

the
futurebuild®
range

FUTUREBUILD®
STRUCTURAL LVL
hy ONE®

FUTUREBUILD®
STRUCTURAL LVL
hy SPAN®

FUTUREBUILD®
LVL TRUSS CHORDS
hy CHORD®

FUTUREBUILD®
STRUCTURAL LVL
BEAMS
hy 90°

FUTUREBUILD®
LVL ENGINEERED
P-JOISTS
hy JOIST®

FUTUREBUILD®
LVL SCAFFOLD
PLANKS
hy PLANK®

FUTUREBUILD®
LVL FORMWORK
BEAMS
tru FORM®

FUTUREBUILD®
LVL FORMWORK
EDGE BOARDS
edge FORM®

FUTUREBUILD® LVL RESIDENTIAL DESIGN GUIDE

JULY 2014

CarterHoltHarvey
Woodproducts New Zealand

Information contained within is specific to the Futurebuild® range of LVL products and cannot be used with any other LVL products no matter how similar they may appear.

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1.0 LAMINATED VENEER LUMBER

Laminated Veneer Lumber (LVL) is the engineered solution for residential housing design and construction. Futurebuild® LVL is an engineered wood product with high structural reliability and performance, and consistent dimensional accuracy. It allows architects and designers to specify Futurebuild LVL with confidence and is readily available in a range of thicknesses, depths and lengths.

- Futurebuild LVL has been tried and trusted in Australasia for over 30 years
- Made in New Zealand
- Available FSC “Chain of Custody” certified on request
- Fully supported by Carter Holt Harvey® Woodproducts design and technical expertise
- Easy to work with using traditional building tools
- Clearly branded for easy identification on-site
- Engineered to precise tolerances

This guide is intended for use by professionals and good building practice must be followed at all times.

1.1 FUTUREBUILD® LVL

Manufactured by Carter Holt Harvey Woodproducts New Zealand, the Futurebuild LVL range is New Zealand's leading brand of LVL. The Futurebuild LVL range of products features specific material property 'recipes'. As such the information contained within this guide is specific to the Futurebuild LVL range and cannot be used with any other LVL product no matter how similar they may appear.

For more information about the Futurebuild LVL range including technical notes and limit state design information visit www.chhwoodproducts.co.nz

The information contained in this manual relates specifically to Futurebuild® LVL products manufactured by Carter Holt Harvey® Woodproducts and cannot be used with any other manufacturers LVL product no matter how similar they may appear.

Alternative LVL products can differ in a number of ways which may not be immediately obvious and substituting them for products is not appropriate and could in extreme cases lead to premature failure and/or buildings which do not meet the requirements of the New Zealand Building Code.

1.2 APPLICATION

The span tables and technical information in this guide are intended to be used by designers or builders to select the appropriate Futurebuild® LVL products for use in the framing of houses and similar buildings within the scope of NZS 3604.

The tabulated data given applies for Futurebuild LVL members installed in accordance with traditionally recognised framing practice as described in NZS 3604 Timber Framed Buildings, the installation specifications contained in this guide and the Futurebuild LVL Residential Installation Guide.

The software specification program designIT® for houses provides the ability to review reaction information for the determination of support and tie-down information where required. For more information or to download CHH design software free of charge, visit www.chhsoftware.com or contact CHH Woodproducts on 0800 808 131.

1.3 SUSTAINABILITY

Futurebuild LVL is manufactured from radiata pine, a plantation grown medium density softwood. It is grown on tree farms which are tended and harvested to provide wood for LVL manufacture and other applications. The crop is managed on a sustainable basis to yield millable trees. New Zealand plantations are managed in compliance with the New Zealand Forest Accord, a voluntary agreement signed in 1991 between

New Zealand forest managers and environmental non-government organisations. Futurebuild LVL is manufactured in New Zealand, at the CHH Woodproducts Marsden Point Laminated Veneer Mill. Futurebuild LVL is available Forestry Stewardship Council (FSC) (SCS-COC-001316) certified upon request.

1.4 DISCLAIMER

The information contained in this document is current as of July 2014 and is based on data available to CHH Woodproducts at the time of going to print. This publication replaces all previous CHH Woodproducts Futurebuild LVL residential design literature. CHH Woodproducts reserves the right to change the information contained in this literature without prior notice. It is important that you call 0800 808 131 to confirm that you have the most up to date information available or refer to www.chhwoodproducts.co.nz

CHH Woodproducts has used all reasonable endeavours to ensure the accuracy and reliability of the information contained in this document. This information does not replace professional advice and we recommend that professional advice should be obtained specific to your circumstances. To the extent permitted by law, CHH Woodproducts will not be liable for any inaccuracies, omissions or errors in this information nor for any actions taken in reliance on this information.



2.0 PRODUCT RANGE

Structural Products

FUTUREBUILD®
STRUCTURAL LVL

**hy
SPAN®**

hySPAN® has high structural properties and is available in a large range of sizes and lengths. hySPAN is typically specified for structural beams and is also used for lintels, rafters and floor joists in residential structures.

FUTUREBUILD®
LVL TRUSS CHORDS

**hy
CHORD®**

hyCHORD® is available in smaller section sizes to match SG Structural Timber such as Laserframe®. hyCHORD is primarily specified as roof truss chords, but can also be used for lintels, rafters, purlins, floor joists, wall studs or other members where smaller section sizes are required.

FUTUREBUILD®
STRUCTURAL LVL
BEAMS

**hy
90®**

hy90® is a 90 mm thick LVL product manufactured primarily for lintels or beams to match 90 mm light timber framing. It has lower structural properties than hySPAN but its thickness offers better member stability when used as long span structural beams or columns.

FUTUREBUILD®
LVL ENGINEERED
I-JOISTS

**hy
JOIST®**

hyJOIST® is an engineered 'I-beam' utilising LVL flanges and a plywood web. It is ideally suited to floor joist and rafter applications due to its light weight, straightness and the ability to cut large holes through the web (e.g. for services or ventilation)

FUTUREBUILD®
STRUCTURAL LVL

**hy
ONE®**

hyONE® is a 90 mm thick, high stiffness and strength LVL product manufactured primarily for lintels or floor beams where large spans or depth restrictions apply.

FUTUREBUILD®
LVL JOIST

**hy
BOUND**

hyBOUND® is a treated boundary joist for enhanced weather protection and to aid in the transfer of upper storey loads.

Formwork Products

FUTUREBUILD®
LVL FORMWORK
BEAMS

**tru
FORM®**

truFORM® is manufactured for use in concrete formwork and is suitable for joists, bearers, walers and soldiers.

FUTUREBUILD®
LVL FORMWORK
EDGE BOARDS

**edge
FORM®**

edgeFORM® is manufactured for use in concrete formwork as edge boards.

Access Products

FUTUREBUILD®
LVL SCAFFOLD
PLANKS

**hy
PLANK®**

hyPLANK® is a strong, lightweight LVL scaffold plank with significantly higher structural reliability than sawn timber.

Building Systems

FUTUREBUILD®
LVL BUILDING
SYSTEMS

**hy
FRAME®**

hyFRAME® is a CHH Woodproducts building system designed for the agricultural market.

Formwork and Access products are outside the scope of this guide. For more information on these products visit www.chhwoodproducts.co.nz or contact CHH Woodproducts.

2.1 PRODUCT AVAILABILITY

TABLE 1: FUTUREBUILD® LVL STANDARD PRODUCT RANGE

Product	Depth (mm)	Thickness (mm)				Length (0.6 m increments where indicated)
		28	45	63	90	
hySPAN®	150		✓	✓		2.4 – 13.2 m
	170		✓			
	200		✓	✓		
	240		✓	✓		
	300		✓	✓		
	360		✓	✓		
	400		✓	✓		
	450			✓		
hy90°	150				✓	4.8 – 7.2 m
	200				✓	
	240				✓	
	300				✓	
	360				✓	
	400				✓	
hyONE®	240				✓	4.8 – 6.0, 7.2 m
	300				✓	4.8 – 6.0, 7.2 m
	360				✓	5.4, 6.0, 7.2 m
	400				✓	5.4, 7.2 m
hyCHORD®	90		✓			4.8*, 6.0*, 7.2 m*
	140		✓			4.8*, 6.0*, 7.2 m*
	190		✓			4.8*, 6.0*, 7.2 m*
hyJOIST®	200		✓			2.4 – 13.2 m
	240			✓	✓	
	300			✓	✓	
	360			✓	✓	
	400				✓	
hyBOUND®	200	✓				4.8, 6.0 m
	240	✓				
	300	✓				
	360	✓				
	400	✓				

* Indicates untreated product available on a make to order basis. Additional lead times may apply

• Non standard products and lengths may be available subject to production availability. Additional lead times may apply

• A comprehensive range of accessories including joist hangers, blocking and web stiffeners are available. Contact CHH Woodproducts or refer to "designIT for houses" software for more information

Available treated only

Available either untreated or treated



3.0 GENERAL DESIGN CONSIDERATIONS

The design methodology used in the preparation of this guide complies with the requirements of the following design standards:

- AS/NZS 1170:2002/3 Structural Design Actions
- NZS 3603:1993 Timber Structures Standard, an Acceptable Solution to NZBC Clause 1 Structure.

Guidance has been taken from AS 1684.1:1999, Residential timber-framed construction, Part 1: Design criteria, and reviewed to ensure agreement with NZS 3604:2011 Timber Framed Buildings. When selected and installed in accordance with the specifications, details and limitations in this guide and the Residential Installation Guide, Futurebuild® LVL will comply with the requirements of the New Zealand Building Code.

The spans given in these tables have been developed by experienced timber design engineers in accordance with NZS3603:1993 and include the most up-to-date loading combinations from AS/NZS 1170.

Floor loading applied includes an allowance for:

- Floor mass not exceeding 40 kg/m², unless otherwise notified
- Live load of up to 1.5 kPa/1.8 kN, for use in domestic houses

For other situations, such as decks, balconies, tiled areas and apartment floors, designIT® for houses software should be used for specification where alternate loading conditions may be applied. For commercial, industrial and other heavily loaded floors use designIT for Commercial Floors or contact CHH Woodproducts.

Wind Loading

Unless noted otherwise, the tables given in this guide are suitable for applications in building wind zones up to very high (VH) exposure.

Snow Loading

All tables are suitable for ground snow loads up to 1.0 kPa. For snow loads over 1.0 kPa refer to designIT for houses software.

Member Specification

In selecting an appropriate beam size, specifiers should also consider the applicability of design deflection limits for the beams intended use. Deflection limits applied in this guide may not be suitable for some designs and further advice should be obtained.

Reaction/Support Considerations

For tie down, support and reaction information refer to designIT for houses software.

Deflection Limits

The deflection limits used in these span tables have been determined on the basis of experience with the known serviceability performance of individual member types in typical applications. Where reduced deflections or higher levels of performance are required consult designIT for houses software or select members that have an increased spanning capability as required.

DL – Dead Load, sometimes referred to as permanent load, considers load that is deemed to apply for periods of more than 6 months.

LL – Live Load, sometimes referred to as transient load, is load that is considered to be temporary in its nature.

Dynamic – Dynamic serviceability limits are applied to floor joists and relate to the dynamic response of a floor joist to load. The 1 kN for 2 mm deflection is provided to reflect a dynamic performance level of the floor corresponding 8 Hz.

3.1 CHH SOFTWARE SOLUTIONS

CHH Software Solutions include specification software for both residential and non-residential structural systems. They enable designers and engineers, even those unfamiliar with the specifics of timber engineering to produce high quality, reliable specifications using engineered wood products.

Residential Software

designIT^{HOUSES} **designIT^{HOUSES} for houses** is a software tool for all building practitioners for designing with the Futurebuild® LVL range of engineered wood products and other selected materials for houses and similar structures.

designIT for houses enables a wide range of applications to be considered, including floor layouts, wind and other loads, which are not included in this publication without the need for engineering knowledge or the exercise of professional engineering judgment.

designIT site The **designIT Site** app has been developed as a handy reference tool for the specifier or tradesman on the go. It is a trimmed down version of designIT for houses.

floorIT site **floorIT site** is a smartphone app to aid specifiers in the specification, selection and estimation of quantities for a range of flooring applications.

layIT out **layITout**® is an integrated design and layout tool that allows users to enter a house plan, propose and then design a floor joist layout for a fully integrated engineered floor system.

Non Residential Software

designIT^{COMMERCIAL FLOORS} **designIT** for Commercial Floors is a software tool for all building practitioners for designing with the Futurebuild LVL range of engineered wood products and other selected materials in commercial, industrial and other heavily loaded floors.

The **computeIT**® software suite is designed to aid in the specification of heavy structural members and non residential structural systems. It includes three software packages; **computeIT** for beams, **computeIT** toolkit and **computeIT** for portal frames.

computeIT^{BEAMS} **computeIT for beams** is an all purpose beam analysis package that enables engineers to develop design solutions for a range of engineered wood products.

computeIT^{TOOLKIT} **computeIT toolkit** is a series of design tools allowing quick and easy design of beams, columns, rigid moment connections, purlins and girts.

computeIT^{PORTAL FRAMES} **computeIT for portal frames** is a fully integrated portal frame design, analysis and specification package for the development of optimised timber design solutions.

slabIT site **slabIT site** is an app for the design of truFORM and gripFORM members for use as joists and bearers for forming slab soffits.

For more information or to download CHH software free of charge, visit www.chhsoftware.com or contact CHH Woodproducts.

3.2 MANUFACTURE

Futurebuild LVL is manufactured by using phenolic adhesive to laminate radiata pine veneer, in a continuous assembly in which the grain direction of all veneers is orientated in the longitudinal direction. It is pressed as a 1.2 m nominal width continuous billet in various standard thicknesses, docked to any specified

length and then ripped into standard widths for use as structural beams etc.

For product range and size information refer to section 2.1 Product Availability.

3.3 STRUCTURAL PROPERTIES

The structural properties for Futurebuild LVL have been determined by testing in accordance with the requirements of AS/NZS 4357 and section 4 of AS/NZS 4063.2:2010 and so comply with the provisions of the NZ Building Code through clause C2.3 in NZS3603.

Refer to the Futurebuild LVL Specific Engineering Design Guide for engineering design information.

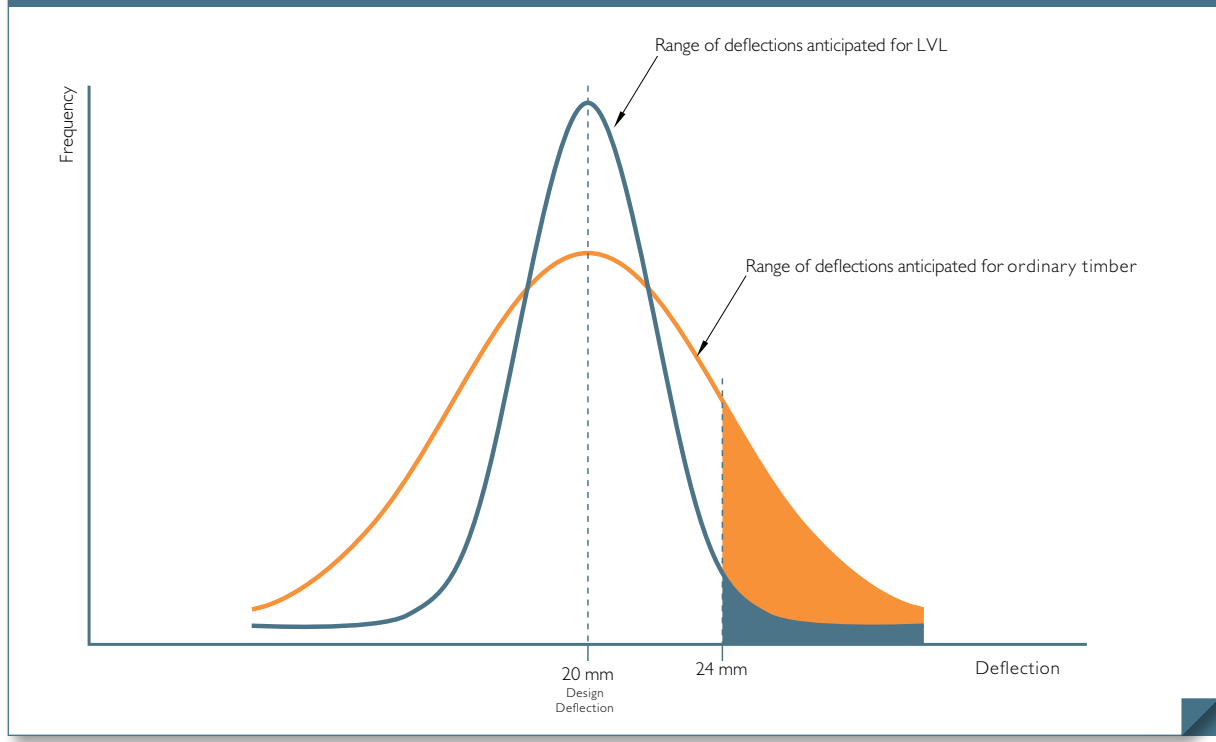
3.4 STRUCTURAL RELIABILITY

Futurebuild LVL is manufactured by laminating various grades of veneer in a predetermined pattern to impart predictable and reliable structural properties. The uniformity of LVL is the key to its high strength and stiffness properties and its reputation for reliable and predictable performance. It is the reliability of LVL that makes it a genuine engineering material suitable for high load, high risk applications such as large span portal frames.

For ordinary applications the reliability of LVL, illustrated graphically in Figure 1, rewards specifiers and builders with the confidence of meeting customer expectations and reduction in the incidence of expensive and disruptive call backs.



Figure 1: LVL Reliability Curve



3.5 STRUCTURAL CERTIFICATION

The span tables and details in this guide for Futurebuild® LVL have been designed in accordance with sound and widely accepted engineering principles.

The design properties of Futurebuild LVL in this guide were determined in accordance with clauses 2.3 and C2.3 of NZS 3603: "Timber Structures Standard." Futurebuild LVL is Product Certified by the Engineered Wood Products Association of Australasia (EWPAA) as being manufactured in accordance with the joint New Zealand / Australian Standard AS/NZS 4357: "Structural Laminated Veneer Lumber." The EWPAA is accredited for product certification by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Structural design is in accordance with NZS 3603 (verification method BI/MMI, 6.1) with loads and deflection criteria as indicated on the tables. Serviceability and other criteria were selected using guidelines available from joint Australian / New Zealand standards technical committees and correspond to those used in NZS 3604, (Acceptable Solution BI / ASI, 4.1).

When installed in accordance with the specifications, details and limitations in this guide and the Residential Installation Guide, Futurebuild LVL members will comply with the requirements of the New Zealand Building Code.

3.6 QUALITY ASSURANCE

Futurebuild LVL is manufactured in a fully quality controlled process, independently third party audited by the Engineered Wood Products Association of Australia (EWPAA). The EWPAA certifies Futurebuild LVL manufactured by CHH Woodproducts at its Marsden Point (New Zealand) mill.

Participation and compliance with the requirements of the EWPAA's process based quality control scheme includes product testing and monitoring of properties. It provides the basis for the EWPAA's Product Certification of Futurebuild LVL as conforming to the requirements of AS/NZS 4357 (Structural Laminated Veneer Lumber). Conformance with AS/NZS 4357

ensures that Futurebuild LVL is suitable for structural applications in accordance with NZS 3603 Timber Structures Standard and NZS 3604 Timber Framed Buildings.

The EWPAA's product certification scheme is accredited under the government Joint Accreditation System of Australia and New Zealand (JAS-ANZ).



3.7 DURABILITY

Futurebuild LVL is manufactured to meet the requirements of the New Zealand Building Code Clause B2 Durability. As such, if the product is used in accordance with CHH Woodproducts specifications and good building practices, and treated to the levels prescribed in NZS 3602, Timber and Wood-based Products for Use in Building, it will comply with the requirements of the NZ Building Code.

The recent changes to the New Zealand Building Code Clause B2 Durability (Amendment 8) have provided clarification around Acceptable Solutions for various treatment levels of LVL, these include the use of untreated LVL, H1.2 glueline and surface spray treated LVL, and H3.1 Azole LOSP treated LVL options.

There is no change to how LVL can be applied untreated in situations where it is protected from weather (with no risk of moisture penetration conducive to decay) i.e. mid floors, sub floors, etc. This is identified in Sections C and E of Table 1 of NZS 3602.

With regard to treated LVL, citing of NZS 3604:2011 in Clause B2/AS1 dictates that if LVL is not specifically referred to in NZS3602 the LVL can be preservative treated to the same level as that required in Clause B2/AS1 of the New Zealand Building Code for kiln dried Radiata Pine. Clause B2/AS1 allows for treatment to be to either a H1.2 or H3.1 LOSP Azole level. This includes situations covered by NZS 3602 Table 1 Section D, "Members protected from the weather but with a risk of moisture penetration conducive to decay." This would include, for example, enclosed external framing situations including lintels, studs, boundary joists, etc.

Two Acceptable Solution options exist specifically for treated LVL in Clause B2/AS1:

1. H3.1 Azole LOSP treated, or
2. H1.2 glueline treated with a surface spray.

LVL products must be protected from water, condensation and dampness by good detailing. For uses where there is risk of temporary moisture, use appropriate treatment levels.

For more information, refer to technical note Futurebuild LVL: Durability and Moisture Statement available from www.chhwoodproducts.co.nz

Sub-floor Applications

Good building practice ensures that raised timber floors are well ventilated underneath, as such the durability of these floors is subject to the floor space being ventilated for the life of the building to the provisions of NZS 3604 or E2/AS1. This is intended to eliminate the possibility of decay for sub-floor members and flooring therefore, in accordance with NZS 3602, untreated Futurebuild LVL may be safely used where standard practices for ventilation and clearance are followed.

External Use

Futurebuild LVL is NOT recommended for fully weather exposed applications, such as open deck joists and pergola beams.

3.8 PRESERVATIVE TREATMENT

For weather-protected applications covered by NZS 3602 Section D, "Members protected from the weather but with a risk of moisture penetration conducive to decay", LVL can be either H1.2 glueline treated with a surface spray (in accordance with NZS 3640) or H3.1 Azole LOSP treated to Table 6.2 of NZS 3640. Both treatments meet the requirements intended by H1.2 of the New Zealand Building Code Clause B2/AS1 and NZS 3604.

LVL can be preservative treated for weather-protected applications, such as verandah beams and for poorly ventilated or damp sub-floor applications.

All H3.1 LOSP treated LVL is envelope treated. Where section ends are cut, ends must be coated with a brush on timber preservative. Holdfast Metalex End Seal is recommended.

4.0 DESIGN CONSIDERATIONS – hyJOIST® I-BEAMS

hyJOIST® I-Beams are ideally suited for long span, low load applications such as floor joists and rafters.

The following design considerations should be taken into account in the design and detailing of hyJOIST floor systems sized and specified within this guide.

4.1 BEARING SUPPORT – JOIST NOT TRANSFERRING LOAD FROM UPPER WALLS

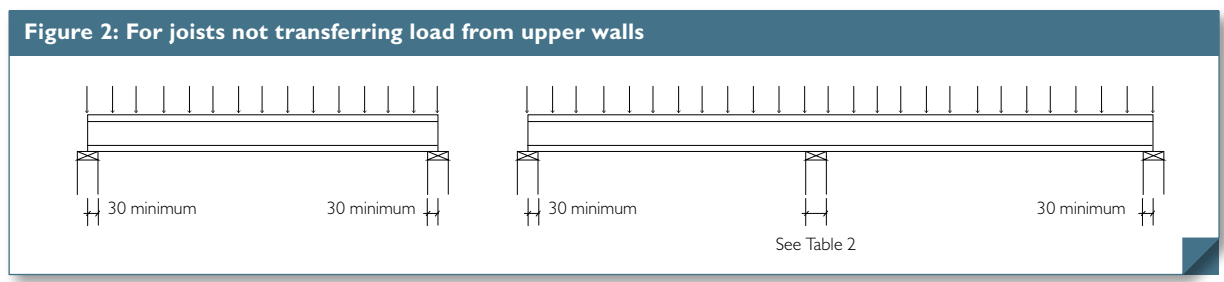


TABLE 2: MINIMUM BEARING FOR hyJOIST® I-BEAMS SUPPORTING FLOOR LOADS ONLY

	End Supports Single or Continuous Span	Intermediate Supports Continuous Span	
Joint Spacing (mm)	ALL	450	600
Minimum Bearing (mm)	30	45	65
Minimum Bearing – Heavy Floors (mm)	30	55	75

4.2 BEARING SUPPORT FOR JOISTS TRANSFERRING UPPER STOREY WALL AND ROOF LOADS AT SUPPORTS

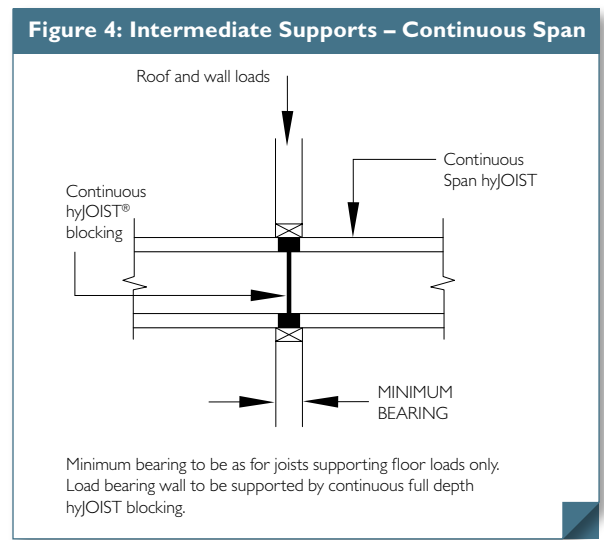
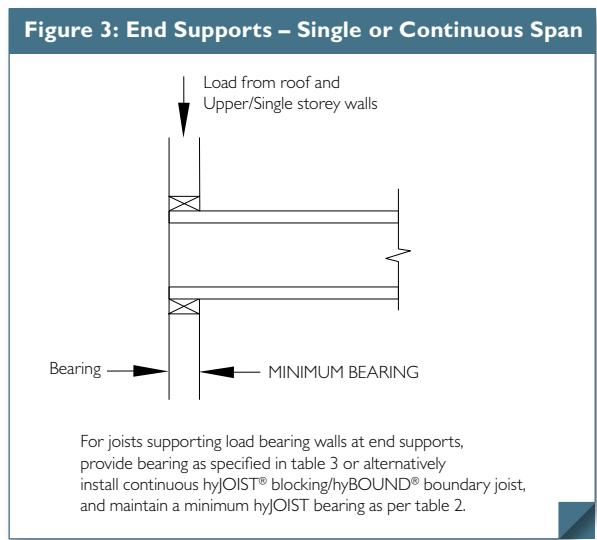


TABLE 3: MINIMUM BEARING FOR hyJOIST® I-BEAMS TRANSFERRING UPPER STOREY ROOF OR FLOOR LOADS

Load Type	Joist Spacing (mm)	
	450	600
	Minimum Bearing (mm)	
Light Roof and ceiling	30	65 ¹
Heavy Roof and ceiling	45	90 ²

1. If web stiffeners installed bearing may be reduced to 45 mm
2. If web stiffeners installed bearing may be reduced to 65 mm
- For all cases bearing may be reduced to 30 mm if continuous full depth blocking or compression blocks are installed
- designIT® for houses software may give a reduced bearing requirement
- Roof mass allowances are defined in Table 7

4.3 BEARING SUPPORT FOR LOWER STOREY OF TWO STOREY CONSTRUCTION

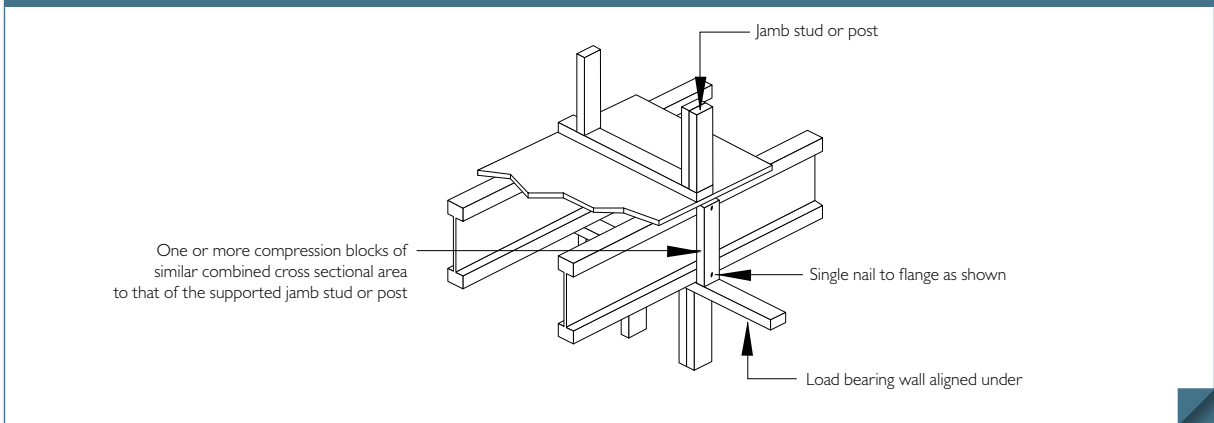
Continuous full depth hyJOIST® blocking should be installed to transfer compression loads from load bearing walls to the supports.

In most cases continuous hyJOIST blocking will be adequate to support the roof, wall and floor loads. Refer to designIT® for houses software for confirmation.

4.4 CONCENTRATED LOADS FROM JAMB STUDS/POSTS

Use compression blocks to transfer loads through to supports as shown.

Figure 5: Concentrated loads for Jamb Studs/Posts



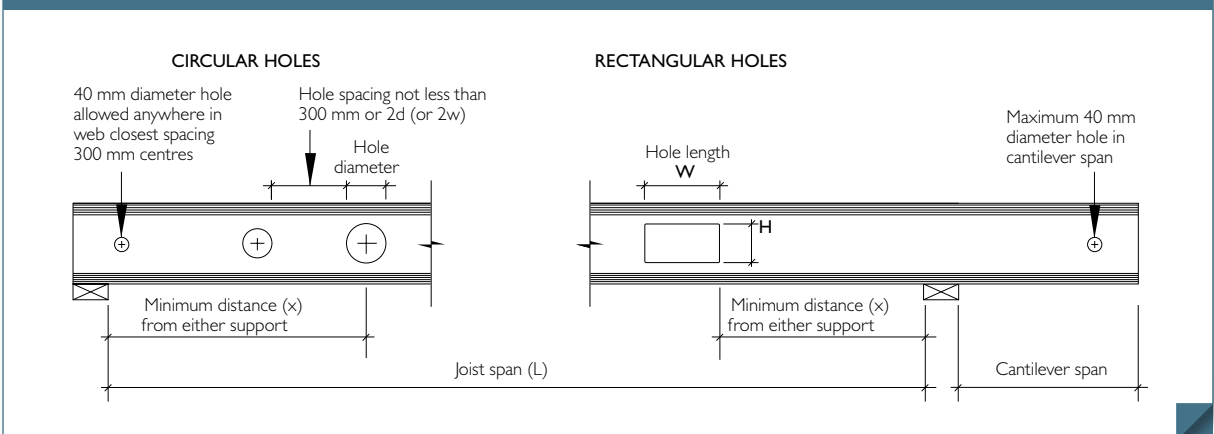
4.5 WEB HOLES FOR HYJOIST® I-BEAMS

Holes may be cut through the web of hyJOIST provided they are located within the central part of the span as specified below.

For cases involving non-uniform loading or where the possibility of locating the hole closer to supports needs to be assessed, use the web hole option in the floor joist calculator in designIT® for houses software.

For hole sizes other than those stated in tables 4 and 5 refer to the web hole calculator in designIT® for houses software, or the designIT site smartphone application

Figure 6: Web Holes for hyJOIST® I-Beams



All treated Futurebuild® LVL is envelope treated. Holes and cuts made in treated hyJOIST must be adequately coated with

a brush on timber preservative. Holdfast Metalex End seal is recommended.

TABLE 4: CIRCULAR HOLES FOR hyJOIST® I-BEAMS

hyJOIST® Section Code	Maximum Hole Diameter (mm)	Minimum Distance from Support 'X'	Hole Diameter (mm)			
			80	110	125	150
			Circular Holes – Minimum Distance 'X' from support – (m)			
HJ200 45	118	0.34 L'	0.16 L	0.28 L	N/A	N/A
HJ240 63	158	0.38 L	0.12 L	0.21 L	0.26 L	0.33 L
HJ240 90						
HJ300 63	218	0.41 L	0.10 L*	0.15 L	0.18 L	0.24 L
HJ300 90				0.10 L*	0.14 L	0.20 L
HJ360 63	278	0.42 L	0.3 m*	0.08 L*	0.11 L	0.16 L
HJ360 90		0.40 L	0.3 m*	0.3 m*	0.3 m*	0.05 L*
HJ400 90	318	0.40 L	0.3 m*	0.3 m*	0.3 m*	0.08 L*

* Minimum distance from any support is 0.3 metres

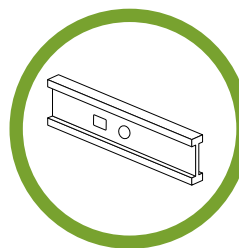
1. Example, if actual span 'L' = 4.0 m then minimum distance 'X' from hole to support (see figure 6) is 0.34 x 4.0 = 1.365 m

TABLE 5: RECTANGULAR HOLES FOR hyJOIST® I-BEAM

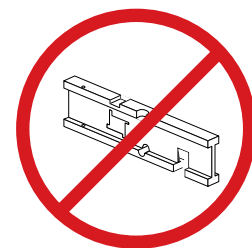
hyJOIST® Section Code	Hole Size		Permitted Locations for Rectangular Holes								
	Height (mm)	Length (mm)	L	Actual Span 'L' in metres							
			X	Minimum Distance from the side of the hole to any support – (m)							
HJ200 45	118	250	L	≤ 3.8	4.0	4.2	4.4	4.5			
			X	0.34 L	1.38	1.59	1.80	1.90			
HJ240 63	158	330	L	≤ 3.5	5.5						
			X	0.38 L	2.13						
HJ240 90	158	330	L	≤ 5.8	6.0	6.1					
			X	0.38 L	2.36	2.45					
HJ300 63	218	400	L	≤ 5.2	5.4	5.6	5.8	6.0	6.2	6.3	
			X	0.41 L	2.25	2.39	2.54	2.69	2.83	2.91	
HJ300 90	218	400	L	≤ 6.4	6.6	6.8	7.0				
			X	0.40 L	2.73	2.88	3.04				
HJ360 63	278	500	L	≤ 5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8
			X	0.42 L	2.37	2.49	2.62	2.75	2.88	3.02	3.15
HJ360 90	278	500	L	≤ 7.2	7.4	7.6	7.7				
			X	0.40 L	2.97	3.10	3.17				
HJ400 90	318	600	L	≤ 8.0							
			X	0.40 L							

Interpolate to obtain values of 'X' for spans intermediate between the values given

- Data applies for floor joists or rafters supporting uniform loads (and concentrated live load not exceeding 1.8 kN)
- Hole locations closer to supports may be possible for some load and support conditions; refer to the 'floor joist calculator' in designIT® for houses software
- Spacing between holes to be not less than 300 mm or twice the width (or twice the diameter) of the larger hole, whichever is greater
- Not more than three holes with width or diameter greater than 80 mm in any span
- For cantilever spans holes greater than 40 mm diameter are not permitted
- Not more than one rectangular (or square) hole per span



Do cut in web area as specified



Do NOT cut, notch or bore through flange

5.0 DESIGN CONSIDERATIONS – SOLID LVL

Solid Futurebuild® LVL products (including hySPAN®, hyONE®, hy90® and hyCHORD®) can be installed in accordance with traditionally recognised framing practice as described in NZ 3604 and other installation details contained and referenced within this guide.

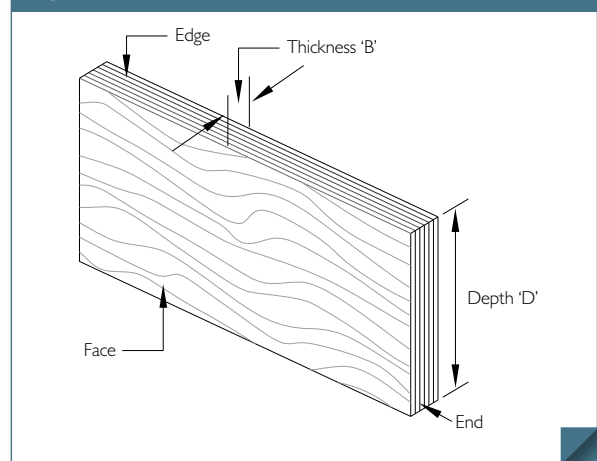
For specific support and tie-down calculation, consult designIT® for houses software where reactions are provided for all members for specification with typical connection details.

5.1 FASTENING FUTUREBUILD® LVL

Futurebuild LVL may be nailed, bolted or screw fixed exactly the same way as dry timber. For installation and performance of fasteners there is no need to distinguish between fasteners installed into either the face or edge (see figure 7). Due to the high density of Futurebuild LVL, to ensure adequate driving, pneumatic nailers should be operated at slightly higher pressures than normally used. Standard edge, end distances and spacings between fasteners appropriate for seasoned softwood timber may be used.

The load carrying capacity of nail, screw or bolt fasteners used with Futurebuild LVL depends on the type of fastener and its orientation. Refer to Table 4 of the Futurebuild LVL Specific Engineering Design Guide.

Figure 7: Solid Futurebuild LVL Profile



5.2 STORAGE OF FUTUREBUILD® LVL

Futurebuild LVL requires care in storage and handling prior to installation:

- Stack well clear of the ground (at least 150 mm) for good ventilation
- Stack on level bearers to keep flat and straight

- Store under cover to keep dry prior to installation
- During construction Futurebuild LVL may be exposed to limited sun and rain. Refer to the Futurebuild LVL Durability Statement downloadable from www.chhwoodproducts.co.nz for detailed information

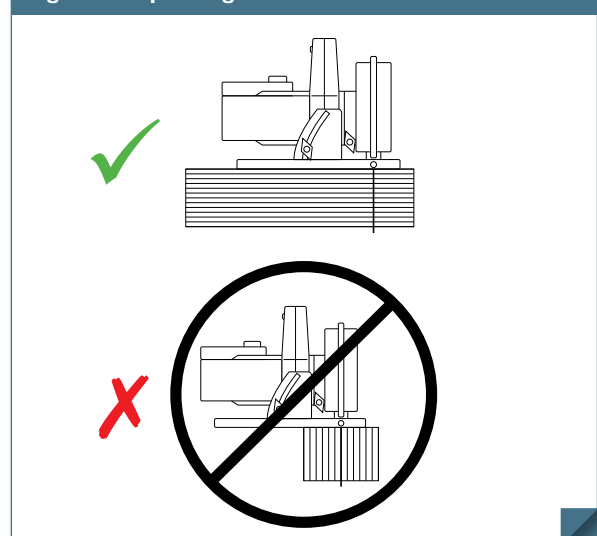
5.3 RIP SAWING FUTUREBUILD® LVL

Unlike graded timber, solid Futurebuild LVL products may be rip sawn through the thickness to the smaller standard section depths given in these span tables without affecting the basic strength properties. Care must be taken to comply with the no negative tolerance specification (i.e. do not cut undersize) if the maximum spans given in these tables are to apply.

Rip sawing through the depth to produce sections of reduced thickness is not permitted and may adversely affect strength properties.

Treated Futurebuild LVL is envelope preservative treated. Where ripping treated LVL, retreatment of the entire beam is required.

Figure 8: Ripsawing of Futurebuild LVL



5.4 USING DOUBLE SECTIONS

Where double sections are specified these need to be securely nail laminated. This does not apply for bearers used in pole frame construction. Whilst nail lamination may ordinarily be satisfactorily achieved using the procedures given in NZS 3604 the fixing will often not be adequate if double sections are required to support incoming members face fixed on one side.

Any moisture between the two sections of LVL which are to be joined must be avoided. In order to meet these requirements the following detail for jointing double sections of Futurebuild® LVL is recommended.

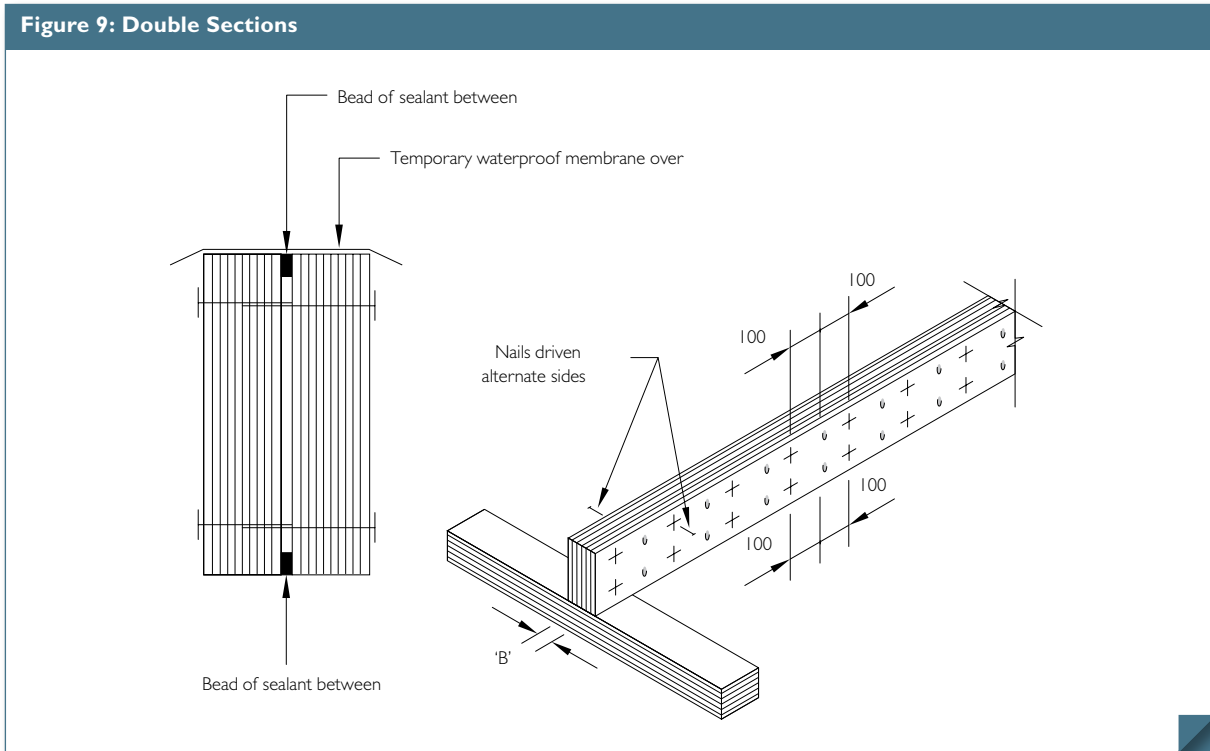


TABLE 6: FASTENER SIZES FOR NAIL LAMINATION OF FUTUREBUILD® LVL

Section Size 'B'	Minimum Nail Diameter (mm)	Minimum Nail Length (mm)
45	3.3	90
63	3.3	100

6.0 TERMINOLOGY

6.1 SPAN

For the purpose of using the following tables, span may be interpreted as the clear distance between supports measured along the beam.

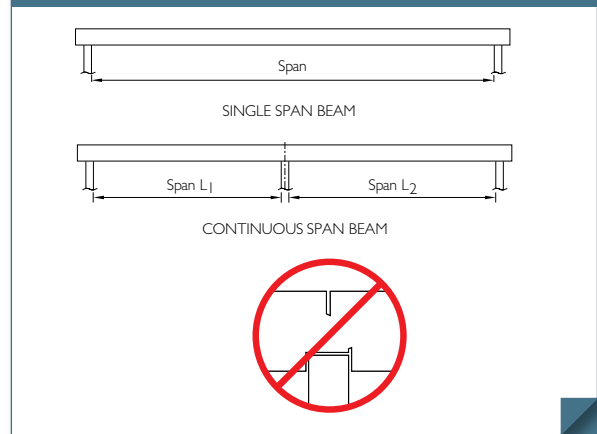
Single Span Beams are beams supported at two points only. Continuous Span Beams are beams supported at three or more points along their length.

Continuous span values given in the tables should only be used where:

- a) The beam is not notched or partially cut through at internal support points and,
- b) If the spans are not equal, the largest span is not greater than twice the smallest adjacent span.

However if either of the above conditions are not met, use the single span tables for the purpose of obtaining the appropriate size.

Figure 10: Beam Spans

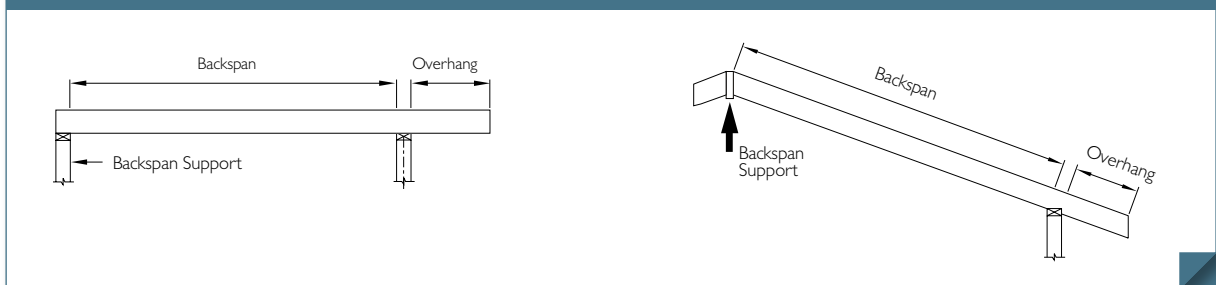


6.2 OVERHANG SPAN (CANTILEVER)

Sometimes referred to as cantilever, overhang is the distance from the face of the support to the free end of the beam, measured along the beam as illustrated.

For beams with overhangs, the backspan should be at least twice the length of the overhang in order to limit uplift forces on the backspan support.

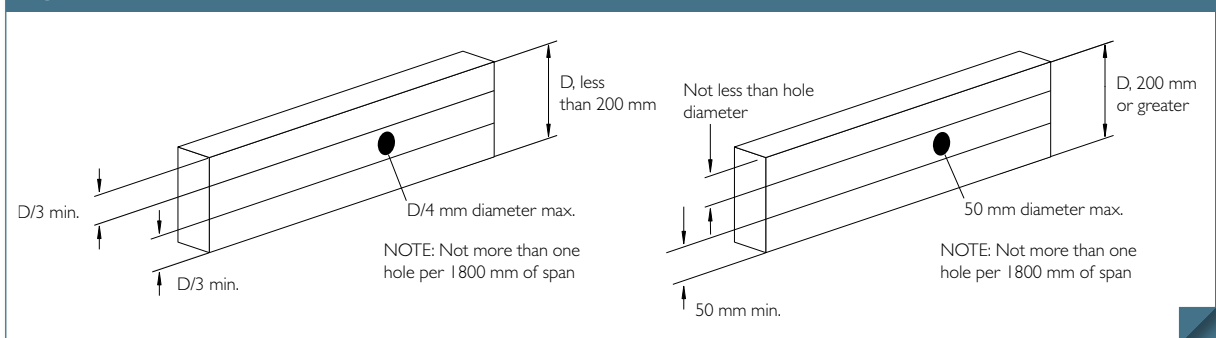
Figure 11: Beams with Overhangs



6.3 HOLES IN MEMBERS IN HOUSES AND RESIDENTIAL BUILDINGS

Holes may be drilled in Futurebuild® LVL members used in houses within the scope of NZS 3604 as detailed below.

Figure 12: Holes in Futurebuild® LVL members



All treated Futurebuild LVL is envelope treated. Holes and cuts made in treated Futurebuild LVL must be coated with a brush on

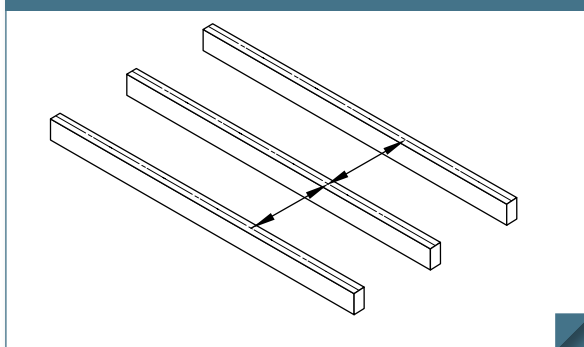
timber preservative. Holdfast Metalex End Seal is recommended.



6.4 SPACING

Tables such as those for rafters, floor joists and ceiling joists, require the spacing of members to be known or selected in order to obtain the required size for a given span. Spacing should be interpreted as the centre to centre distance between adjacent parallel members.

Figure 13: Beam Spacing



6.5 LOAD WIDTHS

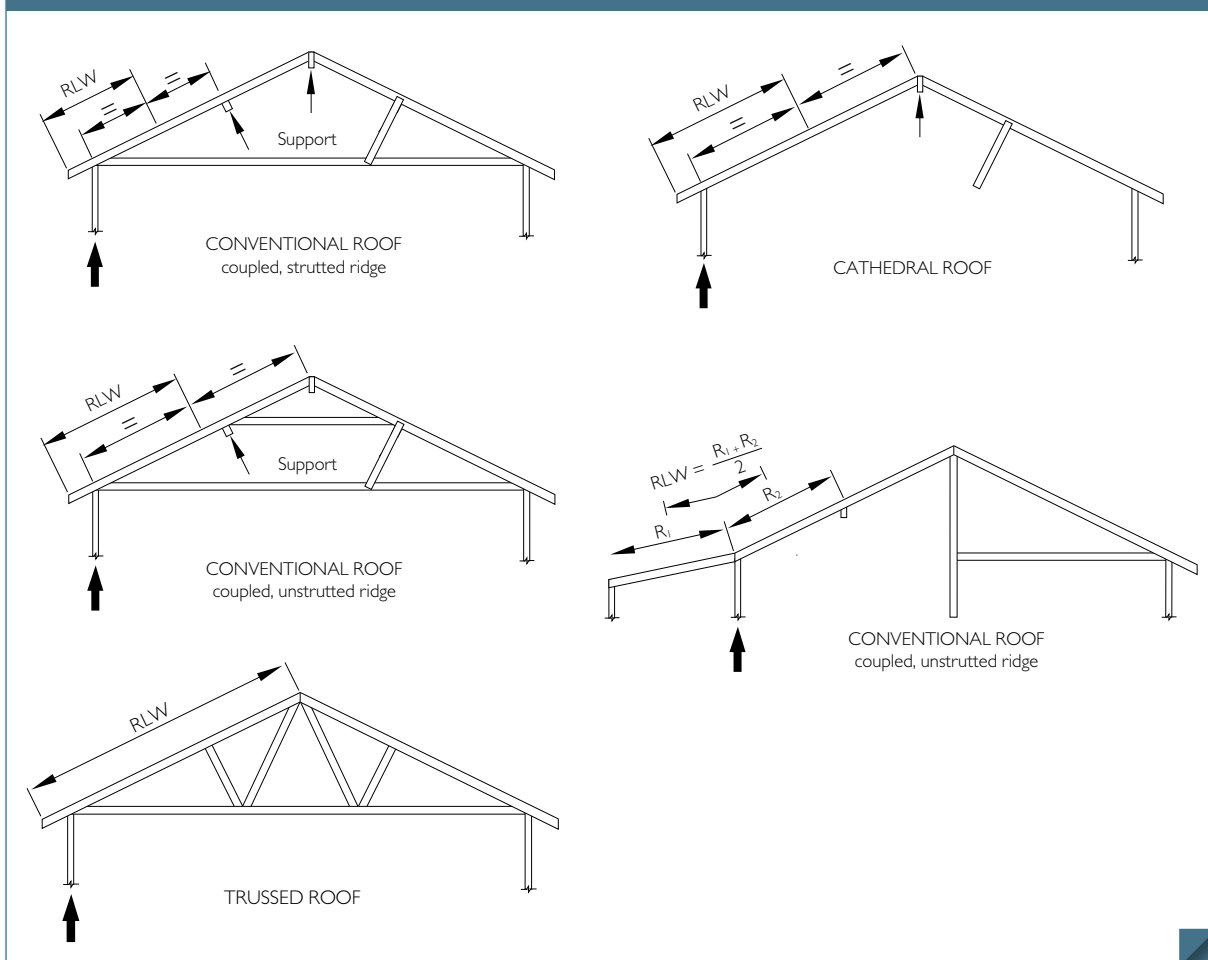
Load width is used in these tables in order to determine the load applied to isolated beams such as lintels, bearers, hanging beams, etc. Roof load width (RLW), ceiling load width (CLW) and floor load width (FLW) are measures of the load applied from roofs, ceilings and floors respectively.

Roof load width (RLW) has a similar function to 'Roof dimensions' used in NZS 3604 in order to determine wall framing sizes, including lintels.

Examples showing the determination of roof load width, floor load width and ceiling load width are illustrated as appropriate throughout this guide

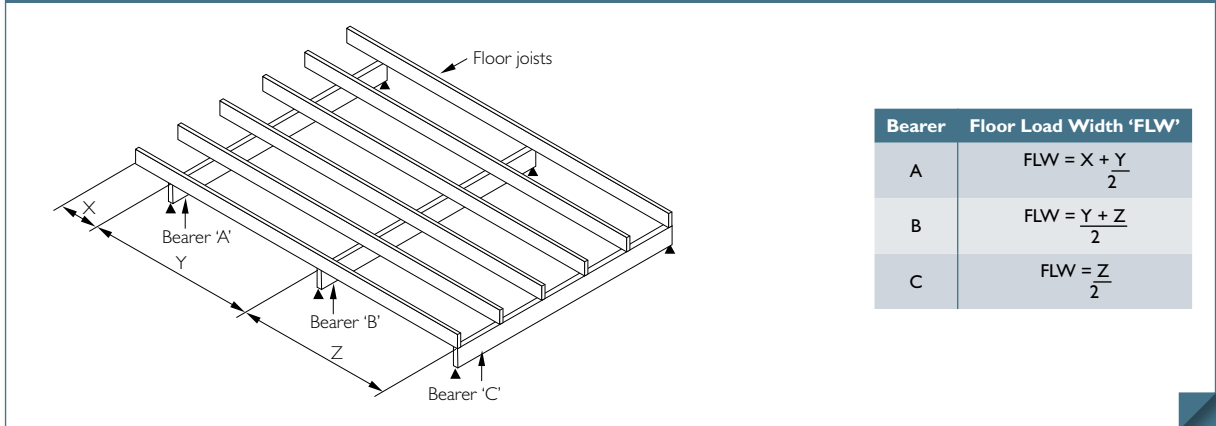
6.6 DETERMINATION OF ROOF LOAD WIDTH

Figure 14: Roof Loads Width



6.7 DETERMINATION OF FLOOR LOAD WIDTH

Figure 15: Floor Load Width



6.8 LINTELS

Lintels are beams contained in walls required to support load over doors and windows. Their design includes stringent

limitations on deflection required in order to maintain clearance of non-structural joinery items below the lintels.

6.9 ROOF MASS

For most applications roof mass has been separated into four categories related to the type of roof cladding and whether or not a ceiling is included. The four categories together with the roof mass allowance for each case, are given in table 7 below.

A corrugated roof would be considered a light weight roof with a concrete tiled roof considered heavy.

For the rafter and verandah beam tables designers need to determine the applicable roof mass of framing and roof materials.

TABLE 7: ROOF MASS ALLOWANCES

Roof Type	Roof Mass Allowed
Light Roof	25 kg/m ²
Light Roof and Ceiling	40 kg/m ²
Heavy Roof	75 kg/m ²
Heavy Roof and Ceiling	90 kg/m ²

6.10 TECHNICAL SUPPORT

For further information on Futurebuild® LVL, guidance on the use of these tables or assistance with applications not included, please contact CHH Woodproducts.

Freephone: 0800 808 131
 Website: www.chhwoodproducts.co.nz
 Software: www.chhsoftware.com

For member types and other design options not in these tables use designIT® for houses software.

7.0 SPAN TABLES

7.1 FLOOR BEAMS OR BEARERS

Design Deflection Limits:
 D.L. SPAN/300 OR 12 mm
 L.L. SPAN/360 OR 9 mm

TABLE 8: BEARERS – FLOOR LOADS ONLY

Section D x B (mm)	Product	Floor Load Width 'FLW' (m)											
		1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.6	4.1	4.8	5.4	6.0
		Maximum Single Span (m)											
2/90 x 45	hyCHORD®	1.9	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1
150 x 63	hySPAN®	2.9	2.7	2.6	2.4	2.3	2.2	2.2	2.0	1.9	1.8	1.7	1.7
150 x 90	hy90°	2.9	2.7	2.6	2.4	2.3	2.2	2.2	2.0	1.9	1.8	1.7	1.7
2/150 x 45	hySPAN	3.3	3.1	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.0	2.0	1.9
2/170 x 45	hySPAN	3.7	3.5	3.3	3.1	3.0	2.8	2.7	2.6	2.5	2.3	2.2	2.1
200 x 63	hySPAN	3.8	3.6	3.4	3.2	3.1	3.0	2.9	2.7	2.6	2.4	2.3	2.2
200 x 90	hy90	3.8	3.6	3.4	3.2	3.1	3.0	2.9	2.7	2.6	2.4	2.3	2.2
2/200 x 45	hySPAN	4.2	3.9	3.8	3.6	3.5	3.3	3.2	3.0	2.9	2.7	2.6	2.5
240 x 63	hySPAN	4.4	4.1	4.0	3.8	3.7	3.6	3.4	3.2	3.1	2.9	2.8	2.7
240 x 90	hy90	4.3	4.1	3.9	3.8	3.7	3.6	3.4	3.2	3.1	2.9	2.8	2.7
2/200 x 63	hySPAN	4.5	4.3	4.1	3.9	3.8	3.7	3.6	3.4	3.2	3.0	2.9	2.8
2/240 x 45	hySPAN	4.7	4.5	4.3	4.1	4.0	3.9	3.8	3.6	3.5	3.3	3.1	3.0
240 x 90	hyONE®	5.0	4.7	4.5	4.3	4.2	4.1	4.0	3.8	3.6	3.5	3.3	3.2
300 x 63	hySPAN	5.1	4.9	4.7	4.5	4.3	4.2	4.1	3.9	3.8	3.6	3.5	3.3
300 x 90	hy90	5.1	4.9	4.6	4.5	4.3	4.2	4.1	3.9	3.8	3.6	3.5	3.3
2/300 x 45	hySPAN	5.6	5.3	5.1	4.9	4.7	4.6	4.5	4.3	4.1	3.9	3.8	3.7
300 x 90	hyONE	5.8	5.5	5.3	5.1	4.9	4.8	4.7	4.5	4.3	4.1	4.0	3.9
360 x 90	hy90	5.8	5.5	5.3	5.1	5.0	4.8	4.7	4.5	4.3	4.1	4.0	3.9
360 x 63	hySPAN	5.9	5.6	5.3	5.1	5.0	4.8	4.7	4.5	4.3	4.1	4.0	3.9
2/360 x 45	hySPAN	6.3	6.0	5.8	5.6	5.4	5.2	5.1	4.9	4.7	4.5	4.4	4.3
400 x 63	hySPAN	6.3	6.0	5.8	5.5	5.4	5.2	5.1	4.8	4.7	4.5	4.3	4.2
400 x 90	hy90	6.3	6.0	5.7	5.5	5.3	5.2	5.1	4.8	4.7	4.5	4.3	4.2
360 x 90	hyONE	6.6	6.3	6.0	5.8	5.6	5.5	5.3	5.1	4.9	4.7	4.6	4.4
2/400 x 45	hySPAN	6.8	6.5	6.2	6.0	5.8	5.7	5.5	5.3	5.1	4.9	4.7	4.6
450 x 63	hySPAN	6.9	6.5	6.3	6.0	5.9	5.7	5.5	5.3	5.1	4.9	4.7	4.6
400 x 90	hyONE	7.1	6.8	6.5	6.3	6.1	5.9	5.8	5.5	5.3	5.1	4.9	4.8
2/400 x 63	hySPAN	7.3	7.0	6.7	6.5	6.3	6.1	6.0	5.7	5.5	5.3	5.1	5.0
2/450 x 63	hySPAN	7.9	7.6	7.3	7.1	6.8	6.7	6.5	6.2	6.0	5.8	5.6	5.4

- Indicates 90 mm required bearing at end supports
- Bearing requirements as per NZS 3604 unless otherwise indicated
- Where joists are loaded into sides of bearers, double sections built up by vertical lamination (see page 15 section 5.4)

Design Deflection Limits:

DL. SPAN/300 OR 12 mm
LL. SPAN/360 OR 9 mm

TABLE 8 CONTINUED: BEARERS – FLOOR LOADS ONLY

Section D x B (mm)	Product	Floor Load Width 'FLW' (m)											
		1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.6	4.1	4.8	5.4	6.0
Maximum Continuous Span (m)													
2/90 x 45	hyCHORD®	2.3	2.2	2.1	1.9	1.9	1.8	1.7	1.6	1.6	1.4	1.3	1.3
150 x 63	hySPAN®	3.6	3.4	3.2	3.1	2.9	2.8	2.7	2.5	2.4	2.1	2.0	1.9
150 x 90	hy90®	3.6	3.4	3.2	3.1	2.9	2.7	2.6	2.4	2.2	2.0	1.9	1.8
2/150 x 45	hySPAN	3.9	3.7	3.5	3.4	3.3	3.2	3.1	2.9	2.8	2.5	2.3	2.2
2/170 x 45	hySPAN	4.3	4.1	3.9	3.7	3.6	3.5	3.4	3.3	3.0	2.8	2.7	2.5
200 x 63	hySPAN	4.4	4.2	4.0	3.9	3.7	3.6	3.5	3.3	3.0	2.7 [■]	2.6 [■]	2.4 [■]
200 x 90	hy90	4.4	4.2	4.0	3.9	3.7	3.6	3.4	3.1	2.8	2.6	2.4	2.3
2/200 x 45	hySPAN	4.8	4.6	4.4	4.2	4.1	4.0	3.9	3.7	3.6	3.2	3.0	2.9
240 x 63	hySPAN	5.1	4.8	4.6	4.4	4.3	4.2	4.0	3.8 [■]	3.5 [■]	3.2 [■]	3.1 [■]	2.9 [■]
240 x 90	hy90	-	-	4.6	4.4	4.3	4.2	4.0	3.6	3.3	3.1	2.9	2.7
2/240 x 45	hySPAN	5.6	5.3	5.0	4.8	4.7	4.5	4.4	4.2	4.1	3.8 [■]	3.6 [■]	3.4 [■]
240 x 90	hyONE®	-	-	-	-	-	-	4.6	4.4	4.3	4.1 [■]	4.0 [■]	3.9 [■]
300 x 63	hySPAN	6.0	5.7	5.4	5.2	5.1	4.9 [■]	4.8 [■]	4.6 [■]	4.3 [■]	#	#	#
300 x 90	hy90	-	-	-	-	-	-	-	4.4	4.1	3.8 [■]	3.5 [■]	3.3 [■]
2/300 x 45	hySPAN	6.6	6.2	5.9	5.7	5.5	5.4	5.2	5.0	4.7 [■]	4.4 [■]	4.2 [■]	4.0 [■]
360 x 63	hySPAN	6.9	6.5	6.2	6.0	5.8 [■]	5.6 [■]	5.5 [■]	#	#	#	#	#
360 x 90	hy90	-	-	-	-	-	-	-	-	-	4.5 [■]	4.2 [■]	4.0 [■]
2/300 x 63	hySPAN	7.1	6.8	6.5	6.2	6.0	5.8	5.7	5.4	5.3	5.1	4.9 [■]	4.8 [■]
2/360 x 45	hySPAN	7.5	7.1	6.8	6.6	6.3	6.2	6.0	5.5 [■]	5.2 [■]	4.9 [■]	#	#
400 x 63	hySPAN	7.5	7.1	6.7	6.5 [■]	6.3 [■]	6.1 [■]	5.9 [■]	#	#	#	#	#
450 x 63	hySPAN	8.1	7.7	7.4 [■]	7.1 [■]	6.9 [■]	#	#	#	#	#	#	#
2/400 x 45	hySPAN	8.2	7.7	7.4	7.1	6.8	6.5	6.3 [■]	5.8 [■]	5.5 [■]	5.2 [■]	#	#
2/400 x 63	hySPAN	-	8.4	8.0	7.7	7.5	7.2	7.1	6.7	6.5 [■]	6.3 [■]	6.1 [■]	#
2/450 x 63	hySPAN	-	-	-	8.4	8.1	7.9	7.7	7.4 [■]	7.1 [■]	6.9 [■]	#	#

- Indicates 45 mm required bearing at end supports and 135 mm required bearing at intermediate supports
- #Indicates bearing requirement is greater than the above. See designIT® for houses software for span and bearing information
- Bearing requirements as for NZS 3604 except where indicated otherwise
- Where joists are loaded into sides of bearers, double sections built up by vertical lamination (see page 15 section 5.4)



Design Deflection Limits:

DL. SPAN/300 OR 12 mm
 LL. SPAN/360 OR 9 mm

TABLE 9: BEARERS – SUPPORTING SINGLE OR UPPER STOREY WALLS

Section D x B (mm)		Product		Light Roof & Ceiling																	
				Floor Load Width 'FLW' (m)																	
				1.2					2.1					3.0							
				Roof Load Width 'RLW' (m)																	
		1.8					3.0					4.2					6.6				
Maximum Single Span (m)																					
2/90 x 45	hyCHORD®	1.5	1.4	1.3	1.3	1.2	1.3	1.3	1.2	1.2	1.1	1.2	1.2	1.2	1.1	1.1					
150 x 63	hySPAN®	2.4	2.2	2.1	2.0	1.9	2.1	2.0	1.9	1.9	1.8	1.9	1.9	1.8	1.8	1.7					
150 x 90	hy90®	2.4	2.2	2.1	2.0	1.9	2.1	2.0	1.9	1.9	1.8	1.9	1.9	1.8	1.8	1.7					
2/150 x 45	hySPAN	2.6	2.5	2.4	2.2	2.2	2.4	2.3	2.2	2.1	2.0	2.2	2.1	2.0	2.0	1.9					
2/170 x 45	hySPAN	3.0	2.8	2.7	2.5	2.4	2.7	2.6	2.5	2.4	2.3	2.5	2.4	2.3	2.2	2.2					
200 x 63	hySPAN	3.1	2.9	2.8	2.7	2.6	2.8	2.7	2.6	2.5	2.4	2.6	2.5	2.4	2.3	2.3					
200 x 90	hy90	3.1	2.9	2.8	2.7	2.6	2.8	2.7	2.6	2.5	2.4	2.6	2.5	2.4	2.3	2.3					
2/200 x 45	hySPAN	3.5	3.3	3.1	3.0	2.9	3.2	3.0	2.9	2.8	2.7	2.9	2.8	2.7	2.6	2.6					
240 x 63	hySPAN	3.7	3.5	3.3	3.2	3.1	3.4	3.2	3.1	3.0	2.9	3.1	3.0	2.9	2.8	2.7					
240 x 90	hy90	3.7	3.5	3.3	3.2	3.1	3.4	3.2	3.1	3.0	2.9	3.1	3.0	2.9	2.8	2.7					
2/200 x 63	hySPAN	3.8	3.7	3.5	3.3	3.2	3.5	3.4	3.2	3.1	3.0	3.2	3.1	3.0	2.9	2.9					
2/240 x 45	hySPAN	4.0	3.9	3.7	3.6	3.4	3.7	3.6	3.5	3.3	3.2	3.5	3.4	3.2	3.1	3.1					
240 x 90	hyONE®	4.2	4.0	3.9	3.7	3.6	3.9	3.8	3.7	3.5	3.4	3.7	3.5	3.4	3.3	3.2					
300 x 63	hySPAN	4.4	4.2	4.0	3.9	3.8	4.0	3.9	3.8	3.7	3.6	3.8	3.7	3.6	3.5	#					
300 x 90	hy90	4.4	4.2	4.0	3.9	3.8	4.0	3.9	3.8	3.7	3.6	3.8	3.7	3.6	3.5	3.4					
2/300 x 45	hySPAN	4.8	4.5	4.4	4.2	4.1	4.4	4.3	4.1	4.0	3.9	4.1	4.0	3.9	3.8	3.8					
300 x 90	hyONE	5.0	4.7	4.6	4.4	4.3	4.6	4.4	4.3	4.2	4.1	4.3	4.2	4.1	4.0	3.9					
Maximum Continuous Span (m)																					
2/90 x 45	hyCHORD	2.0	1.9	1.8	1.7	1.6	1.8	1.7	1.6	1.6	1.5	1.7	1.6	1.5	1.5	1.5					
150 x 63	hySPAN	3.2	3.0	2.8	2.7	2.5	2.8	2.7	2.6	2.5	2.4	2.6	2.4	2.3	2.3	2.2					
150 x 90	hy90	3.2	3.0	2.8	2.6	2.4	2.8	2.6	2.5	2.4	2.2	2.4	2.3	2.2	2.2	2.1					
2/150 x 45	hySPAN	3.5	3.3	3.2	3.0	2.9	3.2	3.0	2.9	2.8	2.7	2.9	2.8	2.7	2.6	2.6					
2/170 x 45	hySPAN	3.9	3.7	3.6	3.4	3.3	3.6	3.4	3.3	3.2	3.1	3.3	3.2	3.1	3.0	2.9					
200 x 63	hySPAN	4.0	3.9	3.7	3.6	3.2	3.7	3.6	3.5	3.3	3.1	3.3	3.1	3.0	3.0	2.9					
200 x 90	hy90	4.0	3.8	3.7	3.4	3.1	3.6	3.4	3.3	3.1	2.9	3.1	2.9	2.9	2.8	2.7					
2/200 x 45	hySPAN	4.4	4.2	4.0	3.9	3.8	4.1	3.9	3.8	3.7	3.6	3.8	3.7	3.6	3.5	3.4					
240 x 63	hySPAN	4.6	4.4	4.2	4.1	3.9	4.3	4.1	4.0	3.9	3.7	3.8	3.7	3.6	3.5	3.4					
240 x 90	hy90	4.6	4.4	4.2	4.0	3.7	4.3	4.1	3.9	3.7	3.5	3.6	3.5	3.4	3.3	3.2					
2/200 x 63	hySPAN	4.8	4.5	4.4	4.2	4.1	4.4	4.3	4.1	4.0	3.9	4.1	4.0	3.9	3.8	3.8					
2/240 x 45	hySPAN	5.0	4.8	4.6	4.5	4.3	4.6	4.5	4.4	4.2	4.1	4.4	4.2	4.1	4.1	4.0					
240 x 90	hyONE	-	-	-	4.7	4.5	-	4.7	4.5	4.4	4.3	4.6	4.4	4.3	4.2	4.1					
300 x 63	hySPAN	5.5	5.2	5.0	4.8	4.7	5.0	4.9	4.7	4.6	4.5	4.7	4.6	4.5	4.4	#					
300 x 90	hy90	-	-	-	-	4.5	-	-	4.7	4.6	4.3	4.4	4.3	4.2	4.1	4.0					
2/300 x 45	hySPAN	5.9	5.7	5.4	5.3	5.1	5.5	5.3	5.1	5.0	4.9	5.1	4.9	4.8	4.7	4.6					
2/300 x 63	hySPAN	6.4	6.1	5.9	5.7	5.5	5.9	5.7	5.6	5.4	5.3	5.6	5.4	5.3	5.2	5.1					

- Indicates 45 mm required bearing at end supports and 135 mm required bearing at intermediate supports
- # Indicates bearing requirement is greater than the above. See designIT® for houses software for span and bearing information
- Bearing requirements as for NZS 3604 except where indicated otherwise
- Where joists are loaded into sides of bearers, double sections built up by vertical lamination (see page 15 section 5.4)

TABLE 9 CONTINUED: BEARERS – SUPPORTING SINGLE OR UPPER STOREY WALLS

Design Deflection Limits:

DL. SPAN/300 OR 12 mm
LL. SPAN/360 OR 9 mm

		Heavy Roof & Ceiling														
		Floor Load Width 'FLW' (m)														
Section D x B (mm)	Product	1.2					2.1					3.0				
		Roof Load Width 'RLW' (m)														
		1.8	3.0	4.2	5.4	6.6	1.8	3.0	4.2	5.4	6.6	1.8	3.0	4.2	5.4	6.6
		Maximum Single Span (m)														
2/90 x 45	hyCHORD®	1.3	1.2	1.1	1.1	1.0	1.2	1.1	1.1	1.0	1.0	1.2	1.1	1.0	1.0	0.9
150 x 63	hySPAN®	2.1	1.9	1.8	1.7	1.6	1.9	1.8	1.7	1.6	1.5	1.8	1.7	1.6	1.5	1.5
150 x 90	hy90®	2.1	1.9	1.8	1.7	1.6	1.9	1.8	1.7	1.6	1.5	1.8	1.7	1.6	1.5	1.5
2/150 x 45	hySPAN	2.4	2.2	2.0	1.9	1.8	2.2	2.0	1.9	1.8	1.7	2.0	1.9	1.8	1.7	1.7
2/170 x 45	hySPAN	2.7	2.4	2.3	2.1	2.0	2.5	2.3	2.1	2.0	1.9	2.3	2.2	2.1	2.0	1.9
200 x 63	hySPAN	2.8	2.5	2.4	2.2	2.1	2.6	2.4	2.2	2.1	2.0	2.4	2.3	2.1	2.0	2.0
200 x 90	hy90	2.8	2.5	2.4	2.2	2.1	2.6	2.4	2.2	2.1	2.0	2.4	2.3	2.1	2.0	2.0
2/200 x 45	hySPAN	3.1	2.9	2.7	2.5	2.4	2.9	2.7	2.5	2.4	2.3	2.7	2.5	2.4	2.3	2.2
240 x 63	hySPAN	3.4	3.1	2.8	2.7	2.5	3.1	2.9	2.7	2.6	2.4	2.9	2.7	2.6	2.5	2.4
240 x 90	hy90	3.4	3.1	2.8	2.7	2.5	3.1	2.9	2.7	2.6	2.4	2.9	2.7	2.6	2.5	2.4
2/200 x 63	hySPAN	3.5	3.2	3.0	2.8	2.7	3.2	3.0	2.8	2.7	2.6	3.0	2.8	2.7	2.6	2.5
2/240 x 45	hySPAN	3.7	3.4	3.2	3.0	2.8	3.5	3.2	3.0	2.9	2.7	3.3	3.1	2.9	2.8	2.7
240 x 90	hyONE®	3.9	3.6	3.4	3.2	3.0	3.7	3.4	3.2	3.0	2.9	3.4	3.2	3.1	2.9	2.8
300 x 63	hySPAN	4.0	3.8	3.5	3.3	#	3.8	3.6	3.4	3.2	#	3.6	3.4	#	#	#
300 x 90	hy90	4.0	3.8	3.5	3.3	3.2	3.8	3.6	3.4	3.2	3.0	3.6	3.4	3.2	3.1	2.9
2/300 x 45	hySPAN	4.4	4.1	3.9	3.7	3.6	4.1	3.9	3.7	3.6	3.4	3.9	3.8	3.6	3.4	3.3
300 x 90	hyONE	4.6	4.3	4.0	3.9	3.7	4.3	4.1	3.9	3.7	3.6	4.1	3.9	3.8	3.6	#
		Maximum Continuous Span (m)														
2/90 x 45	hyCHORD	1.8	1.6	1.5	1.4	1.4	1.7	1.5	1.4	1.4	1.3	1.5	1.5	1.4	1.3	1.3
150 x 63	hySPAN	2.8	2.6	2.4	2.2	2.1	2.6	2.4	2.3	2.1	2.0	2.4	2.2	2.2	2.1	1.9
150 x 90	hy90	2.8	2.6	2.4	2.1	2.0	2.6	2.4	2.2	2.0	1.8	2.3	2.1	2.0	1.9	1.8
2/150 x 45	hySPAN	3.2	2.9	2.7	2.5	2.4	2.9	2.7	2.5	2.4	2.3	2.7	2.6	2.4	2.3	2.2
2/170 x 45	hySPAN	3.6	3.3	3.0	2.9	2.7	3.3	3.1	2.9	2.7	2.6	3.1	2.9	2.8	2.6	2.5
200 x 63	hySPAN	3.7	3.4	3.2	3.0	2.7	3.5	3.2	3.0	2.9	2.6	3.0	2.9	2.8	2.6	2.4
200 x 90	hy90	3.7	3.4	3.1	2.8	2.6	3.4	3.1	2.9	2.7	2.4	2.9	2.7	2.6	2.4	2.3
2/200 x 45	hySPAN	4.1	3.8	3.6	3.4	3.2	3.8	3.6	3.4	3.2	3.1	3.6	3.4	3.2	3.1	3.0
240 x 63	hySPAN	4.3	4.0	3.7	3.6	3.3	4.0	3.8	3.6	3.3	3.1	3.6	3.4	3.2	3.1	3.0
240 x 90	hy90	4.3	4.0	3.6	3.4	3.1	3.9	3.7	3.4	3.1	3.0	3.4	3.2	3.0	3.0	2.8
2/200 x 63	hySPAN	4.4	4.1	3.9	3.7	3.6	4.1	3.9	3.7	3.6	3.4	3.9	3.8	3.6	3.4	3.3
2/240 x 45	hySPAN	4.6	4.3	4.1	3.9	3.8	4.4	4.1	3.9	3.8	3.6	4.2	4.0	3.8	3.7	3.5
240 x 90	hyONE	4.8	4.5	4.3	4.1	3.9	4.6	4.3	4.1	4.0	3.8	4.3	4.1	4.0	3.8	3.7
300 x 63	hySPAN	5.0	4.7	4.4	4.2	#	4.7	4.5	4.3	#	#	4.5	#	#	#	#
300 x 90	hy90	-	4.7	4.4	4.1	3.8	4.7	4.5	4.2	3.9	3.6	4.2	4.0	3.8	3.7	3.5
2/300 x 45	hySPAN	5.5	5.1	4.8	4.6	4.3	5.2	4.9	4.6	4.4	4.1	4.8	4.6	4.4	4.2	4.0
300 x 90	hyONE	-	-	-	-	4.6	-	-	-	4.7	4.5	-	-	4.7	4.5	#

- Indicates 45 mm required bearing at end supports and 135 mm required bearing at intermediate supports
- # Indicates bearing requirement is greater than the above. See designIT® for houses software for span and bearing information
- Bearing requirements as for NZS 3604 except where indicated otherwise
- Where joists are loaded into sides of bearers, double sections built up by vertical lamination (see page 15 section 5.4)



Design Deflection Limits:
 DL. SPAN/300 OR 12 mm
 LL. SPAN/360 OR 9 mm

TABLE 10: BEARERS – SUPPORTING TWO STOREY LOAD BEARING WALLS

Section D x B (mm)		Product		Light Roof & Ceiling													
				Floor Load Width ₁ 'FLW ₁ ' (m)													
				1.5					3.0								
				Floor Load Width ₂ 'FLW ₂ ' (m)													
				1.5		3.0			1.5			3.0					
Roof Load Width 'RLW' (m)																	
2.4			4.5			6.6			2.4			4.5			6.6		
Maximum Single Span (m)																	
2/90 x 45	hyCHORD®	1.2	1.1	1.1	1.1	1.0	1.0	1.1	1.0	1.0	1.0	1.0	0.9				
150 x 63	hySPAN®	1.9	1.8	1.7	1.7	1.6	1.6	1.7	1.6	1.6	1.6	1.5	1.5				
150 x 90	hy90®	1.9	1.8	1.7	1.7	1.6	1.6	1.7	1.6	1.6	1.6	1.5	1.5				
2/150 x 45	hySPAN	2.1	2.0	1.9	1.9	1.8	1.8	1.9	1.8	1.8	1.8	1.7	1.7				
2/170 x 45	hySPAN	2.4	2.2	2.1	2.2	2.1	2.0	2.2	2.1	2.0	2.0	1.9	1.9				
200 x 63	hySPAN	2.5	2.3	2.2	2.3	2.2	2.1	2.3	2.2	2.1	2.1	2.0	2.0				
200 x 90	hy90	2.5	2.3	2.2	2.3	2.2	2.1	2.3	2.2	2.1	2.1	2.0	2.0				
2/200 x 45	hySPAN	2.8	2.6	2.5	2.5	2.4	2.3	2.5	2.4	2.3	2.4	2.3	2.2				
240 x 63	hySPAN	3.0	2.8	2.7	2.7	2.6	2.5	2.7	2.6	2.5	2.5	2.4	2.4				
240 x 90	hy90	3.0	2.8	2.7	2.7	2.6	2.5	2.7	2.6	2.5	2.5	2.4	2.4				
2/200 x 63	hySPAN	3.1	2.9	2.8	2.8	2.7	2.6	2.8	2.7	2.6	2.6	2.5	2.5				
2/240 x 45	hySPAN	3.3	3.2	3.0	3.0	2.9	2.8	3.0	2.9	2.8	2.8	2.7	2.6				
240 x 90	hyONE®	3.5	3.3	3.2	3.2	3.1	3.0	3.2	3.1	3.0	3.0	2.9	2.8				
300 x 63	hySPAN	3.7	3.5	3.4	#	#	#	#	#	#	#	#	#				
300 x 90	hy90	3.7	3.5	3.3	3.4	3.2	3.1	3.4	3.2	3.1	3.1	3.0	2.9				
2/300 x 45	hySPAN	4.0	3.9	3.7	3.7	3.6	3.5	3.7	3.6	3.5	3.5	3.4	3.3				
300 x 90	hyONE	4.2	4.0	3.9	3.9	3.8	3.7	3.9	3.8	3.7	#	#	#				
2/300 x 63	hySPAN	4.4	4.2	4.0	4.1	3.9	3.8	4.1	3.9	3.8	3.9	3.8	3.7				
Maximum Continuous Span (m)																	
2/90 x 45	hyCHORD	1.6	1.5	1.4	1.4	1.4	1.3	1.4	1.4	1.3	1.3	1.2	1.2				
150 x 63	hySPAN	2.5	2.4	2.3	2.2	2.1	2.0	2.2	2.1	2.0	1.9	1.9	1.9				
150 x 90	hy90	2.5	2.4	2.2	2.1	2.0	1.9	2.1	2.0	1.9	1.8	1.7	1.7				
2/150 x 45	hySPAN	2.8	2.7	2.5	2.6	2.4	2.4	2.6	2.4	2.4	2.4	2.3	2.2				
2/170 x 45	hySPAN	3.2	3.0	2.9	2.9	2.8	2.7	2.9	2.8	2.7	2.7	2.6	2.5				
200 x 90	hy90	3.2	3.0	2.8	2.6	2.6	2.5	2.6	2.6	2.5	2.4	2.3	2.2				
200 x 63	hySPAN	3.3	3.1	3.0	2.8 ■	2.7 ■	2.6 ■	2.8 ■	2.7 ■	2.6 ■	2.6 ■	2.5 ■	2.4 ■				
2/200 x 45	hySPAN	3.7	3.5	3.4	3.4	3.3	3.1	3.4	3.3	3.1	3.1	3.0	2.9				
240 x 63	hySPAN	3.9	3.7 ■	3.5 ■	3.3 ■	3.2 ■	3.1 ■	3.3 ■	3.2 ■	3.1 ■	3.1 ■	3.0 ■	2.9 ■				
240 x 90	hy90	3.9	3.6	3.3	3.1	3.1	3.0	3.1	3.1	3.0	2.9	2.8	2.7				
2/200 x 63	hySPAN	4.0	3.9	3.7	3.7	3.6	3.5	3.7	3.6	3.5	3.5	3.4	3.3				
2/240 x 45	hySPAN	4.2	4.1	3.9	3.9	3.7 ■	3.6 ■	3.9	3.7 ■	3.6 ■	3.6 ■	3.4 ■	3.4 ■				
240 x 90	hyONE	4.4	4.2	4.1	4.1 ■	4.0 ■	3.9 ■	4.1 ■	4.0 ■	3.9 ■	3.9 ■	3.8 ■	3.7 ■				
300 x 63	hySPAN	4.6 ■	4.4 ■	4.2 ■	#	#	#	#	#	#	#	#	#				
300 x 90	hy90	4.6	4.4	4.0	3.9	3.7 ■	3.6 ■	3.9	3.7 ■	3.6 ■	3.5 ■	3.4 ■	3.4 ■				
2/300 x 45	hySPAN	5.0	4.8	4.6 ■	4.5 ■	4.3 ■	4.2 ■	4.5 ■	4.3 ■	4.2 ■	4.2 ■	4.1 ■	3.9 ■				
300 x 90	hyONE	-	-	-	-	4.7 ■	4.6 ■	-	4.7 ■	4.6 ■	#	#	#				
2/300 x 63	hySPAN	5.4	5.2	5.0	5.1	4.9	4.8	5.1	4.9	4.8	4.8 ■	4.7 ■	4.6 ■				

■ Indicates 45 mm required bearing at end supports and 135 mm required bearing at intermediate supports
 # Indicates bearing requirement is greater than the above. See designIT® for houses software for span and bearing information
 • Bearing requirements as for NZS 3604 except where indicated otherwise
 • Where joists are loaded into sides of bearers, double sections built up by vertical lamination (see page 15 section 5.4)

TABLE 10 CONTINUED: BEARERS – SUPPORTING TWO STOREY LOAD BEARING WALLS

Design Deflection Limits:

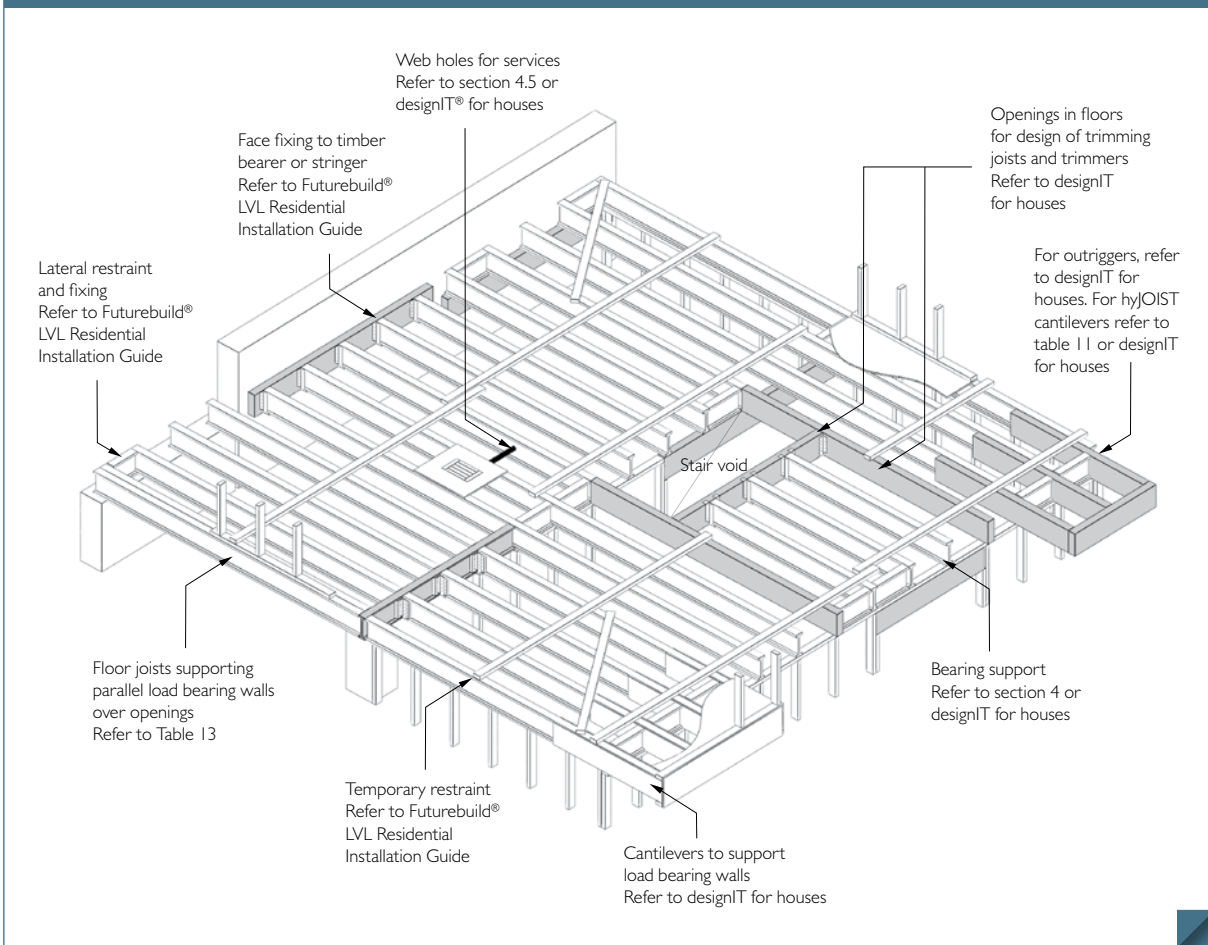
DL. SPAN/300 OR 12 mm
LL. SPAN/360 OR 9 mm

		Heavy Roof & Ceiling											
		Ground Floor Load Width 'FLW' (m)											
		1.5						3.0					
Section D x B (mm)	Product	First Floor Load Width 'FLW' (m)											
		1.5			3.0			1.5		3.0			
		Roof Load Width 'RLW' (m)											
		2.4	4.5	6.6	2.4	4.5	6.6	2.4	4.5	6.6	2.4	4.5	6.6
		Maximum Single Span (m)											
2/90 x 45	hyCHORD®	1.1	1.0	0.9	1.0	0.9	0.9	1.0	0.9	0.9	1.0	0.9	0.8
150 x 63	hySPAN®	1.7	1.6	1.5	1.6	1.5	1.4	1.6	1.5	1.4	1.5	1.4	1.3
150 x 90	hy90°	1.7	1.6	1.5	1.6	1.5	1.4	1.6	1.5	1.4	1.5	1.4	1.3
2/150 x 45	hySPAN	1.9	1.8	1.6	1.8	1.7	1.6	1.8	1.7	1.6	1.7	1.6	1.5
2/170 x 45	hySPAN	2.2	2.0	1.9	2.0	1.9	1.8	2.0	1.9	1.8	1.9	1.8	1.7
200 x 63	hySPAN	2.3	2.1	1.9	2.1	2.0	1.9	2.1	2.0	1.9	2.0	1.9	1.8
200 x 90	hy90	2.3	2.1	1.9	2.1	2.0	1.9	2.1	2.0	1.9	2.0	1.9	1.8
2/200 x 45	hySPAN	2.6	2.4	2.2	2.4	2.2	2.1	2.4	2.2	2.1	2.2	2.1	2.0
240 x 63	hySPAN	2.8	2.5	2.3	2.6	2.4	#	2.6	2.4	#	2.4	#	#
240 x 90	hy90	2.8	2.5	2.3	2.6	2.4	2.2	2.6	2.4	2.2	2.4	2.2	2.1
2/200 x 63	hySPAN	2.9	2.6	2.4	2.7	2.5	2.3	2.7	2.5	2.3	2.5	2.4	2.2
2/240 x 45	hySPAN	3.1	2.8	2.6	2.9	2.7	2.5	2.9	2.7	2.5	2.7	2.5	2.4
240 x 90	hyONE®	3.3	3.0	2.8	3.0	2.8	2.6	3.0	2.8	2.6	2.9	2.7	2.5
300 x 63	hySPAN	3.4	#	#	#	#	#	#	#	#	#	#	#
300 x 90	hy90	3.4	3.1	2.9	3.2	3.0	2.8	3.2	3.0	2.8	3.0	2.8	#
2/300 x 45	hySPAN	3.8	3.5	3.3	3.6	3.3	#	3.6	3.3	#	3.4	#	#
300 x 90	hyONE	4.0	3.7	#	3.7	3.5	#	3.7	3.5	#	#	#	#
		Maximum Continuous Span (m)											
2/90 x 45	hyCHORD	1.5	1.3	1.2	1.4	1.3	1.1	1.4	1.3	1.1	1.3	1.2	1.0
150 x 63	hySPAN	2.3	2.1	1.9	2.0	1.9	1.7	2.0	1.9	1.7	1.9	1.7	1.5
150 x 90	hy90	2.3	2.0	1.8	1.9	1.8	1.7	1.9	1.8	1.7	1.8	1.7	1.5
2/150 x 45	hySPAN	2.6	2.4	2.2	2.4	2.2	2.1	2.4	2.2	2.1	2.3	2.1	1.9
2/170 x 45	hySPAN	2.9	2.7	2.5	2.7	2.5	2.4	2.7	2.5	2.4	2.6	2.4	2.2
200 x 90	hy90	3.0	2.6	2.3	2.6	2.3	2.2	2.6	2.3	2.2	2.3	2.2	2.0
200 x 63	hySPAN	3.1	2.7 [■]	2.4 [■]	2.7 [■]	2.4 [■]	2.2 [■]	2.7 [■]	2.4 [■]	2.2 [■]	2.5 [■]	2.3 [■]	2.0 [■]
2/200 x 45	hySPAN	3.5	3.2	2.9	3.2	3.0	2.7 [■]	3.2	3.0	2.7 [■]	2.9	2.7 [■]	2.6 [■]
240 x 90	hy90	3.5	3.1	2.7	3.0	2.8	2.6 [■]	3.0	2.8	2.6 [■]	2.7	2.6	2.4 [■]
240 x 63	hySPAN	3.7 [■]	3.3 [■]	2.9 [■]	3.1 [■]	3.0 [■]	#	3.1 [■]	3.0 [■]	#	2.9 [■]	#	#
2/200 x 63	hySPAN	3.8	3.5	3.3	3.6	3.3	3.1	3.6	3.3	3.1	3.4	3.2	3.0
2/240 x 45	hySPAN	4.0	3.7	3.4 [■]	3.7 [■]	3.5 [■]	3.2 [■]	3.7 [■]	3.5 [■]	3.2 [■]	3.4 [■]	3.2 [■]	3.0 [■]
240 x 90	hyONE	4.2	3.9 [■]	3.7 [■]	3.9 [■]	3.7 [■]	3.5 [■]	3.9 [■]	3.7 [■]	3.5 [■]	3.8 [■]	3.6 [■]	#
300 x 63	hySPAN	4.3 [■]	#	#	#	#	#	#	#	#	#	#	#
300 x 90	hy90	4.3	3.7 [■]	3.3 [■]	3.7 [■]	3.5 [■]	3.1 [■]	3.7 [■]	3.5 [■]	3.1 [■]	3.4 [■]	3.2 [■]	3.0 [■]
2/300 x 45	hySPAN	4.7	4.3 [■]	4.0 [■]	4.3 [■]	4.0 [■]	#	4.3 [■]	4.0 [■]	#	4.1 [■]	#	#
300 x 90	hyONE	-	4.6 [■]	#	4.7 [■]	#	#	4.7 [■]	#	#	#	#	#

- Indicates 45 mm required bearing at end supports and 135 mm required bearing at intermediate supports
- # Indicates bearing requirement is greater than the above. See designIT® for houses software for span and bearing information
- Bearing requirements as for NZS 3604 except where indicated otherwise
- Where joists are loaded into sides of bearers, double sections built up by vertical lamination (see page 15 section 5.4)

7.2 FLOOR JOISTS

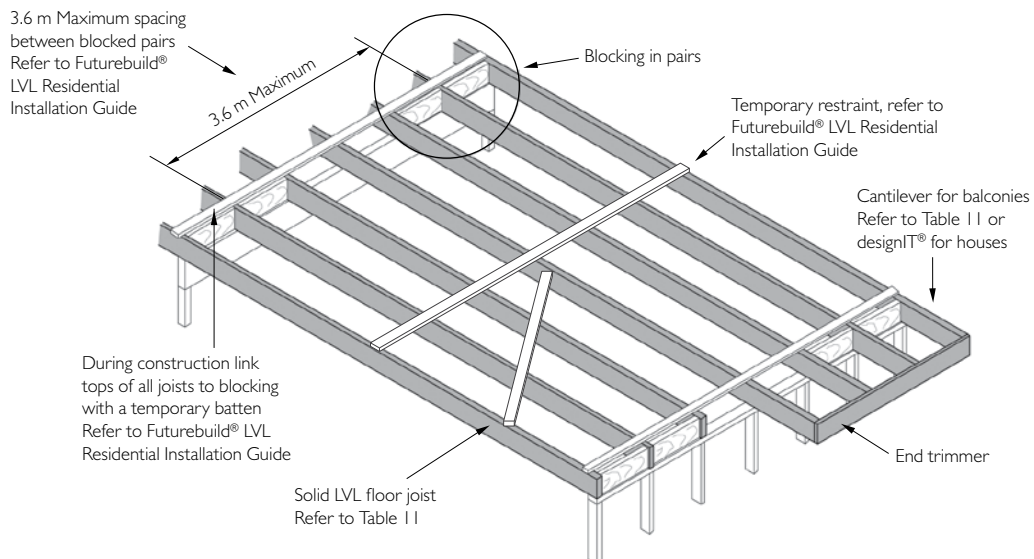
Figure 16: Typical hyJOIST® Floor Layout



- Refer to designIT® for houses software for floor design guidance

Figure 17: Solid LVL Floor Joist Blocking or Lateral Support Requirements





































Joists should have intermittent blocking at supports as shown below. During construction, provide a temporary batten connecting the top of the blocked joists to the other joists to prevent them rolling prior to flooring being fixed.



Design Deflection Limits:

DL	L.L	Dynamic Criteria
SPAN/300	SPAN/360	2 mm/1 kN
OR 15 mm	OR 9 mm	

TABLE 11: FLOOR JOISTS

Floor Joists Section D x B (mm)	Product	Cross Section	Max hole diameter, i (mm)	Floor Joist Spacings (mm)							
				300		400		450		600	
				Maximum Single Span and Overhang 'O/H' (m)							
				Span	O/H	Span	O/H	Span	O/H	Span	O/H
90 x 45	hyCHORD®		20	2.0	0.5	1.7	0.4	1.6	0.4	1.6	0.3
140 x 45	hyCHORD		35	3.6	0.9	2.8	0.8	2.7	0.8	2.6	0.7
150 x 45	hySPAN®		35	4.0	1.0	3.3	0.9	3.1	0.9	3.0	0.8
170 x 45	hySPAN		40	4.4	1.2	3.8	1.1	3.6	1.0	3.4	0.9
HJ200 45	hyJOIST®		112	4.5	1.2	3.8	1.1	3.5	1.0	3.3	0.9
190 x 45	hyCHORD		44	4.6	1.2	4.1	1.1	3.8	1.1	3.6	1.0
200 x 45	hySPAN		50	5.0	1.4	4.6	1.2	4.4	1.2	4.1	1.1
HJ240 63	hyJOIST		152	5.4	1.5	5.0	1.4	4.9	1.3	4.5	1.2
240 x 45	hySPAN		50	5.7	1.6	5.3	1.5	5.1	1.4	4.8	1.3
HJ240 90	hyJOIST		152	6.0	1.7	5.6	1.5	5.4	1.5	5.0	1.4
HJ300 63	hyJOIST		212	6.2	1.7	5.7	1.6	5.5	1.5	5.1	1.4
300 x 45	hySPAN		50	6.7	1.9	6.3	1.8	6.1	1.7	5.7	1.6
HJ300 90	hyJOIST		212	6.8	1.9	6.3	1.8	6.1	1.7	5.7	1.6
HJ360 63	hyJOIST		272	6.9	1.9	6.4	1.8	6.2	1.7	5.7	1.6
HJ360 90	hyJOIST		272	7.6	2.1	7.0	2.0	6.8	1.9	6.3	1.8
360 x 45	hySPAN		50	7.7	2.2	7.2	2.0	7.0	2.0	6.5	1.8
HJ400 90	hyJOIST		312	8.1	2.3	7.5	2.1	7.2	2.0	6.7	1.9
400 x 45	hySPAN		50	8.3	2.4	7.8	2.2	7.5	2.1	7.0	2.0
Maximum Continuous Span and Overhang 'O/H' (m)											
90 x 45	hyCHORD		20	2.7	0.5	2.0	0.4	1.9	0.4	1.8	0.3
140 x 45	hyCHORD		35	4.2	0.9	3.5	0.8	3.2	0.8	3.0	0.7
150 x 45	hySPAN		35	4.6	1.0	4.2	0.9	3.8	0.9	3.5	0.8
170 x 45	hySPAN		40	5.1	1.1	4.8	1.0	4.4	1.0	4.0	0.9
HJ200 45	hyJOIST		112	5.1	1.2	4.7	1.0	4.3	1.0	3.9	0.9
190 x 45	hyCHORD		44	-	-	-	-	4.7	1.1	4.3	1.0
200 x 45	hySPAN		50	5.8	1.4	5.4	1.2	5.2	1.2	4.8	1.1
HJ240 63	hyJOIST		152	6.2	1.5	5.7	1.4	5.5	1.3	5.1	1.2
240 x 45	hySPAN		50	6.6	1.6	6.2	1.5	6.0	1.4	5.6	1.3
HJ240 90	hyJOIST		152	6.8	1.7	6.3	1.5	6.1	1.5	5.6	1.4
HJ300 63	hyJOIST		212	7.0	1.7	6.5	1.6	6.3	1.5	5.8	1.4
300 x 45	hySPAN		50	7.8	1.9	7.3	1.8	7.1	1.7	6.6	1.6
HJ300 90	hyJOIST		212	7.8	1.9	7.2	1.8	7.0	1.7	6.4	1.6
HJ360 63	hyJOIST		272	7.8	1.9	7.2	1.8	6.9	1.7	6.1	1.6
HJ360 90	hyJOIST		272	8.7	2.1	8.0	2.0	7.8	1.9	7.1	1.8
360 x 45	hySPAN		50	-	-	8.3	2.0	8.1	2.0	7.5	1.8
HJ400 90	hyJOIST		312	-	-	8.4	2.1	8.0	2.0	7.2	1.9
400 x 45	hySPAN		50	-	-	-	-	-	-	8.2	2.0

- Refer to section 6.3 or designIT® for houses software for permitted hole sizes and locations
- For solid LVL sections bearing at end supports as for NZS 3604, bearing at intermediate supports 60 mm minimum. For hyJOIST design considerations, refer to section 4: Design Considerations – hyJOIST
- Joists should be blocked at supports – refer to the Futurebuild LVL Residential Installation Guide.



TABLE 12 FLOOR JOISTS – HEAVY FLOOR

Tiled floors and heavy furniture may result in floor joists which have not been designed for these loads, deflecting excessively in the long term. The following tables should therefore be used where the loads from floor coverings or furniture are likely to exceed 50 kg/m but are not greater than 100 kg/m². For other loading options consult designIT® for Houses.

Design Deflection Limits:

D.L.	LL	Dynamic Criteria
SPAN/300	SPAN/360	2 mm/1 kN
OR 15 mm	OR 9 mm	

Section D x B (mm)	Product	Cross Section	Max hole diameter, (mm)	Floor Joist Spacings (mm)			
				300	400	450	600
Maximum Single Span (m)							
90 x 45	hyCHORD®	█	20	2.0	1.7	1.6	1.6
140 x 45	hyCHORD	█	35	3.1	2.8	2.7	2.5
150 x 45	hySPAN®	█	35	3.5	3.2	3.1	2.8
170 x 45	hySPAN	█	40	4.0	3.6	3.5	3.2
HJ200 45	hyJOIST®	I	112	4.1	3.7	3.5	3.2
190 x 45	hyCHORD	█	44	4.2	3.8	3.7	3.4
200 x 45	hySPAN	█	50	4.6	4.3	4.1	3.8
HJ240 63	hyJOIST	I	152	5.0	4.7	4.5	4.1
240 x 45	hySPAN	█	50	5.3	4.9	4.8	4.5
HJ240 90	hyJOIST	I	152	5.5	5.2	5.0	4.7
HJ300 63	hyJOIST	I	212	5.7	5.3	5.2	4.8
300 x 45	hySPAN	█	50	6.2	5.8	5.6	5.3
HJ300 90	hyJOIST	I	212	6.3	5.9	5.7	5.3
HJ360 63	hyJOIST	I	272	6.4	5.9	5.7	5.3
360 x 45	hySPAN	█	50	7.0	6.6	6.4	6.0
HJ360 90	hyJOIST	I	272	7.0	6.5	6.3	5.9
HJ400 90	hyJOIST	I	312	7.4	6.9	6.7	6.3
400 x 45	hySPAN	█	50	7.6	7.1	6.9	6.5
Maximum Continuous Span (m)							
90 x 45	hyCHORD	█	20	2.5	2.0	1.9	1.8
140 x 45	hyCHORD	█	35	3.9	3.5	3.2	3.0
150 x 45	hySPAN	█	35	4.4	4.0	3.8	3.5
170 x 45	hySPAN	█	40	4.9	4.5	4.4	4.0
HJ200 45	hyJOIST	I	112	4.9	4.5	4.3	3.3
190 x 45	hyCHORD	█	44	-	4.7	4.6	4.2
200 x 45	hySPAN	█	50	5.5	5.1	5.0	4.6
HJ240 63	hyJOIST	I	152	5.8	5.4	5.2	4.3
240 x 45	hySPAN	█	50	6.2	5.8	5.7	5.3
HJ240 90	hyJOIST	I	152	6.4	6.0	5.8	5.3
HJ300 63	hyJOIST	I	212	6.6	6.1	5.9	5.4
300 x 45	hySPAN	█	50	7.3	6.9	6.7	6.3
HJ300 90	hyJOIST	I	212	7.3	6.8	6.6	6.1
HJ360 63	hyJOIST	I	272	7.3	6.8	6.5	5.8
HJ360 90	hyJOIST	I	272	8.1	7.5	7.3	6.6 ■
360 x 45	hySPAN	█	50	8.3	7.8	7.6	7.2
HJ400 90	hyJOIST	I	312	8.6	8.0	7.7	6.6 ■
400 x 45	hySPAN	█	50	-	8.5	8.2	7.7

- Indicates 90 mm required bearing at intermediate supports
- Refer to section 6.3 or designIT® for houses software for permitted hole sizes and locations
- Bearing at end supports as for NZS 3604, bearing at intermediate supports 60 mm minimum except where indicated otherwise
- Joists should be blocked at supports – refer to the Futurebuild LVL Residential Installation Guide for detailing

TABLE 13: FLOOR JOISTS – SUPPORTING PARALLEL LOAD BEARING WALLS OVER OPENINGS

Design Deflection Limits:

DL. SPAN/300 OR 15 mm
LL. SPAN/360 OR 9 mm

Floor joists supporting parallel load bearing walls over large spans are likely to deflect excessively even if the 'rule of thumb' practice of doubling joists is followed. The following tables give maximum spans for double joists for various roof loads. Roof load width may be determined by reference to the diagrams in section 6.6 Determination of Roof Load Width.

This table allows for the mass of lightweight claddings/linings such as horizontal boards or planks and sheet materials (plywood or plasterboard) to be partially offset by their contribution to overall wall stiffness.

Section D x B (mm)	Product	Cross Section	Light Roof & Ceiling								
			Roof Load Width 'RLW' (m)								
			1.2	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6
			Maximum Single Span (m)								
2/90 x 45	hyCHORD®	█	1.9	1.7	1.6	1.5	1.5	1.4	1.4	1.4	1.3
2/140 x 45	hyCHORD	█	2.9	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0
150 x 90	hy90®	█	2.9	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.1
2/150 x 45	hySPAN®	█	3.3	2.9	2.8	2.7	2.6	2.5	2.4	2.4	2.3
2/170 x 45	hySPAN	█	3.7	3.3	3.2	3.0	2.9	2.9	2.8	2.7	2.6
2/HJ200 45	hyJOIST®	I	3.8	3.3	3.1	3.0	2.8	2.5	2.3	2.1	1.9
200 x 90	hy90	█	3.8	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.8
2/190 x 45	hyCHORD	█	3.9	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.8
HJ240 90	hyJOIST	I	4.3	3.8	3.3	2.8	2.5	2.2	2.0	1.8	1.6
2/200 x 45	hySPAN	█	4.3	3.9	3.7	3.6	3.5	3.3	3.3	3.2	3.1
240 x 90	hy90	█	4.6	4.1	4.0	3.8	3.7	3.6	3.5	3.4	3.3
2/HJ240 63	hyJOIST	I	4.7	4.3	4.0	3.9	3.7	3.3	3.0	2.7	2.5
HJ300 90	hyJOIST	I	5.0	4.5 [■]	3.8 [■]	3.3 [■]	2.9 [■]	2.6 [■]	2.3 [■]	2.1 [■]	1.9 [■]
2/240 x 45	hySPAN	█	5.0	4.6	4.4	4.3	4.1	4.0	3.9	3.8	3.7
240 x 90	hyONE	█	5.2	4.8	4.7	4.5	4.4	4.2	4.1	4.0	3.9
2/HJ300 63	hyJOIST	I	5.4	4.9	4.7	4.6	4.4	4.3	3.9	3.4	3.1
300 x 90	hy90	█	5.4	5.0	4.8	4.7	4.6	4.4	4.3	4.2	4.1 [■]
HJ360 90	hyJOIST	I	5.5	4.6 [■]	3.8 [■]	3.3 [■]	2.9 [■]	2.6 [■]	2.3 [■]	2.0 [■]	1.8 [■]
2/300 x 45	hySPAN	█	5.8	5.4	5.2	5.1	5.0	4.9	4.8	4.7 [■]	4.6 [■]
HJ400 90	hyJOIST	I	5.9	4.6 [■]	3.8 [■]	3.3 [■]	2.9 [■]	2.6 [■]	2.2 [■]	2.0 [■]	1.8 [■]
2/HJ360 63	hyJOIST	I	6.0	5.5	5.3	5.1	4.9 [■]	4.8 [■]	4.3 [■]	3.9 [■]	3.6 [■]
360 x 90	hy90	█	6.1	5.7	5.5	5.3	5.2	5.1	5.0 [■]	4.9 [■]	4.8 [■]
300 x 90	hyONE	█	6.1	5.7	5.5	5.3	5.2	5.1	5.0 [■]	4.9 [■]	4.8 [■]
2/360 x 45	hySPAN	█	6.7	6.2	6.0	5.8	5.7	5.6 [■]	5.4 [■]	5.3 [■]	5.2 [■]
400 x 90	hy90	█	6.6	6.1	5.9	5.8	5.6	5.5 [■]	5.4 [■]	5.3 [■]	5.2 [■]
360 x 90	hyONE®	█	7.0	6.5	6.3	6.1	5.9	5.8 [■]	5.7 [■]	5.6 [■]	5.5 [■]
2/400 x 45	hySPAN	█	7.2	6.7	6.5	6.3	6.1 [■]	6.0 [■]	5.9 [■]	5.8 [■]	5.7 [■]

- Indicates minimum bearing at end supports = 45 mm
- Bearing at end supports as for NZS 3604 except where indicated otherwise



Design Deflection Limits:
 D.L. SPAN/300 OR 15 mm
 L.L. SPAN/360 OR 9 mm

TABLE 13 CONTINUED: FLOOR JOISTS – SUPPORTING PARALLEL LOAD BEARING WALLS OVER OPENINGS

Section D x B (mm)	Product	Cross Section	Light Roof & Ceiling								
			Roof Load Width 'RLW' (m)								
			1.2	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6
Maximum Continuous Span (m)											
2/90 x 45	hyCHORD®	■	2.5	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.8
2/140 x 45	hyCHORD	■	3.8	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.6
150 x 90	hy90°	■	3.9	3.5	3.3	3.2	3.1	2.9	2.7	2.6	2.5
2/150 x 45	hySPAN®	■	4.4	3.9	3.7	3.6	3.5	3.4	3.3	3.2	3.1
2/HJ200 45	hyJOIST®	I	4.8	3.6	2.9	2.6	2.3	2.0	1.8	1.7	1.5
2/170 x 45	hySPAN	■	4.8	4.4	4.2	4.1	3.9	3.8	3.7	3.6	3.5
200 x 90	hy90	■	-	4.6	4.4	4.3	4.0	3.8	3.6	3.5	3.3
2/190 x 45	hyCHORD	■	-	4.6	4.5	4.3	4.1	4.0	3.9	3.7	3.5
HJ240 90	hyJOIST	I	5.2	3.0	2.5	2.3	2.0	1.8	1.6	1.5	1.3
2/200 x 45	hySPAN	■	5.4	5.0	4.9	4.7	4.6	4.5	4.4	4.2	4.1
240 x 90	hy90	■	-	-	-	-	4.7	4.5	4.3	4.0	3.9
2/HJ240 63	hyJOIST	I	5.7	4.5	3.7	3.2	2.8	2.7	2.4	2.2	2.0
HJ300 90	hyJOIST	I	5.9 ■	3.5 ■	2.9 ■	2.7 ■	2.3 ■	2.1 ■	1.9 ■	1.7 ■	1.6 ■
HJ360 90	hyJOIST	I	6.1 ■	3.5 ■	2.9 ■	2.7 ■	2.3 ■	2.1 ■	1.9 ■	1.7 ■	1.6 ■
HJ400 90	hyJOIST	I	6.1 ■	3.5 ■	2.9 ■	2.7 ■	2.3 ■	2.1 ■	1.9 ■	1.7 ■	1.6 ■
2/240 x 45	hySPAN	■	6.1	5.7	5.5	5.4	5.3	5.1	5.0	4.8 ■	4.6 ■
2/HJ300 63	hyJOIST	I	6.5	5.9	4.9	4.2	3.7	3.6	3.2	2.9	2.7
2/HJ360 63	hyJOIST	I	7.2	6.5 ■	5.8 ■	4.9 ■	4.3 ■	4.1 ■	3.7 ■	3.4 ■	3.1 ■
2/300 x 45	hySPAN	■	7.3	6.7	6.5	6.4	6.2	6.0 ■	5.7 ■	5.5 ■	5.3 ■
2/360 x 45	hySPAN	■	8.3	7.7	7.5	7.2 ■	6.8 ■	6.5 ■	6.3 ■	6.1 ■	5.8 ■
2/400 x 45	hySPAN	■	8.9	8.2	7.8	7.4 ■	7.0 ■	6.8 ■	6.5 ■	6.4 ■	6.2 ❖

- Indicates minimum bearing at intermediate supports = 90 mm
- ❖ Indicates minimum bearing at end supports = 45 mm and intermediate supports = 135 mm
- Minimum bearing at end supports as per NZS 3604 & intermediate supports = 60 mm, unless otherwise indicated

Design Deflection Limits:

DL. SPAN/300 OR 15 mm
LL. SPAN/360 OR 9 mm

TABLE 13 CONTINUED: FLOOR JOISTS – SUPPORTING PARALLEL LOAD BEARING WALLS OVER OPENINGS

Section D x B (mm)	Product	Cross Section	Heavy Roof & Ceiling								
			Roof Load Width 'RLW' (m)								
			1.2	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6
			Maximum Single Span (m)								
2/90 x 45	hyCHORD®	█	1.6	1.4	1.3	1.2	1.2	1.2	1.1	1.1	1.0
2/140 x 45	hyCHORD	█	2.5	2.2	2.0	1.9	1.9	1.8	1.7	1.7	1.6
150 x 90	hy90®	█	2.5	2.2	2.1	2.0	1.9	1.8	1.8	1.7	1.7
2/150 x 45	hySPAN®	█	2.9	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.9
2/170 x 45	hySPAN	█	3.2	2.8	2.6	2.5	2.4	2.3	2.2	2.2	2.1
2/HJ200 45	hyJOIST®	┆	3.2	2.7	2.5	2.3	2.0	1.8	1.6	1.4	1.3
200 x 90	hy90	█	3.4	2.9	2.7	2.6	2.5	2.4	2.3	2.3	2.2
2/190 x 45	hyCHORD	█	3.4	2.9	2.8	2.6	2.5	2.4	2.3	2.3	2.2
HJ240 90	hyJOIST	┆	3.7	2.8	2.3	2.0	1.7	1.5	1.4	1.3	1.2
2/200 x 45	hySPAN	█	3.8	3.3	3.1	2.9	2.8	2.7	2.6	2.5	2.5
240 x 90	hy90	█	4.0	3.5	3.3	3.1	3.0	2.9	2.8	2.7	2.6
2/HJ240 63	hyJOIST	┆	4.1	3.4	3.2	3.0	2.6	2.3	2.1	1.9	1.7
HJ300 90	hyJOIST	┆	4.4 [■]	3.3 [■]	2.7 [■]	2.3 [■]	2.0 [■]	1.8 [■]	1.6 [■]	1.5 [■]	1.3 [■]
2/240 x 45	hySPAN	█	4.5	3.9	3.7	3.5	3.4	3.2	3.1	3.0	3.0
240 x 90	hyONE	█	4.7	4.1	3.9	3.7	3.6	3.4	3.3	3.2	3.1 [■]
2/HJ300 63	hyJOIST	┆	4.8	4.1	3.8	3.6	3.4	3.1	2.8	2.5	2.3
300 x 90	hy90	█	4.9	4.3	4.1	3.9	3.7	3.6	3.5	3.4 [■]	3.3 [■]
HJ360 90	hyJOIST	┆	4.9 [■]	3.3 [■]	2.7 [■]	2.3 [■]	2.0 [■]	1.8 [■]	1.6 [■]	1.5 [■]	1.3 [■]
HJ400 90	hyJOIST	┆	5.2 [■]	3.3 [■]	2.8 [■]	2.3 [■]	2.0 [■]	1.8 [■]	1.6 [■]	1.5 [■]	1.3 [■]
2/300 x 45	hySPAN	█	5.3	4.8	4.6	4.4	4.2	4.0	3.9 [■]	3.8 [■]	3.7 [■]
2/HJ360 63	hyJOIST	┆	5.4	4.7	4.5	4.2 [■]	4.0 [■]	3.6 [■]	3.2 [■]	2.9 [■]	2.7 [■]
360 x 90	hy90	█	5.6	5.0	4.8	4.6	4.5	4.3 [■]	4.2 [■]	4.1 [■]	3.9 [■]
300 x 90	hyONE®	█	5.6	5.0	4.8	4.6	4.4	4.3 [■]	4.1 [■]	4.0 [■]	3.9 [■]
400 x 90	hy90	█	6.0	5.4	5.2	5.0	4.8 [■]	4.7 [■]	4.6 [■]	4.5 [■]	4.4 [◆]
2/360 x 45	hySPAN	█	6.1	5.4	5.2	5.0	4.9 [■]	4.8 [■]	4.6 [■]	4.5 [■]	4.4 [◆]
360 x 90	hyONE	█	6.3	5.7	5.5	5.3 [■]	5.1 [■]	5.0 [■]	4.8 [■]	4.7 [◆]	4.6 [◆]
2/400 x 45	hySPAN	█	6.6	5.9	5.6	5.5 [■]	5.3 [■]	5.1 [■]	5.0 [■]	4.9 [◆]	4.8 [◆]

- Indicates minimum bearing at end supports = 45 mm
- ◆ Indicates minimum bearing at end supports = 60 mm
- Bearing at end supports as per NZS 3604 except where indicated otherwise



Design Deflection Limits:
 D.L. SPAN/300 OR 15 mm
 L.L. SPAN/360 OR 9 mm

TABLE 13 CONTINUED: FLOOR JOISTS – SUPPORTING PARALLEL LOAD BEARING WALLS OVER OPENINGS

Section D x B (mm)	Product	Cross Section	Heavy Roof & Ceiling								
			Roof Load Width 'RLW' (m)								
			1.2	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6
Maximum Continuous Span (m)											
2/90 x 45	hyCHORD®	█	2.2	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.4
2/140 x 45	hyCHORD	█	3.4	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.2
150 x 90	hy90°	█	3.4	2.9	2.8	2.6	2.5	2.4	2.2	2.2	2.1
HJ240 90	hyJOIST®	I	3.7	2.3	1.9	1.6	1.3	1.2	1.1	1.0	0.9
2/150 x 45	hySPAN®	█	3.8	3.3	3.1	3.0	2.8	2.7	2.6	2.6	2.5
2/HJ200 45	hyJOIST	I	4.1	2.6	2.2	1.8	1.6	1.3	1.2	1.1	1.0
HJ360 90	hyJOIST	I	4.3 [■]	2.5 [■]	2.1 [■]	1.9 [■]	1.6 [■]	1.4 [■]	1.3 [■]	1.1 [■]	1.0 [■]
HJ400 90	hyJOIST	I	4.3 [■]	2.5 [■]	2.1 [■]	1.9 [■]	1.6 [■]	1.4 [■]	1.3 [■]	1.2 [■]	1.1 [■]
2/170 x 45	hySPAN	█	4.3	3.7	3.5	3.3	3.2	3.1	3.0	2.9	2.8 [■]
HJ300 90	hyJOIST	I	4.4 [■]	2.7 [■]	2.1 [■]	1.8 [■]	1.5 [■]	1.4 [■]	1.2 [■]	1.1 [■]	1.0 [■]
200 x 90	hy90	█	4.5	3.9	3.7	3.5	3.4	3.1	3.0	2.8	2.7
2/190 x 45	hyCHORD	█	4.5	3.9	3.7	3.5	3.4	3.2	3.1	3.0	3.0 [■]
2/200 x 45	hySPAN	█	4.9	4.4	4.1	3.9	3.8	3.6	3.5 [■]	3.4 [■]	3.3 [■]
2/HJ240 63	hyJOIST	I	5.0	3.4	2.7	2.3	2.0	1.8	1.6	1.4	1.3
240 x 90	hy90	█	5.2	4.6	4.4	4.2	4.0	3.8	3.5 [■]	3.3 [■]	3.2 [■]
2/240 x 45	hySPAN	█	5.6	5.0	4.8	4.7	4.5 [■]	4.4 [■]	4.2 [■]	4.1 [■]	4.0 [■]
2/HJ300 63	hyJOIST	I	5.8	4.3	3.6	3.0	2.6	2.3	2.1	1.9	1.7
240 x 90	hyONE®	█	-	-	-	-	4.7 [■]	4.6 [■]	4.5 [■]	4.3 [❖]	4.2 [❖]
300 x 90	hy90	█	-	-	-	-	-	4.5 [■]	4.3 [■]	4.1 [■]	4.0 [■]
2/HJ360 63	hyJOIST	I	6.4	5.0 [■]	4.2 [■]	3.5 [■]	3.1 [■]	2.7 [■]	2.4 [■]	2.2 [■]	2.0 [■]
2/300 x 45	hySPAN	█	6.6	5.9	5.7 [■]	5.5 [■]	5.3 [■]	5.1 [■]	5.0 [❖]	4.7 [❖]	4.5 [❖]
2/360 x 45	hySPAN	█	7.6	6.8 [■]	6.4 [■]	6.1 [■]	5.9 [■]	5.6 [❖]	5.4 [❖]	5.3 [❖]	5.0 [❖]
2/400 x 45	hySPAN	█	8.2	7.1 [■]	6.7 [■]	6.4 [■]	6.1 [❖]	5.9 [❖]	5.7 [❖]	5.5 [❖]	5.3 [❖]

- Indicates minimum bearing at intermediate supports = 90 mm
- ❖ Indicates minimum bearing at end supports = 45 mm and intermediate supports = 135 mm
- Minimum bearing at end supports as for NZS 3604 & intermediate supports = 60 mm, except where indicated otherwise

7.3 WALLS

Design Deflection Limits:

DL	LL
SPAN/300	SPAN/360
OR 10 mm	OR 10 mm

TABLE 14: LINTELS – UPPER/SINGLE STOREY

Section D x B (mm)	Product	Light Roof And Ceiling									
		Roof Load Width 'RLW' (m)									
		1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2
Maximum Span (m)											
90 x 45	hyCHORD®	1.7	1.5	1.3	1.2	1.1	1.1	1.0	1.0	0.9	0.8
2/90 x 45	hyCHORD	2.3	2.0	1.8	1.7	1.5	1.5	1.4	1.3	1.3	1.2
140 x 45	hyCHORD	2.7	2.5	2.4	2.3	2.1	2.0	1.8	1.8	1.7	1.6
150 x 45	hySPAN®	3.0	2.8	2.7	2.5	2.4	2.4	2.3	2.1	2.0	2.0
150 x 63	hySPAN	3.2	3.0	2.9	2.7	2.6	2.5	2.5	2.4	2.4	2.3
2/140 x 45	hyCHORD	3.2	3.0	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3
150 x 90	hy90®	3.2	3.0	2.9	2.7	2.6	2.5	2.5	2.4	2.4	2.3
170 x 45	hySPAN	3.3	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.4	2.4
190 x 45	hyCHORD	3.4	3.2	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4
2/150 x 45	hySPAN	3.5	3.3	3.1	3.0	2.9	2.8	2.7	2.6	2.6	2.5
200 x 45	hySPAN	3.7	3.5	3.3	3.1	3.0	2.9	2.8	2.8	2.7	2.6
2/170 x 45	hySPAN	3.8	3.6	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.8
200 x 63	hySPAN	4.0	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9
2/190 x 45	hyCHORD	4.0	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9
200 x 90	hy90	4.0	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9
240 x 45	hySPAN	4.2	4.0	3.8	3.6	3.5	3.3	3.3	3.2	3.1	3.0
2/200 x 45	hySPAN	4.4	4.1	3.9	3.7	3.6	3.5	3.4	3.3	3.2	3.1
240 x 63	hySPAN	4.6	4.3	4.1	3.9	3.7	3.6	3.5	3.4	3.4	3.3
240 x 90	hy90	4.6	4.3	4.0	3.9	3.7	3.6	3.5	3.4	3.4	3.3
2/240 x 45	hySPAN	5.0	4.7	4.5	4.2	4.1	4.0	3.8	3.7	3.7	3.6
300 x 45	hySPAN	5.0	4.8	4.5	4.2	4.1	4.0	3.8	3.7	3.7	3.6 ■
240 x 90	hyONE®	5.2	4.9	4.7	4.5	4.3	4.1	4.0	3.9	3.8	3.7
300 x 90	hy90	5.3	5.0	4.8	4.6	4.5	4.3	4.2	4.1	4.0	3.9
300 x 63	hySPAN	5.4	5.1	4.8	4.6	4.5	4.3	4.2	4.1	4.0	3.9
360 x 45	hySPAN	5.7	5.3	5.1	4.9	4.8	4.6	4.5	4.3	4.2 ■	4.0 ■
2/300 x 45	hySPAN	5.8	5.4	5.2	5.0	4.9	4.8	4.6	4.5	4.4	4.2

- Indicates minimum bearing at end supports = 90 mm
- Minimum bearing at end supports 45 mm, except where indicated otherwise
- Double sections built-up by vertical lamination – see section 5.4



Design Deflection Limits:

DL. SPAN/300 OR 10 mm
 LL. SPAN/360 OR 10 mm

TABLE 14 CONTINUED: LINTELS – UPPER/SINGLE STOREY

Section D x B (mm)	Product	Heavy Roof And Ceiling									
		Roof Load Width 'RLW' (m)									
		1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2
		Maximum Span (m)									
90 x 45	hyCHORD®	1.4	1.3	1.2	1.2	1.1	1.0	1.0	0.9	0.9	0.8
2/90 x 45	hyCHORD	1.7	1.5	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.1
140 x 45	hyCHORD	2.0	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.4	1.3
150 x 45	hySPAN®	2.4	2.2	2.0	1.8	1.7	1.7	1.6	1.5	1.5	1.4
150 x 63	hySPAN	2.6	2.4	2.2	2.0	1.9	1.9	1.8	1.7	1.7	1.6
170 x 45	hySPAN	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.7	1.6
2/140 x 45	hyCHORD	2.6	2.4	2.2	2.0	1.9	1.8	1.8	1.7	1.6	1.6
150 x 90	hy90®	2.6	2.4	2.2	2.0	1.9	1.9	1.8	1.7	1.7	1.6
190 x 45	hyCHORD	2.8	2.6	2.4	2.2	2.1	2.0	1.9	1.8	1.8	1.7
2/150 x 45	hySPAN	2.9	2.6	2.5	2.4	2.2	2.1	2.0	1.9	1.9	1.8
200 x 45	hySPAN	3.0	2.8	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9
2/170 x 45	hySPAN	3.2	3.0	2.8	2.6	2.5	2.4	2.3	2.3	2.2	2.1
200 x 63	hySPAN	3.4	3.1	2.9	2.7	2.6	2.5	2.4	2.4	2.3	2.2
2/190 x 45	hyCHORD	3.4	3.1	2.9	2.7	2.6	2.5	2.4	2.4	2.3	2.2
200 x 90	hy90	3.3	3.1	2.9	2.7	2.6	2.5	2.4	2.4	2.3	2.2
240 x 45	hySPAN	3.5	3.3	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.4
2/200 x 45	hySPAN	3.6	3.4	3.2	3.0	2.9	2.8	2.7	2.6	2.6	2.5
240 x 63	hySPAN	3.8	3.6	3.4	3.2	3.1	3.0	2.9	2.8	2.7	2.6
240 x 90	hy90	3.8	3.6	3.4	3.2	3.1	3.0	2.9	2.8	2.7	2.6
2/240 x 45	hySPAN	4.1	3.8	3.7	3.5	3.4	3.2	3.2	3.1	3.0	2.9
300 x 45	hySPAN	4.1	3.8	3.7	3.5	3.4	3.2	3.1	3.1	3.0	2.9 ■
240 x 90	hyONE®	4.3	4.0	3.8	3.7	3.6	3.4	3.3	3.2	3.1	3.1
300 x 63	hySPAN	4.5	4.2	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2
300 x 90	hy90	4.4	4.2	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2
360 x 45	hySPAN	4.8	4.4	4.2	4.0	3.8	3.8	3.7	3.6	3.5 ■	3.4 ■
2/300 x 45	hySPAN	4.9	4.6	4.3	4.1	4.0	3.8	3.8	3.7	3.6	3.5

- Indicates minimum bearing at end supports = 90 mm
- Minimum bearing at end supports 45 mm, except where indicated otherwise
- Double sections built-up by vertical lamination – see section 5.4

Design Deflection Limits:

DL	LL
SPAN/300	SPAN/360
OR 10 mm	OR 10 mm

TABLE 15: LINTELS – LOWER STOREY

Section D x B (mm)		Product		Light Roof And Ceiling															
				Floor Load Width 'FLW' (m)															
				1.8			2.4					3.0							
				Roof Load Width 'RLW' (m)															
				1.8	3.0	4.2	5.4	6.6	1.8	3.0	4.2	5.4	6.6	1.8	3.0	4.2	5.4	6.6	
				Maximum Span (m)															
90 x 45	hyCHORD®	1.2	1.1	1.1	1.0	1.0	1.1	1.0	1.0	1.0	0.9	1.0	1.0	1.0	0.9	0.9			
2/90 x 45	hyCHORD	1.5	1.4	1.3	1.3	1.3	1.4	1.3	1.3	1.2	1.2	1.3	1.3	1.2	1.2	1.2			
140 x 45	hyCHORD	1.7	1.7	1.6	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.5	1.5	1.4	1.4	1.4			
150 x 45	hySPAN®	2.0	1.9	1.8	1.7	1.7	1.9	1.8	1.7	1.6	1.6	1.8	1.7	1.6	1.6	1.5			
150 x 63	hySPAN	2.2	2.1	2.0	1.9	1.9	2.1	2.0	1.9	1.8	1.8	2.0	1.9	1.8	1.8	1.7			
170 x 45	hySPAN	2.2	2.1	2.0	1.9	1.9	2.1	2.0	1.9	1.9	1.8	2.0	1.9	1.8	1.8	1.7			
2/140 x 45	hyCHORD	2.2	2.1	2.0	1.9	1.9	2.1	2.0	1.9	1.8	1.8	2.0	1.9	1.8	1.8	1.7			
150 x 90	hy90®	2.2	2.1	2.0	1.9	1.9	2.1	2.0	1.9	1.8	1.8	2.0	1.9	1.8	1.8	1.7			
190 x 45	hyCHORD	2.3	2.2	2.1	2.0	2.0	2.2	2.1	2.0	2.0	1.9	2.1	2.0	1.9	1.9	1.8			
2/150 x 45	hySPAN	2.5	2.4	2.3	2.2	2.1	2.3	2.2	2.2	2.1	2.0	2.2	2.1	2.1	2.0	1.9			
200 x 45	hySPAN	2.6	2.5	2.4	2.3	2.2	2.5	2.3	2.3	2.2	2.1	2.3	2.2	2.2	2.1	2.0			
2/170 x 45	hySPAN	2.8	2.7	2.5	2.4	2.4	2.6	2.5	2.4	2.3	2.3	2.5	2.4	2.3	2.3	2.2			
200 x 63	hySPAN	2.9	2.8	2.6	2.5	2.5	2.7	2.6	2.5	2.4	2.4	2.6	2.5	2.4	2.3	2.3			
200 x 90	hy90	2.9	2.8	2.6	2.5	2.5	2.7	2.6	2.5	2.4	2.4	2.6	2.5	2.4	2.3	2.3			
2/190 x 45	hyCHORD	2.9	2.8	2.7	2.6	2.5	2.8	2.6	2.5	2.5	2.4	2.6	2.5	2.4	2.4	2.3			
240 x 45	hySPAN	3.1	3.0	2.8	2.7	2.6	2.9	2.8	2.7	2.6	2.5	2.8	2.7	2.6	2.5	2.4			
2/200 x 45	hySPAN	3.2	3.1	3.0	2.9	2.8	3.1	2.9	2.8	2.7	2.7	2.9	2.8	2.7	2.6	2.6			
240 x 63	hySPAN	3.4	3.2	3.1	3.0	2.9	3.2	3.1	3.0	2.9	2.8	3.1	3.0	2.9	2.8	2.7			
240 x 90	hy90	3.4	3.2	3.1	3.0	2.9	3.2	3.1	3.0	2.9	2.8	3.1	3.0	2.9	2.8	2.7			
300 x 45	hySPAN	3.6	3.5	3.4	3.3	3.2	3.5	3.4	3.3	3.2	3.1	3.3	3.3	3.2	3.1	3.0			
2/240 x 45	hySPAN	3.7	3.5	3.4	3.3	3.2	3.5	3.4	3.3	3.2	3.1	3.4	3.3	3.2	3.1	3.1			
240 x 90	hyONE®	3.8	3.7	3.6	3.5	3.4	3.6	3.5	3.4	3.3	3.3	3.5	3.4	3.3	3.2	3.2			
300 x 63	hySPAN	4.0	3.8	3.7	3.6	3.5	3.8	3.7	3.6	3.5	3.4	3.6	3.5	3.4	3.4	3.3			
300 x 90	hy90	3.9	3.8	3.7	3.6	3.5	3.8	3.7	3.6	3.5	3.4	3.6	3.5	3.4	3.4	3.3			
360 x 45	hySPAN	4.2	4.0	3.9	3.8	3.7	4.0	3.9	3.8	3.7	3.6	3.8	3.7	3.6	3.6	3.5			
2/300 x 45	hySPAN	4.3	4.2	4.0	3.9	3.8	4.1	4.0	3.9	3.8	3.7	4.0	3.9	3.8	3.7	3.6			

- Indicates minimum bearing at end supports = 90 mm
- Minimum bearing at end supports 45 mm, except where indicated otherwise
- Double sections built-up by vertical lamination – see section 5.4



Design Deflection Limits:
 DL. SPAN/300 OR 10 mm
 LL. SPAN/360 OR 10 mm

TABLE 15 CONTINUED: LINTELS – LOWER STOREY

Section D x B (mm)		Product		Heavy Roof And Ceiling																						
				Floor Load Width 'FLW' (m)																						
				1.8					2.4					3.0												
				Roof Load Width 'RLW' (m)																						
		1.8					3.0					4.2					5.4					6.6				
		Maximum Span (m)																								
90 x 45	hyCHORD®	1.1	1.0	0.9	0.9	0.8	1.0	0.9	0.9	0.8	0.8	1.0	0.9	0.9	0.8	0.8										
2/90 x 45	hyCHORD	1.4	1.2	1.2	1.1	1.1	1.3	1.2	1.1	1.1	1.0	1.2	1.2	1.1	1.0	1.0										
140 x 45	hyCHORD	1.6	1.5	1.4	1.3	1.2	1.5	1.4	1.3	1.3	1.2	1.4	1.4	1.3	1.2	1.2										
150 x 45	hySPAN®	1.8	1.7	1.5	1.5	1.4	1.7	1.6	1.5	1.4	1.4	1.6	1.5	1.5	1.4	1.3										
150 x 63	hySPAN	2.0	1.8	1.7	1.6	1.6	1.9	1.8	1.7	1.6	1.5	1.8	1.7	1.6	1.5	1.5										
170 x 45	hySPAN	2.0	1.9	1.7	1.7	1.6	1.9	1.8	1.7	1.6	1.5	1.9	1.7	1.6	1.6	1.5										
2/140 x 45	hyCHORD	2.0	1.8	1.7	1.6	1.6	1.9	1.8	1.7	1.6	1.5	1.8	1.7	1.6	1.5	1.5										
150 x 90	hy90®	2.0	1.8	1.7	1.6	1.6	1.9	1.8	1.7	1.6	1.5	1.8	1.7	1.6	1.5	1.5										
190 x 45	hyCHORD	2.1	2.0	1.8	1.7	1.7	2.0	1.9	1.8	1.7	1.6	1.9	1.8	1.7	1.6	1.6										
2/150 x 45	hySPAN	2.3	2.1	2.0	1.8	1.8	2.2	2.0	1.9	1.8	1.7	2.1	1.9	1.8	1.8	1.7										
200 x 45	hySPAN	2.4	2.2	2.1	1.9	1.8	2.3	2.1	2.0	1.9	1.8	2.2	2.0	1.9	1.8	1.8 ■										
2/170 x 45	hySPAN	2.6	2.4	2.2	2.1	2.0	2.4	2.3	2.1	2.0	1.9	2.3	2.2	2.1	2.0	1.9										
200 x 63	hySPAN	2.7	2.4	2.3	2.2	2.1	2.5	2.4	2.2	2.1	2.0	2.4	2.3	2.2	2.1	2.0										
2/190 x 45	hyCHORD	2.7	2.5	2.3	2.2	2.1	2.6	2.4	2.2	2.1	2.0	2.4	2.3	2.2	2.1	2.0										
200 x 90	hy90	2.7	2.4	2.3	2.2	2.1	2.5	2.4	2.2	2.1	2.0	2.4	2.3	2.2	2.1	2.0										
240 x 45	hySPAN	2.9	2.6	2.5	2.3 ■	2.2 ■	2.7	2.5	2.4 ■	2.3 ■	2.2 ■	2.6 ■	2.4 ■	2.3 ■	2.2 ■	2.1 ■										
2/200 x 45	hySPAN	3.0	2.8	2.6	2.4	2.3	2.9	2.7	2.5	2.4	2.3	2.7	2.6	2.4	2.3	2.2										
240 x 63	hySPAN	3.1	2.9	2.7	2.6	2.5	3.0	2.8	2.7	2.5	2.4	2.9	2.7	2.6	2.5	2.4										
240 x 90	hy90	3.1	2.9	2.7	2.6	2.5	3.0	2.8	2.7	2.5	2.4	2.9	2.7	2.6	2.5	2.4										
2/240 x 45	hySPAN	3.4	3.2	3.1	2.9	2.8	3.3	3.1	3.0	2.8	2.7	3.2	3.0	2.9	2.8	2.7										
300 x 45	hySPAN	3.4	3.2 ■	3.0 ■	2.9 ■	2.8 ■	3.3 ■	3.1 ■	3.0 ■	2.8 ■	2.7 ■	3.2 ■	3.0 ■	2.9 ■	2.7 ■	2.6 ■										
240 x 90	hyONE®	3.6	3.4	3.2	3.1	2.9	3.4	3.3	3.1	3.0	2.9	3.3	3.2	3.0	2.9	2.8										
300 x 63	hySPAN	3.7	3.5	3.3	3.2	3.1 ■	3.6	3.4	3.2	3.1 ■	3.0 ■	3.5 ■	3.3 ■	3.2 ■	3.1 ■	2.9 ■										
300 x 90	hy90	3.7	3.5	3.3	3.2	3.1	3.6	3.4	3.2	3.1	3.0	3.5	3.3	3.2	3.1	2.9										
360 x 45	hySPAN	3.9 ■	3.7 ■	3.5 ■	3.3 ■	3.2 ■	3.8 ■	3.6 ■	3.4 ■	3.3 ■	3.2 ■	3.6 ■	3.5 ■	3.3 ■	3.2 ■	3.1 ■										
2/300 x 45	hySPAN	4.0	3.8	3.6	3.5	3.3	3.9	3.7	3.5	3.4	3.3	3.8	3.6	3.5	3.3	3.2 ■										

- Indicates minimum bearing at end supports = 90 mm
- Minimum bearing at end supports 45 mm, except where indicated otherwise
- Double sections built-up by vertical lamination – see section 5.4

7.4 CEILING JOISTS

Design Deflection Limits:

DL
SPAN/400
OR 12 mm

TABLE 16: CEILING JOISTS

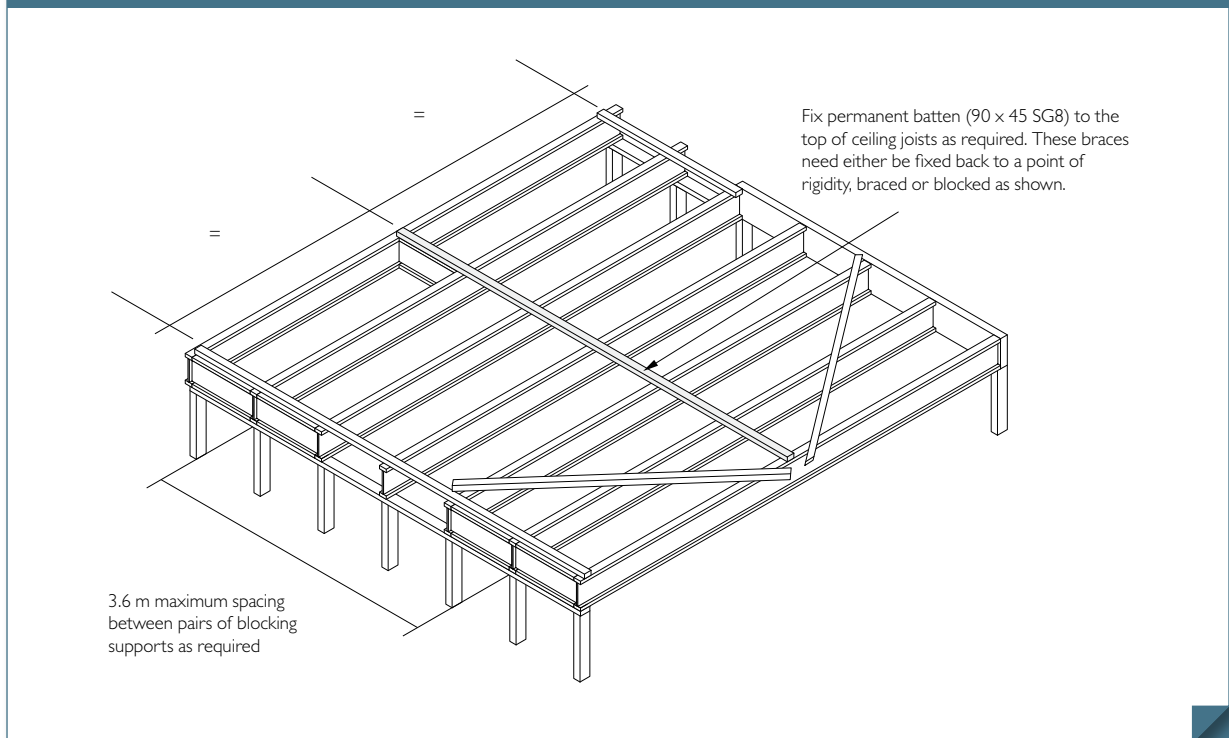
Section D x B (mm)	Product	Cross Section	Single Span				Continuous Span			
			Joist Spacing (mm)							
			450	600	900	1200	450	600	900	1200
90 x 45	hyCHORD®		2.6	2.6	2.6	2.4	3.0	3.0	3.0	3.0
140 x 45	hyCHORD		4.7 [■]	4.4 [■]	4.0 [■]	3.7 [■]	-	-	-	-
150 x 45	hySPAN®		5.2 [■]	4.9 [■]	4.5 [■]	4.2 [■]	6.4 [■]	6.1 [■]	5.7 [■]	5.4 [■]
170 x 45	hySPAN		5.6 [■]	5.3 [■]	5.0 [■]	4.7 [■]	7.0 [■]	6.7 [■]	6.2 [■]	5.9 [■]
190 x 45	hyCHORD		5.7 ^{*■}	5.5 ^{*■}	5.1 ^{*■}	4.9 ^{*■}	-	-	-	-
HJ200 45	hyJOIST®		5.8 [■]	5.5 [■]	5.0 [■]	4.8 [■]	6.7 [■]	6.3 [■]	5.8 [■]	5.5 [■]
200 x 45	hySPAN		6.2 ^{*■}	5.9 ^{*■}	5.6 ^{*■}	5.3 ^{*■}	7.7 ^{*■}	7.4 ^{*■}	6.9 ^{*■}	6.6 ^{*■}
200 x 63	hySPAN		6.5	6.2	5.9	5.6	8.1	7.8	7.3	7.0
240 x 45	hySPAN		7.0 ^{*■}	6.7 ^{*■}	6.3 ^{*■}	6.0 ^{*■}	8.7 ^{*■}	8.3 ^{*■}	7.8 ^{*■}	7.4 ^{*■}
HJ240 63	hyJOIST		7.2 [■]	6.8 [■]	6.3 [■]	5.9 [■]	-	8.4 [■]	7.7 [■]	7.2 [■]
HJ300 63	hyJOIST		7.3 [■]	6.9 [■]	6.3 [■]	6.1 [■]	8.6 [■]	8.1 [■]	7.4 [■]	7.2 [■]
HJ240 90	hyJOIST		7.6 [■]	7.3 [■]	6.8 [■]	6.4 [■]	-	-	8.3 [■]	7.9 [■]
HJ300 90	hyJOIST		8.6 [■]	8.2 [■]	7.7 [■]	7.3 [■]	-	-	-	-

■ Indicates that a permanent batten should be fixed at mid span to the top of all joists and braced back to a point of rigidity to prevent roll over under construction and maintenance loads – see figure 18

* Indicates ceiling joists not fixed to rafters should be blocked at supports to prevent roll over – see figure 18

• Mass of ceiling lining and battens not to exceed 15 kg/m²

Figure 18: Ceiling Joists (hySPAN® similar showing hyJOIST below)





7.5 HANGING BEAMS

Design Deflection Limits:

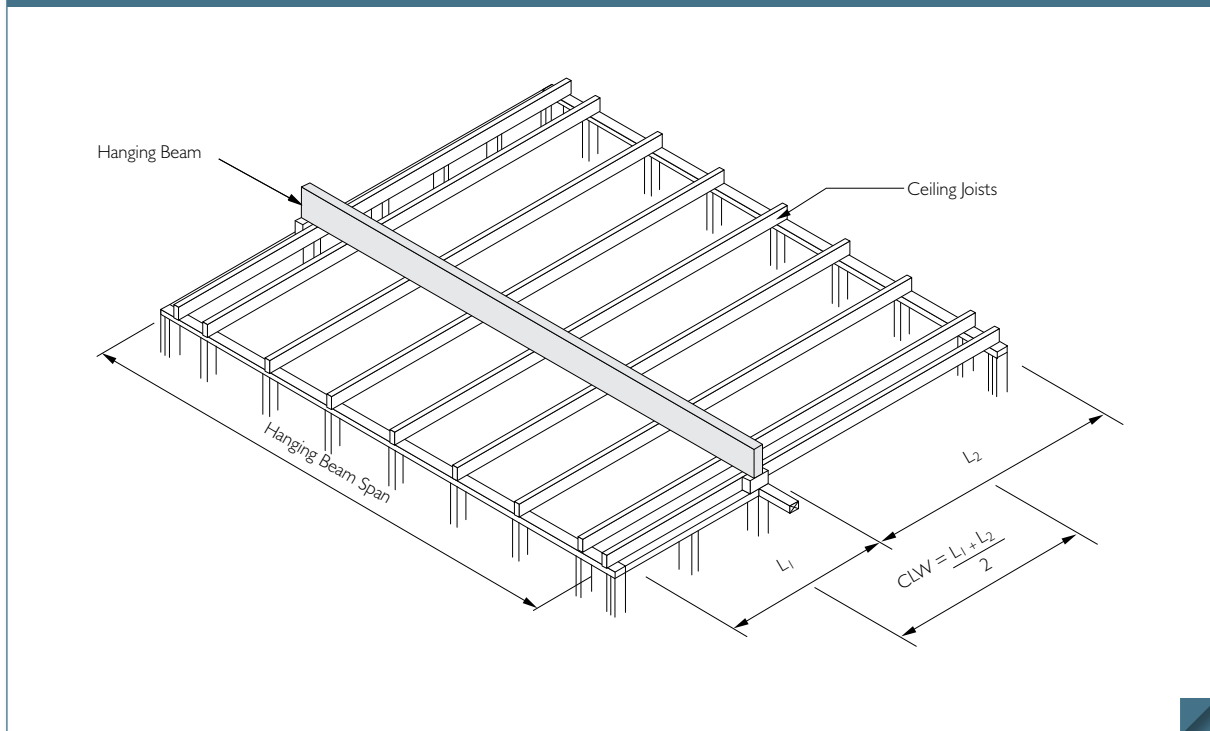
D.L.	L.L.
SPAN/300	SPAN/270
OR 20 mm	OR 50mm

TABLE 17: HANGING BEAMS

Section D x B (mm)	Product	Ceiling Load Width 'CLW' (m)									
		1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.6	4.2	4.8
90 x 45	hyCHORD®	2.0	2.0	2.0	1.9	1.8	1.8	1.7	1.6	1.5	1.4
140 x 45	hyCHORD	3.6	3.4	3.1	3.0	2.8	2.7	2.6	2.4	2.3	2.1
150 x 45	hySPAN®	4.1	3.8	3.6	3.4	3.2	3.1	3.0	2.8	2.6	2.4
150 x 63	hySPAN	4.5	4.2	4.0	3.8	3.6	3.4	3.3	3.1	2.9	2.7
170 x 45	hySPAN	4.6	4.3	4.0	3.8	3.6	3.5	3.4	3.1	2.9	2.8
190 x 45	hyCHORD	4.8	4.5	4.2	4.0	3.8	3.7	3.5	3.3	3.1	2.9
200 x 45	hySPAN	5.4	5.0	4.7	4.5	4.3	4.1	3.9	3.7	3.4	3.2
200 x 63	hySPAN	5.9	5.5	5.2	4.9	4.7	4.5	4.4	4.1	3.8	3.6
240 x 45	hySPAN	6.3	6.0	5.6	5.3	5.1	4.9	4.7	4.4	4.1	3.9
240 x 63	hySPAN	6.7	6.4	6.1	5.9	5.6	5.4	5.2	4.9	4.6	4.3
300 x 45	hySPAN	7.3	7.0	6.7	6.5	6.2	6.0	5.8	5.4	5.1	4.8
300 x 63	hySPAN	7.8	7.5	7.2	6.9	6.7	6.5	6.3	6.0	5.7	5.4

- Mass of ceiling lining, battens and ceiling joists not to exceed 20 kg/m²
- Minimum bearing at end supports 30 mm

Figure 19: Hanging Beams



7.6 HIP OR VALLEY RAFTERS

Design Deflection Limits:

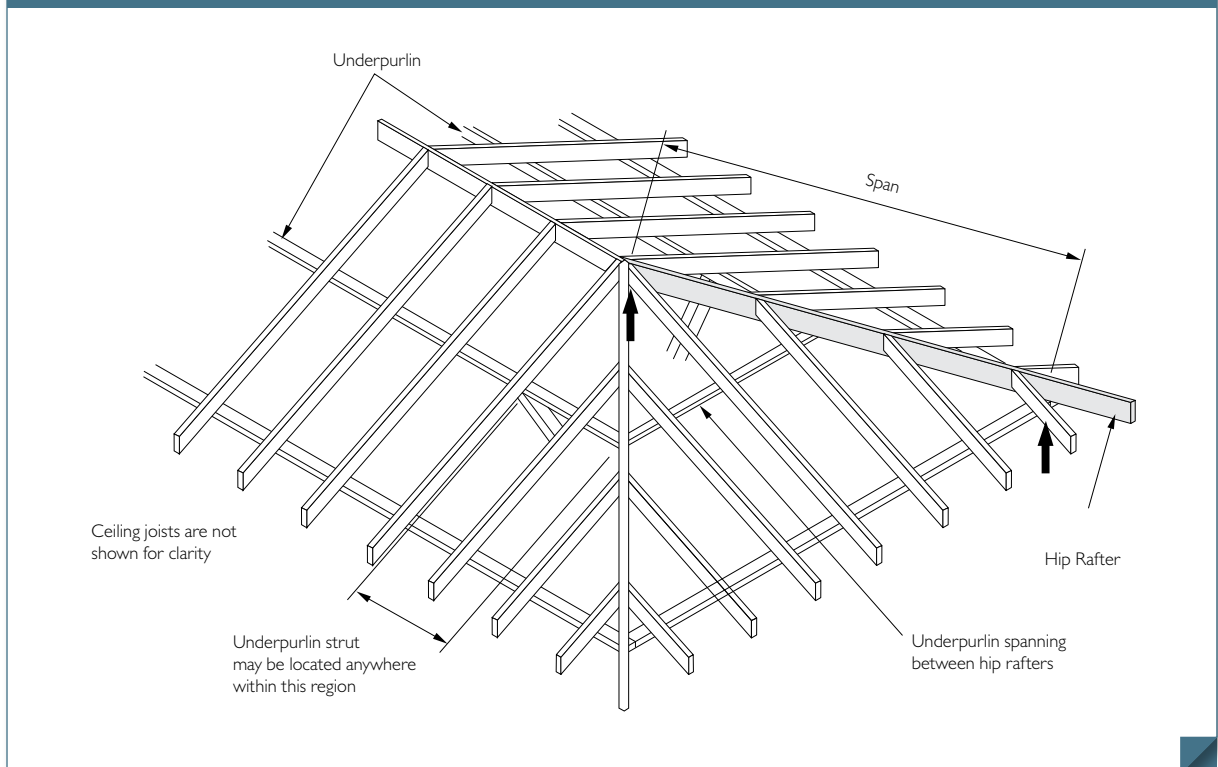
DL	LL
SPAN/300	SPAN/250
OR 20 mm	OR 20 mm

TABLE 18: HIP RAFTERS – SUPPORTING RAFTERS AND UNDERPURLINS

Section D x B (mm)	Product	Light Roof	Heavy Roof
		Maximum Hip Rafter Span (m)	
150 x 45	hySPAN®	3.5	2.7
170 x 45	hySPAN	3.8	3.0
200 x 45	hySPAN	4.3	3.3
240 x 45	hySPAN	4.8	3.8
240 x 63	hySPAN	5.4	4.2
300 x 45	hySPAN	5.1	4.5
300 x 63	hySPAN	6.3	4.9
360 x 45	hySPAN	5.4	5.2
360 x 63	hySPAN	7.0	5.7
400 x 45	hySPAN	5.5	5.6
400 x 63	hySPAN	7.4	6.1

- See Table 7 for Roof Mass Allowances

Figure 20: Supporting Rafters and Underpurlins





7.6 HIP OR VALLEY RAFTERS CONTINUED

Figure 21: Single Span Hip Rafter

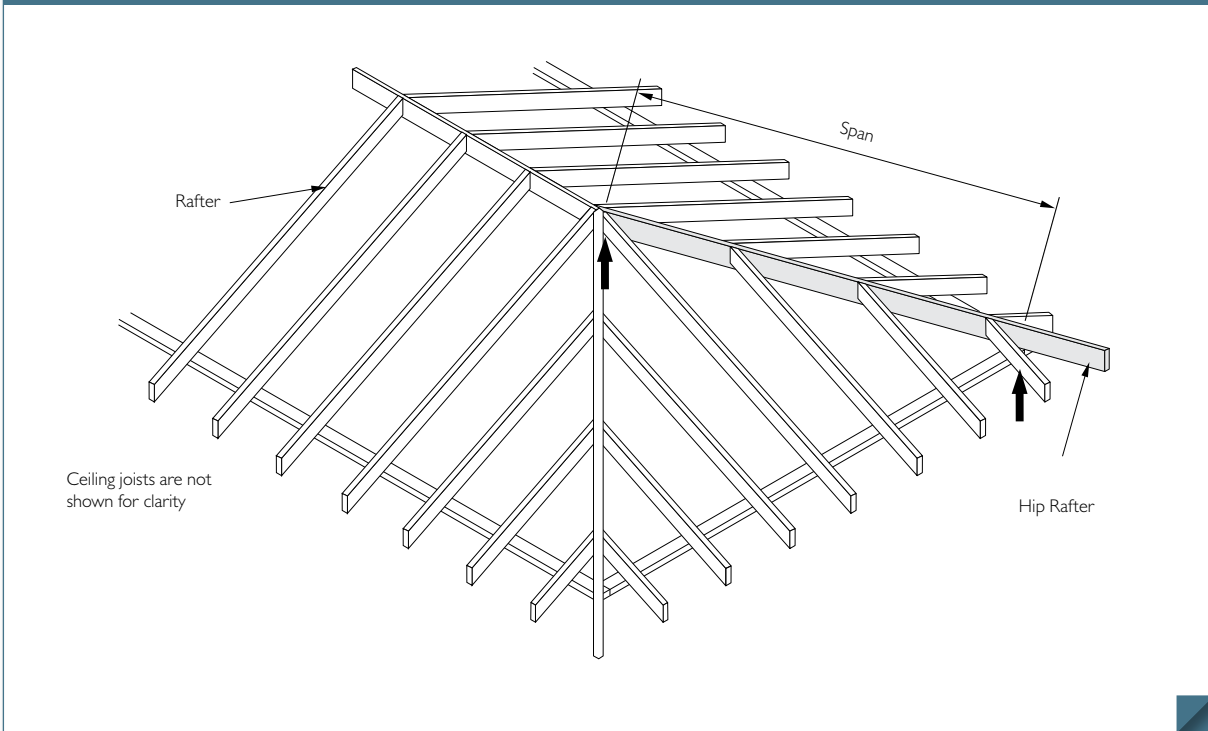
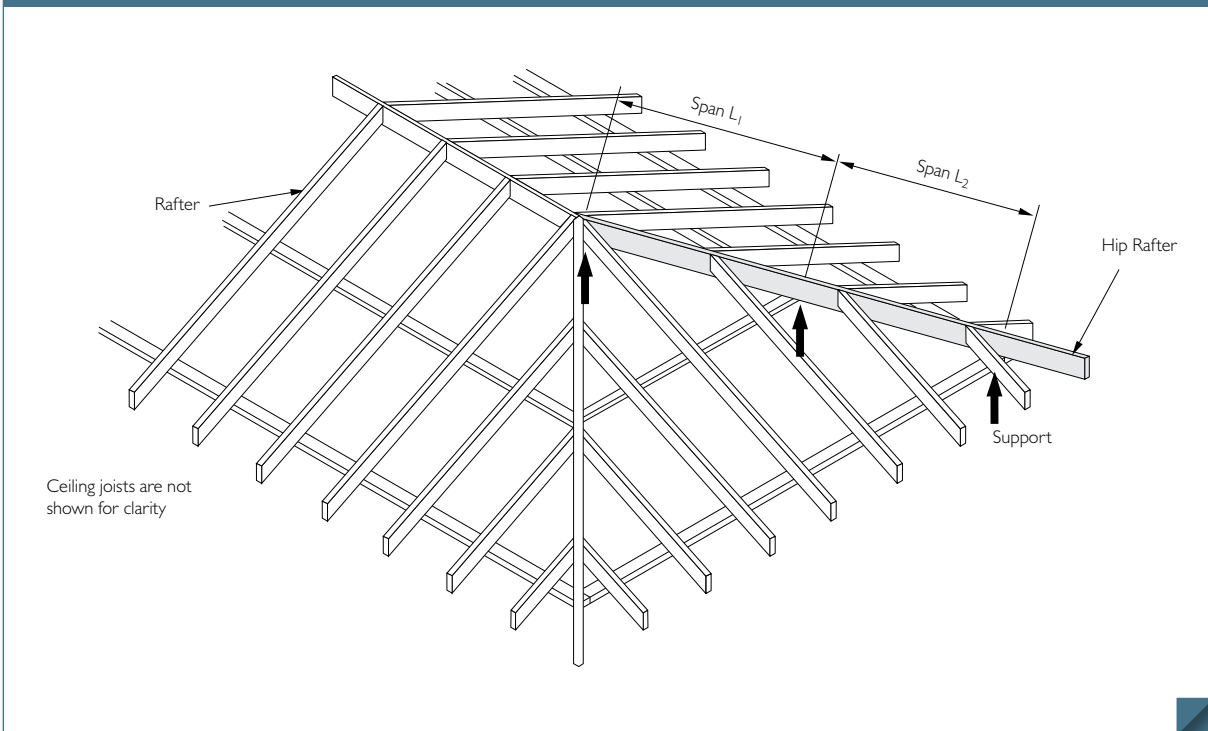


Figure 22: Continuous Span Hip Rafter



Notes

- Use the largest span (L_1 or L_2) to enter the table
- The largest span should not be greater than twice the adjacent span otherwise use the single span table

Design Deflection Limits:

DL	LL
SPAN/300	SPAN/250
OR 20 mm	OR 20 mm

TABLE 19: HIP RAFTERS – SUPPORTING RAFTERS ONLY

Section D x B (mm)	Product	Light Roof	Light Roof & Ceiling	Heavy Roof	Heavy Roof & Ceiling
		Maximum Single Span (m)			
150 x 45	hySPAN®	3.7	3.4	2.9	2.8
170 x 45	hySPAN	4.1	3.7	3.2	3.1
200 x 45	hySPAN	4.6	4.2	3.6	3.5
240 x 45	hySPAN	5.3	4.8	4.2	4.0
240 x 63	hySPAN	5.7	5.2	4.5	4.3
300 x 45	hySPAN	6.0	5.7	4.9	4.7
300 x 63	hySPAN	6.5	6.1	5.3	5.1
360 x 45	hySPAN	6.3	5.9	5.7	5.4
360 x 63	hySPAN	7.3	6.8	6.1	5.9
400 x 45	hySPAN	6.5	6.1	6.1	5.9
400 x 63	hySPAN	7.7	7.2	6.5	6.3
Maximum Continuous Span (m)					
150 x 45	hySPAN	4.7	4.2	3.7	3.5
170 x 45	hySPAN	5.1	4.6	4.0	3.9
200 x 45	hySPAN	5.8	5.2	4.6	4.4
240 x 45	hySPAN	6.2	6.0	5.2	5.0
240 x 63	hySPAN	6.9	6.4	5.7	5.4
300 x 45	hySPAN	6.7	6.4	6.1	5.8
300 x 63	hySPAN	7.8	7.3	6.5	6.3
360 x 45	hySPAN	7.1	6.8	6.4	6.2
360 x 63	hySPAN	8.7	8.1	7.3	7.0
400 x 45	hySPAN	7.3	7.0	6.7	6.5
400 x 63	hySPAN	-	8.6	7.7	7.5

- See Table 7 for Roof Mass Allowances



7.7 RAFTERS

Figure 23: Single Span Rafter

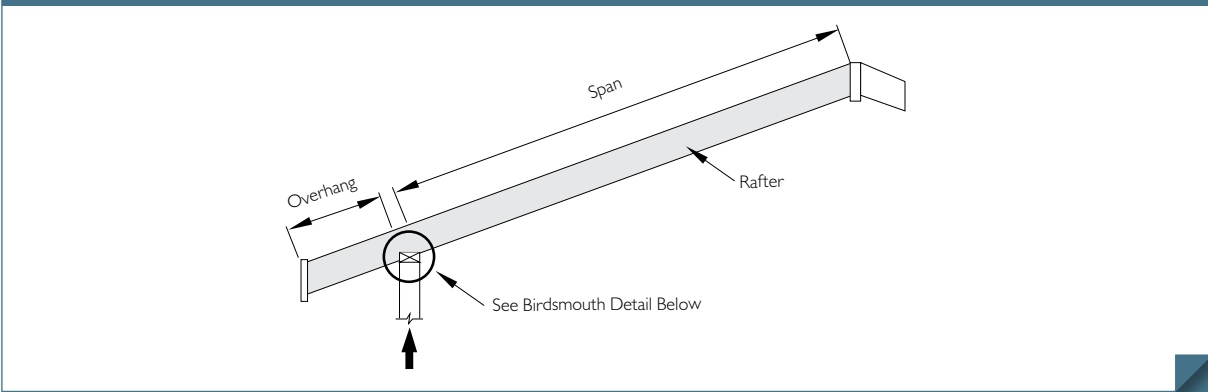
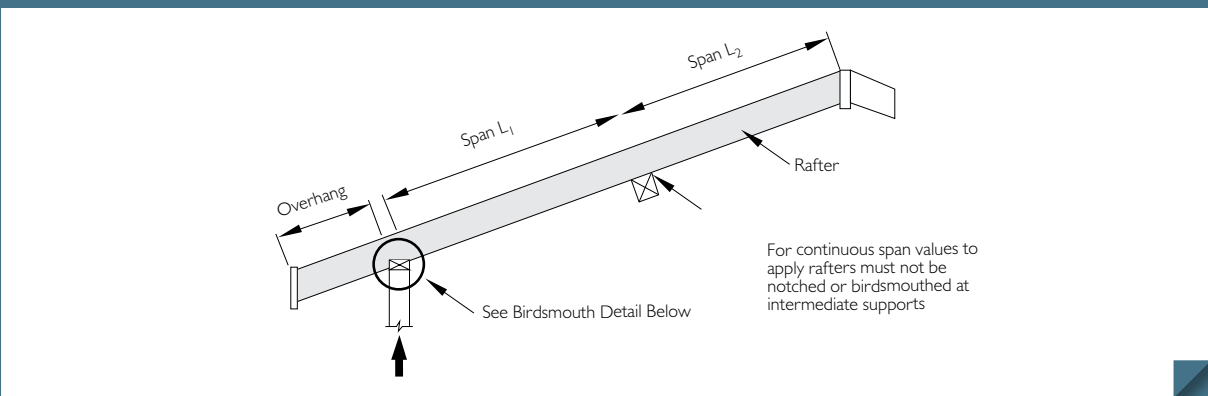


Figure 24: Continuous Span Rafter



The largest span of L_1 and L_2 should be selected for entering the table, however the largest span should not be greater than twice

the adjacent span otherwise use the single span table.

Figure 25: Overhangs – Solid Futurebuild LVL Products

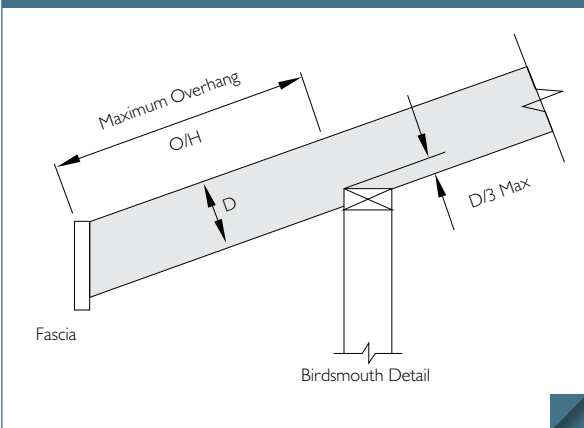
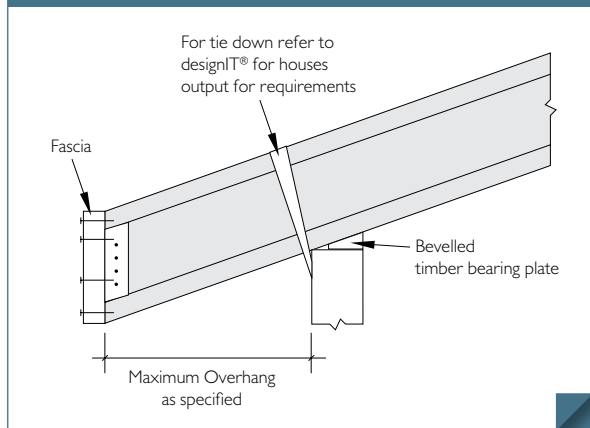


Figure 26: Rafter Overhang – hyJOIST® I-Beams



Refer to designIT® for houses software for alternative hyJOIST® overhang details.

7.8 RAFTER SPAN TABLES

Design Deflection Limits:

DL. SPAN/300 OR 20 mm
LL. SPAN/250 OR 20 mm

TABLE 20A: RAFTERS – LOW AND MEDIUM WIND EXPOSURE

Section D x B (mm)	Product	Cross Section	Single Span								Continuous Span							
			450		600		900		1200		450		600		900		1200	
			Maximum Rafter Span and Overhang 'O/H' (m) for Light Roofs and Ceilings = 40 kg/m'															
Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	
90 x 45	hyCHORD®	█	2.7	0.7	2.4	0.7	2.2	0.6	2.0	0.6	3.1	0.7	3.0	0.6	2.8	0.6	2.6	0.6
140 x 45	hyCHORD	█	4.0	1.1	3.7	1.0	3.3	1.0	3.0	1.0	-	-	-	-	4.4	0.9	4.1	0.9
150 x 45	hySPAN®	█	4.6	1.3	4.2	1.2	3.8	1.1	3.4	1.2	6.1	1.1	5.7	1.0	5.0	1.0	4.6	1.0
150 x 63	hySPAN	█	5.0	1.5	4.6	1.4	4.2	1.3	3.8	1.3	6.5	1.3	6.2	1.2	5.6	1.1	5.1	1.1
170 x 45	hySPAN	█	5.2	1.5	4.8	1.3	4.2	1.3	3.9	1.3	6.7	1.3	6.3	1.2	5.7	1.1	5.2	1.2
190 x 45	hyCHORD	█	5.4	1.5	5.0	1.4	4.4	1.4	4.1	1.3	-	-	-	-	-	-	-	-
HJ200 45	hyJOIST®	I	5.6	1.4	5.1	1.4	4.4	1.3	4.0	1.3	7.0	1.3	6.5	1.2	5.8	1.2	4.8	1.2
200 x 45	hySPAN	█	6.0	1.7	5.6	1.6	5.0	1.5	4.6	1.5	7.5	1.6	7.1	1.4	6.5	1.3	6.1	1.4
200 x 63	hySPAN	█	6.4	2.0	6.0	1.8	5.5	1.7	5.0	1.7	7.9	1.8	7.5	1.6	7.0	1.5	6.5	1.6
240 x 45	hySPAN	█	6.8	2.1	6.4	1.9	5.9	1.8	5.4	1.9	8.5	1.9	8.0	1.8	7.4	1.7	6.9	1.6
HJ240 63	hyJOIST	I	6.8	1.9	6.3	1.8	5.7	1.7	5.2	1.7	8.3	1.8	7.8	1.7	7.0	1.6	6.2	1.6
240 x 63	hySPAN	█	7.2	2.4	6.9	2.2	6.3	2.1	6.0	2.0	-	-	8.5	2.0	7.9	1.9	7.5	1.8
HJ240 90	hyJOIST	I	7.3	2.3	6.9	2.1	6.3	2.0	5.9	1.9	-	-	8.5	1.9	7.7	1.8	7.2	1.8
HJ300 63	hyJOIST	I	7.7	2.4	7.2	2.2	6.6	2.1	6.1	2.0	-	-	-	-	8.0	1.9	7.4	1.9
300 x 45	hySPAN	█	7.9	2.8	7.5	2.5	6.9	2.3	6.5	2.3	-	-	-	-	8.6	2.1	8.1	2.1
300 x 63	hySPAN	█	8.3	3.2	8.0	2.9	7.4	2.7	7.0	2.6	-	-	-	-	-	-	8.7	2.4
HJ300 90	hyJOIST	I	8.3	2.8	7.8	2.6	7.2	2.4	6.7	2.3	-	-	-	-	-	-	8.2	2.2

TABLE 20B: RAFTERS – LOW AND MEDIUM WIND EXPOSURE

Section D x B (mm)	Product	Cross Section	Single Span								Continuous Span							
			450		600		900		1200		450		600		900		1200	
			Maximum Rafter Span and Overhang 'O/H' (m) for Heavy Roofs and Ceilings = 90 kg/m'															
Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	
90 x 45	hyCHORD®	█	2.1	0.8	1.9	0.8	1.7	0.7	1.5	0.7	2.8	0.7	2.5	0.7	2.2	0.6	2.0	0.6
140 x 45	hyCHORD	█	3.2	1.3	2.9	1.2	2.6	1.1	2.3	1.1	4.3	1.1	3.9	1.0	3.5	1.0	3.1	1.0
150 x 45	hySPAN®	█	3.6	1.4	3.3	1.3	2.9	1.3	2.7	1.2	4.9	1.3	4.5	1.2	3.9	1.1	3.6	1.1
150 x 63	hySPAN	█	4.0	1.6	3.7	1.5	3.3	1.4	3.0	1.4	5.4	1.4	4.9	1.3	4.4	1.3	4.0	1.2
170 x 45	hySPAN	█	4.1	1.6	3.8	1.5	3.3	1.4	3.0	1.4	5.5	1.4	5.0	1.3	4.4	1.3	4.1	1.2
190 x 45	hyCHORD	█	4.3	1.7	3.9	1.6	3.5	1.5	3.2	1.5	-	-	-	-	4.7	1.3	4.3	1.3
HJ200 45	hyJOIST®	I	4.3	1.6	3.8	1.5	3.3	1.4	3.0	1.4	5.6	1.4	5.0	1.4	4.2	1.3	3.2	1.4
200 x 45	hySPAN	█	4.8	1.9	4.4	1.8	3.9	1.7	3.5	1.6	6.3	1.7	5.9	1.6	5.2	1.5	4.8	1.5
200 x 63	hySPAN	█	5.3	2.2	4.9	2.0	4.3	1.9	3.9	1.8	6.8	1.9	6.4	1.8	5.8	1.7	5.3	1.6
HJ240 63	hyJOIST	I	5.5	2.1	4.9	2.0	4.3	1.9	3.8	1.8	6.8	1.9	6.3	1.8	5.5	1.7	4.2	1.8
240 x 45	hySPAN	█	5.7	2.3	5.2	2.1	4.6	2.0	4.2	2.0	7.2	2.1	6.8	1.9	6.2	1.8	5.7	1.7
HJ240 90	hyJOIST	I	6.1	2.4	5.6	2.3	4.9	2.2	4.4	2.1	7.5	2.2	7.0	2.1	6.3	2.0	5.5	2.0
240 x 63	hySPAN	█	6.2	2.6	5.8	2.4	5.1	2.3	4.7	2.2	7.7	2.4	7.3	2.2	6.7	2.0	6.2	2.1
HJ300 63	hyJOIST	I	6.4	2.6	5.9	2.4	5.1	2.3	4.6	2.2	7.8	2.4	7.2	2.2	6.4	2.1	5.6	2.1
300 x 45	hySPAN	█	6.8	2.9	6.4	2.7	5.8	2.5	5.3	2.4	8.4	2.7	7.9	2.4	7.3	2.3	6.8	2.2
HJ300 90	hyJOIST	I	7.0	3.0	6.5	2.8	5.9	2.6	5.3	2.5	8.5	2.8	7.9	2.6	7.1	2.4	6.4	2.4
300 x 63	hySPAN	█	7.2	3.4	6.8	3.1	6.3	2.8	5.8	2.8	-	-	8.5	2.8	7.8	2.6	7.3	2.5

The following notes relate to TABLE 20A and TABLE 20B.

- Maximum overhangs (O/H) have been determined for the support conditions and a minimum backspan of twice O/H
- Bottom edge to be restrained by ceiling or ceiling battens at maximum 600 c/c

Design Deflection Limits:

D.L.	L.L.
SPAN/300	SPAN/250
OR 20 mm	OR 20 mm

TABLE 21A: RAFTERS – HIGH AND VERY HIGH WIND EXPOSURE

Section D x B (mm)	Product	Cross Section	Single Span								Continuous Span							
			450		600		900		1200		450		600		900		1200	
			Maximum Rafter Span and Overhang 'O/H' (m) for Light Roofs and Ceilings = 40 kg/m ²															
Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	
90 x 45	hyCHORD®	■	2.7	0.7	2.4	0.7	2.2	0.6	2.0	0.6	3.1	0.7	3.0	0.6	2.8	0.6	2.6	0.6
140 x 45	hyCHORD	■	4.0	1.1	3.7	1.0	3.3	1.0	3.0	1.0	-	-	-	-	4.4	0.9	4.1	0.9
150 x 45	hySPAN®	■	4.6	1.3	4.2	1.2	3.8	1.1	3.4	1.2	6.1	1.1	5.7	1.0	5.0	1.0	4.6	1.0
150 x 63	hySPAN	■	5.0	1.5	4.6	1.4	4.2	1.3	3.8	1.3	6.5	1.3	6.2	1.2	5.6	1.1	5.1	1.1
170 x 45	hySPAN	■	5.2	1.5	4.8	1.3	4.2	1.3	3.9	1.2	6.7	1.3	6.3	1.2	5.7	1.1	5.2	1.2
190 x 45	hyCHORD	■	5.4	1.5	5.0	1.4	4.4	1.4	4.1	1.3	-	-	-	-	-	-	-	-
HJ200 45	hyJOIST®	⊥	5.6	1.4	5.1	1.4	4.4	1.3	4.0	1.3	7.0	1.3	6.5	1.2	5.8	1.2	4.8	1.2
200 x 45	hySPAN	■	6.0	1.7	5.6	1.6	5.0	1.5	4.6	1.4	7.5	1.6	7.1	1.4	6.5	1.3	6.1	1.4
200 x 63	hySPAN	■	6.4	2.0	6.0	1.8	5.5	1.7	5.0	1.7	7.9	1.8	7.5	1.6	7.0	1.5	6.5	1.6
240 x 45	hySPAN	■	6.8	2.1	6.4	1.9	5.9	1.8	5.4	1.7	8.5	1.9	8.0	1.8	7.4	1.7	6.9	1.6
HJ240 63	hyJOIST	⊥	6.8	1.9	6.3	1.8	5.7	1.7	5.2	1.7	8.3	1.8	7.8	1.7	7.0	1.6	6.2	1.6
240 x 63	hySPAN	■	7.2	2.4	6.9	2.2	6.3	2.1	6.0	2.0	-	-	8.5	2.0	7.9	1.9	7.5	1.8
HJ240 90	hyJOIST	⊥	7.3	2.3	6.9	2.1	6.3	2.0	5.9	1.9	-	-	8.5	1.9	7.7	1.8	7.2	1.8
HJ300 63	hyJOIST	⊥	7.7	2.4	7.2	2.2	6.6	2.1	6.1	2.0	-	-	-	-	8.0	1.9	7.4	1.9
300 x 45	hySPAN	■	7.9	2.8	7.5	2.5	6.9	2.3	6.5	2.0	-	-	-	-	8.6	2.1	8.1	2.0
300 x 63	hySPAN	■	8.3	3.2	8.0	2.9	7.4	2.7	7.0	2.5	-	-	-	-	-	-	8.7	2.4
HJ300 90	hyJOIST	⊥	8.3	2.8	7.8	2.6	7.2	2.4	6.7	2.3	-	-	-	-	-	-	8.2	2.2

TABLE 21B: RAFTERS – HIGH AND VERY HIGH WIND EXPOSURE

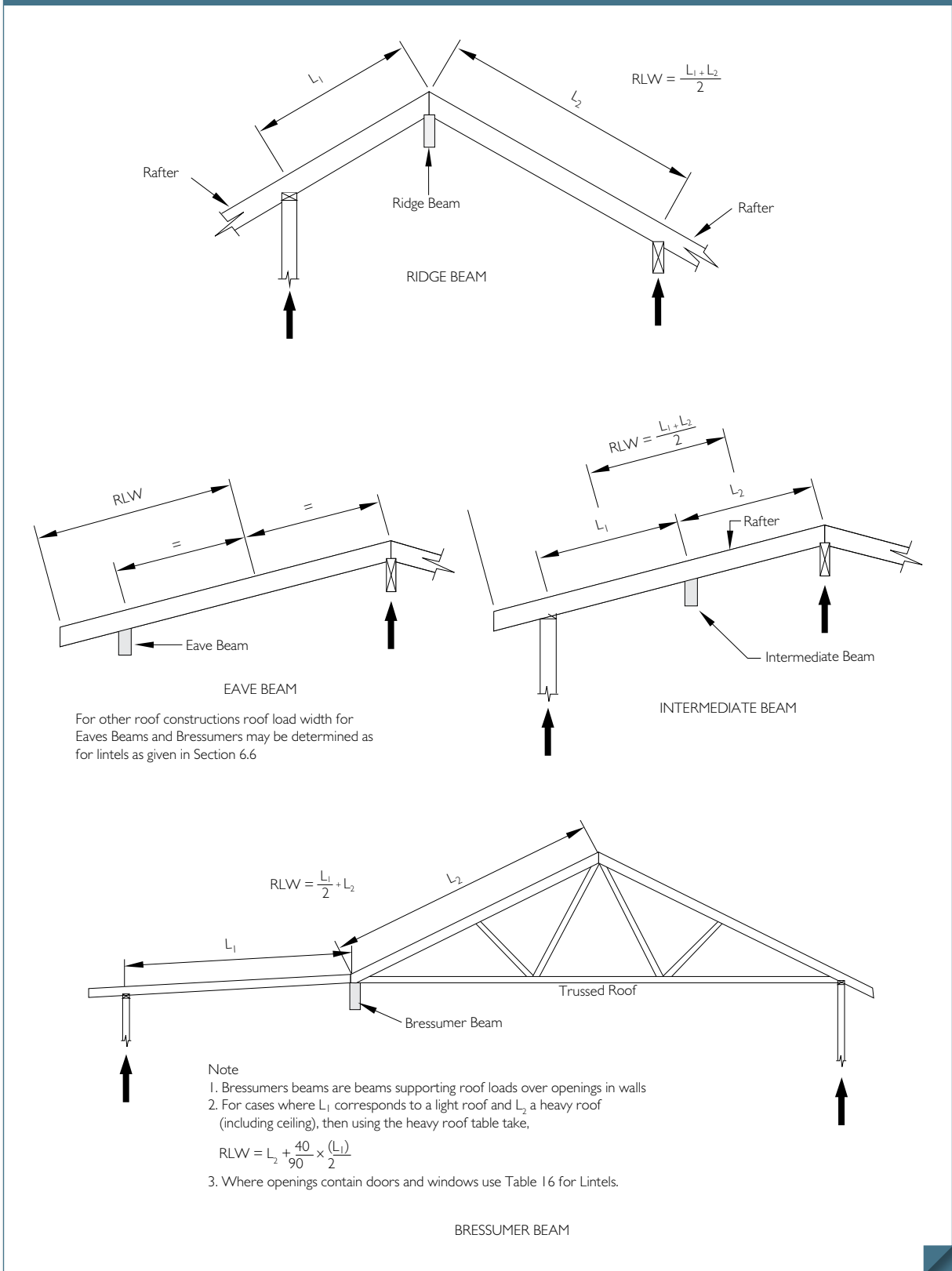
Section D x B (mm)	Product	Cross Section	Single Span								Continuous Span							
			450		600		900		1200		450		600		900		1200	
			Maximum Rafter Span and Overhang 'O/H' (m) for Heavy Roofs and Ceilings = 90 kg/m ²															
Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	Span	O/H	
90 x 45	hyCHORD®	■	2.1	0.8	1.9	0.8	1.7	0.7	1.5	0.7	2.8	0.7	2.5	0.7	2.2	0.6	2.0	0.6
140 x 45	hyCHORD	■	3.2	1.3	2.9	1.2	2.6	1.1	2.3	1.1	4.3	1.1	3.9	1.0	3.5	1.0	3.1	1.0
150 x 45	hySPAN®	■	3.6	1.4	3.3	1.3	2.9	1.3	2.7	1.2	4.9	1.3	4.5	1.2	3.9	1.1	3.6	1.1
150 x 63	hySPAN	■	4.0	1.6	3.7	1.5	3.3	1.4	3.0	1.4	5.4	1.4	4.9	1.3	4.4	1.3	4.0	1.2
170 x 45	hySPAN	■	4.1	1.6	3.8	1.5	3.3	1.4	3.0	1.4	5.5	1.4	5.0	1.3	4.4	1.3	4.1	1.2
190 x 45	hyCHORD	■	4.3	1.7	3.9	1.6	3.5	1.5	3.2	1.5	-	-	-	-	4.7	1.3	4.3	1.3
HJ200 45	hyJOIST®	⊥	4.3	1.6	3.8	1.5	3.3	1.4	3.0	1.4	5.6	1.4	5.0	1.4	4.2	1.3	3.2	1.4
200 x 45	hySPAN	■	4.8	1.9	4.4	1.8	3.9	1.7	3.5	1.6	6.3	1.7	5.9	1.6	5.2	1.5	4.8	1.5
200 x 63	hySPAN	■	5.3	2.2	4.9	2.0	4.3	1.9	3.9	1.8	6.8	1.9	6.4	1.8	5.8	1.7	5.3	1.6
HJ240 63	hyJOIST	⊥	5.5	2.1	4.9	2.0	4.3	1.9	3.8	1.8	6.8	1.9	6.3	1.8	5.5	1.7	4.2	1.7
240 x 45	hySPAN	■	5.7	2.3	5.2	2.1	4.6	2.0	4.2	1.9	7.2	2.1	6.8	1.9	6.2	1.8	5.7	1.7
HJ240 90	hyJOIST	⊥	6.1	2.4	5.6	2.3	4.9	2.2	4.4	2.0	7.5	2.2	7.0	2.1	6.3	2.0	5.5	2.0
240 x 63	hySPAN	■	6.2	2.6	5.8	2.4	5.1	2.3	4.7	2.2	7.7	2.4	7.3	2.2	6.7	2.0	6.2	2.1
HJ300 63	hyJOIST	⊥	6.4	2.6	5.9	2.4	5.1	2.3	4.6	2.1	7.8	2.4	7.2	2.2	6.4	2.1	5.6	2.0
300 x 45	hySPAN	■	6.8	2.9	6.4	2.7	5.8	2.5	5.3	2.3	8.4	2.7	7.9	2.4	7.3	2.3	6.8	2.2
HJ300 90	hyJOIST	⊥	7.0	3.0	6.5	2.8	5.9	2.6	5.3	2.3	8.5	2.8	7.9	2.6	7.1	2.4	6.4	2.3
300 x 63	hySPAN	■	7.2	3.3	6.8	3.1	6.3	2.8	5.8	2.6	-	-	8.5	2.8	7.8	2.6	7.3	2.5

The following notes relate to TABLE 21A and TABLE 21B.

- Maximum overhangs (O/H) have been determined for the support conditions and a minimum backspan of twice O/H
- Bottom edge to be restrained by ceiling or ceiling battens at maximum 600 c/c

7.9 ROOF BEAMS

Figure 27: Ridge, Intermediate, Eave and Bressumer Beams





Design Deflection Limits:
 D.L. SPAN/300 OR 20 mm
 L.L. SPAN/250 OR 20 mm

TABLE 22A: ROOF BEAMS

Section D x B (mm)	Product	Light Roof and Ceiling											
		Roof Load Width 'RLW' (m)											
		1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.8	5.4	6.0
Maximum Single Span (m)													
150 x 45	hySPAN®	3.0	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9
2/140 x 45	hyCHORD®	3.2	3.1	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.1
150 x 63	hySPAN	3.3	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1
170 x 45	hySPAN	3.3	3.2	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.3	2.2	2.1
190 x 45	hyCHORD	3.5	3.3	3.2	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.3	2.3
2/150 x 45	hySPAN	3.7	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4
200 x 45	hySPAN	3.9	3.7	3.6	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.6	2.5
2/170 x 45	hySPAN	4.1	3.9	3.8	3.6	3.5	3.4	3.3	3.2	3.1	2.9	2.8	2.7
200 x 63	hySPAN	4.3	4.1	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	2.9	2.8
2/200 x 45	hySPAN	4.8	4.6	4.4	4.2	4.1	3.9	3.8	3.7	3.6	3.4	3.3	3.2
240 x 63	hySPAN	5.2	4.9	4.7	4.5	4.4	4.2	4.1	4.0	3.9	3.7	3.5	3.4
2/240 x 45	hySPAN	5.8	5.5	5.3	5.1	4.9	4.7	4.6	4.4	4.3	4.1	3.9	3.8
300 x 63	hySPAN	6.3	6.1	5.9	5.6	5.4	5.3	5.1	4.9	4.8	4.6	4.4	4.2
2/300 x 45	hySPAN	6.8	6.6	6.4	6.2	6.0	5.9	5.7	5.5	5.4	5.1	4.9	4.7
Maximum Continuous Span (m)													
150 x 45	hySPAN	4.0	3.8	3.6	3.4	3.3	3.2	3.1	3.0	2.9	2.7	2.4	2.3
150 x 63	hySPAN	4.4	4.2	4.0	3.8	3.7	3.6	3.4	3.3	3.3	3.1	3.0	2.7
2/140 x 45	hyCHORD	4.3	4.1	3.9	3.8	3.6	3.5	3.4	3.3	3.2	3.1	2.9	2.8
170 x 45	hySPAN	4.5	4.3	4.1	3.9	3.7	3.6	3.5	3.3	3.2	2.9	2.8	2.6
190 x 45	hyCHORD	4.7	4.5	4.3	4.1	3.8	3.6	3.5	3.3	3.2	2.9	2.7	2.6
2/150 x 45	hySPAN	4.9	4.7	4.5	4.3	4.1	4.0	3.9	3.8	3.7	3.5	3.3	3.2
200 x 45	hySPAN	5.3	5.0	4.8	4.6	4.4	4.1	4.0	3.9	3.7	3.5	3.2	3.1
2/170 x 45	hySPAN	5.5	5.3	5.0	4.8	4.7	4.5	4.4	4.2	4.1	3.9	3.8	3.6
200 x 63	hySPAN	5.8	5.5	5.3	5.1	4.9	4.7	4.6	4.4	4.3	4.1	3.8	3.6
2/200 x 45	hySPAN	6.4	6.1	5.9	5.7	5.5	5.3	5.1	5.0	4.8	4.6	4.4	4.2
240 x 63	hySPAN	6.7	6.5	6.2	6.1	5.9	5.7	5.5	5.3	5.2	4.8	4.5	4.3
2/240 x 45	hySPAN	7.2	7.0	6.8	6.6	6.4	6.2	6.0	5.9	5.6	5.3	5.1	4.8
300 x 63	hySPAN	7.9	7.6	7.3	7.1	6.9	6.8	6.6	6.4	6.1	5.8 ■	5.5 ■	5.2 ■
2/300 x 45	hySPAN	8.5	8.2	7.9	7.6	7.3	7.0	6.8	6.6	6.4	6.0	5.7	5.5

- Indicates minimum bearing at end supports = 45 mm and minimum bearing at intermediate supports = 135 mm
- Unless otherwise indicated minimum bearing at end supports = 45 mm and minimum bearing at intermediate supports = 90 mm
- Double sections built up by vertical lamination (see section 5.4)

Design Deflection Limits:

DL. SPAN/300 OR 20 mm
 LL. SPAN/250 OR 20 mm

TABLE 22B: ROOF BEAMS

Section D x B (mm)	Product	Heavy Roof and Ceiling											
		Roof Load Width 'RLW' (m)											
		1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.8	5.4	6.0
Maximum Single Span (m)													
150 x 45	hySPAN®	2.3	2.2	2.1	2.0	1.9	1.9	1.8	1.8	1.7	1.6	1.6	1.5
150 x 63	hySPAN	2.6	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7
170 x 45	hySPAN	2.6	2.5	2.4	2.3	2.2	2.1	2.1	2.0	2.0	1.9	1.8	1.7
2/140 x 45	hyCHORD®	2.5	2.4	2.3	2.2	2.1	2.1	2.0	2.0	1.9	1.8	1.7	1.7
190 x 45	hyCHORD	2.8	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.1	2.0	1.9	1.8
2/150 x 45	hySPAN	2.9	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.0	1.9
200 x 45	hySPAN	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.0
2/170 x 45	hySPAN	3.3	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.3	2.2	2.2
200 x 63	hySPAN	3.4	3.3	3.1	3.0	2.9	2.8	2.7	2.6	2.6	2.4	2.3	2.3
2/200 x 45	hySPAN	3.8	3.6	3.5	3.4	3.2	3.1	3.0	3.0	2.9	2.7	2.6	2.5
240 x 63	hySPAN	4.1	3.9	3.7	3.6	3.5	3.3	3.2	3.2	3.1	2.9	2.8	2.7
2/240 x 45	hySPAN	4.6	4.4	4.2	4.0	3.9	3.8	3.6	3.5	3.4	3.3	3.2	3.0
300 x 63	hySPAN	5.1	4.9	4.6	4.5	4.3	4.2	4.0	3.9	3.8	3.7	3.5	3.4
2/300 x 45	hySPAN	5.7	5.4	5.2	5.0	4.8	4.7	4.5	4.4	4.3	4.1	3.9	3.8
Maximum Continuous Span (m)													
150 x 45	hySPAN	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.0
2/140 x 45	hyCHORD	3.4	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2
150 x 63	hySPAN	3.5	3.3	3.1	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.4	2.3
170 x 45	hySPAN	3.5	3.3	3.2	3.1	2.9	2.9	2.8	2.7	2.6	2.5	2.3	2.2
190 x 45	hyCHORD	3.7	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.4	2.3	2.1
2/150 x 45	hySPAN	3.9	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6
200 x 45	hySPAN	4.1	3.9	3.7	3.6	3.5	3.4	3.3	3.2	3.1	2.8	2.7	2.5
2/170 x 45	hySPAN	4.4	4.2	4.0	3.8	3.7	3.6	3.5	3.4	3.3	3.1	3.0	2.9
200 x 63	hySPAN	4.6	4.4	4.2	4.0	3.9	3.7	3.6	3.5	3.4	3.3	3.1	3.0
2/200 x 45	hySPAN	5.1	4.9	4.7	4.5	4.3	4.2	4.1	4.0	3.9	3.7	3.5	3.4
240 x 63	hySPAN	5.5	5.2	5.0	4.8	4.6	4.5	4.3	4.2	4.1	3.9	3.8	3.5
2/240 x 45	hySPAN	6.1	5.8	5.6	5.4	5.2	5.0	4.9	4.7	4.6	4.4	4.2	4.1
300 x 63	hySPAN	6.6	6.4	6.2	6.0	5.8	5.6	5.4	5.3	5.1	4.9	4.6	4.3
2/300 x 45	hySPAN	7.2	6.9	6.7	6.5	6.2	6.0	5.9	5.6	5.5	5.2	4.9	4.7

- Indicates minimum bearing at end supports = 45 mm and minimum bearing at intermediate supports = 135 mm
- Unless otherwise indicated minimum bearing at end supports = 45 mm and minimum bearing at intermediate supports = 90 mm
- Double sections built up by vertical lamination (see section 5.4)



8.0 VERANDAH BEAMS

Design Deflection Limits:

DL.
SPAN/400
OR 10 mm

LL.
SPAN/250
OR 12 mm

TABLE 23A: VERANDAH BEAMS – HIGH AND VERY HIGH WINDS

Section D x B (mm)	Product	Single Span							Continuous Span						
		Roof Load Width 'RLW' (m)													
		0.9	1.2	1.5	1.8	2.1	2.4	2.7	0.9	1.2	1.5	1.8	2.1	2.4	2.7
Maximum Span (m) for Roof Mass = 10 kg/m ²															
150 x 45	hySPAN®	3.8	3.5	3.3	3.1	2.9	2.8	2.7	4.9	4.5	4.3	4.1	3.9	3.8	3.5
150 x 63	hySPAN	4.3	4.0	3.6	3.4	3.3	3.1	3.0	5.3	5.0	4.8	4.5	4.3	4.2	4.1
170 x 45	hySPAN	4.3	4.0	3.7	3.4	3.3	3.2	3.0	5.4	5.0	4.8	4.5	4.3	4.2	3.9
190 x 45	hyCHORD®	4.5	4.2	3.9	3.6	3.4	3.3	3.2	-	-	-	-	4.5	4.3	3.9
200 x 45	hySPAN	4.9	4.6	4.3	4.1	3.9	3.7	3.5	6.1	5.7	5.4	5.2	5.0	4.8	4.6
200 x 63	hySPAN	5.3	5.0	4.8	4.5	4.4	4.2	4.0	6.6	6.2	5.9	5.6	5.4	5.2	5.1
240 x 45	hySPAN	5.6	5.2	5.0	4.8	4.6	4.5	4.3	7.0	6.5	6.2	5.9	5.7	5.4	5.2
240 x 63	hySPAN	6.0	5.7	5.4	5.2	5.0	4.9	4.7	7.5	7.2	6.7	6.4	6.2	6.0	5.8
300 x 45	hySPAN	6.6	6.2	5.8	5.6	5.4	5.3	5.1	8.3	7.7	7.3	7.0	6.5	6.2	5.9
300 x 63	hySPAN	7.2	6.7	6.4	6.1	5.8	5.7	5.5	-	8.4	8.0	7.6	7.3	7.2	6.9

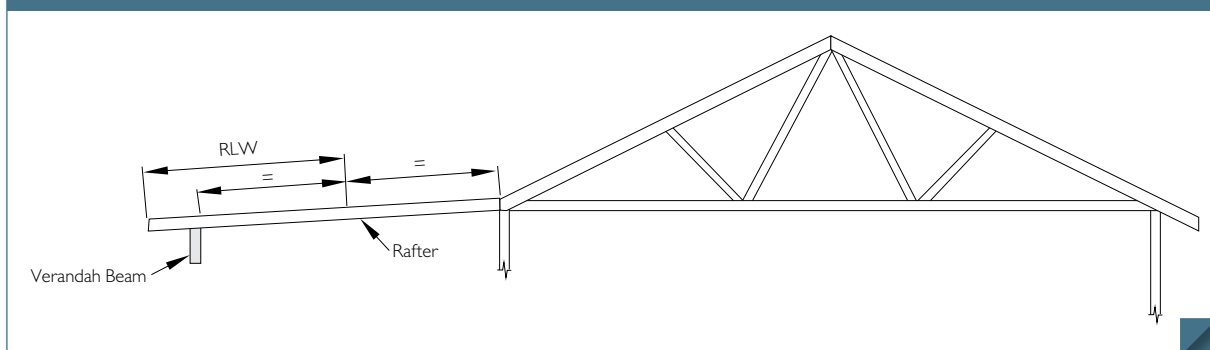
TABLE 23B: VERANDAH BEAMS – HIGH AND VERY HIGH WINDS

Section D x B (mm)	Product	Single Span							Continuous Span						
		Roof Load Width 'RLW' (m)													
		0.9	1.2	1.5	1.8	2.1	2.4	2.7	0.9	1.2	1.5	1.8	2.1	2.4	2.7
Maximum Span (m) for Roof Mass = 40 kg/m ²															
150 x 45	hySPAN®	3.3	3.0	2.8	2.7	2.6	2.5	2.4	4.3	4.1	3.8	3.6	3.4	3.2	3.1
150 x 63	hySPAN	3.7	3.3	3.1	3.0	2.8	2.7	2.7	4.7	4.3	4.2	3.9	3.8	3.6	3.4
170 x 45	hySPAN	3.8	3.4	3.2	3.0	2.9	2.8	2.6	4.8	4.4	4.2	4.0	3.8	3.6	3.5
190 x 45	hyCHORD®	3.9	3.6	3.3	3.1	3.0	2.8	2.8	-	4.6	4.3	4.2	4.0	3.8	3.7
200 x 45	hySPAN	4.3	4.0	3.7	3.5	3.3	3.1	3.0	5.3	5.0	4.8	4.5	4.3	4.2	4.1
200 x 63	hySPAN	4.6	4.4	4.1	3.9	3.7	3.5	3.4	5.8	5.4	5.1	4.9	4.8	4.5	4.4
240 x 45	hySPAN	4.9	4.6	4.4	4.2	4.0	3.8	3.6	6.1	5.7	5.4	5.2	5.0	4.9	4.7
240 x 63	hySPAN	5.3	5.0	4.7	4.5	4.4	4.2	4.1	6.5	6.2	5.9	5.6	5.4	5.2	5.1
300 x 45	hySPAN	5.7	5.4	5.1	4.9	4.8	4.6	4.4	7.2	6.7	6.4	6.1	5.9	5.7	5.5
300 x 63	hySPAN	6.1	5.8	5.5	5.3	5.1	5.0	4.8	7.6	7.3	6.8	6.6	6.4	6.2	6.0

The following notes relate to Table 23A and Table 23B.

- Minimum bearing at end supports = 45 mm & intermediate supports = 90 mm

Figure 28: Verandah Beams



the futurebuild[®] range

 **CarterHoltHarvey**
Woodproducts New Zealand

Private Bag 92-106
Victoria Street West
Auckland 1142
New Zealand

Freephone: 0800 808 131
Freefax: 0800 808 132

www.chhwoodproducts.co.nz
www.chhsoftware.com

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