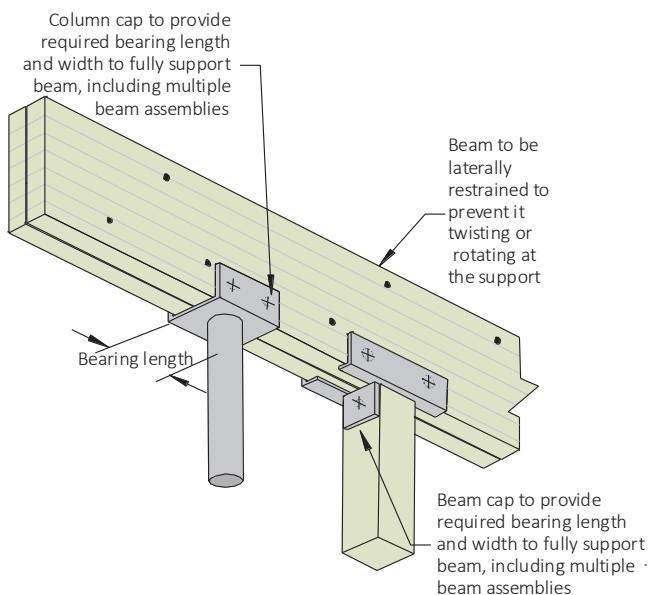
Non Birds mouthed:

- 25% of actual beam span

Birdsmouthed:

- Sheet roof - 10% of actual beam span
- Tiled roof - 20% of actual beam span

### Steel and Timber fixing to SmartLam GL10C



**CORRECT**

**INCORRECT**

# Installation (cont'd)

## Multiple SmartLam GL10C section beams

Vertical laminations may be achieved by adopting the principle described in clause 2.3 of AS 1684, however, due to the thickness of SmartLam GL10C, nails are NOT suitable for combining SmartLam GL10C beams.

Experience with GLT beams indicates that multiple member laminations individual components may cup as a result of the ingress of moisture between laminates during construction. The suggested method of vertical lamination shown below provides a greater level of fixity between individual components, and combined with

the use of a temporary waterproof membrane and an elastomeric adhesive prevents moisture penetration between the laminates.

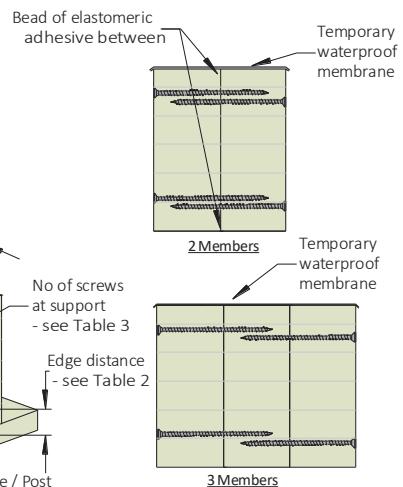
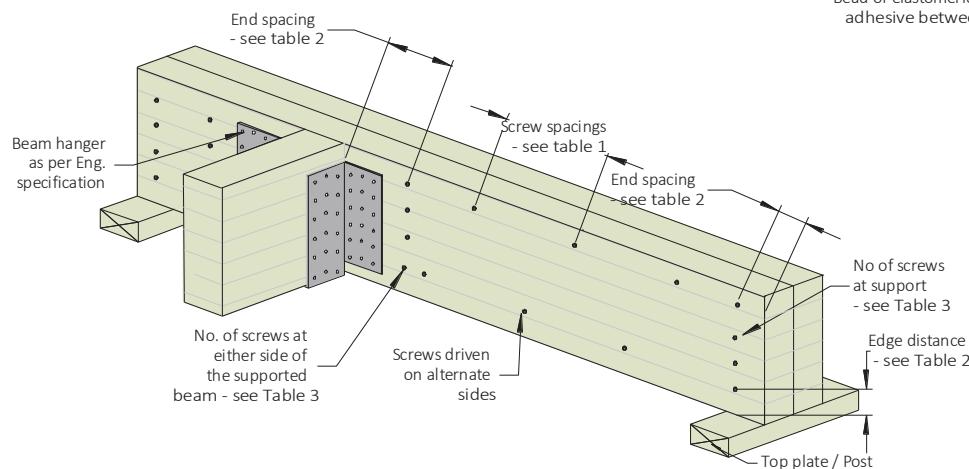
Maximum floor load width tables for multiple member laminations of SmartLam GL10C:

### 1. Type 17 screw lamination

### 2. Bolt lamination

are shown below.

### 1. Type 17 screws



**Table 1**

Side (non-symmetrically) and top loaded beam				
Section width	Type 17 screw size	No of screw rows (both sides)	Screw spacing (mm)	Max. floor joist span supported by outer member (mm)**
2/75 & 3/75	14g x 100	2 or 3*	300	7700
2/60 & 3/60	14g x 125	2 or 3*	300	6000

\* for beam depths  $\geq$  300 mm, use 3 rows of screws  
\*\* Floor loads G = 1.25 kPa, Q = 2.0 kPa

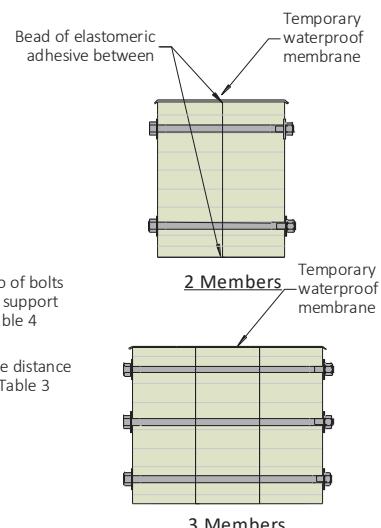
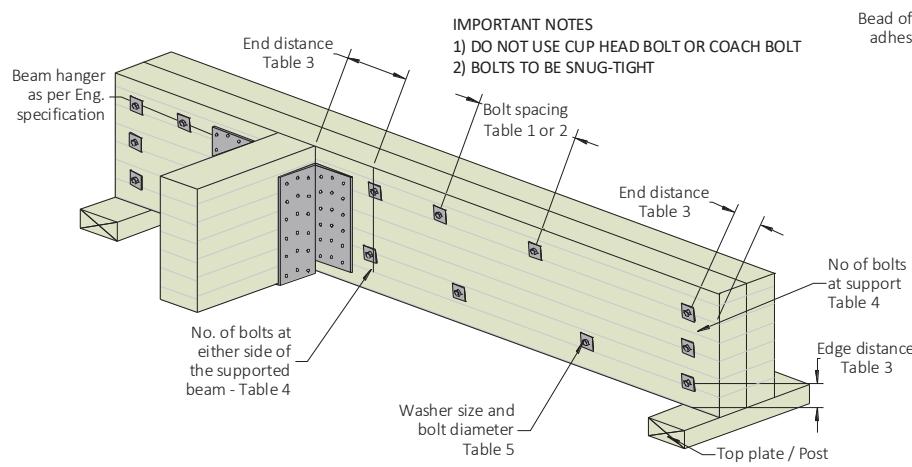
**Table 2**

Type 17 screw size	Min. edge distance (mm)	Min. end distance (mm)	Min. distance between screws (across the grain) (mm)
14g	40	70	30

**Table 3**

Beam depth (mm)	Min. number of screws required	
	At support	At either side of supported beam
90 – 240	3	3
> 240	4	4

### 2. Bolts



## Installation (cont'd)

### 2. Bolts (Cont'd)

Table 1

Top (symmetrically) loaded beam - M12 Hex head bolt	
Beam depth ≤ 300 mm	Beam depth > 300 mm
2 rows of bolts at 600 mm ctrs	3 rows of bolts at 600 mm ctrs

Table 2

Side (Non symmetrically) loaded beam - M12 Hex head bolt		
Maximum floor joist span supported by the beam mm*		
2 rows at 600 mm ctrs	2 rows at 300 mm ctrs	3 rows at 600 mm ctrs
11,00 mm	>12	>12

\* based upon floor loads of G: 1.25 kPa Q: 2.0 kPa

Table 3

Bolt size	Min. edge distance	Min. end distance	Min. distance between bolts (across grain)
M12 Hex head	60 mm	60 mm	60 mm

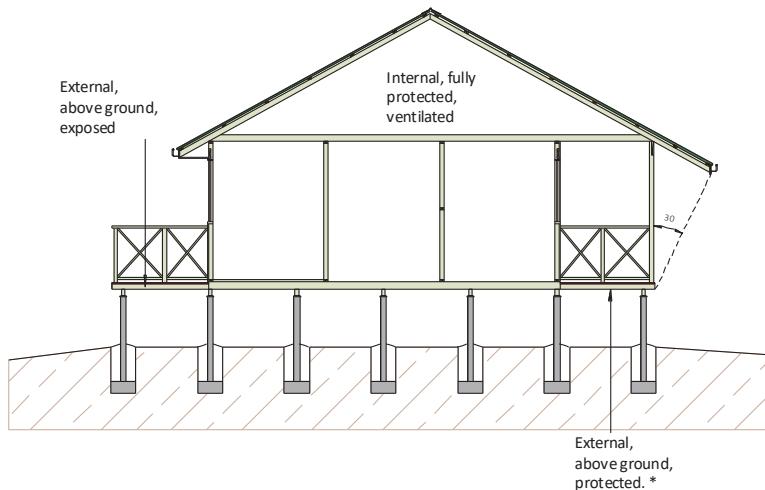
Table 4

Beam depth (mm)	Min. number of bolts required	
	At support	At either side of supported beam
90–150	1	1
160–240	2	2
> 240	3	3

Table 5

Bolt diameter (mm)	Washer dimensions		
	Thickness (mm)	Min. diameter of round washers (mm)	Min. side length of square washers (mm)
M12	3	55	50

## SmartLam durability and weather exposure



### AS 1684 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).

SmartLam GL10C's are manufactured from kiln dried timber (MC less than 15%), and therefore need to be protected from moisture cycling that can occur from:

- Exposure to direct sun and rain (including during construction)
- Contact or close exposure with moisture laden porous material (e.g. Concrete blocks)
- Exposure to extreme environments such as dry heating systems (e.g. slow combustion wood heaters), air conditioning, large north or west facing windows or moisture laden environments such as pool enclosures.

## SmartLam GL10C protection methods

### During Construction (pre-water proof roof)

SmartLam GL10C's are supplied WITHOUT any short term construction sealer. However if SmartLam GL10C is expected to be

exposed for an extended period or become wet, it is recommended that the beam be sealed with a construction sealer that is compatible with the final paint or varnish finish, or wrapped in plastic to provide protection (plastic must allow for drainage and air circulation to breath).

Examples:

- If the SmartLam GL10C is installed inside a building without direct exposure to air-conditioning such as in wall cavity, NO protection to the beam is required.
- If the SmartLam GL10C is installed inside a building with direct exposure to air conditioning or dry heat then a sealer is required.
- If the SmartLam GL10C is under the eaves and protected from direct rain and sun, it is recommended that the construction sealer be lightly sanded and a finish coat of compatible premium quality paint be applied. (In accordance with paint manufacturer's specifications).

# Durability and exposure to moisture (Cont'd)

## Moisture effects on SmartLam GL15

SmartLam GL15, like all wood products, is hygroscopic, which means it has an affinity for water, and being a GLT, should be considered as a composite of many pieces of wood, each with different potential swelling. Moisture exposure will ultimately lead to dimensional change.

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. To prevent this effect, use construction details as shown on page 7.

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.

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 remedial water repellent be used to recoat any cut ends or notches etc.

The table below shows the moisture content of SmartLam GL15 as a function of humidity.

Moisture content of wood products % <sup>(1)</sup>	
Relative Humidity %	GLT 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°C

## Dimensional change

SmartLam GL15 will shrink and swell in proportion to changes in moisture content between 0 and 28 % fibre saturation point.

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 SmartLam GL15 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:

$\Delta D$  = 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%

NOTE: these dimensional effects are quite variable.

## 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 ~ 25% for Eucalypts

The APPROXIMATE effect upon key Characteristic Properties of SmartLam GL15 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
MOR (Bending)	F'_b	8.4	16.1	23.1	29.6	35.5
Compression perpendicular to grain	f'_p	9.9	18.9	27.0	34.2	40.8
Compression parallel to grain	f'_c	11.0	20.7	29.4	37.2	44.1
Shear	f'_s	6.6	12.8	18.6	24.0	29.0
						33.7

The design Characteristic properties of SmartLam GL15 can therefore be considerably reduced by severe increase in MC of the LVL.

If the SmartLam GL15 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 SmartLam GL15 will ultimately dry and re-equilibrate to the ambient humidity conditions, but some expansion or swelling will remain after re-drying.

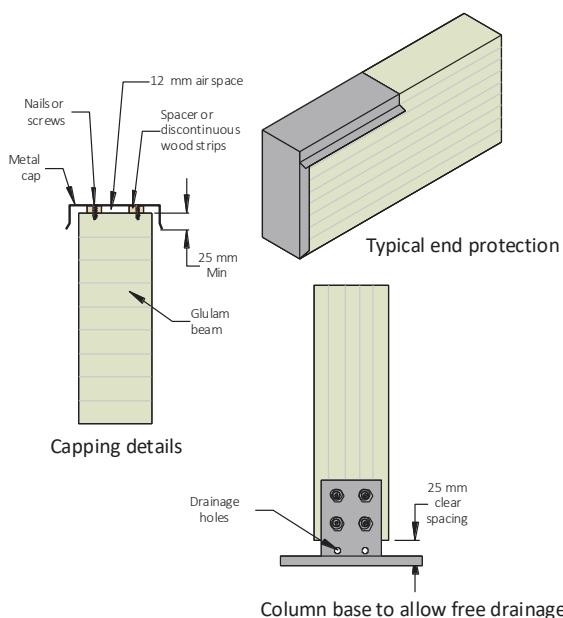
## Design for durability

- i. The use of building overhangs and other structures which protect the beams from excessive moisture movement and sun exposure.
- ii. 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.
- iii. The use of arrised or round edges on beams to reduce the likelihood of coating failures on sharp edges.
- iv. The use of drip edges or other devices which provide a path for free moisture flow away from the timber beam.

## Durability and exposure to moisture (Cont'd)

- v. Joint detailing should, wherever possible, comply with the following:
1. Keep horizontal contact areas to a minimum, in favour of self draining vertical surfaces.
  2. Ventilate joint surfaces by using spacers, wherever possible
  3. 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
  4. 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.



### Post-Production treatment

SmartLam GL15 can be supplied Tru-Core® treated to either H2 or H3 hazard class levels, as per AS/NZS 1604.1 (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 SmartLam GL15 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 SmartLam GL15, as shown in the table below.

A more comprehensive Hazard Class Table is available in AS/NZS 1604.1 but it is **NOT** recommended that SmartLam GL15 be used in end uses with exposures requiring treatment in excess of H3.

(1) Experience is showing that post production treated GLT 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 SmartLam 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™ high density water proof joist/ bearer cover or malthoid capping
- and
- (ii) An impervious membrane such as regularly maintained painting or staining
- (iii) Construction detailing to prevent water entrapment.

H3 treated SmartLam GL15 is NOT recommended for fascias, 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.

### Fasteners for H3 SmartLam GL15

For any H3 SmartLam GL15 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.

### Painting of treated SmartLam GL15

#### 1. General

To provide the longest service life of the SmartLam GL15 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

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
4. A water based stain can be applied to the clean, dry wood in 45-70 days from treatment date.

## Durability and exposure to moisture (Cont'd)

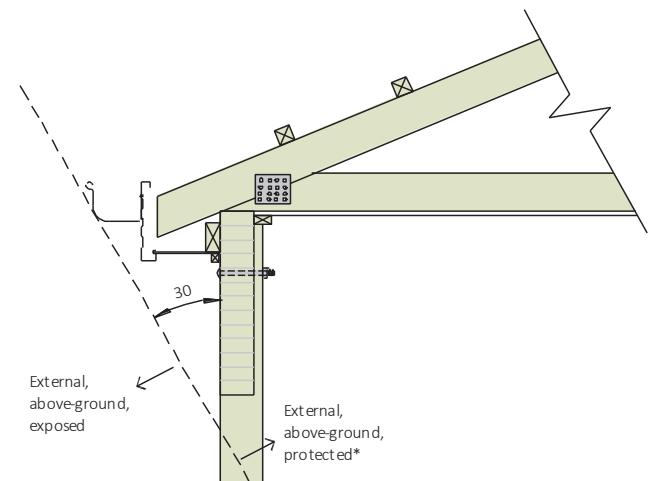
5. Depending on the treatment method used, if the wood is left uncoated and without UV protection:

- The typical brown colour of the Copper Quat treated wood will naturally weather to a grey colour over long-term exposure to the sun
- 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.

### Covered alfresco beams

Alfresco beams constructed to comply with the diagram below are technically classified in AS 1684 as *External, above-ground, protected*. (see previous page)



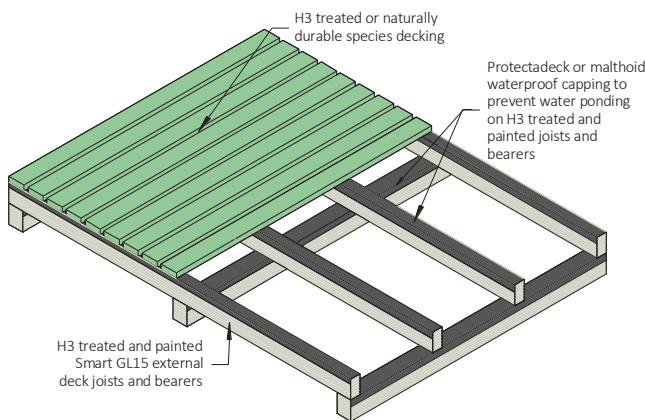
SmartLam GLs used in protected exterior applications must be:

- Correctly detailed by fully enclosing member with a mechanical barrier such a cement sheet if it is likely to get wet or experiences direct sun
- Mechanical barrier correctly painted with a premium quality protective finish (e.g. light coloured pigmented external paint system) to prevent moisture infiltration.

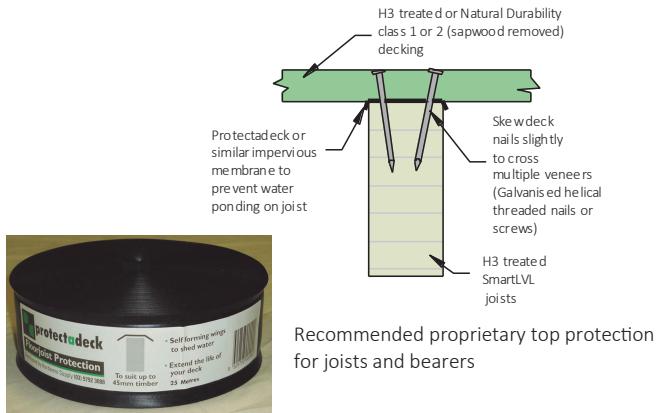
It is important that an inspection and maintenance programme, based on exposure level and the paint manufacturer's recommendations be prepared.

### H3 Deck bearers and joists

H3 Treated Deck joists and bearers are a common application for treated SmartLam GL15. The diagram demonstrates the minimum construction detailing for H3 treated joists and bearers. Failure to follow these guidelines may render treatment warranties void.



It is recommended that deck nails be slightly skewed as per the detail below.



Recommended proprietary top protection for joists and bearers

### 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:

- Structural adequacy: (the duration for which the elements can carry its designated load)
- Integrity: (the duration for which the element can maintain its integrity to prevent the spread of fire to/ from the compartment)

and

- 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 GLT) is described in AS/NZS 1720.4 - 2019 Timber Structures Part 4: Fire resistance of timber elements.

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

where:

c = notional charring rate, in mm per minute

d = timber density of SmartLam GL10 - ~600 kg/m<sup>3</sup>

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.

Further information about using SmartFrame product in fire rated applications can be obtained by contacting the Techsupport Help-line on 1300 668 690 or email [techsupport@tilling.com.au](mailto:techsupport@tilling.com.au).

# Designing with SmartLam GL10C

The design information contained within this Design Guide is for the properties of SmartLam GL10C only. Other manufacturers' LVL may have different properties and therefore cannot be designed using this information.

## 1. Product Specification

<b>Lamella:</b>	Thickness:	25-45 mm
	Species:	Pinus Radiata, Pinus Sylvestris
	Strength Group	SD6
	Joints:	Finger joint
<b>Dimensional tolerances:</b>	Length:	± 10 mm
	Depth:	≤ 100 mm ± 1 mm ≥ 100 ≤ 302 mm ± 3 mm ≥ 301 ≤ 600 mm ± 4 mm ≥ 601 ± 6 mm
	Thickness:	-0, +4 mm at 12% moisture content
<b>Adhesive:</b>	Complies with AS/NZS 4364:2010	
<b>Treatment: options:</b>	Un-treated , H2 and H3	

## 2. Limit State Design Characteristic Properties

Timber Strength Properties: <sup>(1)</sup>			
Bending	$f'_b$	22 MPa	
Tension Parallel to grain	$f'_t$	8 MPa	
Tension Perpendicular to grain	$f'_{tp}$	0.5 MPa	
Compression Parallel to grain	$f'_c$	18 MPa	
Compression Perpendicular to grain - Edge	$f'_p$	10 MPa	
Shear	$f'_s$	3.7 MPa	
Average Elastic Modulus	E	10,000 MPa	
Average Modulus of Rigidity	G	670 MPa	
Average Density		600 kg/m <sup>3</sup>	
Moisture Content		12-15%	

(1) Dry conditions

## 3. 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 SmartLam GL10C as a structural member		
Category 1	Category 2	Category 3
<b>Structural members for houses for which failure would be unlikely to affect an area greater than 25 m<sup>2</sup>; OR secondary members in structures other than houses</b>	<b>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<sup>2</sup></b>	<b>Primary structural members in structures intended to fulfil essential services or post disaster function</b>
Strength reduction factor $\phi^*$		
0.95	0.85	0.75

\* AS 1720.1:2010 Table 2.1

## 4. Duration of load

The duration of load factor  $k_1$  for strength is defined within clause

Duration	Service class / exposure classification		
	1, 2	3	Severe/ Adverse
Short term <= 1 Day	1.0	1.0	1.0
Long term > 12 months	1.5	2.0	3.0*

Notes:

- \* Any beams to be used in service class 3 are outside the scope of these span tables, therefore specialist design advice should be sought from an engineer.
- In general, the size of this beam can conservatively be obtained by the following method:
  - Obtain the beam size for service class 1 & 2
  - Obtain the  $EI_{xx}$  from the "Section Properties" table for this beam
  - Obtain from the "Section Properties" table a beam size with an  $EI_{xx} \Rightarrow 2/1.5 \times EI_{xx}$  of the original beam
  - Follow the recommendations for SmartLam durability and weather exposure on page 6
- Service Classes 1,2 & 3 are defined in AS 1328

## 5. Partial seasoning factor

SmartLam GL10C is a seasoned timber product, generally  $k_4$  equals 1. Where the GLT is subjected to conditions in which the average moisture content for a 12 month period is expected to exceed 15%, the characteristic capacity shall be decreased. The value of  $k_4$  shall be the greater of:

$$a. \quad k_4 = 1 - 0.3 \frac{EMC - 15}{10};$$

$$b. \quad k_4 = 0.7$$

Where EMC is the highest value of the annual moisture content (percent) that the timber will attain in service.

## 6. Length and position of bearing

The  $k_7$  bearing factor is defined in clause 2.4.4 of AS 1720.1

## 7. Load sharing

Because of the reduced variability of strength values of GLT compared to solid timber, the load sharing factor  $k_9 = 1.0$  as defined in clause 7.4.3 of AS 1720.1

## 8. Stability

The stability factor  $k_{12}$  is defined within section 7 of AS 1720.1 beams. The methods for calculating  $k_{12}$  for solid wood in section 3 of AS 1720.1 shall generally apply except that the material constant ( $\rho_b$  or  $\rho_c$ ) for beams and column shall be as given in Tables 7.2(A) and 7.2(B)

## 9. Temperature

For covered timber structures under ambient conditions, no modification for strength need be made for the effect of temperature (i.e.,  $k_6$  equals 1.0) except that where seasoned timber is used in structures erected in coastal regions of Queensland north of latitude 25°S, and all other regions of Australia north of latitude 16°S, the strength shall be modified by a factor  $k_6$  of 0.9.

## SmartLam GL10C Beam Properties

Nominal Size DxB mm		Beam Mass kg/m	Nominal section area $10^3 \text{ mm}^2$	Major axis			Minor axis		
				Z <sub>xx</sub> $10^3 \text{ mm}^2$	I <sub>xx</sub> $10^6 \text{ mm}^4$	E <sub>ixx</sub> $10^9 \text{ Nmm}^2$	Z <sub>yy</sub> $10^3 \text{ mm}^2$	I <sub>yy</sub> $10^6 \text{ mm}^4$	
168	x	65	6.0	10.9	306	26	257	118.3	3.8
210	x	65	7.5	13.7	478	50	502	147.9	4.8
252	x	65	9.0	16.4	688	87	867	177.5	5.8
294	x	65	10.5	19.1	936	138	1376	207.0	6.7
336	x	65	12.0	21.8	1223	205	2055	236.6	7.7
378	x	65	13.5	24.6	1548	293	2926	266.2	8.7
420	x	65	15.0	27.3	1911	401	4013	295.8	9.6
168	x	85	7.9	14.3	400	34	336	202.3	8.6
210	x	85	9.8	17.9	625	66	656	252.9	10.7
252	x	85	11.8	21.4	900	113	1134	303.5	12.9
294	x	85	13.7	25.0	1225	180	1800	354.0	15.0
336	x	85	15.7	28.6	1599	269	2687	404.6	17.2
378	x	85	17.7	32.1	2024	383	3826	455.2	19.3
420	x	85	19.6	35.7	2499	525	5248	505.8	21.5
168	x	115	10.6	19.3	541	45	454	370.3	21.3
210	x	115	13.3	24.2	845	89	888	462.9	26.6
252	x	115	15.9	29.0	1217	153	1534	555.5	31.9
294	x	115	18.6	33.8	1657	244	2435	648.0	37.3
336	x	115	21.3	38.6	2164	364	3635	740.6	42.6
378	x	115	23.9	43.5	2739	518	5176	833.2	47.9
420	x	115	26.6	48.3	3381	710	7100	925.8	53.2
462	x	115	29.2	53.1	4091	945	9450	1018.3	58.6
504	x	115	31.9	58.0	4869	1227	12269	1110.9	63.9
168	x	135	12.5	22.7	635	53	533	510.3	34.4
210	x	135	15.6	28.4	992	104	1042	637.9	43.1
252	x	135	18.7	34.0	1429	180	1800	765.5	51.7
294	x	135	21.8	39.7	1945	286	2859	893.0	60.3
336	x	135	24.9	45.4	2540	427	4267	1020.6	68.9
378	x	135	28.1	51.0	3215	608	6076	1148.2	77.5
420	x	135	31.2	56.7	3969	833	8335	1275.8	86.1
462	x	135	34.3	62.4	4802	1109	11094	1403.3	94.7
504	x	135	37.4	68.0	5715	1440	14403	1530.9	103.3
546	x	135	40.5	73.7	6708	1831	18312	1658.5	111.9

## SmartLam GL10C 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

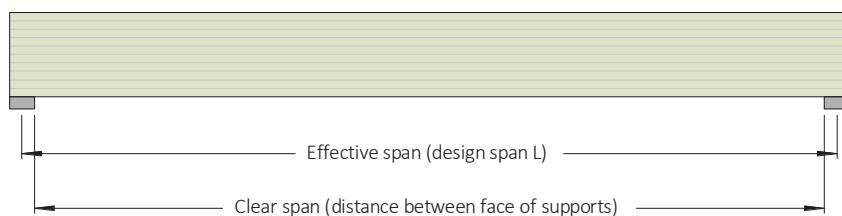
**Design span/Effective span.** This is the span used for single span members to determine the bending moment, the slenderness of bending members and the deflections. In NZS 3603 this is the dimension referred to as “L”, and is defined below.

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

(a)



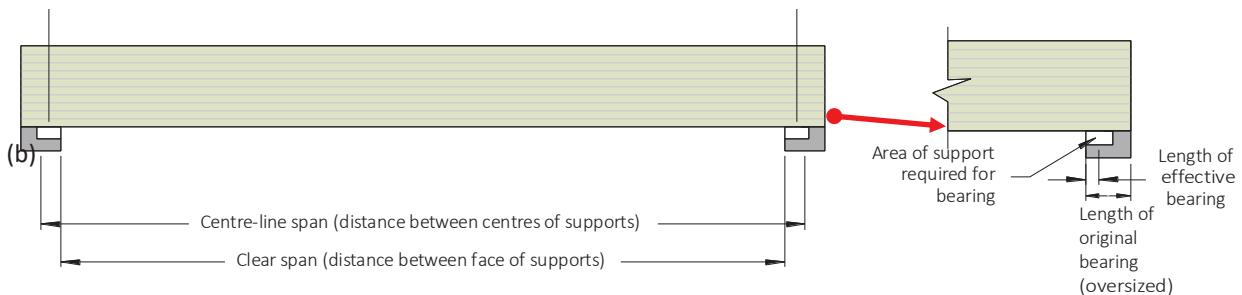


Diagram (b) shows beam where bearings at each end have been oversized. (This is frequently the case for beams that bear onto brickwork or concrete walls where the thickness of the wall is in excess of the area required to give the beam bearing capacity).

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

span difference	effective span	resultant span description
10% Max	main span	continuous
10 – 30%	1.1 x main span	continuous
Above 30% difference	main span	single

$$\text{span difference} = \frac{(\text{major span} - \text{minor span})}{(\text{major span} + \text{minor span})} \times 100$$

The span to use in the case of unequal continuous spans is the "resultant span description" as shown in the table above.

(Note: It is recommended for the most accurate designs, that the SmartFrame software be used.)

## Checking in SmartLam GL10C

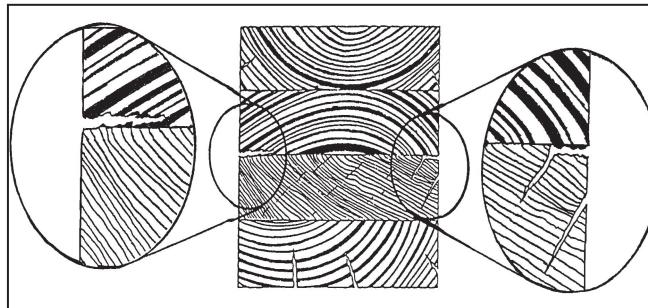
One of the advantages of glued laminated timber construction is that while seasoning checks may occur for the same reasons that they do in sawn members, checking in glued laminated timber will generally occur to a much lesser degree because of careful control of the moisture content of timber used for laminating. Checks in wood are separations along the fibres normally occurring across the rings of annual growth resulting from stresses developed during changes in moisture content. Checks in glued laminate timber may appear as openings parallel to the grain on the sides of members.

As wood loses moisture to the surrounding atmosphere, the outer fibres of the member lose moisture at a more rapid rate than do the inner fibres. As outer fibres try to shrink, they are restrained by the inner portion of the member that has higher moisture content. The more rapid the rate of drying, the greater will be the differential in shrinkage between the outer and inner fibres resulting in higher shrinkage stresses.

These resultant stresses perpendicular to the grain of the wood can cause characteristic wood seasoning checks. The influence of checks on the structural performance of glued laminated timber members is generally minor. Checking can be minimized by careful installation practices that avoid prolonged exposure of the members during construction.

## Identification of checking

Checks occur as transverse separations or openings that are nearly parallel to the grain direction in glued laminated timber and generally follow the grain direction around knots and along sloping grain. Differences in the shrinkage rate of individual laminations used in glued laminated timber tend to concentrate shrinkage stresses at or near glue lines, resulting in checks.



Checks are often confused with delamination that occurs when the glue bond is not adequate. The presence of wood fibre separation in these openings is the key distinguishing characteristic of seasoning checks. Openings due to inadequate adhesive bonding may appear as smooth wood surface separations, possibly darkened by the adhesive film, or as glossy surface areas of adhesive with an absence of torn wood fibres.

Checking often occurs along the first glue line adjacent to the outer lamination that may dry more rapidly because a larger surface area of that lamination is exposed to the air. This condition is sometimes aggravated when the outer lamination tends to cup, creating tension perpendicular to grain stresses along or near the first glue line.

## Significance of checking

In general, checks have little effect on the strength of glued laminated members. Glued laminated members are made from laminations that are thin enough to season readily in kiln drying schedules without developing checks. Checks usually appear on the wide faces of the timber and do not materially affect the shear strength of the laminations. In cases where members are designed for loading parallel to the wide face of the laminations, checks may affect the shear strength of the beam their effect may

be evaluated in the same manner as for sawn timber. Seasoning checks in bending members affect only the horizontal shear capacity.

In establishing allowable horizontal shear values, normal checking due to seasoning has been considered.

Checks are usually not of structural importance unless they are significant in depth, occur in the mid-height of the member near the supports, and the design of the member is governed by shear.

## Checking in SmartLam GL10C (Cont'd)

If these conditions exist, the reduction in shear strength is directly proportional to the ratio of the depth of checks to the width of the bending member. Checks in columns are not of structural importance unless the check develops into a split, thereby increasing the l/d ratio of the column.

### Additional information

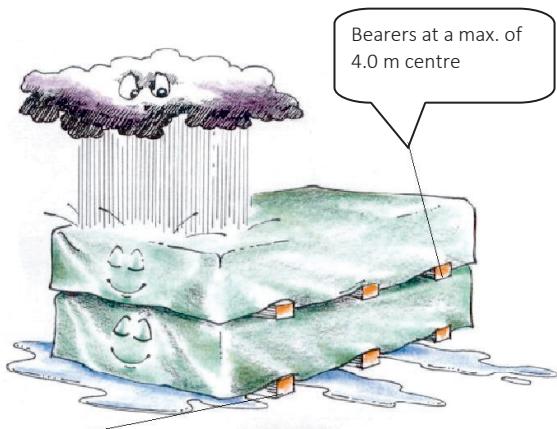
While checking is not considered to be of structural significance, the reason for the checking and the means by which further checking may be minimized should be determined.

If there is concern regarding structural adequacy, advice can be obtained from engineers from the SmartFrame Design Centre or a structural engineer experienced and qualified in glued laminated timber technology should evaluate the significance of the checking.

The SmartFrame Technical Note - "Evaluation of Checking in Glued Laminated Timber (GLT)" gives detailed analysis of the modification to structural capacity as a result of severe checking.

## Storage and handling

1. Store SmartLam GL10C's flat on a hard, dry surface
2. If surface isn't paved, the ground should be covered with a polythene film
3. Keep covered with waterproof material that allows bundles to "breathe"
4. Use bearers (bolsters) between the ground and the first bundle (4 metre max spacing)
5. Use 100 x 50 timber flat between bundles at same spacing as bolsters
6. Take great care to rewrap remaining material after opening bundles
7. Timber "grows" in thickness and depth when allowed to get wet....KEEP DRY!
8. Timber products with high MC has short term reduction in Characteristic Strengths .... KEEP DRY!
9. Under NO circumstances is stored SmartLam GL10C to be in contact with the ground.



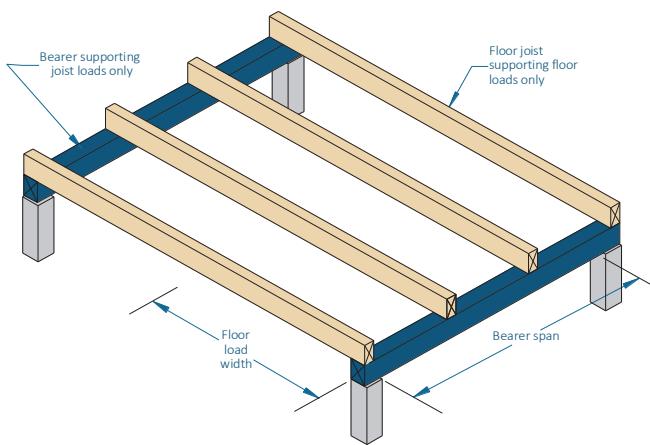
Use bearers to keep stacked material away from damp surfaces. Align bearer vertically

## LISTS OR TABLES AND CHARTS

Floor bearers - floor loads only	14
Bearers - wall and roof loads - sheet and tiled roof	16
Single/upper storey lintels	19
Lower storey lintels supporting load bearing walls and floors	21
Rafters/Roof beam - ceiling attached	
- Wind classification N1-N3	22
- Wind classification C1-C3	23
Rafters/Roof beam -no ceiling attached	
- Wind classification N1-N3	24
- Wind classification C1-C3	25
Ridge or intermediate beam	
- Wind classification N1-N3	26
- Wind classification C1-C3	27
Verandah beam	
- single span wind classification N1-N3	29
- continuous span wind classification N1-N3	30
Verandah beam	
- single span wind classification C1-C3	32
- continuous span wind classification C1-C3	33
Hip or valley rafter	35

## Floor bearers supporting floor loads only

Floor mass - 40 kg/m<sup>2</sup>



### EXAMPLE:

single span bearer = 4000 mm  
floor load width = 4000 mm

Enter single span table at 4200 mm in floor load width column, read down to a span equal to or greater than 4000 mm

### ADOPT:

SmartLam GL10C - 420 x 65

Loadings: Permanent - self weight + 40 kg/m<sup>2</sup> + 0.6 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 SINGLE span bearer span (mm)									
168x65	3100	2700	2400	2100	1900	1800	1700	1600	1500	1400
210x65	3700	3300	3000	2700	2400	2300	2100	2000	1900	1800
252x65	4200	3800	3500	3200	2900	2700	2500	2400	2200	2100
294x65	4700	4300	4000	3800	3400	3200	3000	2800	2600	2500
336x65	5300	4700	4400	4200	3900	3600	3400	3200	3000	2900
378x65	5700	5200	4800	4600	4400	4100	3800	3600	3400	3200
420x65	6200	5600	5200	4900	4700	4500	4200	4000	3800	3600
168x85	3300	2900	2700	2500	2200	2100	1900	1800	1700	1600
210x85	3900	3600	3300	3100	2800	2600	2400	2300	2100	2000
252x85	4500	4100	3800	3600	3400	3100	2900	2700	2600	2400
294x85	5100	4600	4300	4000	3900	3600	3400	3200	3000	2900
336x85	5600	5100	4700	4500	4300	4100	3900	3600	3400	3300
378x85	6200	5600	5200	4900	4700	4500	4300	4100	3900	3700
420x85	6700	6000	5600	5300	5100	4900	4700	4600	4300	4100
168x115	3600	3200	3000	2700	2600	2400	2200	2100	2000	1900
210x115	4300	3800	3600	3400	3200	3000	2800	2600	2500	2400
252x115	4900	4400	4100	3900	3700	3600	3400	3200	3000	2900
294x115	5500	5000	4600	4400	4200	4000	3900	3700	3500	3300
336x115	6100	5500	5100	4800	4600	4400	4300	4200	4000	3800
378x115	6600	6000	5600	5300	5000	4800	4700	4500	4400	4300
420x115	7200	6500	6000	5700	5500	5300	5100	4900	4800	4700
462x115	7700	7000	6500	6100	5900	5600	5500	5300	5200	5000
504x115	8200	7500	6900	6600	6300	6000	5800	5700	5500	5400
168x135	3700	3400	3100	2900	2700	2600	2400	2300	2200	2000
210x135	4400	4000	3700	3500	3400	3200	3000	2900	2700	2600
252x135	5100	4600	4300	4000	3900	3700	3600	3400	3300	3100
294x135	5700	5200	4800	4500	4300	4200	4000	3900	3800	3600
336x135	6300	5700	5300	5000	4800	4600	4500	4300	4200	4100
378x135	6900	6300	5800	5500	5200	5000	4900	4700	4600	4500
420x135	7500	6800	6300	6000	5700	5500	5300	5100	5000	4900
462x135	8000	7300	6800	6400	6100	5900	5700	5500	5400	5200
504x135	8600	7800	7200	6800	6500	6300	6100	5900	5700	5600
546x135	9100	8300	7700	7300	6900	6700	6500	6300	6100	6000

## Floor bearers supporting floor loads only (Cont'd)

Floor mass - 40 kg/m<sup>2</sup>

Loadings: Permanent - self weight + 40 kg/m<sup>2</sup> + 0.6 kPa of the live load, live load - 1.5 kPa or floor point load of 1.8 kN

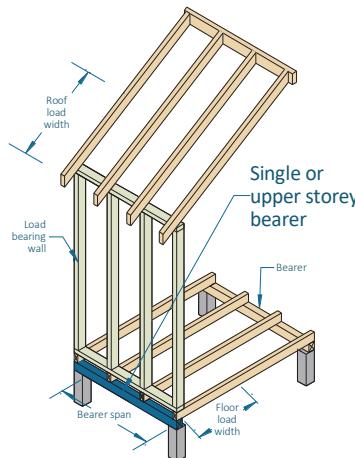
Floor load width (mm)	1200	1800	2400	3000	3600	4200	4800	5400	6000	6600
Size DxB (mm)	Maximum recommended CONTINUOUS span bearer span (mm)									
420x115	40	6500	5700	5200	5900	5400	4900	5100	4800	4500
	90	6100	5100	4500	5600	4900	4400	4900	4500	4100
462x115	40	7100	6300	5600	6400	5800	5300	5500	5200	4900
	90	6700	5500	4900	6100	5300	4800	5400	4900	4500
504x115	40	7800	6800	6100	6900	6300	5800	5800	5600	5300
	90	7200	6000	5300	6600	5700	5100	5800	5300	48005
168x135	40	3000	2600	2300	2600	2400	2100	2200	2100	1900
	90	2800	2200	1900	2500	2100	1800	2100	1900	1700
210x135	40	3700	3200	2900	3400	3000	2700	2800	2600	2400
	90	3500	2800	2400	3200	2700	2300	2700	2400	2200
252x135	40	4300	3900	3500	4000	3600	3300	3400	3200	2900
	90	4100	3400	2900	3800	3200	2800	3300	2900	2600
294x135	40	5000	4400	4000	4500	4100	3800	3900	3700	3500
	90	4600	3900	3500	4300	3700	3300	3800	3400	3100
336x135	40	5600	4900	4500	5100	4600	4200	4400	4100	3900
	90	5200	4400	3900	4800	4200	3800	4300	3900	3600
378x135	40	6200	5500	4900	5600	5100	4700	4900	4600	4300
	90	5800	4900	4300	5300	4600	4200	4700	4300	4000
420x135	40	6800	6000	5400	6200	5600	5100	5300	5000	4700
	90	6400	5300	4700	5900	5100	4600	5200	4700	4300
462x135	40	7500	6600	5900	6700	6100	5600	5700	5500	5100
	90	7000	5800	5100	6400	5500	5000	5600	5100	4700
504x135	40	8200	7100	6400	7200	6600	6100	6100	5900	5600
	90	7600	6300	5600	7000	6000	5400	6000	5500	5100
546x135	40	8800	7700	6900	7600	7200	6500	6500	6400	6000
	90	8200	6800	6000	7500	6500	5800	6400	5900	5400

### NOTES:

- D = member depth, B = member breadth, NS = not suitable.
- End bearing lengths = 70 mm at end supports and 90 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 90 mm at internal supports.
- Restraint value for slenderness calculations is 600 mm. (floor joist centres at 600 mm max)
- Not all sizes of SmartLam GL10C 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

## Single span



Floor mass - 40 kg/m<sup>2</sup>

### EXAMPLE:

Sheet roof - 40 kg/m<sup>2</sup>  
floor load width = 2000 mm  
roof load width = 1950 mm  
bearer span = 3000 mm (single span)

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 3000 mm in the 40 kg/m<sup>2</sup> row

### ADOPT:

SmartLam GL10C - 295 x 65

Floor load width (mm)		1200			2400			4800		
Roof load width (mm)		1500	4500	7500	1500	4500	7500	1500	4500	7500
Size DxW (mm)	Roof Mass (kg/m <sup>2</sup> )	Maximum SINGLE span bearer span (mm)								
168x65	40	2300	2000	1700	2000	1800	1600	1600	1500	1400
	90	2100	1700	1500	1900	1600	1400	1500	1400	1200
210x65	40	2900	2500	2200	2600	2300	2100	2000	1900	1700
	90	2700	2200	1900	2400	2000	1800	1900	1700	1600
252x65	40	3600	3100	2700	3200	2800	2500	2400	2200	2100
	90	3300	2600	2300	3000	2500	2100	2300	2100	1900
294x65	40	4100	3600	3200	3700	3300	3000	2800	2600	2500
	90	3800	3100	2700	3500	2900	2500	2700	2400	2200
336x65	40	4500	4000	3600	4100	3800	3400	3200	3000	2800
	90	4300	3600	3000	3900	3400	2900	3100	2800	2500
378x65	40	5000	4400	4000	4600	4100	3800	3600	3400	3200
	90	4700	4000	3400	4300	3800	3200	3500	3100	2900
420x65	40	5500	4900	4400	5000	4500	4200	4000	3700	3500
	90	5200	4300	3800	4800	4100	3600 <sub>5</sub>	3900	3500 <sub>5</sub>	3200 <sub>15</sub>
168x85	40	2500	2200	1900	2200	2000	1800	1800	1700	1600
	90	2300	1900	1600	2100	1800	1600	1700	1600	1400
210x85	40	3200	2800	2400	2900	2500	2300	2300	2100	2000
	90	3000	2400	2100	2700	2300	2000	2200	2000	1800
252x85	40	3800	3400	3000	3500	3100	2800	2700	2600	2400
	90	3600	2900	2500	3300	2700	2400	2600	2400	2200
294x85	40	4400	3900	3500	4000	3600	3300	3200	3000	2800
	90	4100	3400	3000	3800	3200	2800	3100	2800	2500
336x85	40	4900	4300	3900	4400	4000	3700	3600	3400	3200
	90	4600	3900	3400	4200	3700	3300	3500	3200	2900
378x85	40	5400	4800	4300	4900	4500	4100	4100	3900	3600
	90	5100	4300	3800	4700	4100	3700	4000	3600	3300
420x85	40	6000	5300	4700	5400	4900	4500	4500	4300	4000
	90	5600	4700	4100	5100	4500	4000	4400	4000	3600 <sub>5</sub>
168x115	40	2800	2400	2100	2500	2200	2000	2100	1900	1800
	90	2600	2100	1800	2400	2000	1700	2000	1800	1600
210x115	40	3600	3100	2700	3200	2800	2500	2600	2500	2300
	90	3300	2700	2300	3000	2500	2200	2600	2300	2100
252x115	40	4200	3700	3300	3800	3400	3100	3200	3000	2800
	90	3900	3200	2800	3600	3000	2700	3100	2800	2500
294x115	40	4800	4200	3800	4300	3900	3600	3700	3500	3300
	90	4400	3700	3300	4100	3600	3200	3600	3200	2900
336x115	40	5300	4700	4300	4800	4400	4100	4200	4000	3700
	90	5000	4200	3700	4600	4000	3600	4100	3700	3400
378x115	40	5900	5200	4700	5400	4900	4500	4600	4400	4100
	90	5500	4600	4100	5100	4400	4000	4500	4100	3800

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

Floor mass - 40 kg/m<sup>2</sup>

Floor load width (mm)		1200			2400			4800		
Roof load width (mm)		1500	4500	7500	1500	4500	7500	1500	4500	7500
Size DxW (mm)	Roof Mass (kg/m <sup>2</sup> )	Maximum SINGLE span bearer span (mm)								
420x115	40	6500	5700	5200	5900	5400	4900	5100	4800	4500
	90	6100	5100	4500	5600	4900	4400	4900	4500	4100
462x115	40	7100	6300	5600	6400	5800	5300	5500	5200	4900
	90	6700	5500	4900	6100	5300	4800	5400	4900	4500
504x115	40	7800	6800	6100	6900	6300	5800	5800	5600	5300
	90	7200	6000	5300	6600	5700	5100	5800	5300	4800 <sub>5</sub>
168x135	40	3000	2600	2300	2600	2400	2100	2200	2100	1900
	90	2800	2200	1900	2500	2100	1800	2100	1900	1700
210x135	40	3700	3200	2900	3400	3000	2700	2800	2600	2400
	90	3500	2800	2400	3200	2700	2300	2700	2400	2200
252x135	40	4300	3900	3500	4000	3600	3300	3400	3200	2900
	90	4100	3400	2900	3800	3200	2800	3300	2900	2600
294x135	40	5000	4400	4000	4500	4100	3800	3900	3700	3500
	90	4600	3900	3500	4300	3700	3300	3800	3400	3100
336x135	40	5600	4900	4500	5100	4600	4200	4400	4100	3900
	90	5200	4400	3900	4800	4200	3800	4300	3900	3600
378x135	40	6200	5500	4900	5600	5100	4700	4900	4600	4300
	90	5800	4900	4300	5300	4600	4200	4700	4300	4000
420x135	40	6800	6000	5400	6200	5600	5100	5300	5000	4700
	90	6400	5300	4700	5900	5100	4600	5200	4700	4300
462x135	40	7500	6600	5900	6700	6100	5600	5700	5500	5100
	90	7000	5800	5100	6400	5500	5000	5600	5100	4700
504x135	40	8200	7100	6400	7200	6600	6100	6100	5900	5600
	90	7600	6300	5600	7000	6000	5400	6000	5500	5100
546x135	40	8800	7700	6900	7600	7200	6500	6500	6400	6000
	90	8200	6800	6000	7500	6500	5800	6400	5900	5400

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

Floor mass - 40 kg/m<sup>2</sup>

Floor load width (mm)		1200			2400			4800		
Roof load width (mm)		1500	4500	7500	1500	4500	7500	1500	4500	7500
Size DxW (mm)	Roof Mass (kg/m <sup>2</sup> )	Maximum CONTINUOUS span bearer span (mm)								
168x65	40	2700	2300	1900	2100	1900	1700	1600	1500	1400
	90	2500	1800	1500	2000	1700	1400	1500	1400	1200
210x65	40	3400	2800	2400	2700	2400	2200	2000	1900	1700
	90	3100	2300	1900	2500	2100	1800	1900	1700	1600
252x65	40	4100	3400	2900	3200	2900	2600	2400	2200 <sub>5</sub>	2100 <sub>10</sub>
	90	3800	2800	2300	3000	2500	2100 <sub>10</sub>	2300	2100 <sub>10</sub>	1900 <sub>20</sub>
294x65	40	4800	4000	3300	3700	3400	3000 <sub>5</sub>	2800 <sub>15</sub>	2600 <sub>20</sub>	2500 <sub>30</sub>
	90	4400	3300	2700 <sub>20</sub>	3500	3000 <sub>5</sub>	2500 <sub>25</sub>	2700 <sub>15</sub>	2400 <sub>30</sub>	2200 <sub>45</sub>
336x65	40	5300	4500	3800 <sub>10</sub>	4300	3900 <sub>10</sub>	3500 <sub>20</sub>	3200 <sub>30</sub>	3000 <sub>35</sub>	2800 <sub>55</sub>
	90	5000	3700 <sub>10</sub>	3000 <sub>35</sub>	4100 <sub>5</sub>	3400 <sub>20</sub>	2900 <sub>55</sub>	3100 <sub>35</sub>	2800 <sub>55</sub>	2500 <sub>75</sub>
378x65	40	5800	5100	4300 <sub>20</sub>	4800 <sub>10</sub>	4300 <sub>20</sub>	3900 <sub>35</sub>	3600 <sub>55</sub>	3400 <sub>70</sub>	3200 <sub>80</sub>
	90	5500	4200 <sub>25</sub>	3400 <sub>65</sub>	4600 <sub>15</sub>	3800 <sub>35</sub>	3200 <sub>75</sub>	3500 <sub>65</sub>	3100 <sub>80</sub>	2900 <sub>95</sub>
420x65	40	6200	5600 <sub>15</sub>	4800 <sub>35</sub>	5300 <sub>20</sub>	4800 <sub>35</sub>	4300 <sub>60</sub>	4000 <sub>75</sub>	3700 <sub>85</sub>	3500 <sub>95</sub>
	90	5900	4600 <sub>40</sub>	3800 <sub>80</sub>	5100 <sub>30</sub>	4300 <sub>65</sub>	3600 <sub>95</sub>	3900 <sub>80</sub>	3500 <sub>95</sub>	3200 <sub>115</sub>
168x85	40	3100	2600	2200	2400	2200	2000	1800	1700	1600
	90	2900	2100	1700	2300	1900	1600	1700	1600	1400
210x85	40	3900	3300	2700	3000	2800	2500	2300	2100	2000
	90	3600	2700	2200	2900	2400	2000	2200	2000	1800
252x85	40	4600	3900	3300	3700	3300	3000	2700	2600	2400
	90	4300	3200	2600	3500	2900	2400	2600	2400	2200 <sub>5</sub>

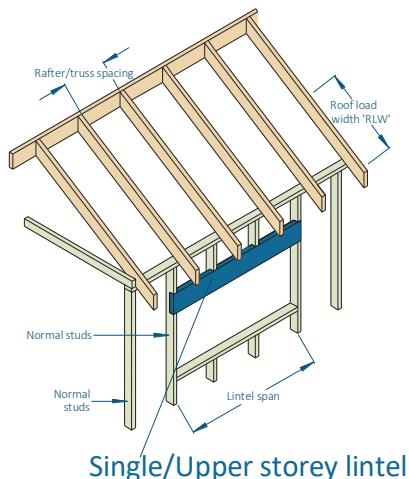
## Floor bearers supporting single storey load bearing wall - sheet and tiled roof Continuous span (Cont'd)

Floor load width (mm)		1200			2400			4800		
Roof load width (mm)		1500	4500	7500	1500	4500	7500	1500	4500	7500
Size DxW (mm)	Roof Mass (kg/m <sup>2</sup> )	Maximum CONTINUOUS span bearer span (mm)								
294x85	40	5100	4500	3800	4300	3900	3500	3200	3000 <sub>5</sub>	2800 <sub>10</sub>
	90	4800	3700	3000 <sub>5</sub>	4100	3400	2900 <sub>10</sub>	3100 <sub>5</sub>	2800 <sub>15</sub>	2500 <sub>25</sub>
336x85	40	5700	5100	4400	4900	4400	4000 <sub>5</sub>	3600 <sub>15</sub>	3400 <sub>20</sub>	3200 <sub>25</sub>
	90	5300	4300	3500 <sub>20</sub>	4600	3900 <sub>5</sub>	3300 <sub>25</sub>	3500 <sub>15</sub>	3200 <sub>30</sub>	2900 <sub>45</sub>
378x85	40	6200	5600	4900 <sub>5</sub>	5500	5000 <sub>5</sub>	4500 <sub>15</sub>	4100 <sub>30</sub>	3900 <sub>35</sub>	3600 <sub>50</sub>
	90	5800	4800 <sub>10</sub>	3900 <sub>35</sub>	5200	4400 <sub>20</sub>	3700 <sub>45</sub>	4000 <sub>30</sub>	3600 <sub>50</sub>	3300 <sub>70</sub>
420x85	40	6700	6000	5400 <sub>20</sub>	6100 <sub>5</sub>	5500 <sub>15</sub>	5000 <sub>30</sub>	4500 <sub>45</sub>	4300 <sub>65</sub>	4000 <sub>70</sub>
	90	6300	5300 <sub>20</sub>	4300 <sub>60</sub>	5800 <sub>10</sub>	4900 <sub>35</sub>	4100 <sub>70</sub>	4400 <sub>55</sub>	4000 <sub>75</sub>	3600 <sub>90</sub>
168x115	40	3600	3000	2500	2800	2600	2300	2100	2000	1900
	90	3300	2500	2000	2700	2300	1900	2000	1800	1700
210x115	40	4300	3800	3200	3500	3200	2900	2600	2500	2300
	90	4000	3100	2500	3400	2800	2400	2600	2300	2100
252x115	40	4900	4400	3800	4200	3900	3500	3200	3000	2800
	90	4600	3700	3000	4000	3400	2800	3100	2800	2500
294x115	40	5500	5000	4400	4900	4500	4000	3700	3500	3300
	90	5200	4300	3500	4700	4000	3300	3600	3300	3000 <sub>5</sub>
336x115	40	6100	5500	5000	5600	5100	4600	4200	4000 <sub>5</sub>	3800 <sub>10</sub>
	90	5700	4900	4000	5400	4500	3800 <sub>10</sub>	4100	3700 <sub>10</sub>	3400 <sub>20</sub>
378x115	40	6600	6000	5500	6100	5600	5200	4700 <sub>10</sub>	4500 <sub>15</sub>	4200 <sub>25</sub>
	90	6300	5400	4500 <sub>15</sub>	5900	5100 <sub>5</sub>	4300 <sub>25</sub>	4600 <sub>15</sub>	4200 <sub>25</sub>	3800 <sub>35</sub>
420x115	40	7100	6500	5900	6600	6100	5700 <sub>10</sub>	5300 <sub>25</sub>	5000 <sub>30</sub>	4700 <sub>40</sub>
	90	6800	5800	5000 <sub>30</sub>	6300	5600 <sub>15</sub>	4700 <sub>35</sub>	5100 <sub>25</sub>	4600 <sub>40</sub>	4200 <sub>65</sub>
462x115	40	7700	6900	6400 <sub>5</sub>	7100	6500 <sub>5</sub>	6100 <sub>20</sub>	5800 <sub>35</sub>	5500 <sub>45</sub>	5200 <sub>65</sub>
	90	7200	6300 <sub>10</sub>	5500 <sub>45</sub>	6800	6000 <sub>25</sub>	5200 <sub>60</sub>	5600 <sub>40</sub>	5100 <sub>65</sub>	4700 <sub>80</sub>
504x115	40	8200	7400	6800 <sub>15</sub>	7500	7000 <sub>10</sub>	6500 <sub>30</sub>	6300 <sub>55</sub>	6000 <sub>70</sub>	5600 <sub>80</sub>
	90	7700	6700 <sub>15</sub>	6000 <sub>65</sub>	7200 <sub>5</sub>	6400 <sub>35</sub>	5700 <sub>75</sub>	6100 <sub>65</sub>	5600 <sub>80</sub>	5100 <sub>95</sub>
168x135	40	3800	3300	2700	3100	2800	2500	2300	2100	2000
	90	3500	2700	2200	2900	2400	2000	2200	2000	1800
210x135	40	4500	4000	3400	3800	3500	3100	2900	2700	2500
	90	4200	3400	2700	3600	3100	2600	2800	2500	2300
252x135	40	5100	4600	4100	4600	4200	3800	3400	3200	3000
	90	4800	4000	3300	4400	3700	3100	3300	3000	2800
294x135	40	5700	5100	4700	5200	4900	4400	4000	3800	3600
	90	5400	4700	3800	5000	4300	3600	3900	3500	3200
336x135	40	6300	5700	5200	5800	5400	5000	4600	4300	4100
	90	6000	5100	4400	5600	4900	4100	4400	4000 <sub>5</sub>	3700 <sub>15</sub>
378x135	40	6900	6200	5700	6300	5900	5500	5100	4900 <sub>10</sub>	4600 <sub>15</sub>
	90	6500	5600	4900 <sub>5</sub>	6100	5400	4600 <sub>15</sub>	5000 <sub>5</sub>	4500 <sub>15</sub>	4100 <sub>25</sub>
420x135	40	7400	6700	6200	6800	6300	5900	5700 <sub>15</sub>	5400 <sub>20</sub>	5100 <sub>25</sub>
	90	7000	6100	5400 <sub>20</sub>	6600	5800 <sub>5</sub>	5100 <sub>25</sub>	5500 <sub>15</sub>	5000 <sub>30</sub>	4600 <sub>40</sub>
462x135	40	7900	7200	6600	7300	6800	6300 <sub>5</sub>	6300 <sub>25</sub>	6000 <sub>30</sub>	5600 <sub>40</sub>
	90	7500	6500	5900 <sub>30</sub>	7000	6300 <sub>10</sub>	5600 <sub>40</sub>	6100 <sub>30</sub>	5500 <sub>45</sub>	5000 <sub>65</sub>
504x135	40	8400	7700	7000	7800	7300	6800 <sub>15</sub>	6800 <sub>35</sub>	6500 <sub>50</sub>	6100 <sub>65</sub>
	90	8000	7000 <sub>5</sub>	6300040	7500	6700 <sub>20</sub>	6100 <sub>65</sub>	6600 <sub>40</sub>	6000 <sub>65</sub>	5500 <sub>80</sub>
546x135	40	8900	8100	7500 <sub>5</sub>	8300	7700 <sub>5</sub>	7200 <sub>20</sub>	7400 <sub>60</sub>	7000 <sub>70</sub>	6600 <sub>80</sub>
	90	8500	7400 <sub>10</sub>	6700 <sub>60</sub>	8000	7100 <sub>30</sub>	6500 <sub>75</sub>	7200 <sub>65</sub>	6500 <sub>80</sub>	6000 <sub>95</sub>

### NOTES:

- D = member depth, B = member breadth, NS = not suitable.
- The above table was based on a maximum DL of 40 kg/m<sup>2</sup>, total ground floor mass of 40 kg/m<sup>2</sup>, total wall mass of 37 kg/m<sup>2</sup>, floor live load of 1.5 kPa, floor point load of 1.8 kN
- The above table was based on a wall height of 2700 mm
- End bearing lengths = 70 mm at end supports and 90 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 90 mm at internal supports
- Restraint value for slenderness calculations is 600 mm
- Not all sizes of SmartLam GL10C 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, N2 and N3



## EXAMPLE:

wind speed = N3  
sheet roof - 40 kg/m<sup>2</sup>  
roof load width = 3900 mm  
rafter/truss spacing = 900 mm  
lintel span = 3500 mm

Enter span table at 4500 roof load width column, rafter/truss spacing 900 mm, and read down to a span equal to or greater than 3500 mm in the 40 kg/m<sup>2</sup> row

## ADOPT:

SmartLam GL10C - 252 x 65

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)	900	1200	900	1200	900	1200	900	1200	900	1200	
Size DxH (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended lintel span (mm)									
168x65	40	3600	3500	2900	2900	2500	2500	2200	2100	1900	1800
	90	2900	2900	2300	2300	2000	1900	1700	1500	1500	1200
210x65	40	4300	4300	3500	3500	3100	3100	2700	2700	2400	2400
	90	3500	3500	2900	2900	2500	2500	2200	2200	1900 <sub>10</sub>	1800 <sub>5</sub>
252x65	40	5100	5100	4100	4100	3600	3600	3300	3300	2900	2900 <sub>5</sub>
	90	4100	4100	3400	3300	3000	3000	2600	2700 <sub>10</sub>	2300 <sub>10</sub>	2300 <sub>10</sub>
294x65	40	5800	5800	4700	4700	4100	4100	3800	3700	3500 <sub>5</sub>	3400 <sub>5</sub>
	90	4700	4700	3800	3800	3400	3400	3100 <sub>15</sub>	3100 <sub>15</sub>	2700 <sub>10</sub>	2700 <sub>20</sub>
336x65	40	6600	6600	5300	5300	4600	4600	4200 <sub>5</sub>	4200 <sub>10</sub>	3900 <sub>10</sub>	3900 <sub>10</sub>
	90	5300	5300	4300	4300	3800 <sub>5</sub>	3800 <sub>5</sub>	3500 <sub>15</sub>	3500 <sub>10</sub>	3200 <sub>15</sub>	3100 <sub>25</sub>
378x65	40	7300	7300	5900	5900	5200	5200	4700 <sub>5</sub>	4700 <sub>5</sub>	4300 <sub>15</sub>	4300 <sub>20</sub>
	90	5900	5900	4800	4800	4200 <sub>10</sub>	4200 <sub>15</sub>	3900 <sub>20</sub>	3800 <sub>15</sub>	3600 <sub>35</sub>	3500 <sub>25</sub>
420x65	40	8100	8100	6500	6500	5700 <sub>5</sub>	5700 <sub>5</sub>	5200 <sub>15</sub>	5100 <sub>15</sub>	4700 <sub>15</sub>	4700 <sub>15</sub>
	90	6500	6500	5300	5300 <sub>5</sub>	4600 <sub>10</sub>	4600 <sub>15</sub>	4200 <sub>30</sub>	4200 <sub>30</sub>	3900 <sub>35</sub>	3900 <sub>30</sub>
168x85	40	3900	3800	3200	3100	2700	2800	2400	2400	2200	2200
	90	3100	3100	2500	2500	2200	2100	2000	1900	1700	1500
210x85	40	4600	4600	3800	3800	3300	3300	3100	3000	2800	2800
	90	3800	3800	3100	3100	2700	2800	2400	2400	2200	2200
252x85	40	5400	5400	4400	4400	3900	3900	3500	3500	3300	3300
	90	4400	4400	3600	3600	3200	3200	3000	3000	2700	2700 <sub>10</sub>
294x85	40	6200	6200	5100	5100	4500	4400	4100	4000	3700	3700
	90	5100	5100	4100	4100	3700	3600	3400	3300	3100 <sub>15</sub>	3100 <sub>10</sub>
336x85	40	7100	7100	5700	5700	5000	5000	4500	4500	4200 <sub>5</sub>	4200 <sub>5</sub>
	90	5700	5700	4600	4600	4100	4100	3800 <sub>10</sub>	3700 <sub>5</sub>	3500 <sub>10</sub>	3500 <sub>10</sub>
378x85	40	7900	7900	6400	6400	5600	5600	5100 <sub>5</sub>	5100 <sub>5</sub>	4700 <sub>5</sub>	4700 <sub>5</sub>
	90	6400	6400	5200	5200	4600	4500	4200 <sub>15</sub>	4200 <sub>15</sub>	3900 <sub>20</sub>	3900 <sub>15</sub>
420x85	40	8800	8800	7100	7100	6200	6200	5600 <sub>5</sub>	5600 <sub>5</sub>	5100 <sub>15</sub>	5100 <sub>15</sub>
	90	7100	7000	5700	5700	5000	5000 <sub>10</sub>	4600 <sub>10</sub>	4600 <sub>15</sub>	4200 <sub>25</sub>	4300 <sub>30</sub>

# Single span lintels in single/upper storey walls

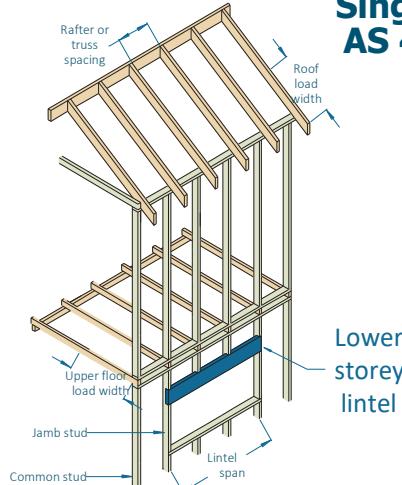
## AS 4055 classification C1, C2 and C3

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		900	1200	900	1200	900	1200	900	1200	900	1200
Size DxW (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended lintel span (mm)									
168x65	40	2600	2700	1800	1600	1400	1000	1000	NS	NS	NS
	90	2600	2700	1900	1600	1400	1100	1100	NS	NS	NS
210x65	40	3400	3300	2300	2300	1900 <sub>5</sub>	1700	1600 <sub>5</sub>	1200	1300 <sub>15</sub>	1000 <sub>5</sub>
	90	3400	3300	2300	2300	1900 <sub>10</sub>	1700 <sub>10</sub>	1600 <sub>10</sub>	1200 <sub>5</sub>	1300 <sub>25</sub>	1000 <sub>10</sub>
252x65	40	4100	4000	2800	2800 <sub>5</sub>	2300 <sub>10</sub>	2300 <sub>5</sub>	2000 <sub>15</sub>	1800 <sub>15</sub>	1800 <sub>30</sub>	1500 <sub>10</sub>
	90	4100	4000	2800	2800 <sub>10</sub>	2300 <sub>15</sub>	2300 <sub>10</sub>	2000 <sub>25</sub>	1800 <sub>20</sub>	1800 <sub>40</sub>	1400 <sub>15</sub>
294x65	40	4800	4800	3400	3300	2700 <sub>5</sub>	2700 <sub>15</sub>	2300 <sub>25</sub>	2300 <sub>15</sub>	2100 <sub>30</sub>	2000 <sub>25</sub>
	90	4700	4700	3400 <sub>10</sub>	3200 <sub>5</sub>	2700 <sub>10</sub>	2700 <sub>25</sub>	2300 <sub>35</sub>	2300 <sub>25</sub>	2000 <sub>40</sub>	2000 <sub>35</sub>
336x65	40	5600	5500	3900 <sub>10</sub>	3800 <sub>5</sub>	3100 <sub>10</sub>	3000 <sub>20</sub>	2600 <sub>20</sub>	2700 <sub>35</sub>	2400 <sub>40</sub>	2400 <sub>50</sub>
	90	5300	5300	3900 <sub>15</sub>	3800 <sub>10</sub>	3100 <sub>15</sub>	3000 <sub>30</sub>	2600 <sub>30</sub>	2600 <sub>45</sub>	2300 <sub>55</sub>	2400 <sub>65</sub>
378x65	40	6200	6200	4400 <sub>10</sub>	4400 <sub>15</sub>	3600 <sub>30</sub>	3400 <sub>20</sub>	3000 <sub>20</sub>	3000 <sub>45</sub>	2700 <sub>35</sub>	2700 <sub>50</sub>
	90	5900	5900	4300 <sub>20</sub>	4300 <sub>25</sub>	3600 <sub>40</sub>	3400 <sub>25</sub>	3000 <sub>30</sub>	2900 <sub>60</sub>	2600 <sub>50</sub>	2700 <sub>65</sub>
420x65	40	7000 <sub>5</sub>	7000	4900 <sub>10</sub>	4900 <sub>20</sub>	4000 <sub>30</sub>	3900 <sub>20</sub>	3400 <sub>45</sub>	3300 <sub>40</sub>	3000 <sub>30</sub>	3000 <sub>50</sub>
	90	6500	6500	4800 <sub>15</sub>	4900 <sub>30</sub>	3900 <sub>40</sub>	3800 <sub>30</sub>	3400 <sub>55</sub>	3300 <sub>55</sub>	3000 <sub>45</sub>	2900 <sub>65</sub>
168x85	40	3100	3000	2100	2100	1700	1400	1400	1000	1100	NS
	90	3100	3000	2100	2100	1700	1400	1400	1000	1100	NS
210x85	40	3900	3800	2700	2700	2200	2100	1900 <sub>5</sub>	1700 <sub>5</sub>	1700 <sub>5</sub>	1300
	90	3800	3800	2700	2700	2200 <sub>5</sub>	2100	1900 <sub>10</sub>	1600 <sub>10</sub>	1700 <sub>10</sub>	1300 <sub>5</sub>
252x85	40	4700	4700	3300	3200	2600	2600 <sub>5</sub>	2300 <sub>10</sub>	2300 <sub>5</sub>	2000 <sub>15</sub>	1900 <sub>10</sub>
	90	4400	4400	3300	3200	2600	2600 <sub>10</sub>	2200 <sub>15</sub>	2200 <sub>15</sub>	2000 <sub>25</sub>	1900 <sub>15</sub>
294x85	40	5600	5500	3900	3800	3100 <sub>10</sub>	3000 <sub>5</sub>	2700 <sub>5</sub>	2700 <sub>20</sub>	2400 <sub>20</sub>	2400 <sub>30</sub>
	90	5100	5100	3900 <sub>5</sub>	3800	3100 <sub>15</sub>	3000 <sub>15</sub>	2600 <sub>10</sub>	2600 <sub>25</sub>	2300 <sub>30</sub>	2400 <sub>40</sub>
336x85	40	6400	6300	4400	4400 <sub>5</sub>	3700 <sub>15</sub>	3500 <sub>5</sub>	3100 <sub>10</sub>	3000 <sub>25</sub>	2700 <sub>15</sub>	2700 <sub>30</sub>
	90	5700	5700	4400 <sub>5</sub>	4400 <sub>10</sub>	3600 <sub>15</sub>	3500 <sub>15</sub>	3100 <sub>15</sub>	3000 <sub>35</sub>	2700 <sub>25</sub>	2700 <sub>40</sub>
378x85	40	7200	7200	5100 <sub>10</sub>	5000 <sub>10</sub>	4100 <sub>15</sub>	4000 <sub>10</sub>	3600 <sub>30</sub>	3400 <sub>20</sub>	3200 <sub>20</sub>	3100 <sub>40</sub>
	90	6400	6400	5000 <sub>5</sub>	5000 <sub>15</sub>	4000 <sub>25</sub>	4000 <sub>15</sub>	3500 <sub>30</sub>	3400 <sub>30</sub>	3100 <sub>25</sub>	3000 <sub>55</sub>
420x85	40	7800	7800	5600 <sub>10</sub>	5600 <sub>15</sub>	4600 <sub>20</sub>	4600 <sub>20</sub>	4000 <sub>30</sub>	3800 <sub>20</sub>	3500 <sub>40</sub>	3400 <sub>35</sub>
	90	7100	7000	5600 <sub>20</sub>	5500 <sub>20</sub>	4500 <sub>25</sub>	4500 <sub>30</sub>	3900 <sub>40</sub>	3800 <sub>30</sub>	3500 <sub>50</sub>	3300 <sub>50</sub>
462x85	40	8400	8400	6200 <sub>15</sub>	6100 <sub>10</sub>	5100 <sub>15</sub>	5000 <sub>30</sub>	4300 <sub>40</sub>	4300 <sub>45</sub>	3900 <sub>50</sub>	3800 <sub>35</sub>
	90	7700	7700	6100 <sub>25</sub>	6100 <sub>15</sub>	5000 <sub>25</sub>	5000 <sub>40</sub>	4300 <sub>55</sub>	4200 <sub>60</sub>	3800 <sub>60</sub>	3700 <sub>45</sub>
504x85	40	90005	9000	6800 <sub>15</sub>	6800 <sub>25</sub>	5500 <sub>35</sub>	5500 <sub>30</sub>	4800 <sub>35</sub>	4800 <sub>50</sub>	4200 <sub>50</sub>	4200 <sub>35</sub>
	90	8500	84005	6700 <sub>20</sub>	6600 <sub>20</sub>	5400 <sub>45</sub>	5400 <sub>40</sub>	4700 <sub>50</sub>	4700 <sub>55</sub>	4100 <sub>60</sub>	4100 <sub>45</sub>

### 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 SmartLam GL10C 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 N1, N2, N3 & C1



## EXAMPLE:

wind speed = N3  
sheet roof - 40 kg/m<sup>2</sup>  
rafter/truss spacing = 600 mm  
lintel span = 3500 mm  
roof load width = 3900 mm  
floor load width = 2400 mm

Enter span table at 4500 roof load width column, floor load width 2400 mm, and read down to a span equal to or greater than 3500 mm in 40 kg/m<sup>2</sup> row

## ADOPT:

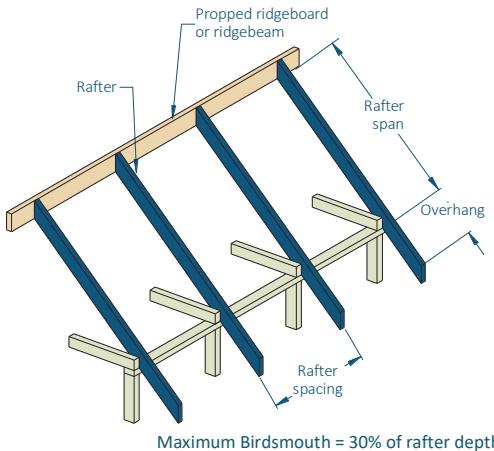
SmartLam GL10C – 336 x 65

Roof load width (mm)		1500			3000			4500			6000		
Floor load width (mm)		1200	2400	3600	1200	2400	3600	1200	2400	3600	1200	2400	3600
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Lintel span (mm)											
		Single span											
168x65	40	2400	2100	1900	2200	2000	1800	2100	1900	1700	1900	1800	1700
	90	2200	2000	1800	2000	1800	1700	1800	1700	1600	1600	1600	1500
210x65	40	3000	2700	2400	2800	2500	2300	2600	2400	2200	2400	2300	2100
	90	2800	2500	2300	2500	2300	2100	2300	2100	2000 <sub>5</sub>	2100	2000 <sub>5</sub>	1900 <sub>5</sub>
252x65	40	3500	3200	2800 <sub>5</sub>	3300	3000	2700 <sub>5</sub>	3100	2900	2600 <sub>5</sub>	3000	2800 <sub>5</sub>	2500 <sub>10</sub>
	90	3300	3000	2700 <sub>5</sub>	3000	2800	2600 <sub>10</sub>	2700	2600 <sub>5</sub>	2400 <sub>10</sub>	2500 <sub>5</sub>	2400 <sub>10</sub>	2300 <sub>15</sub>
294x65	40	4000	3600	3300 <sub>10</sub>	3700	3500 <sub>5</sub>	3200 <sub>10</sub>	3500	3300 <sub>5</sub>	3100 <sub>15</sub>	3400	3200 <sub>5</sub>	3000 <sub>15</sub>
	90	3700	3500 <sub>5</sub>	3200 <sub>10</sub>	3400	3200 <sub>5</sub>	3000 <sub>15</sub>	3200 <sub>5</sub>	3000 <sub>10</sub>	2800 <sub>15</sub>	3000 <sub>15</sub>	2800 <sub>15</sub>	2700 <sub>20</sub>
336x65	40	4500	4100 <sub>5</sub>	3800 <sub>15</sub>	4200	3900 <sub>5</sub>	3600 <sub>20</sub>	4000	3700 <sub>10</sub>	3500 <sub>20</sub>	3800 <sub>5</sub>	3600 <sub>10</sub>	3400 <sub>20</sub>
	90	4200	3900 <sub>5</sub>	3600 <sub>20</sub>	3800 <sub>5</sub>	3600 <sub>10</sub>	3400 <sub>20</sub>	3500 <sub>10</sub>	3400 <sub>15</sub>	3200 <sub>25</sub>	3300 <sub>20</sub>	3200 <sub>25</sub>	3100 <sub>30</sub>
348x65	40	4600	4200 <sub>5</sub>	3900 <sub>20</sub>	4300	4000 <sub>10</sub>	3700 <sub>20</sub>	4100	3800 <sub>10</sub>	3600 <sub>20</sub>	3900 <sub>5</sub>	3700 <sub>15</sub>	3500 <sub>25</sub>
	90	4300	4000 <sub>10</sub>	3700 <sub>20</sub>	3900 <sub>5</sub>	3700 <sub>10</sub>	3500 <sub>25</sub>	3600 <sub>10</sub>	3500 <sub>20</sub>	3300 <sub>25</sub>	3400 <sub>20</sub>	3300 <sub>25</sub>	3200 <sub>30</sub>
420x65	40	5400	4900 <sub>15</sub>	4600 <sub>25</sub>	5100	4700 <sub>15</sub>	4400 <sub>30</sub>	4800 <sub>5</sub>	4500 <sub>20</sub>	4200 <sub>30</sub>	4500 <sub>15</sub>	4300 <sub>20</sub>	4100 <sub>35</sub>
	90	5100 <sub>5</sub>	4700 <sub>15</sub>	4400 <sub>30</sub>	4600 <sub>10</sub>	4300 <sub>20</sub>	4100 <sub>35</sub>	4300 <sub>20</sub>	4100 <sub>25</sub>	3900 <sub>35</sub>	4000 <sub>30</sub>	3900 <sub>35</sub>	3700 <sub>45</sub>
168x85	40	2600	2300	2100	2400	2200	2000	2300	2100	1900	2100	2000	1900
	90	2400	2200	2000	2200	2000	1900	2000	1800	1800	1800	1700	1700
210x85	40	3200	3000	2700	3000	2800	2600	2900	2600	2500	2700	2500	2400
	90	3000	2800	2600	2700	2500	2400	2500	2300	2200	2300	2200	2100
252x85	40	3800	3400	3200	3500	3300	3100	3300	3100	3000	3200	3000	2900 <sub>5</sub>
	90	3500	3300	3100	3200	3000	2900	3000	2800	2700 <sub>5</sub>	2800	2700 <sub>5</sub>	2500 <sub>5</sub>
294x85	40	4300	3900	3600 <sub>5</sub>	4000	3700	3500 <sub>5</sub>	3800	3600	3400 <sub>5</sub>	3600	3400	3300 <sub>5</sub>
	90	4000	3700	3500 <sub>5</sub>	3700	3500	3300 <sub>5</sub>	3400	3300 <sub>5</sub>	3100 <sub>10</sub>	3200 <sub>5</sub>	3100 <sub>10</sub>	3000 <sub>15</sub>
336x85	40	4800	4400	4100 <sub>10</sub>	4500	4200	3900 <sub>10</sub>	4300	4000	3800 <sub>10</sub>	4100	3800 <sub>5</sub>	3600 <sub>10</sub>
	90	4500	4200	3900 <sub>10</sub>	4100	3900 <sub>5</sub>	3700 <sub>10</sub>	3800 <sub>5</sub>	3600 <sub>10</sub>	3500 <sub>15</sub>	3600 <sub>10</sub>	3500 <sub>15</sub>	3300 <sub>20</sub>
348x85	40	5000	4500	4200 <sub>10</sub>	4700	4300	4000 <sub>10</sub>	4400	4100 <sub>5</sub>	3900 <sub>10</sub>	4200	3900 <sub>5</sub>	3800 <sub>15</sub>
	90	4700	4300	4000 <sub>10</sub>	4200	4000 <sub>5</sub>	3800 <sub>15</sub>	3900 <sub>5</sub>	3700 <sub>10</sub>	3600 <sub>15</sub>	3700 <sub>10</sub>	3600 <sub>15</sub>	3400 <sub>20</sub>
420x85	40	5900	5300 <sub>5</sub>	4900 <sub>15</sub>	5500	5100 <sub>5</sub>	4700 <sub>20</sub>	5200	4800 <sub>10</sub>	4600 <sub>20</sub>	4900 <sub>5</sub>	4600 <sub>10</sub>	4400 <sub>20</sub>
	90	5500	5100 <sub>5</sub>	4700 <sub>20</sub>	5000 <sub>5</sub>	4700 <sub>10</sub>	4500 <sub>20</sub>	4600 <sub>10</sub>	4400 <sub>15</sub>	4200 <sub>25</sub>	4300 <sub>20</sub>	4200 <sub>25</sub>	4000 <sub>30</sub>
210x115	40	3500	3200	3000	3300	3100	2900	3100	2900	2700	3000	2800	2600
	90	3300	3100	2900	3000	2800	2600	2800	2600	2500	2600	2400	2300
252x115	40	4100	3700	3500	3800	3600	3300	3600	3400	3200	3500	3300	3100
	90	3800	3600	3300	3500	3300	3100	3300	3100	3000	3100	3000	2800
294x115	40	4700	4200	3900	4400	4100	3800	4100	3900	3700	3900	3700	3500
	90	4400	4000	3800	4000	3800	3600	3700	3500	3400	3500	3400	3200 <sub>5</sub>
336x115	40	5200	4800	4400	4900	4500	4300	4600	4300	4100	4400	4200	4000 <sub>5</sub>
	90	4900	4500	4300	4500	4200	4000 <sub>5</sub>	4100	4000	3800 <sub>5</sub>	3900	3800 <sub>5</sub>	3600 <sub>10</sub>
348x115	40	5400	4900	4600	5100	4700	4400	4800	4500	4200 <sub>5</sub>	4500	4300	4100 <sub>5</sub>
	90	5100	4700	4400	4600	4300	4100 <sub>5</sub>	4300	4100	3900 <sub>5</sub>	4000 <sub>5</sub>	3900 <sub>5</sub>	3700 <sub>10</sub>
420x115	40	6400	5800	5400 <sub>5</sub>	6000	5500	5200 <sub>10</sub>	5700	5300	5000 <sub>10</sub>	5400	5100 <sub>5</sub>	4800 <sub>10</sub>
	90	6000	5500	5200 <sub>10</sub>	5400	5100 <sub>5</sub>	4900 <sub>10</sub>	5000 <sub>5</sub>	4800 <sub>5</sub>	4600 <sub>15</sub>	4700 <sub>10</sub>	4500 <sub>15</sub>	4400 <sub>20</sub>

## NOTES:

- D = member depth, B = member breadth, NS = not suitable.
- Total Upper floor mass of 40 kg/m<sup>2</sup>, floor live load of 1.5 kPa, floor point load of 1.8 kN
- Minimum bearing length = 35 mm at end supports. Subscript values indicate the minimum additional bearing length where required to be greater than 35 mm.
- Restraint value for slenderness calculations is 600 mm.
- Not all sizes of SmartLam GL10C in this table are stocked in each state. Please check with your supplier before ordering

## Single/continuous span roof rafter - AS 4055 classification N1, N2 AND N3 - with ceiling attached



### EXAMPLE:

wind speed = N3  
sheet roof - 40 kg/m<sup>2</sup>  
rafter/truss spacing = 600 mm  
rafter span = 5000 mm

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 5000 mm in 40 kg/m<sup>2</sup> row

### ADOPT:

SmartLam GL10C - 168 x 65

Rafter spacing (mm)		450	600	900	1200	450	600	900	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Rafter span (mm)							
		Single span				Continuous span			
168x65	30	5600	5600	5000	4600	6600	6600	6100	5700
	40	5600	5200	4600	4200	6600	6300	5700	5300
	75	4700	4300	3700	3400	5800	5400	4700	4400
	90	4400	4000	3500	3200	5500	5100	4500	4100
210x65	30	7000	6800	6200	5800	8100	7700	7200	6800
	40	6800	6400	5800	5300	7700	7300	6800	6400
	75	5900	5400	4700	4300	6900	6500	5900	5400
	90	5600	5100	4500	4100	6600	6200	5600	5100
252x65	30	8300	7900	7200	6700	9100	8700	8200	7700
	40	7900	7400	6700	6300	8700	8300	7700	7300
	75	6900	6400	5700	5200	7800	7400	6800	6300
	90	6600	6100	5400	4900	7500	7100	6500	6100
294x65	30	9400	8900	8200	7700	10100	9700	9100	8600
	40	8900	8400	7700	7200	9600	9200	8600	8100
	75	7800	7300	6600	6100	8700	8200	7600	7100
	90	7500	7000	6300	5800	8400	7900	7300	6800
336x65	30	10600	10000	9200	8600	10900	10600	9900	9400
	40	10000	9500	8600	8100	10500	10100	9400	8900
	75	8800	8200	7400	6900	9500	9000	8300	7800
	90	8400	7800	7100	6500	9200	8700	8000	7500
384x65	30	11900	11300	10400	9700	11900	11500	10800	10300
	40	11300	10700	9700	9100	11500	11000	10300	9800
	75	9900	9200	8300	7700	10400	9900	9200	8600
	90	9500	8800	7900	7300	10100	9600	8800	8300
168x85	30	6100	6000	5400	5000	7300	7000	6500	6100
	40	6000	5600	5000	4500	7000	6600	6100	5700
	75	5100	4600	4100	3700	6200	5800	5200	4700
	90	4800	4400	3900	3500	5900	5500	4900	4500
210x85	30	7500	7100	6600	6200	8400	8100	7600	7200
	40	7100	6700	6200	5700	8100	7700	7200	6800
	75	6300	5800	5200	4700	7200	6900	6300	5900
	90	6000	5500	4900	4400	7000	6600	6000	5600
252x85	30	8700	8300	7600	7200	9500	9100	8600	8100
	40	8300	7800	7200	6700	9100	8700	8100	7700
	75	7300	6800	6200	5700	8200	7800	7200	6700
	90	7000	6500	5900	5400	7900	7500	6900	6500
294x85	30	9900	9400	8700	8200	10400	10100	9500	9000
	40	9400	8900	8200	7700	10000	9700	9000	8600
	75	8300	7800	7100	6600	9100	8700	8000	7500
	90	8000	7400	6700	6300	8800	8400	7700	7200
336x85	30	11000	10500	9800	9200	11300	11000	10400	9900
	40	10500	10000	9200	8600	10900	10500	9900	9400
	75	9300	8700	7900	7400	10000	9500	8800	8300
	90	8900	8400	7600	7000	9600	9200	8500	8000
384x85	30	12000	11800	11000	10300	12000	11900	11300	10800
	40	11800	11300	10300	9700	11900	11500	10800	10300
	75	10500	9800	8900	8300	10900	10400	9700	9100
	90	10100	9400	8500	7900	10600	10100	9300	8800

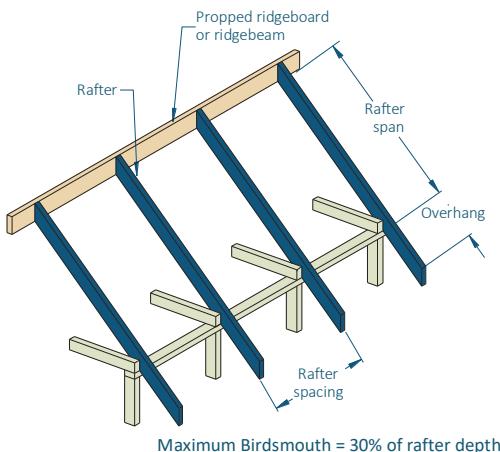
## Single/continuous span roof rafter AS 4055 classification C1, C2 and C3 - with ceiling attached

Rafter spacing (mm)		450	600	900	1200	450	600	900	1200
Size DxW (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended rafter span (mm)							
		Single Span				Continuous span			
168x65	30	5500	4800	3800	3200	5600	4800	3800	3200
	40	5500	4800	3800	3200	5600	4800	3800	3200
	75	4700	4300	3700	3300	5700	4900	3900	3300
	90	4400	4000	3500	3200	5500	4800	3800	3200
210x65	30	6500	6000	4800	4000	7000	6000	4800	4000
	40	6500	6100	4900	4100	7100	6100	4900	4100
	75	5900	5400	4700	4200	6900	6100	4900	4200
	90	5500	5100	4500	4100	6600	6000	4800	4100
252x65	30	7500	7000	5800	4900	8500	7300	5800	4900
	40	7500	7000	5900	5000	8600	7400	5900	5000
	75	6900	6400	5700	5100	7800	7400	6000	5100
	90	6600	6100	5400	4900	7500	7100	5800	5000
294x65	30	8400	7800	6800	5800	10000	8500	6800	5800
	40	8400	7800	6900	5900	9600	8600	6900	5900
	75	7800	7300	6600	6000	8700	8200	7000	6000 <sub>5</sub>
	90	7500	7000	6300	5800	8400	7900	6800	5800 <sub>10</sub>
336x65	30	9300	8700	7800	6700	10900	9800	7900	6700 <sub>5</sub>
	40	9300	8700	7800	6800	10500	9900	7900	6800 <sub>10</sub>
	75	8800	8200	7400	6900	9500	9000	8000 <sub>10</sub>	6900 <sub>15</sub>
	90	8400	7800	7100	6500	9200	8700	7800 <sub>10</sub>	6700 <sub>15</sub>
384x65	30	10300	9600	8700	7700	11900	11300	9000 <sub>5</sub>	7700 <sub>15</sub>
	40	10300	9600	8700	7800	11500	11000	9100 <sub>10</sub>	7800 <sub>15</sub>
	75	9900	9200	8300	7700	10400	9900	9100 <sub>15</sub>	7900 <sub>25</sub>
	90	9500	8800	7900	7300	10100	9600	8800 <sub>15</sub>	7700 <sub>25</sub>
168x85	30	5900	5500	4400	3700	6400	5500	4400	3700
	40	5900	5500	4400	3700	6500	5600	4400	3700
	75	5000	4600	4100	3700	6200	5600	4500	3800
	90	4800	4400	3900	3500	5900	5500	4400	3700
210x85	30	7000	6500	5500	4700	8100	6900	5500	4700
	40	7000	6500	5600	4700	8100	7000	5600	4700
	75	6300	5800	5200	4700	7200	6900	5700	4800
	90	6000	5500	4900	4400	7000	6600	5600	4700
252x85	30	8000	7500	6700	5700	9400	8400	6700	5700
	40	8000	7500	6700	5800	9100	8500	6800	5800
	75	7300	6800	6200	5700	8200	7800	6800	5800
	90	7000	6500	5900	5400	7900	7500	6700	5700
294x85	30	9000	8400	7600	6700	10400	9900	7900	6700
	40	9000	8400	7600	6800	10000	9700	8000	6800
	75	8300	7800	7100	6600	9100	8700	8000	6900
	90	8000	7400	6700	6300	8800	8400	7700	6700
336x85	30	9900	9300	8400	7700	11300	11000	9100	7700
	40	9900	9300	8400	7800	10900	10500	9200	7800
	75	9300	8700	7900	7400	10000	9500	8800	7900 <sub>10</sub>
	90	8900	8400	7600	7000	9600	9200	8500	7700 <sub>10</sub>
384x85	30	11000	10300	9300	8600	12000	11900	10400	8900 <sub>5</sub>
	40	11000	10300	9300	8600	11900	11500	10600 <sub>5</sub>	9000 <sub>10</sub>
	75	10500	9800	8900	8300	10900	10400	9700 <sub>5</sub>	9000 <sub>15</sub>
	90	10100	9400	8500	7900	10600	10100	9300 <sub>5</sub>	8800 <sub>15</sub>
420x85	30	11700	11000	9900	9200	12000	12000	11500 <sub>5</sub>	9800 <sub>15</sub>
	40	11800	11000	9900	9200	12000	12000	11500 <sub>10</sub>	9900 <sub>15</sub>
	75	11400	10700	9700	9000	11500	11100	10300 <sub>10</sub>	9700 <sub>20</sub>
	90	10900	10200	9200	8600	11200	10700	9900 <sub>10</sub>	9400 <sub>20</sub>

### 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 birds mouth depth = 30 % of rafter depth
4. 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 45 mm at end supports and 45 mm at internal supports
5. Construction loads shall not be applied to overhangs until a 190 x 19 (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

# Single/continuous span roof rafter- AS 4055 classification N1, N2 and N3 - without ceiling attached



## EXAMPLE:

wind speed = N3  
sheet roof - 40 kg/m<sup>2</sup>  
rafter/truss spacing = 600 mm  
rafter span = 5000 mm

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 5000 mm in 40 kg/m<sup>2</sup> row

## ADOPT:

SmartLam GL10C - 168 x 65

Rafter spacing (mm)		450	600	900	1200	450	600	900	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Rafter span (mm)							
		Single span				Continuous span			
168x65	10	5600	5600	5400	5200	6700	6700	6700	6000
	20	5700	5600	5400	5200	6700	6700	6600	6200
	40	5600	5200	4600	4200	6600	6300	5700	5300
	60	5000	4600	4000	3700	6100	5700	5100	4700
210x65	10	7000	6900	6700	6200	8300	8400	8400	7600
	20	7000	6900	6700	6200	8300	8300	7700	7300
	40	6800	6400	5800	5300	7700	7300	6800	6400
	60	6200	5800	5100	4600	7200	6800	6200	5800
252x65	10	8300	8200	7700	7100	10000	10000	9600	9000
	20	8400	8200	7700	7100	9600	9300	8700	8300
	40	7900	7400	6700	6300	8700	8300	7700	7300
	60	7200	6700	6100	5600	8100	7700	7100	6700
294x65	10	9600	9400	8600	8000	11200	11000	10600	10100
	20	9700	9400	8600	8000	10600	10200	9700	9200
	40	8900	8400	7700	7200	9600	9200	8600	8100
	60	8200	7700	7000	6500	9000	8600	7900	7500
336x65	10	10800	10500	9500	8900	12000	11900	11500	11100
	20	10900	10500	9500	8900	11500	11100	10600	10100
	40	10000	9500	8600	8100	10500	10100	9400	8900
	60	9200	8600	7800	7300	9900	9400	8700	8200
384x65	10	12000	11700	10500	9800	12000	12000	12000	12000
	20	12000	11700	10500	9800	12000	12000	11500	11000
	40	11300	10700	9700	9100	11500	11000	10300	9800
	60	10400	9700	8800	8200	10800	10300	9600	9000
168x85	10	6100	6100	5900	5600	7300	7300	7300	6900
	20	6200	6100	5900	5600	7300	7300	7000	6600
	40	6000	5600	5000	4500	7000	6600	6100	5700
	60	5400	5000	4400	4000	6500	6100	5500	5100
210x85	10	7600	7500	7100	6600	9100	9200	8900	8400
	20	7600	7500	7100	6600	8800	8600	8100	7700
	40	7100	6700	6200	5700	8100	7700	7200	6800
	60	6600	6200	5500	5100	7500	7200	6600	6200
252x85	10	9000	8900	8200	7600	10500	10300	9900	9600
	20	9100	8900	8200	7600	9900	9600	9100	8700
	40	8300	7800	7200	6700	9100	8700	8100	7700
	60	7600	7200	6500	6100	8500	8100	7500	7100
294x85	10	10400	10200	9200	8600	11400	11300	10900	10600
	20	10400	10100	9200	8600	10900	10600	10100	9700
	40	9400	8900	8200	7700	10000	9700	9000	8600
	60	8700	8200	7400	6900	9400	9000	8400	7900
336x85	10	11800	11300	10200	9500	12000	12000	11800	11500
	20	11700	11200	10200	9500	11800	11500	11000	10500
	40	10500	10000	9200	8600	10900	10500	9900	9400
	60	9800	9200	8400	7800	10300	9900	9200	8700
384x85	10	12000	12000	11300	10500	12000	12000	12000	12000
	20	12000	12000	11300	10500	12000	12000	11900	11500
	40	11800	11300	10300	9700	11900	11500	10800	10300
	60	11000	10300	9400	8800	11300	10800	10100	9500
420x85	10	12000	12000	12000	11200	12000	12000	12000	12000
	20	12000	12000	12000	11200	12000	12000	12000	12000
	40	12000	12000	11200	10500	12000	12000	11500	10900
	60	11900	11200	10200	9500	11900	11500	10700	10200

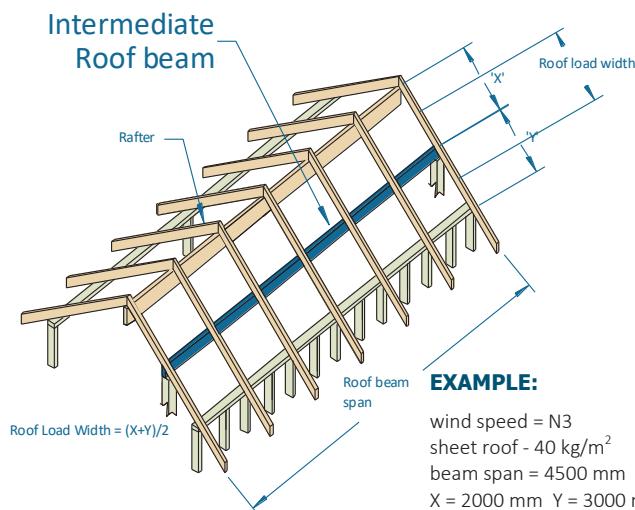
## Single/continuous span roof rafter AS 4055 classification C1, C2 and C3 - without ceiling attached

Rafter spacing (mm)		450	600	900	1200	450	600	900	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Rafter span (mm)							
		Single span				Continuous span			
168x65	10	5500	4700	3700	3100	5500	4700	3700	3100
	20	5500	4700	3700	3100	5500	4700	3700	3100
	40	5500	4800	3800	3200	5600	4800	3800	3200
	60	5000	4600	3900	3300	5800	4900	3900	3300
210x65	10	6500	5900	4700	4000	6900	5900	4700	4000
	20	6500	6000	4700	4000	7000	6000	4700	4000
	40	6500	6100	4900	4100	7100	6100	4900	4100
	60	6200	5800	5000	4200	7200	6200	5000	4200
252x65	10	7500	7000	5700	4800	8300	7100	5700	4800
	20	7500	7000	5800	4900	8400	7200	5800	4900
	40	7500	7000	5900	5000	8600	7400	5900	5000
	60	7200	6700	6000	5100	8100	7500	6000	5100
294x65	10	8400	7800	6700	5700	9800	8400	6700	5700
	20	8400	7800	6800	5700	9900	8400	6800	5700
	40	8400	7800	6900	5900	9600	8600	6900	5900
	60	8200	7700	7000	6000	9000	8600	7100	6000 <sub>5</sub>
336x65	10	9300	8700	7700	6500	11200	9600	7700	6500
	20	9300	8700	7800	6600	11300	9700	7800	6600
	40	9300	8700	7800	6800	10500	9900	7900	6800 <sub>10</sub>
	60	9200	8600	7800	6900	9900	9400	8100 <sub>5</sub>	6900 <sub>15</sub>
384x65	10	10300	9600	8700	7500	12000	11000	8800	7500 <sub>10</sub>
	20	10300	9600	8700	7600	12000	11200	8900 <sub>5</sub>	7600 <sub>10</sub>
	40	10300	9600	8700	7800	11500	11000	9100 <sub>10</sub>	7800 <sub>15</sub>
	60	10300	9600	8700	8000	10800	10300	9300 <sub>15</sub>	8000 <sub>25</sub>
168x85	10	5900	5400	4300	3600	6300	5400	4300	3600
	20	5900	5400	4300	3600	6400	5400	4300	3600
	40	5900	5500	4400	3700	6500	5600	4400	3700
	60	5400	5000	4400	3800	6500	5700	4500	3800
210x85	10	7000	6500	5400	4600	8000	6800	5400	4600
	20	7000	6500	5500	4600	8000	6900	5500	4600
	40	7000	6500	5600	4700	8100	7000	5600	4700
	60	6600	6200	5500	4800	7500	7200	5700	4800
252x85	10	8000	7500	6600	5600	9600	8200	6600	5600
	20	8000	7500	6600	5600	9700	8300	6600	5600
	40	8000	7500	6700	5800	9100	8500	6800	5800
	60	7600	7200	6500	5900	8500	8100	6900	5900
294x85	10	9000	8400	7600	6600	11300	9700	7700	6600
	20	9000	8400	7600	6600	10800	9800	7800	6600
	40	9000	8400	7600	6800	10000	9700	8000	6800
	60	8700	8200	7400	6900	9400	9000	8200	6900
336x85	10	9900	9300	8400	7600	12000	11100	8900	7600
	20	9900	9300	8400	7600	11700	11200	9000	7600
	40	9900	9300	8400	7800	10900	10500	9200	7800
	60	9800	9200	8400	7800	10300	9900	9200	8000 <sub>5</sub>
384x85	10	11000	10300	9300	8600	12000	12000	10200	8700
	20	11000	10300	9300	8600	12000	12000	10300	8800 <sub>5</sub>
	40	11000	10300	9300	8600	11900	11500	10600 <sub>5</sub>	9000 <sub>10</sub>
	60	11000	10200	9300	8600	11300	10800	10100 <sub>5</sub>	9200 <sub>15</sub>
420x85	10	11700	11000	9900	9200	12000	12000	11200	9600 <sub>10</sub>
	20	11800	11000	9900	9200	12000	12000	11300 <sub>5</sub>	9700 <sub>10</sub>
	40	11800	11000	9900	9200	12000	12000	11500 <sub>10</sub>	9900 <sub>15</sub>
	60	11800	11000	9900	9200	11900	11500	10700 <sub>10</sub>	10100 <sub>20</sub>

**NOTES:**

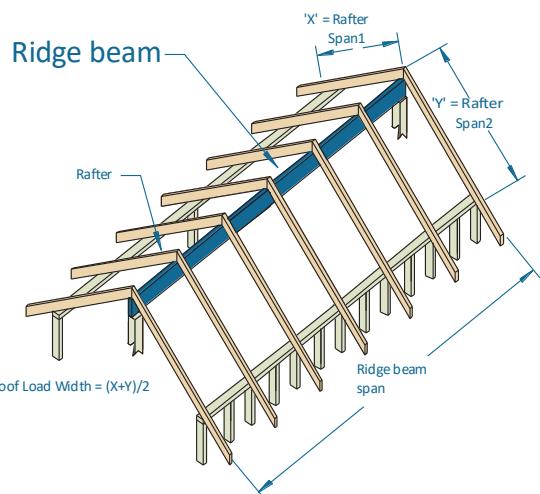
1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a batten spacing of 900 mm
3. Maximum birds mouth depth = 30 % of rafter depth
4. End bearing lengths = 45 mm at end supports and 45 mm at internal supports for continuous members. Subscript values Indicate the minimum additional bearing length where required to be greater than 45 mm at end supports and 45 mm at internal supports
5. Construction loads shall not be applied to overhangs until a 190 x 19 (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.

## Ridge/intermediate roof beam AS 4055 classification N1, N2 and N3



**EXAMPLE:**

wind speed = N3  
sheet roof - 40 kg/m<sup>2</sup>  
beam span = 4500 mm  
X = 2000 mm Y = 3000 mm  
roof load width =  $(X+Y)/2 = 2500$  mm  
Enter single span table at 3000 roof load width with  
column And read down to span equal to or greater  
than 4500 mm in 40 kg/m<sup>2</sup> row



ADOPT: SmartLam GL10C - 252 x 65

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Ridge / Intermediate beam span (mm)									
		Single span						Continuous span			
168x65	40	3800	2900	2500	2200	2000	4800	3300	2700	2300	2000
	90	2900	2300	2000	1800	1600	3800	2700	2100	1800	1600
210x65	40	4800	3700	3200	2800	2500	5900	4100	3300	2900	2500
	90	3700	2900	2500	2200	2000	4700	3300	2700	2300	2000
252x65	40	5800	4500	3900	3400	3000	6800	4900	4000	3400	3000
	90	4500	3500	3000	2700	2400	5600	4000	3200	2800	2400
294x65	40	6700	5300	4600	4000	3500	7600	5800	4700	4000	3500
	90	5300	4200	3600	3200	2800	6400	4600	3800	3200	2800
336x65	40	7500	6100	5300	4600	4100	8400	6600	5300	4600	4100
	90	6100	4800	4100	3700	3200	7100	5300	4300	3700	3200
384x65	40	8400	6900	6100	5200	4600	9200	7700	6100	5200	4600
	90	6900	5500	4800	4200	3700	7800	6000	4900	4200 <sub>5</sub>	3700 <sub>25</sub>
420x65	40	9100	7400	6500	5700	5100	9800	8400	6600	5700	5100 <sub>10</sub>
	90	7400	6100	5200	4600	4100	8300	6700	5400	4600 <sub>20</sub>	4100 <sub>40</sub>
168x85	40	4100	3200	2700	2400	2200	5200	3800	3000	2600	2300
	90	3200	2500	2200	1900	1800	4100	3000	2500	2100	1800
210x85	40	5200	4100	3500	3100	2800	6300	4700	3800	3300	2900
	90	4100	3200	2700	2500	2200	5100	3800	3100	2600	2300
252x85	40	6300	5000	4200	3800	3400	7200	5600	4600	3900	3500
	90	4900	3900	3300	3000	2700	6100	4500	3700	3200	2800
294x85	40	7100	5900	5000	4400	4000	8100	6700	5300	4600	4100
	90	5800	4600	3900	3500	3200	6800	5300	4300	3700	3200
336x85	40	8000	6600	5800	5100	4600	8900	7600	6100	5200	4600
	90	6600	5300	4500	4000	3700	7500	6000	4900	4200	3700
384x85	40	9000	7400	6500	5900	5300	9700	8300	6900	6000	5300
	90	7400	6100	5200	4700	4200	8300	7000	5600	4800	4200
420x85	40	9800	8000	7000	6400	5800	10300	8900	7600	6500	5800
	90	8000	6500	5800	5200	4600	8800	7500	6100	5200 <sub>5</sub>	4600 <sub>20</sub>
462x85	40	10700	8700	7700	7000	6400	11000	9500	8300	7200	6400 <sub>5</sub>
	90	8700	7100	6300	5700	5100	9500	8100	6700 <sub>5</sub>	5700	5100 <sub>35</sub>
168x115	40	4500	3600	3100	2700	2500	5700	4400	3500	3000	2700
	90	3600	2800	2400	2100	2000	4500	3500	2900	2400	2100
210x115	40	5700	4500	3900	3400	3100	6700	5500	4400	3800	3400
	90	4500	3500	3000	2700	2500	5600	4400	3600	3100	2700
252x115	40	6700	5500	4700	4200	3800	7700	6600	5300	4600	4000
	90	5500	4300	3700	3300	3000	6500	5300	4300	3700	3200
294x115	40	7700	6400	5500	4900	4500	8600	7300	6200	5300	4700
	90	6300	5100	4400	3900	3600	7300	6100	5000	4300	3800
336x115	40	8600	7100	6300	5700	5200	9400	8100	7000	6100	5400
	90	7100	5800	5000	4500	4100	8000	6900	5700	4900	4300

**Ridge/intermediate roof beam  
AS 4055 classification N1, N2 & N3 (Cont'd)**

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Ridge /Intermediate beam span (mm)									
		Single span					Continuous span				
384x115	40	9700	8000	7100	6400	6000	10200	8900	8000	6900	6100
	90	8000	6600	5800	5200	4800	8800	7600	6500	5600	4900
420x115	40	10500	8700	7700	7000	6500	10900	9500	8600	7600	6700
	90	8700	7100	6300	5700	5300	9400	8100	7000	6100	5400 <sub>5</sub>
462x115	40	11500	9500	8400	7600	7000	11600	10100	9200	8300	7400
	90	9500	7800	6900	6300	5800	10100	8700	7700	67005	5900
168x135	40	4800	3800	3200	2900	2600	5900	4700	3800	3300	2900
	90	3700	2900	2500	2300	2100	4700	3800	3100	2600	2300
210x135	40	6000	4800	4100	3600	3300	7000	5900	4800	4100	3600
	90	4700	3700	3200	2900	2600	5900	4700	3900	3300	2900
252x135	40	7000	5800	5000	4400	4000	7900	6800	5700	4900	4400
	90	5800	4500	3900	3500	3200	6800	5700	4600	4000	3500
294x135	40	8000	6600	5900	5200	4700	8800	7600	6700	5700	5100
	90	6600	5400	4600	4100	3800	7600	6400	5400	4600	4100
336x135	40	9000	7400	6600	6000	5500	9700	8400	7600	6600	5800
	90	7400	6100	5300	4800	4400	8300	7100	6100	5300	4700
384x135	40	10100	8400	7400	6700	6200	10500	9200	8300	7500	6600
	90	8300	6900	6100	5500	5000	9200	7800	7000	6000	5300
420x135	40	10900	9100	8000	7300	6700	11200	9800	8900	8200	7300
	90	9100	7400	6600	6000	5600	9700	8400	7600	6500	5800
462x135	40	11900	9900	8700	7900	7300	11900	10500	9500	8800	8000
	90	9900	8100	7200	6600	6100	10400	9000	8100	7200	6400

**Ridge/intermediate roof beam  
AS 4055 classification C1, C2 and C3**

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Ridge /Intermediate beam span (mm)									
		Single span					Continuous span				
168x65	40	2800	1900	1600	1400	1200	2800	1900	1600	1400	1200
	90	2800	1900	1600	1300	1200	2800	1900	1600	1300	1200
210x65	40	3500	2400	2000	1700	1500	3500	2400	2000	1700	1500
	90	3500	2400	2000	1700	1500	3500	2400	2000	1700	1500
252x65	40	4300	2900	2400	2100	1900	4300	2900	2400	2100	1900
	90	4300	2900	2400	2100	1800	4300	2900	2400	2100	1800 <sub>5</sub>
294x65	40	5100	3500	2800	2400	2200	5100	3500	2800	2400	2200 <sub>10</sub>
	90	5100	3400	2800	2400	2100	5100	3400	2800	2400 <sub>10</sub>	2100 <sub>20</sub>
336x65	40	5900	3900	3200	2800	2500	5900	3900	3200	2800 <sub>10</sub>	2500 <sub>25</sub>
	90	5900	3900	3200	2800	2400	5900	3900	3200 <sub>5</sub>	2800 <sub>30</sub>	2400 <sub>40</sub>
384x65	40	6900	4500	3700	3200	2900	6900	4500	3700 <sub>5</sub>	3200 <sub>25</sub>	2900 <sub>50</sub>
	90	6800	4500	3700	3200	2800 <sub>85</sub>	6800	4500	3700 <sub>25</sub>	3200 <sub>60</sub>	2800 <sub>75</sub>
420x65	40	7500	4900	4000	3500 <sub>55</sub>	3100 <sub>75</sub>	7500	4900	4000 <sub>20</sub>	3500 <sub>40</sub>	3100 <sub>65</sub>
	90	7400	4900 <sub>20</sub>	4000	3500 <sub>80</sub>	3100 <sub>100</sub>	7400	4900 <sub>10</sub>	4000 <sub>35</sub>	3500 <sub>75</sub>	3100 <sub>95</sub>
168x85	40	3200	2200	1800	1600	1400	3200	2200	1800	1600	1400
	90	3200	2200	1800	1600	1400	3200	2200	1800	1600	1400
210x85	40	4100	2800	2300	2000	1800	4100	2800	2300	2000	1800
	90	4100	2800	2300	2000	1700	4100	2800	2300	2000	1700
252x85	40	5000	3400	2800	2400	2100	5000	3400	2800	2400	2100
	90	4900	3400	2700	2400	2100	5000	3400	2700	2400	2100
294x85	40	6000	4000	3200	2800	2500	6000	4000	3200	2800	2500
	90	5800	3900	3200	2800	2500	5900	3900	3200	2800	2500 <sub>5</sub>
336x85	40	6900	4500	3700	3200	2900	6900	4500	3700	3200	2900 <sub>10</sub>
	90	6600	4500	3700	3200	2800	6800	4500	3700	3200 <sub>5</sub>	2800 <sub>25</sub>
384x85	40	7900	5200	4200	3700	3300	7900	5200	4200	3700 <sub>10</sub>	3300 <sub>25</sub>
	90	7400	5100	4200	3600	3200 <sub>65</sub>	7800	5100	4200 <sub>5</sub>	3600 <sub>25</sub>	3200 <sub>45</sub>
420x85	40	8700	5700	4600	4000	3600 <sub>55</sub>	8700	5700	4600 <sub>5</sub>	4000 <sub>20</sub>	3600 <sub>35</sub>
	90	8000	5600	4600	4000	3500 <sub>75</sub>	8500	5600	4600 <sub>20</sub>	4000 <sub>45</sub>	3500 <sub>65</sub>
462x85	40	9300	6300	5100	4400 <sub>45</sub>	4000 <sub>75</sub>	9700	6300	5100 <sub>15</sub>	4400 <sub>35</sub>	4000 <sub>65</sub>
	90	8700	6200	5000 <sub>40</sub>	4300 <sub>75</sub>	3900 <sub>90</sub>	9400	6200	5000 <sub>30</sub>	4300 <sub>65</sub>	3900 <sub>85</sub>

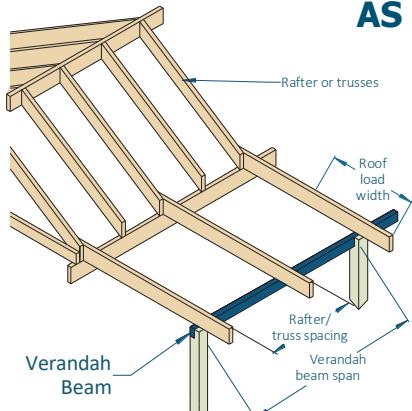
# Ridge/intermediate roof beam AS 4055 classification C1, C2 & C3

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Ridge /Intermediate beam span (mm)									
		Single span					Continuous span				
168x115	40	3800	2600	2100	1800	1600	3800	2600	2100	1800	1600
	90	3600	2600	2100	1800	1600	3800	2600	2100	1800	1600
210x115	40	4900	3300	2700	2300	2100	4900	3300	2700	2300	2100
	90	4500	3300	2700	2300	2000	4800	3300	2700	2300	2000
252x115	40	6000	4000	3200	2800	2500	6000	4000	3200	2800	2500
	90	5500	3900	3200	2800	2400	5900	3900	3200	2800	2400
294x115	40	7000	4600	3800	3300	2900	7000	4600	3800	3300	2900
	90	6300	4600	3700	3200	2900	6900	4600	3700	3200	2900
336x115	40	7900	5300	4300	3700	3400	8100	5300	4300	3700	3400
	90	7100	5200	4300	3700	3300	7900	5200	4300	3700	3300 <sub>5</sub>
384x115	40	8800	6100	4900	4300	3800	9400	6100	4900	4300	3800 <sub>5</sub>
	90	8000	6000	4900	4200	3700	8800	6000	4900	4200 <sub>5</sub>	3700 <sub>20</sub>
420x115	40	9400	6700	5400	4700	4200	10300	6700	5400	4700 <sub>5</sub>	4200 <sub>20</sub>
	90	8700	6600	5300	4600	4100	9400	6600	5300 <sub>5</sub>	4600 <sub>20</sub>	4100 <sub>35</sub>
462x115	40	10100	7500	6000	5200	4600	11400	7500	6000	5200 <sub>15</sub>	4600 <sub>30</sub>
	90	9500	7300	5800	5100	4500 <sub>70</sub>	10100	7300	5800 <sub>15</sub>	5100 <sub>35</sub>	4500 <sub>55</sub>
168x135	40	4200	2800	2300	2000	1800	4200	2800	2300	2000	1800
	90	3800	2800	2300	2000	1800	4100	2800	2300	2000	1800
210x135	40	5300	3600	2900	2500	2300	5300	3600	2900	2500	2300
	90	4800	3500	2900	2500	2200	5300	3500	2900	2500	2200
252x135	40	6500	4300	3500	3000	2700	6500	4300	3500	3000	2700
	90	5800	4200	3500	3000	2700	6400	4200	3500	3000	2700
294x135	40	7500	5000	4100	3600	3200	7700	5000	4100	3600	3200
	90	6600	4900	4000	3500	3100	7500	4900	4000	3500	3100
336x135	40	8200	5700	4700	4100	3600	8900	5700	4700	4100	3600
	90	7400	5600	4600	4000	3600	8300	5600	4600	4000	3600
384x135	40	9100	6700	5400	4700	4200	10200	6700	5400	4700	4200
	90	8300	6500	5300	4600	4100	9100	6500	5300	4600	4100 <sub>15</sub>
420x135	40	9800	7400	5900	5100	4600	11200	7400	5900	5100	4600 <sub>10</sub>
	90	9000	7200	5800	5000	4400	9700	7200	5800	5000 <sub>5</sub>	4400 <sub>20</sub>
462x135	40	10500	8200	6500	5600	5000	12000	8200	6500	5600 <sub>5</sub>	5000 <sub>20</sub>
	90	9900	8000	6300	5500	4900	10400	8000	6300 <sub>5</sub>	5500 <sub>20</sub>	4900 <sub>35</sub>

## NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. End bearing lengths = 70 mm at end supports and 90 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 90 mm at internal supports
3. Rafter spacing up to 1200 mm
4. Not all sizes of SmartLam GL10C in this table are stocked in each state. Please check with your supplier before ordering

# Verandah beam (single span) AS 4055 classification N1, N2 and N3



## EXAMPLE:

wind speed = N3  
 sheet roof - 40 kg/m<sup>2</sup>  
 rafter/truss spacing = 600 mm  
 verandah span = 3500 mm (single span)  
 roof load width = 3900 mm

Enter span table at 4500 roof load width column, rafter spacing of 600 mm, and read down to a span equal to or greater than 3500 mm in 40 kg/m<sup>2</sup> row

## ADOPT:

SmartLam GL10C - 252 x 65

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah beam span (mm)									
168x65	10	4000	3900	2800	2700	2300	2200	2000	1800	1700	1400
	20	4100	4000	2900	2800	2400	2200	2000	1900	1800	1500
	40	3500	3400	2700	2700	2300	2200	1900	1700	1700	1300
	60	3100	3000	2400	2400	2000	2000	1800	1500	1600	1200
	90	2700	2700	2100	2000	1800	1800	1600	1300	1500	1000
210x65	10	5100	5000	3600	3400	2900	2800	2500	2400	2300	2200
	20	5100	5100	3700	3500	3000	2900	2600	2500	2300	2200
	40	4300	4300	3400	3400	2900	2800	2500	2400	2200	2100
	60	3900	3900	3000	3000	2600	2600	2300	2200	2000	1900
	90	3400	3400	2700	2700	2300	2200	2000	2000	1800	1600
252x65	10	6100	6000	4300	4200	3500	3400	3000	2900	2700	2700
	20	6000	5900	4400	4400	3600	3400	3100	3000	2800	2700
	40	5100	5100	4100	4100	3500	3300	2900	2800	2600	2500
	60	4600	4600	3700	3600	3100	3100	2800	2700	2500	2400
	90	4100	4100	3200	3200	2800	2800	2500	2400	2300	2200
294x65	10	6900	6900	5100	5000	4100	4000	3600	3400	3200	3100
	20	6800	6800	5200	5100	4200	4100	3700	3500	3300	3100
	40	5800	5800	4700	4700	4000	3900	3500	3300	3100	2900
	60	5200	5200	4300	4300	3700	3700	3300	3100	2900	2800
	90	4700	4700	3800	3800	3300	3200	2900	2900	2700	2600
336x65	10	7600	7600	5800	5700	4700	4700	4100	4000	3700	3500
	20	7600	7600	5900	5800	4900	4800	4200	4100	3800	3600
	40	6600	6600	5300	5300	4600	4600	4000	3800	3500	3400
	60	5900	5900	4800	4800	4200	4200	3800	3600	3300	3200
	90	5300	5300	4300	4300	3800	3700	3400	3300	3100	3000
384x65	10	8400	8400	6600	6600	5400	5300	4700	4700	4200	4100
	20	8400	8400	6800	6700	5500	5500	4800	4800	4300	4200
	40	7500	7500	6000	6000	5200	5200	4600	4500	4000	3900
	60	6700	6700	5400	5400	4800	4700	4300	4200	3800	3700
	90	6000	6000	4900	4800	4300	4300	3900	3900	3600 <sub>5</sub>	3400
420x65	10	9000	9000	7300	7300	6000	5800	5200	5100	4700	4600
	20	9000	9000	7400	7400	6100	6000	5300	5200	4700	4700
	40	8200	8100	6500	6500	5700	5700	5000	5000	4400	4400
	60	7300	7300	5900	5900	5200	5100	4700	4700	4200	4100
	90	6500	6500	5300	5300	4700	4600	4200	4200 <sub>5</sub>	3900 <sub>5</sub>	3700
168x85	10	4500	4500	3300	3100	2700	2600	2300	2200	2000	1900
	20	4500	4500	3400	3200	2700	2700	2400	2200	2100	2000
	40	3800	3800	2900	2900	2500	2600	2200	2100	1900	1700
	60	3400	3300	2600	2700	2200	2200	2000	1900	1800	1600
	90	2900	2900	2300	2300	2000	1900	1700	1700	1600	1300
210x85	10	5600	5600	4100	4000	3400	3200	2900	2800	2600	2500
	20	5400	5400	4200	4100	3500	3300	3000	2900	2600	2600
	40	4600	4600	3800	3700	3200	3100	2800	2700	2500	2400
	60	4200	4200	3300	3300	2800	2800	2500	2500	2300	2300
	90	3700	3700	2900	2900	2500	2500	2200	2200	2000	2000
252x85	10	6600	6600	5000	4900	4000	3900	3500	3400	3100	3000
	20	6400	6300	5100	5000	4100	4000	3600	3400	3200	3100
	40	5400	5400	4400	4400	3900	3800	3400	3200	3000	2900
	60	4900	4900	4000	4000	3500	3400	3100	3100	2800	2800
	90	4400	4400	3500	3500	3000	3000	2700	2800	2500	2500
294x85	10	7400	7400	5800	5700	4800	4700	4100	4000	3700	3500
	20	7300	7300	5900	5800	4900	4800	4200	4100	3800	3600
	40	6300	6200	5100	5100	4500	4400	4000	3800	3500	3400
	60	5600	5600	4600	4600	4100	4000	3600	3600	3300	3200
	90	5100	5100	4100	4100	3600	3600	3200	3200	2900	2900

## Verandah beam (single span) AS 4055 classification N1, N2 and N3 (Cont'd)

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah beam span (mm)									
		Single span									
336x85	10	8100	8100	6600	6600	5400	5400	4700	4700	4200	4200
	20	8100	8100	6700	6700	5600	5500	4900	4800	4300	4200
	40	7100	7100	5700	5700	5000	5000	4600	4500	4000	3900
	60	6400	6400	5200	5200	4600	4500	4200	4200	3800	3700
	90	5700	5700	4700	4600	4100	4100	3700	3700	3400	3400
384x85	10	9000	9000	7600	7600	6200	6100	5400	5300	4900	4900
	20	9000	9000	7600	7600	6400	6300	5500	5500	4900	4900
	40	8000	8000	6500	6500	5700	5700	5100	5100	4600	4600
	60	7200	7200	5900	5800	5100	5100	4700	4600	4300	4300
	90	6500	6500	5300	5300	4600	4600	4200	4200	3900	3900
420x85	10	9600	9600	8100	8100	6800	6800	6000	5800	5300	5300
	20	9600	9600	8100	8100	7000	7000	6100	6000	5400	5300
	40	8800	8800	7100	7100	6200	6100	5600	5600	5100	5000
	60	7900	7900	6400	6400	5600	5600	5100	5000	4700	4700
	90	7100	7000	5700	5700	5000	5000	4600	4600	4300	4300
462x85	10	10400	10400	8700	8700	7500	7500	6500	6500	5900	5800
	20	10300	10300	8700	8700	7700	7700	6700	6600	5900	5800
	40	9700	9700	7800	7800	6800	6800	6100	6100	5600	5500
	60	8700	8700	7000	7000	6100	6100	5500	5500	5100	5100
	90	7700	7700	6200	6200	5500	5500	5000	5000	4600	4600

## Verandah beam (Continuous span) AS 4055 classification N1, N2 and N3

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah beam span (mm)									
		Continuous span									
168x65	10	4100	4000	2800	2900	2300	2300	2000	2000	1800	1800
	20	4100	4100	2900	2900	2400	2400	2100	2000	1800	1800
	40	4100	4100	2800	2900	2300	2200	2000	1900	1700	1700
	60	3800	3800	2700	2700	2200	2100	1800	1800	1600	1600
	90	3400	3300	2500	2600	2000	1900	1700	1700	1500	1400
210x65	10	5100	5100	3600	3500	2900	2900	2600	2600	2300	2200
	20	5200	5200	3700	3600	3000	3000	2600	2700	2300	2200
	40	5000	5000	3600	3500	2900	2900	2500	2500	2200	2100
	60	4600	4500	3400	3300	2700	2800	2300	2300	2100	2000
	90	4200	4200	3100	3100	2600	2600	2200	2100	1900 <sub>5</sub>	1900
252x65	10	6100	6100	4300	4300	3500	3500	3100	3100	2800	2800
	20	6300	6300	4400	4400	3600	3500	3200	3100	2800	2800 <sub>5</sub>
	40	5700	5700	4300	4300	3500	3400	3000	3000	2700 <sub>10</sub>	2700 <sub>10</sub>
	60	5200	5200	4100	4000	3300	3200	2800	2800 <sub>5</sub>	2500 <sub>10</sub>	2500 <sub>10</sub>
	90	4800	4800	3800	3700	3000	3000	2600 <sub>10</sub>	2700 <sub>10</sub>	2300 <sub>20</sub>	2200 <sub>15</sub>
294x65	10	7200	7200	5100	5100	4100	4100	3600	3500	3300 <sub>10</sub>	3200 <sub>5</sub>
	20	7100	7200	5200	5200	4200	4200	3700 <sub>5</sub>	3600 <sub>5</sub>	3300 <sub>15</sub>	3200 <sub>15</sub>
	40	6300	6300	5000	5000	4100	4100	3500 <sub>10</sub>	3400 <sub>10</sub>	3100 <sub>20</sub>	3100 <sub>20</sub>
	60	5800	5800	4800	4700	3900 <sub>5</sub>	3800	3300 <sub>15</sub>	3300 <sub>15</sub>	2900 <sub>25</sub>	2900 <sub>25</sub>
	90	5300	5300	4400	4400	3600 <sub>10</sub>	3500 <sub>10</sub>	3100 <sub>25</sub>	3100 <sub>25</sub>	2700 <sub>35</sub>	2800 <sub>40</sub>
336x65	10	8200	8200	5800	5800	4800	4700	4100 <sub>10</sub>	4100 <sub>10</sub>	3700 <sub>20</sub>	3600 <sub>20</sub>
	20	7600	7900	6000	5900	4900 <sub>5</sub>	4800 <sub>5</sub>	4200 <sub>15</sub>	4200 <sub>15</sub>	3800 <sub>30</sub>	3700 <sub>30</sub>
	40	6900	7000	5700	5700	4700 <sub>10</sub>	4600 <sub>10</sub>	4000 <sub>25</sub>	4000 <sub>25</sub>	3600 <sub>35</sub>	3500 <sub>35</sub>
	60	6400	6400	5400	5400	4400 <sub>15</sub>	4400 <sub>15</sub>	3800 <sub>30</sub>	3700 <sub>25</sub>	3400 <sub>45</sub>	3300 <sub>40</sub>
	90	5900	5900	5000	5000	4100 <sub>20</sub>	4100 <sub>20</sub>	3500 <sub>40</sub>	3400 <sub>35</sub>	3100 <sub>50</sub>	3100 <sub>50</sub>
384x65	10	9000	9400	6600	6600	5400 <sub>5</sub>	5400 <sub>5</sub>	4800 <sub>20</sub>	4700 <sub>20</sub>	4200 <sub>35</sub>	4200 <sub>35</sub>
	20	8200	8600	6800	6800	5600 <sub>15</sub>	5600 <sub>15</sub>	4900 <sub>30</sub>	4800 <sub>30</sub>	4300 <sub>45</sub>	4300 <sub>45</sub>
	40	7500	7600	6500 <sub>5</sub>	6500 <sub>5</sub>	5300 <sub>20</sub>	5300 <sub>20</sub>	4600 <sub>40</sub>	4500 <sub>40</sub>	4100 <sub>55</sub>	4000 <sub>55</sub>
	60	7000	7100	6000 <sub>5</sub>	6000 <sub>5</sub>	5000 <sub>25</sub>	5000 <sub>25</sub>	4300 <sub>45</sub>	4300 <sub>45</sub>	3800 <sub>60</sub>	3800 <sub>60</sub>
	90	6500	6500	5500 <sub>10</sub>	5500 <sub>10</sub>	4700 <sub>35</sub>	4600 <sub>35</sub>	4000 <sub>55</sub>	4000 <sub>55</sub>	3600 <sub>80</sub>	3500 <sub>75</sub>
420x65	10	9400	10000	7300	7200	6000 <sub>15</sub>	5900 <sub>15</sub>	5200 <sub>30</sub>	5200 <sub>30</sub>	4700 <sub>45</sub>	4600 <sub>45</sub>
	20	8700	9200	7500 <sub>5</sub>	7400 <sub>5</sub>	6100 <sub>25</sub>	6000 <sub>25</sub>	5300 <sub>40</sub>	5300 <sub>40</sub>	4700 <sub>55</sub>	4700 <sub>55</sub>
	40	7900	8200	6900 <sub>10</sub>	6900 <sub>10</sub>	5800 <sub>30</sub>	5800 <sub>30</sub>	5000 <sub>50</sub>	5000 <sub>50</sub>	4400 <sub>70</sub>	4500 <sub>75</sub>
	60	7400	7500	6400 <sub>10</sub>	6400 <sub>10</sub>	5500 <sub>35</sub>	5500 <sub>35</sub>	4800 <sub>55</sub>	4700 <sub>55</sub>	4200 <sub>85</sub>	4200 <sub>85</sub>
	90	6900	6900	5900 <sub>20</sub>	5900 <sub>15</sub>	5100 <sub>45</sub>	5100 <sub>45</sub>	4400 <sub>75</sub>	4400 <sub>75</sub>	3900 <sub>95</sub>	3900 <sub>95</sub>

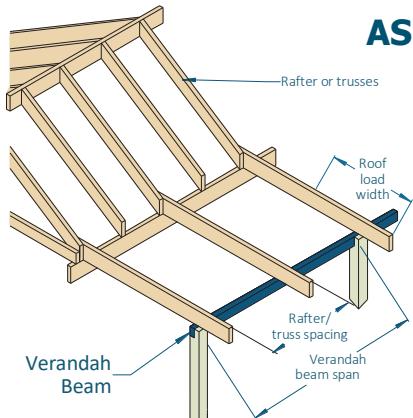
## Verandah beam (Continuous span) AS 4055 classification N1, N2 and N3

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah beam span (mm)									
		Continuous span									
462x65	10	10000	10600	8000 <sub>5</sub>	8000 <sub>5</sub>	6600 <sub>25</sub>	6600 <sub>25</sub>	5700 <sub>40</sub>	5700 <sub>40</sub>	5100 <sub>60</sub>	5100 <sub>60</sub>
	20	9200	9800	8000 <sub>10</sub>	8200 <sub>15</sub>	6700 <sub>35</sub>	6700 <sub>35</sub>	5900 <sub>55</sub>	5800 <sub>50</sub>	5200 <sub>85</sub>	5200 <sub>85</sub>
	40	8300	8700	7300 <sub>15</sub>	7400 <sub>15</sub>	6400 <sub>40</sub>	6400 <sub>40</sub>	5500 <sub>65</sub>	5500 <sub>65</sub>	4900 <sub>90</sub>	4800 <sub>95</sub>
	60	7800	8100	6800 <sub>15</sub>	6800 <sub>15</sub>	6100 <sub>50</sub>	6000 <sub>50</sub>	5200 <sub>80</sub>	5200 <sub>80</sub>	4600 <sub>100</sub>	4600 <sub>100</sub>
	90	7300	7400	6300 <sub>25</sub>	6300 <sub>25</sub>	5600 <sub>60</sub>	5600 <sub>60</sub>	4900 <sub>95</sub>	4800 <sub>90</sub>	4300 <sub>115</sub>	4300 <sub>115</sub>
168x85	10	4700	4600	3300	3200	2700	2700	2300	2300	2100	2000
	20	4800	4800	3400	3300	2800	2800	2400	2400	2100	2000
	40	4500	4500	3300	3200	2700	2700	2200	2200	2000	1900
	60	4100	4100	3100	3100	2500	2600	2100	2000	1900	1900
	90	3700	3700	2900	2900	2300	2300	2000	1900	1700	1700
210x85	10	5900	5800	4100	4100	3400	3300	2900	2900	2600	2700
	20	6000	5900	4200	4200	3500	3400	3000	3000	2700	2700
	40	5300	5300	4100	4100	3300	3300	2800	2800	2500	2600
	60	4800	4800	3900	3800	3100	3100	2700	2700	2400	2400
	90	4400	4400	3600	3500	2900	2900	2500	2600	2200	2100
252x85	10	7100	7000	5000	5000	4100	4100	3500	3500	3200	3200
	20	6700	6800	5100	5100	4200	4200	3600	3500	3200	3200
	40	6000	6000	4900	4900	4000	4000	3400	3400	3000	3000
	60	5500	5600	4700	4600	3800	3700	3300	3200	2900	2900
	90	5100	5100	4300	4300	3500	3400	3000	3000	2700 <sub>5</sub>	2700 <sub>10</sub>
294x85	10	8000	8200	5800	5800	4800	4700	4100	4100	3700	3600
	20	7400	7500	6000	5900	4900	4900	4200	4200	3800 <sub>5</sub>	3700 <sub>5</sub>
	40	6700	6700	5700	5700	4700	4600	4000	4000	3600 <sub>10</sub>	3500 <sub>10</sub>
	60	6200	6200	5200	5200	4400	4400	3800 <sub>5</sub>	3700 <sub>5</sub>	3400 <sub>15</sub>	3300 <sub>10</sub>
	90	5700	5700	4800	4800	4100	4100	3500 <sub>10</sub>	3400 <sub>10</sub>	3100 <sub>20</sub>	3100 <sub>20</sub>
336x85	10	8600	9000	6700	6700	5400	5400	4800	4800	4300 <sub>10</sub>	4300 <sub>10</sub>
	20	8000	8300	6800	6800	5600	5600	4900 <sub>5</sub>	4800 <sub>5</sub>	4300 <sub>15</sub>	4300 <sub>15</sub>
	40	7200	7300	6300	6300	5300	5300	4600 <sub>10</sub>	4500 <sub>10</sub>	4100 <sub>20</sub>	4000 <sub>25</sub>
	60	6800	6800	5800	5800	5000 <sub>5</sub>	5000	4300 <sub>15</sub>	4300 <sub>15</sub>	3900 <sub>30</sub>	3800 <sub>25</sub>
	90	6300	6300	5300	5300	4700 <sub>10</sub>	4600 <sub>10</sub>	4000 <sub>20</sub>	4000 <sub>20</sub>	3600 <sub>35</sub>	3500 <sub>35</sub>
384x85	10	9300	9800	7600	7700	6300	6200	5400 <sub>10</sub>	5400 <sub>10</sub>	4900 <sub>20</sub>	4800 <sub>20</sub>
	20	8600	9000	7600	7800	6400 <sub>5</sub>	6400 <sub>5</sub>	5600 <sub>20</sub>	5600 <sub>20</sub>	4900 <sub>30</sub>	4900 <sub>30</sub>
	40	7800	8100	6800	6900	6100 <sub>10</sub>	6000 <sub>10</sub>	5200 <sub>25</sub>	5200 <sub>25</sub>	4700 <sub>35</sub>	4600 <sub>35</sub>
	60	7300	7500	6400	6400	5700 <sub>15</sub>	5700 <sub>15</sub>	5000 <sub>30</sub>	4900 <sub>30</sub>	4400 <sub>40</sub>	4400 <sub>40</sub>
	90	6800	6900	5900	5900	5300 <sub>20</sub>	5300 <sub>20</sub>	4600 <sub>35</sub>	4600 <sub>35</sub>	4100 <sub>50</sub>	4100 <sub>50</sub>
420x85	10	9800	10300	8400	8300	6800 <sub>5</sub>	6900 <sub>5</sub>	6000 <sub>20</sub>	5900 <sub>15</sub>	5300 <sub>30</sub>	5300 <sub>30</sub>
	20	9000	9600	8000	8300	7000 <sub>10</sub>	7000 <sub>10</sub>	6100 <sub>25</sub>	6000 <sub>25</sub>	5400 <sub>40</sub>	5400 <sub>40</sub>
	40	8200	8600	7200	7300	6600 <sub>20</sub>	6600 <sub>15</sub>	5700 <sub>30</sub>	5700 <sub>30</sub>	5100 <sub>45</sub>	5100 <sub>45</sub>
	60	7700	8000	6800	6800	6100 <sub>20</sub>	6200 <sub>20</sub>	5400 <sub>40</sub>	5400 <sub>40</sub>	4900 <sub>55</sub>	4700 <sub>50</sub>
	90	7200	7300	6300	6300	5600 <sub>25</sub>	5600 <sub>25</sub>	5000 <sub>45</sub>	5000 <sub>45</sub>	4500 <sub>70</sub>	4500 <sub>70</sub>
462x85	10	10400	11000	9100	9200	7500 <sub>10</sub>	7500 <sub>10</sub>	6500 <sub>25</sub>	6500 <sub>25</sub>	5900 <sub>40</sub>	5800 <sub>40</sub>
	20	9600	10200	8400	8900	7700 <sub>20</sub>	7700 <sub>20</sub>	6700 <sub>35</sub>	6700 <sub>35</sub>	5900 <sub>50</sub>	5900 <sub>50</sub>
	40	8700	9200	7600	7900	7000 <sub>25</sub>	7100 <sub>25</sub>	6300 <sub>45</sub>	6300 <sub>45</sub>	5600 <sub>60</sub>	5600 <sub>60</sub>
	60	8200	8600	7200	7300	6600 <sub>30</sub>	6600 <sub>30</sub>	6000 <sub>50</sub>	5900 <sub>50</sub>	5300 <sub>75</sub>	5300 <sub>75</sub>
	90	7600	7900	6700 <sub>5</sub>	6700 <sub>5</sub>	6100 <sub>35</sub>	6100 <sub>35</sub>	5500 <sub>65</sub>	5500 <sub>60</sub>	4900 <sub>90</sub>	4900 <sub>90</sub>

### NOTES:

- D = member depth, B = member breadth, NS = not suitable.
- 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.
- Restraint value for slenderness calculations is 1200 mm
- Not all sizes of SmartLam GL10C in this table are stocked in each state. Please check with your supplier before ordering.

# Verandah beam (single span) AS 4055 classification C1, C2 and C3



## EXAMPLE:

wind speed = C3  
sheet roof - 40 kg/m<sup>2</sup>  
rafter/truss spacing = 600 mm  
verandah span = 3500 mm (single span)  
roof load width = 3900 mm

Enter span table at 4500 roof load width column, rafter spacing of 600 mm, and read down to a span equal to or greater than 3500 mm at 40 kg/m<sup>2</sup> row

## ADOPT:

SmartLam GL10C - 384x65

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah span (mm)									
		Single span									
168x65	10	2600	2600	1800	1500	1400	1000	1300	NS	1100	NS
	20	2700	2600	1800	1500	1500	1000	1300	NS	1200	NS
	40	2700	2700	1900	1600	1500	1100	1300	NS	1200	NS
	60	2800	2700	1900	1700	1500	1100	1300	NS	1200	NS
	90	2700	2700	1900	1600	1500	1000	1300	NS	1200	NS
210x65	10	3300	3200	2400	2200	1800	1600	1600	1200	1200	1400
	20	3400	3200	2400	2200	1900	1600	1600	1200	1400	1000
	40	3400	3300	2400	2300	1900	1700	1600	1300	1500	1000
	60	3500	3400	2500	2400	2000	1800	1700	1300	1500	1100
252x65	90	3400	3300	2400	2300	1900	1700	1600	1200	1400	1000
	10	4000	3900	2800	2700	2300	2200	1900	1700	1700	1400
	20	4100	3900	2800	2700	2300	2200	2000	1800	1700	1400
	40	4100	4000	2900	2800	2400	2300	2000	1800	1800	1500
	60	4200	4100	3000	2900	2400	2300	2100	1900	1800	15005
294x65	90	4100	4000	2900	2800	2400	2300	2000	1800	1700	1400
	10	4700	4700	3300	3200	2700	2600	2300	2300	2000	1900
	20	4800	4700	3300	3200	2700	2600	2300	2300	2100	1900
	40	4900	4800	3400	3300	2800	2700	2400	2300	2100	2000
	60	5000	4900	3500	3300	2800	2700	2500	24005	2200	2100
336x65	90	4700	4700	3400	3200	2700	2700	2400	2300	2100	1900
	10	5400	5300	3800	3600	3100	3000	2700	2600	2400	230010
	20	5400	5400	3800	3700	3100	3000	2700	2600	2400	240010
	40	5600	5500	3900	3800	3200	3000	2700	2700	25005	240015
	60	5700	5600	4000	3900	3300	3100	2800	27005	25005	250020
384x65	90	5300	5300	3900	3700	3100	3000	2700	260010	240015	240030
	10	6200	6100	4300	4300	3600	3400	3000	2900	2700	270010
	20	6300	6200	4400	4300	3600	3400	3100	30005	2800	270010
	40	6400	6300	4500	4400	3700	3500	3200	300010	28005	270015
	60	6500	6500	4600	4600	3800	3600	3200	310015	29005	280020
420x65	90	6000	6000	4500	4400	3600	3500	31005	300025	270015	270030
	10	6800	6700	4800	4800	3900	3700	3400	3200	3000	290010
	20	6800	6800	4800	4800	3900	3800	3400	32005	300010	290010
	40	7000	7000	4900	4900	4000	3900	3500	33005	310015	300015
	60	7200	7200	5000	5000	4100	4000	360015	340010	320020	300020
168x85	90	6500	6500	4900	4900	4000	3800	3400	330020	300030	290030
	10	3000	2900	2100	2000	1700	1300	1400	1000	1300	NS
	20	3100	2900	2100	2000	1700	1300	1500	1000	1300	NS
	40	3100	3000	2200	2100	1700	1400	1500	1000	1300	NS
	60	3200	3100	2300	2100	1800	1500	1500	1100	1400	NS
210x85	90	2900	2900	2200	2100	1700	1400	1500	1000	1300	NS
	10	3800	3700	2700	2600	2200	2100	1800	1600	1600	1300
	20	3900	3700	2700	2600	2200	2100	1900	1600	1600	1300
	40	4000	3800	2800	2700	2300	2200	1900	1700	1700	1300
252x85	60	4000	3900	2800	2700	2300	2200	1900	1700	1700	1400
	90	3700	3700	2700	2700	2200	2100	1900	1600	1600	1300
	10	4600	4600	3200	3100	2600	2600	2300	2200	2000	1800
	20	4700	4600	3300	3100	2700	2600	2300	2200	2000	1900
294x85	40	4800	4700	3400	3200	2700	2600	2400	2300	2100	1900
	60	4900	4800	3400	3300	2800	2700	2400	2300	2100	2000
	90	4400	4400	3300	3200	2700	2600	2300	2200	2000	1900
	10	5400	5300	3800	3600	3100	3000	2700	2600	2400	2300
294x85	20	5500	5400	3800	3700	3100	3000	2700	2600	2400	2300
	40	5600	5500	3900	3800	3200	3000	2700	2600	2500	2400
	60	5600	5600	4000	3900	3300	3100	2800	2700	2500	2400
	90	5100	5100	3900	3800	3200	3000	2700	2600	2400	23005

**Verandah beam (Single span)  
AS 4055 classification C1, C2 and C3 (Cont'd)**

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah beam span (mm)									
		Single span									
336x85	10	6200	6100	4400	4300	3600	3400	3100	2900	2700	2700
	20	6300	6200	4400	4300	3600	3400	3100	3000	2800	2700
	40	6400	6300	4500	4500	3700	3500	3200	3000	2800	2700
	60	6400	6400	4600	4600	3800	3600	3200	3100	2900	2800
	90	5700	5700	4500	4400	3600	3500	3100	3000	2800	2700
384x85	10	7100	7100	5000	5000	4100	3900	3600	3400	3100	3000
	20	7200	7200	5100	5000	4100	4000	3600	3400	3200	3000
	40	7300	7300	5200	5100	4200	4100	3700	3500	3300	3100
	60	7200	7200	5300	5200	4300	4200	3700	3600	3300	3200
	90	6500	6500	5100	5100	4100	4000	3600	3400	3200	3000
420x85	10	7800	7700	5500	5400	4500	4400	3900	3700	3500	3300
	20	7900	7800	5500	5500	4500	4500	3900	3800	3500	3300
	40	7900	7900	5600	5600	4600	4600	4000	3800	3600	3400
	60	7900	7900	5800	5700	4700	4700	4100	4000	3700	3500
	90	7100	7000	5600	5500	4500	4500	3900	3800	3500	3300
462x85	10	8500	8500	6100	5900	4900	4900	4300	4200	3800	3700
	20	8500	8500	6100	6000	5000	5000	4300	4200	3900	3700
	40	8500	8500	6200	6100	5100	5000	4400	4300	3900	3800
	60	8500	8500	6400	6300	5200	5100	4500	4500	4000	3900
	90	7700	7700	6100	6000	5000	5000	4300	4200	3800	3700

**Verandah beam (Continuous span)  
AS 4055 classification C1, C2 and C3**

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah beam span (mm)									
		Continuous span									
168x65	10	2700	2700	1800	1800	1500	1300	1300	1000	1100	NS
	20	2700	2700	1900	1900	1500	1400	1300	1000	1100	NS
	40	2800	2800	1900	1900	1600	1500	1400	1100	1200	NS
	60	2800	2800	2000	1900	1600	1600	1400	1100	1200	NS
	90	2800	2800	1900	1900	1600	1400	1400	1000	1100	NS
210x65	10	3400	3300	2300	2300	1900	1900	1600	1600	1500	1300
	20	3400	3300	2400	2300	1900	1900	1600	1600	1500	1300
	40	3500	3400	2400	2400	2000	1900	1700	1700	1500	1400
	60	3500	3500	2500	2600	2000	2000	1700	1700	1600	1400
	90	3500	3400	2400	2400	2000	1900	1700	1600	1500	1300
252x65	10	4000	4000	2800	2800	2300	2200	2000	1900	1800	1800
	20	4100	4100	2900	2900	2300	2200	2000	1900	1800	1800
	40	4200	4200	2900	2900	2400	2300	2100	2000	1800	1800
	60	4300	4200	3000	3000	2400	2400	2100	2000	1900	1900
	90	4100	4100	2900	2900	2400	2300	2000	1900	1800	1800
294x65	10	4800	4700	3300	3300	2700	2700	2300	2200	2100	2000
	20	4800	4700	3400	3300	2800	2800	2400	2200	2100	2000
	40	4900	4900	3500	3400	2800	2800	2400	2300	2200	2000
	60	5000	5000	3500	3400	2900	2900	2500	2400	2300	2100
	90	4800	4800	3400	3300	2800	2800	2400	2300	2100	2000
336x65	10	5400	5400	3800	3800	3100	3100	2700	2700	2400	2300
	20	5500	5500	3900	3800	3100	3100	2700	2700	2400	2300
	40	5600	5600	3900	3900	3200	3200	2800	2800	2500	2400
	60	5700	5700	4000	4000	3300	3200	2800	2800	2500	2400
	90	5500	5500	3900	3900	3200	3200	2700	2800	2400	2300
384x65	10	6200	6200	4400	4400	3600	3500	3100	3100	2800	2800
	20	6300	6200	4400	4400	3600	3500	3100	3100	2800	2800
	40	6400	6400	4500	4500	3700	3600	3200	3200	2800	2900
	60	6500	6500	4600	4600	3800	3700	3300	3200	2900	2900
	90	6300	6300	4500	4500	3700	3600	3100	3100	2800	2800
420x65	10	6800	6800	4800	4700	3900	3900	3400	3300	3000	2900
	20	6900	6900	4900	4800	4000	3900	3400	3400	3100	3050
	40	7000	7000	5000	4900	4000	3900	3500	3400	3100	3100
	60	7200	7100	5000	4900	4100	4100	3600	3500	3200	3200
	90	6900	6900	4900	4800	4000	4000	3400	3400	3100	3050

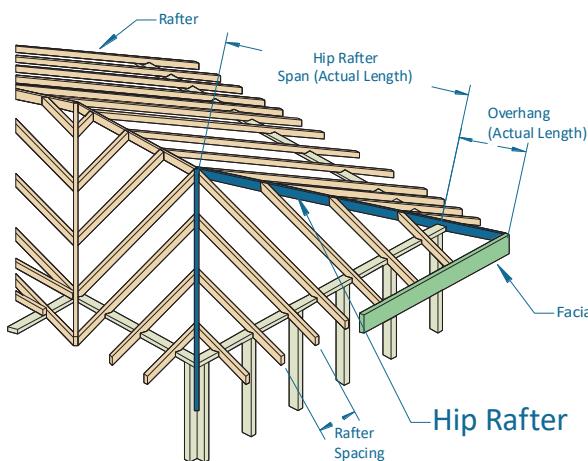
# Verandah beam (Continuous span) AS 4055 classification C1, C2 and C3

Roof load width (mm)		1500		3000		4500		6000		7500		
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200	
Member size DxB (mm)	Roof mass (kg/m <sup>2</sup> )	Maximum recommended Verandah beam span (mm)										
		Continuous span										
168x85	10	3100	3100	2200	2000	1700	1700	1500	1300	1400	1100	
	20	3100	3100	2200	2100	1700	1700	1500	1400	1400	1100	
	40	3200	3100	2200	2100	1800	1800	1600	1500	1400	1100	
	60	3200	3200	2300	2200	1800	1800	1600	1600	1400	1200	
	90	3200	3100	2200	2100	1800	1700	1500	1400	1400	1100	
	210x85	10	3900	3800	2700	2700	2200	2100	1900	1900	1700	1700
252x85	20	3900	3900	2700	2800	2200	2100	1900	1900	1700	1700	
	40	4000	4000	2800	2800	2300	2200	2000	1900	1700	1700	
	60	4100	4100	2800	2900	2300	2200	2000	2000	1800 <sub>10</sub>	1800 <sub>10</sub>	
	90	4000	4000	2800	2800	2300	2100	1900	1900	1700 <sub>10</sub>	1700 <sub>10</sub>	
	294x85	10	4700	4600	3300	3200	2700	2700	2300	2200	2100 <sub>5</sub>	2000 <sub>5</sub>
	20	4700	4600	3300	3200	2700	2700	2300	2200	2100 <sub>10</sub>	2000 <sub>10</sub>	
336x85	40	4800	4800	3400	3300	2800	2800	2400 <sub>5</sub>	2300 <sub>5</sub>	2100 <sub>20</sub>	2000 <sub>15</sub>	
	60	4900	4900	3500	3400	2800	2800	2400 <sub>15</sub>	2400 <sub>15</sub>	2200 <sub>25</sub>	2100 <sub>20</sub>	
	90	4700	4700	3400	3300	2700 <sub>5</sub>	2800 <sub>10</sub>	2300 <sub>20</sub>	2200 <sub>15</sub>	2100 <sub>30</sub>	2000 <sub>25</sub>	
	10	5400	5400	3800	3800	3100	3100	2700 <sub>10</sub>	2700 <sub>10</sub>	2400 <sub>20</sub>	2300 <sub>15</sub>	
	20	5500	5500	3900	3800	3200	3100	2700 <sub>10</sub>	2800 <sub>15</sub>	2400 <sub>25</sub>	2300 <sub>25</sub>	
	40	5600	5600	4000	3900	3200 <sub>5</sub>	3200 <sub>5</sub>	2800 <sub>20</sub>	2800 <sub>20</sub>	2500 <sub>30</sub>	2400 <sub>35</sub>	
384x85	60	5700	5700	4000	4000	3300 <sub>15</sub>	3200 <sub>15</sub>	2800 <sub>30</sub>	2800 <sub>30</sub>	2500 <sub>45</sub>	2500 <sub>40</sub>	
	90	5500	5500	3900	3900	3200 <sub>20</sub>	3200 <sub>20</sub>	2800 <sub>35</sub>	2800 <sub>35</sub>	2400 <sub>50</sub>	2300 <sub>45</sub>	
	10	6200	6200	4400	4400	3600 <sub>5</sub>	3500 <sub>5</sub>	3100 <sub>20</sub>	3100 <sub>20</sub>	2800 <sub>35</sub>	2800 <sub>35</sub>	
	20	6300	6300	4400	4400	3600 <sub>10</sub>	3500 <sub>10</sub>	3100 <sub>25</sub>	3100 <sub>25</sub>	2800 <sub>40</sub>	2800 <sub>40</sub>	
	40	6400	6400	4500	4500	3700 <sub>20</sub>	3600 <sub>15</sub>	3200 <sub>35</sub>	3200 <sub>35</sub>	2900 <sub>50</sub>	2900 <sub>50</sub>	
	60	6600	6600	4600 <sub>10</sub>	4600 <sub>10</sub>	3800 <sub>25</sub>	3700 <sub>25</sub>	3300 <sub>45</sub>	3200 <sub>40</sub>	2900 <sub>60</sub>	2900 <sub>60</sub>	
420x85	90	6300	6300	4500 <sub>15</sub>	4500 <sub>15</sub>	3700 <sub>35</sub>	3600 <sub>30</sub>	3100 <sub>50</sub>	3100 <sub>50</sub>	2800 <sub>70</sub>	2800 <sub>75</sub>	
	10	7200	7100	5000	5000	4100 <sub>20</sub>	4100 <sub>20</sub>	3600 <sub>35</sub>	3500 <sub>35</sub>	3200 <sub>50</sub>	3200 <sub>50</sub>	
	20	7200	7200	5100 <sub>5</sub>	5100 <sub>5</sub>	4100 <sub>25</sub>	4100 <sub>25</sub>	3600 <sub>40</sub>	3500 <sub>40</sub>	3200 <sub>55</sub>	3200 <sub>55</sub>	
	40	7400	7300	5200 <sub>15</sub>	5200 <sub>15</sub>	4200 <sub>30</sub>	4200 <sub>30</sub>	3700 <sub>50</sub>	3600 <sub>50</sub>	3300 <sub>80</sub>	3200 <sub>80</sub>	
	60	7300	7500	5300 <sub>20</sub>	5300 <sub>20</sub>	4300 <sub>40</sub>	4300 <sub>40</sub>	3800 <sub>70</sub>	3700 <sub>65</sub>	3400 <sub>95</sub>	3300 <sub>90</sub>	
	90	6800	6900	5100 <sub>25</sub>	5100 <sub>25</sub>	4200 <sub>50</sub>	4200 <sub>50</sub>	3600 <sub>85</sub>	3500 <sub>75</sub>	3200 <sub>100</sub>	3200 <sub>100</sub>	
462x85	10	7800	7800	5500 <sub>10</sub>	5500 <sub>10</sub>	4500 <sub>30</sub>	4500 <sub>30</sub>	3900 <sub>45</sub>	3800 <sub>45</sub>	3500 <sub>65</sub>	3400 <sub>60</sub>	
	20	7900	7900	5600 <sub>15</sub>	5500 <sub>15</sub>	4500 <sub>35</sub>	4500 <sub>30</sub>	3900 <sub>50</sub>	3900 <sub>50</sub>	3500 <sub>75</sub>	3400 <sub>80</sub>	
	40	8100	8000	5700 <sub>20</sub>	5600 <sub>20</sub>	4600 <sub>45</sub>	4600 <sub>40</sub>	4000 <sub>65</sub>	4000 <sub>65</sub>	3600 <sub>100</sub>	3500 <sub>90</sub>	
	60	7700	8000	5800 <sub>30</sub>	5800 <sub>30</sub>	4800 <sub>55</sub>	4700 <sub>55</sub>	4100 <sub>90</sub>	4100 <sub>90</sub>	3700 <sub>105</sub>	3600 <sub>105</sub>	
	90	7200	7300	5600 <sub>35</sub>	5600 <sub>35</sub>	4600 <sub>65</sub>	4500 <sub>65</sub>	3900 <sub>95</sub>	3900 <sub>95</sub>	3500 <sub>115</sub>	3400 <sub>110</sub>	
	10	8600	8600	6100 <sub>20</sub>	6000 <sub>20</sub>	5000 <sub>40</sub>	4900 <sub>40</sub>	4300 <sub>60</sub>	4300 <sub>60</sub>	3800 <sub>90</sub>	3800 <sub>90</sub>	
	20	8700	8700	6100 <sub>20</sub>	6100 <sub>20</sub>	5000 <sub>45</sub>	4900 <sub>45</sub>	4300 <sub>70</sub>	4300 <sub>70</sub>	3900 <sub>95</sub>	3800 <sub>95</sub>	
	40	8700	8900	6200 <sub>30</sub>	6200 <sub>30</sub>	5100 <sub>55</sub>	5100 <sub>55</sub>	4400 <sub>90</sub>	4400 <sub>90</sub>	4000 <sub>110</sub>	4000 <sub>110</sub>	
	60	8200	8600 <sub>5</sub>	6400 <sub>40</sub>	6400 <sub>40</sub>	5200 <sub>75</sub>	5200 <sub>75</sub>	4500 <sub>105</sub>	4500 <sub>105</sub>	4000 <sub>125</sub>	4000 <sub>125</sub>	
	90	7600	7900 <sub>5</sub>	6200 <sub>45</sub>	6100 <sub>45</sub>	5000 <sub>90</sub>	5000 <sub>85</sub>	4300 <sub>110</sub>	4300 <sub>110</sub>	3900 <sub>135</sub>	3800 <sub>135</sub>	

## NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. End bearing lengths = 70mm 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.
3. Restraint value for slenderness calculations is 1200 mm
4. Not all sizes of SmartLam GL10C in this table are stocked in each state. Please check with your supplier before ordering.

# Hip rafter - sheet and tile roof AS 4055 wind classification N1, N2, N3, C1, C2 & C3



## EXAMPLE:

wind speed = N3  
roof load = 40 kg/m<sup>2</sup> (sheet roof)  
hip rafter span = 4500 mm (single span)  
rafter spacing = 600 mm

Enter column at (N1,N2 & N3) wind speed, 600 mm rafter spacing and read down to span equal to or greater than 4500 mm for a 40 kg/m<sup>2</sup> roof load

## ADOPT:

SmartLam GL10C — 210 x 65

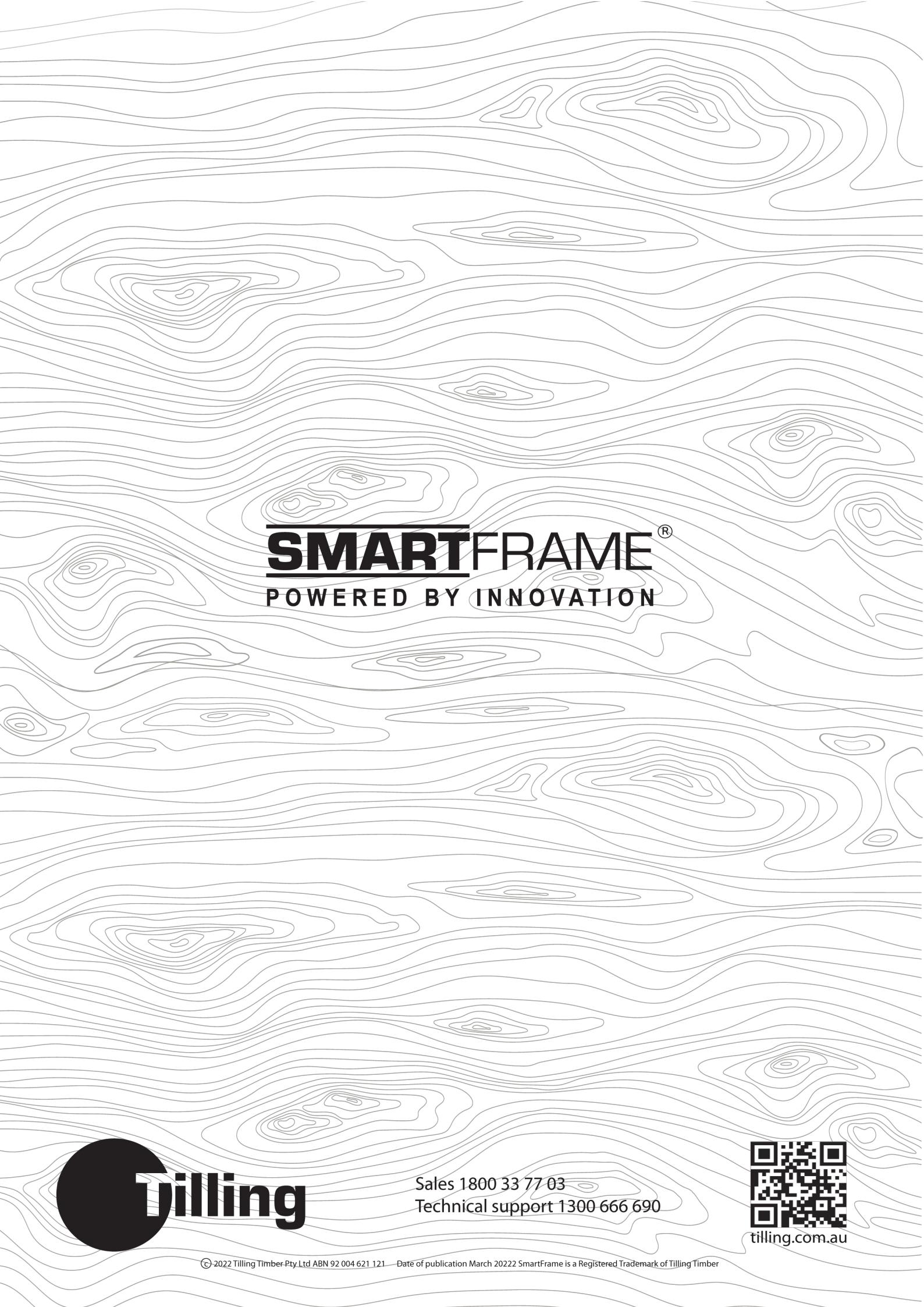
Wind Speed		N1, N2 & N3				C1, C2 & C3							
Rafter spacing (mm)		600		1200		600		1200					
Member size DxB (mm)	Roof & ceiling mass (kg/m <sup>2</sup> )	Maximum Rafter span + overhang span (mm)				Maximum Rafter span + overhang span (mm)							
		Single span				Single span							
168x65	40	3800	750	3800	700	3200	750	3200	700				
	90	3200	700	3200	700	3200	700	3200	700				
210x65	40	4600	1000	4600	1000	3700	1000	3700	1000				
	90	3800	950	3800	950	3700	950	3700	950				
252x65	40	5200	1250	5200	1200	4200	1250	4200	1200				
	90	4400	1150	4400	1150	4200	1150	4200	1150				
294x65	40	5900	1500	5900	1500	4700	1500	4700	1500				
	90	5000	1350	5000	1350	4600	1350	4600	1350				
336x65	40	6500	1800	6500	1750	5100	1750	5100	1750				
	90	5500	1600	5500	1550	5000 <sub>5</sub>	1600	5100 <sub>5</sub>	1550				
384x65	40	7000	2050	7100	2050	5600 <sub>10</sub>	1850	5600 <sub>10</sub>	1850				
	90	6100	1800	6100	1800	5500 <sub>15</sub>	1750	5500 <sub>15</sub>	1750				
420x65	40	7500	2250	7500	2250	5900 <sub>15</sub>	1950	5900 <sub>15</sub>	1950				
	90	6500 <sub>5</sub>	1950	6500 <sub>5</sub>	1950	5800 <sub>20</sub>	1850	5900 <sub>20</sub>	1850				
168x85	40	4100	1000	4100	950	3500	1000	3500	950				
	90	3400	900	3400	900	3400	900	3400	900				
210x85	40	4900	1250	4900	1250	4100	1250	4100	1250				
	90	4100	1150	4100	1150	4000	1150	4000	1150				
252x85	40	5600	1550	5600	1550	4600	1550	4600	1550				
	90	4700	1400	4700	1400	4600	1400	4600	1400				
294x85	40	6200	1900	6200	1850	5100	1800	5100	1800				
	90	5300	1700	5300	1650	5000	1700	5100	1650				
336x85	40	6800	2150	6800	2150	5600	1900	5600	1900				
	90	5900	1900	5900	1900	5500	1800	5500	1800				
384x85	40	7400	2450	7500	2450	6100 <sub>5</sub>	2050	6100 <sub>5</sub>	2050				
	90	6500	2150	6500	2100	6000 <sub>10</sub>	1950	6000 <sub>10</sub>	1950				
420x85	40	7900	2650	7900	2600	6500 <sub>10</sub>	2150	6500 <sub>10</sub>	2150				
	90	6900	2300	6900	2300	6400 <sub>15</sub>	2050	6400 <sub>15</sub>	2000				

## NOTES:

- D = member depth, B = member breadth, NS = not suitable.
- The above table was based on a batten spacing of 900 mm
- Minimum backspan = 200% of overhang
- Maximum birds mouth depth = 30% of depth
- End bearing length = 35 at end supports and 35 mm. Subscript values indicate the minimum additional bearing length where required to be greater than 35 mm at end support
- Construction loads shall not be applied to overhangs until a 190 x 19 mm (min) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
- Not all sizes of SmartLam GL10C in this table are stocked in each state. Please check with your supplier before ordering.

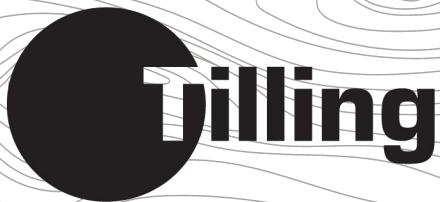






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