futurebuild® LVL

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 I-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

AUGUST 2022

CHH LVL

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

# futurebuild® LVL

## Contents



CHH LVL

# 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 Forest Stewardship Council® (FSC®) CoC certified (FSC® C007103) on request.
- Fully supported by Futurebuild LVL 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 LVL Limited New Zealand, the Futurebuild LVL range is New Zealand's largest range of LVL products. 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 futurebuild.co.nz.

*The information contained in this manual relates specifically to Futurebuild® LVL products manufactured by Carter Holt Harvey® LVL Limited 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 Futurebuild LVL 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 LVL's Marsden Point Laminated Veneer Mill. Futurebuild LVL is available FSC® CoC certified (FSC® C007103) on request.

The Futurebuild LVL range of untreated and H1.2 treated products have Declare certification as Red List Free through the International Living Institute. The range can be used in living building challenge projects.

Futurebuild LVL products have been subjected to review with Environmental Product Declarations (EPD) developed by Think-Step NZ for the product range.

Visit futurebuild.co.nz for further information.

## 1.4 DISCLAIMER

The information contained in this document is current as of August 2022 and is based on data available to CHH LVL Ltd at the time of going to print. This publication replaces all previous Futurebuild LVL residential design literature. CHH LVL 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 futurebuild.co.nz.

CHH LVL 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 LVL will not be liable for any inaccuracies, omissions or errors in this information nor for any actions taken in reliance on this information.

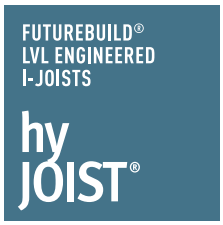
# 2.0 PRODUCT RANGE

### Structural Products


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.


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.


hy90® is manufactured in both 45 mm and 90 mm thicknesses targeted to suit joist, rafter and lintel applications respectively. hy90 is an ideal solution where a lower strength and stiffness is acceptable.




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).


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.

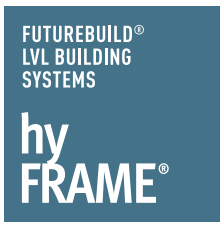
### Formwork Products


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

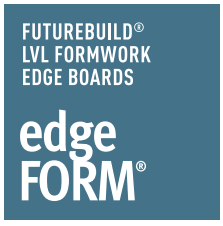
### Access Products


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

### Building Systems




hyFRAME® is a Futurebuild® LVL building system designed for the agricultural market.




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

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

## 2.1 PRODUCT AVAILABILITY

**Table 1: Futurebuild® LVL Standard Product Range**

| Product | Depth (mm) | Thickness (mm) | | | Length (0.6 m increments where indicated) |
|---|---|---|---|---|---|
| | | 45 | 63 | 90 | |
| hySPAN® | 150 | ● | ● | | 2.4 – 13.2 m |
| | 170 | ● | | | |
| | 200 | ● | ● | | |
| | 240 | ● | ● | | |
| | 300 | ● | ● | | |
| | 360 | ● | ● | | |
| | 400 | ● | ● | | |
| | 450 | | | ● | |
| | 600 | | | ● | |
| 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 – 12.6 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 Futurebuild® LVL or refer to "designIT® for houses" software for more information.

Available H1.2 treated only

Available either untreated or H1.2 treated (subject to availability)

# 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 loading combinations from AS/NZS 1170.

Floor loading applied includes an allowance for:

- Floor mass not exceeding 40 kg/m$^2$, 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 Futurebuild LVL.

### 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.

For Extra high wind zone applications please use designIT for houses.

### 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® 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® HOUSES-sITe App

The designIT sITe App has been developed as a handy reference tool for the specifier or tradesman on the go. Use the App to access installation details, a floor joist and hole calculator and more.

laylTout® FLOORS

laylTout® 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.

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

## 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.

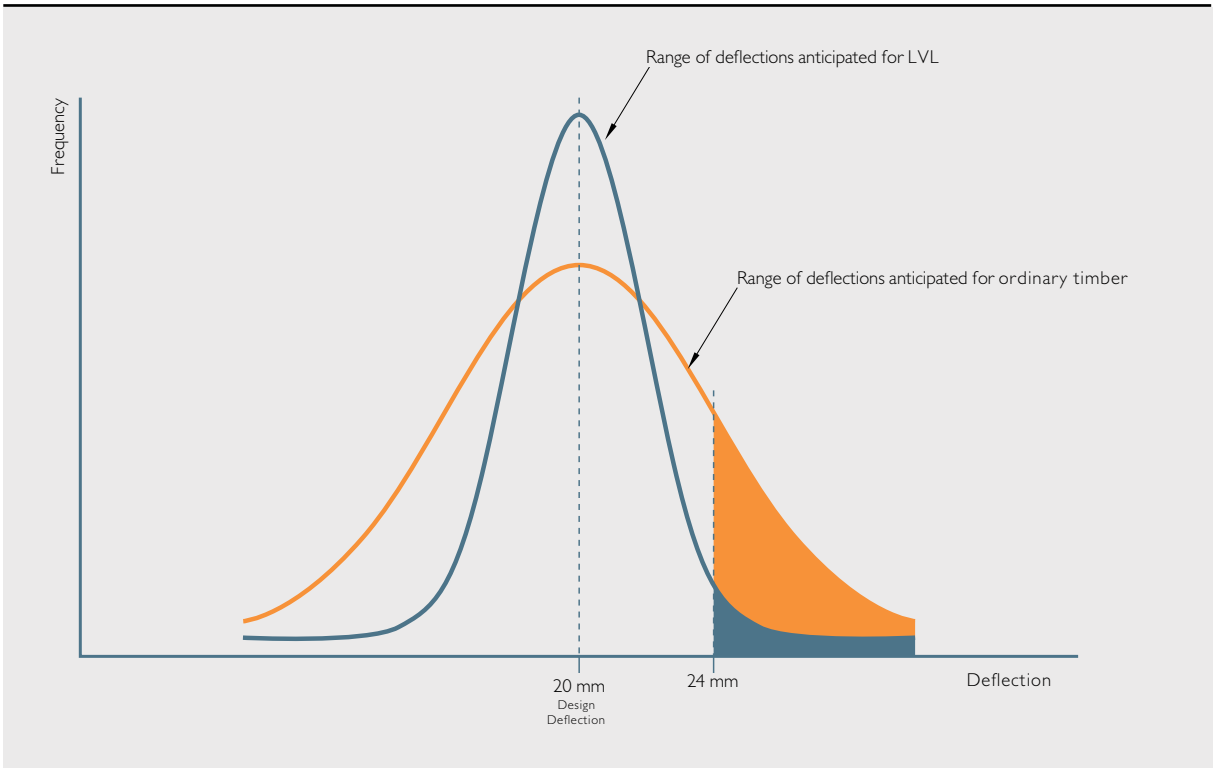
Refer to the Futurebuild LVL Specific Engineering Design Guide for engineering design information.

## 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 B1/VM1, 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 B1/AS1, 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 Futurebuild LVL 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).

ewpaa

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 Futurebuild LVL 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.

New Zealand Building Code Clause B2 Durability (Amendment 8) provides 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.

LVL products 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 and Treatment for Use in Buildings available from futurebuild.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 H1.2 glueline treated with a surface spray in accordance with NZS 3640.

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

# 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

**Figure 2: For Joists not Transferring Load From Upper Walls**

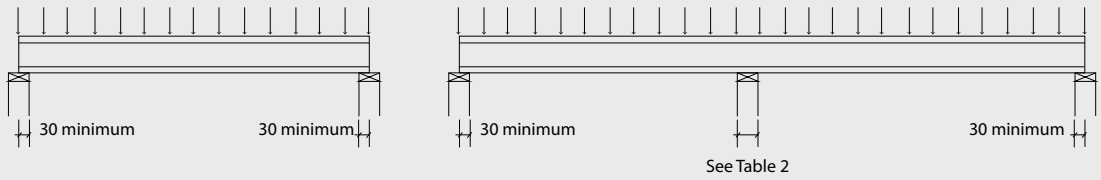
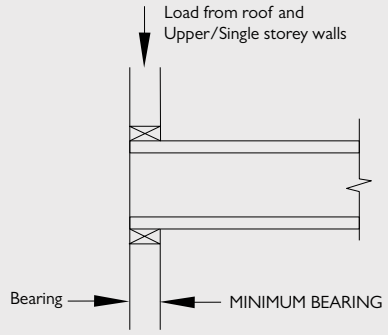



**Table 2: Minimum Bearing for hyJOIST® I-Beams Supporting Floor Loads Only**

| | 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 |

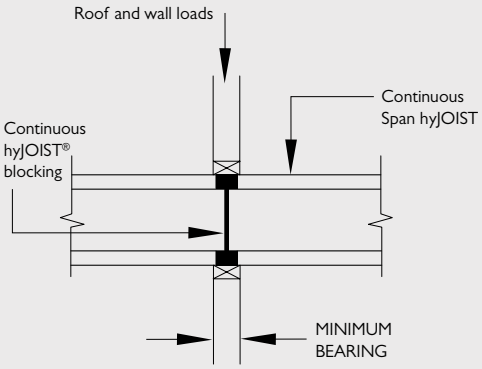
## 4.2 BEARING SUPPORT FOR JOISTS TRANSFERRING UPPER STOREY WALL & ROOF LOADS AT SUPPORTS

**Figure 3: End Supports – Single or Continuous Span**




For joists supporting load bearing walls at end supports, provide bearing as specified in table 3 or alternatively install continuous hyJOIST® blocking/hy90® boundary joist, and maintain a minimum hyJOIST bearing as per table 2.

**Figure 4: Intermediate Supports – Continuous Span**




Minimum bearing to be as for joists supporting floor loads only. Load bearing wall to be supported by continuous full depth hyJOIST blocking.

**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

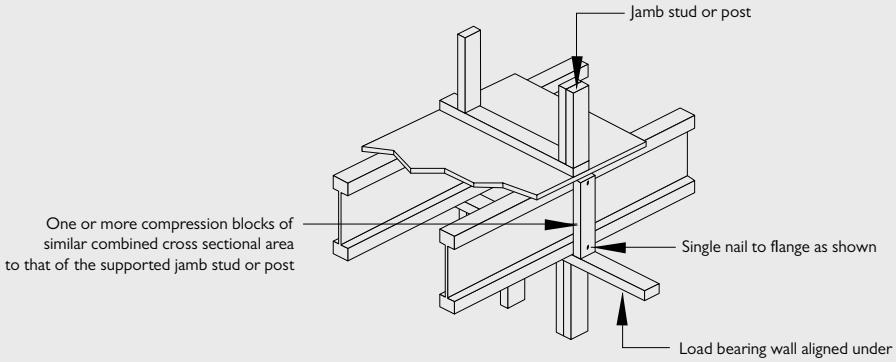
Continuous full depth hyJOIST® blocking should be installed to transfer compression loads from load bearing walls to the supports.

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 Jambs Studs/Posts**



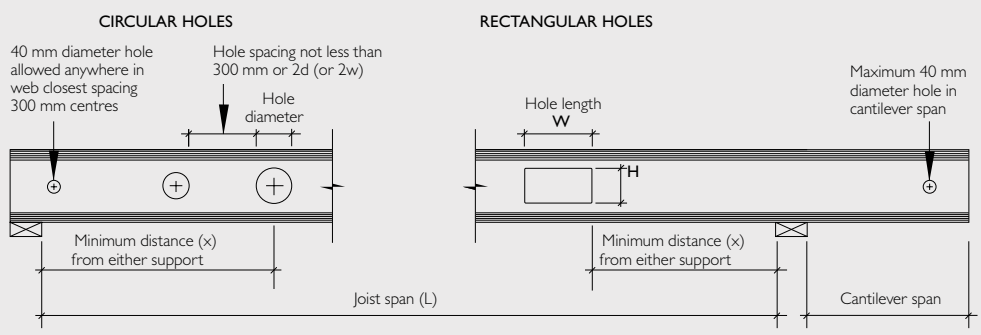

## 4.5 WEB HOLES FOR hyJOIST® I-BEAMS

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

For 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 App smartphone application.

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.

**Figure 6: Web Holes for hyJOIST® I-Beams**



## 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 | 113 | 0.34 L[1] | 0.16 L | 0.28 L | N/A | N/A |
| HJ240 45 | 153 | 0.38 L | 0.12 L | 0.21 L | 0.26 L | 0.33 L |
| HJ240 63 | | | | | | |
| HJ240 90 | | | | | | |
| HJ300 45 | 213 | 0.41 L | 0.10 L* | 0.15 L | 0.18 L | 0.24 L |
| HJ300 63 | | | | | | |
| HJ300 90 | | | | 0.10 L* | 0.14 L | 0.20 L |
| HJ360 63 | 273 | 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 | 313 | 0.40 L | 0.3 m* | 0.3 m* | 0.3 m* | 0.08 L* |

* Minimum distance from any support is 0.3 metres.

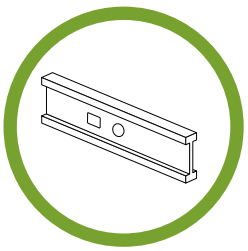
1. Example, if actual span 'L'= 4.0 m then minimum distance 'X' from hole to support (see Figure 6) is 0.34 x 4.0 = 1.365 m.

## Table 5: Rectangular Holes for hyJOIST® i-Beam

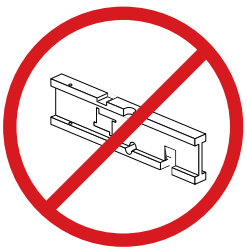
| hyJOIST® Section Code | Hole Size | | Permitted Locations for Rectangular Holes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Height (mm) | Length (mm) | Actual Span 'L' in metres | | | | | | | | |
| | | | Minimum Distance from the side of the hole to any support – (m) | | | | | | | | |
| HJ200 45 | 113 | 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 45 | 153 | 300 | L | <=3.5 | 3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 4.7 |
| | | | X | 0.38 L | 1.36 | 1.50 | 1.65 | 1.80 | 1.95 | 2.10 | 2.18 |
| HJ240 63 | 153 | 300 | L | ≤ 3.5 | 5.5 | | | | | | |
| | | | X | 0.38 L | 2.13 | | | | | | |
| HJ240 90 | 153 | 300 | L | ≤ 5.8 | 6.0 | 6.1 | | | | | |
| | | | X | 0.38 L | 2.36 | 2.45 | | | | | |
| HJ300 45 | 213 | 400 | L | <=3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | | |
| | | | X | 0.41 L | 1.58 | 1.71 | 1.84 | 1.97 | 2.10 | | |
| HJ300 63 | 213 | 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 | 213 | 400 | L | ≤ 6.4 | 6.6 | 6.8 | 7.0 | | | | |
| | | | X | 0.40 L | 2.73 | 2.88 | 3.04 | | | | |
| HJ360 63 | 273 | 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 | 273 | 500 | L | ≤ 7.2 | 7.4 | 7.6 | 7.7 | | | | |
| | | | X | 0.40 L | 2.97 | 3.10 | 3.17 | | | | |
| HJ400 90 | 313 | 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.

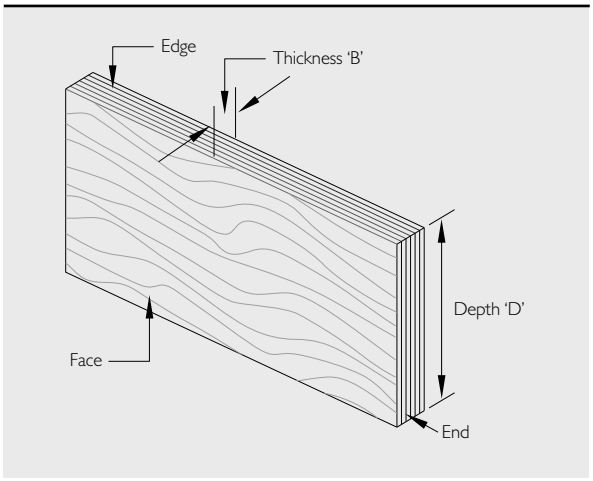
For specific support and tie-down calculation, consult designIT® for houses software where reactions are provided for all members for specification with typical connection details.

## 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 futurebuild.co.nz for detailed information.

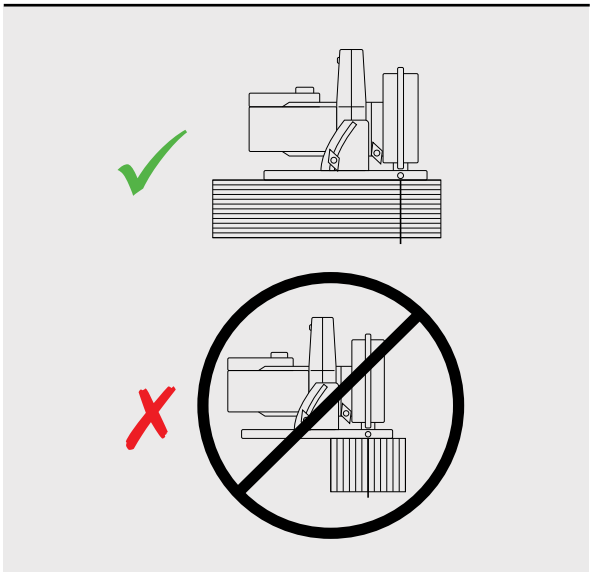
## 5.3 RIP SAWING FUTUREBUILD LVL

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**

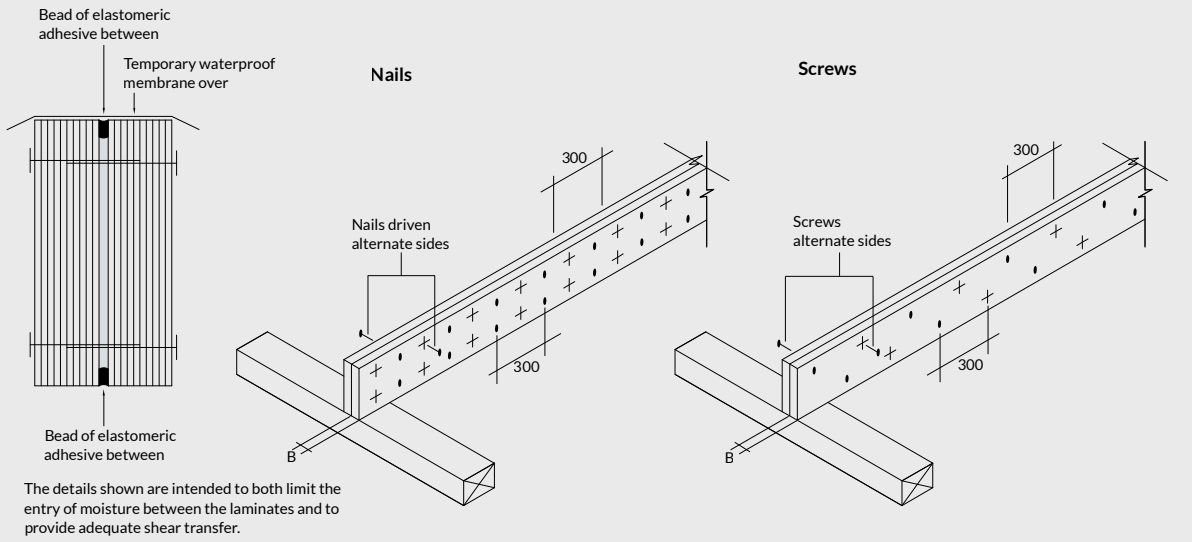


## 5.4 USING DOUBLE SECTIONS

Where double sections are specified these need to be securely screw/nail laminated. This does not apply for bearers used in pole frame construction. Whilst vertical 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.

### Detail H1: Vertical Lamination - Two Pieces




The details shown are intended to both limit the entry of moisture between the laminates and to provide adequate shear transfer.

### Table 6: Vertical Lamination - Two Pieces

| Section Size 'B' | Minimum Nail Diameter | Minimum Nail Length | Minimum Screw Gauge | Minimum Screw Length |
|---|---|---|---|---|
| 45 | 3.30 mm | 90 mm | 14 g | 75 mm |
| 63 | 3.30 mm | 100 mm | 14 g | 100 mm |
| 90 | - | - | 14 g | 150 mm |

# 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.

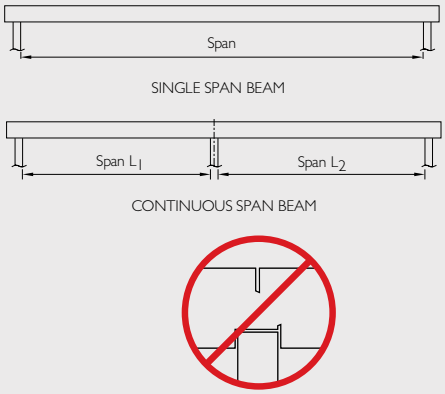
Single Span Beams are beams supported at two points only. Continuous Span Beams are beams supported at three or more points along their length.

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**

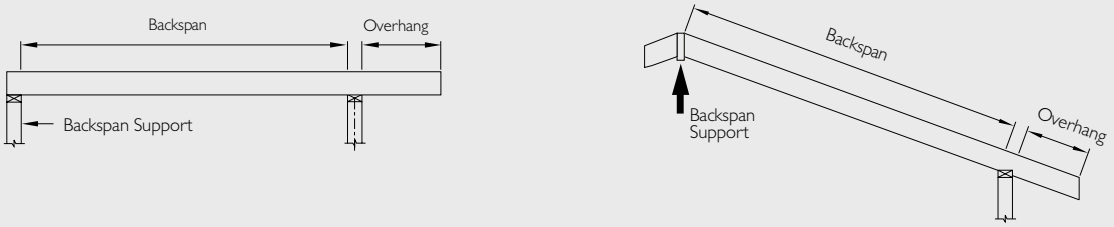



## 6.2 OVERHANG SPAN (CANTILEVER)

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.

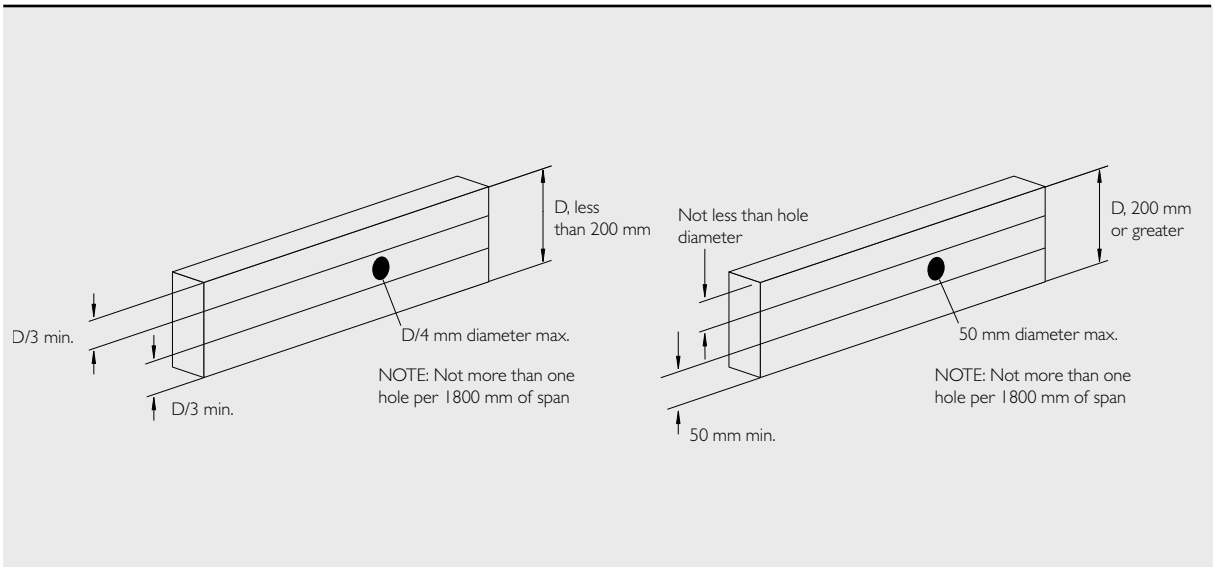
**Figure 11: Beams with Overhangs**



## 6.3 HOLES IN MEMBERS IN HOUSES & RESIDENTIAL BUILDINGS

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

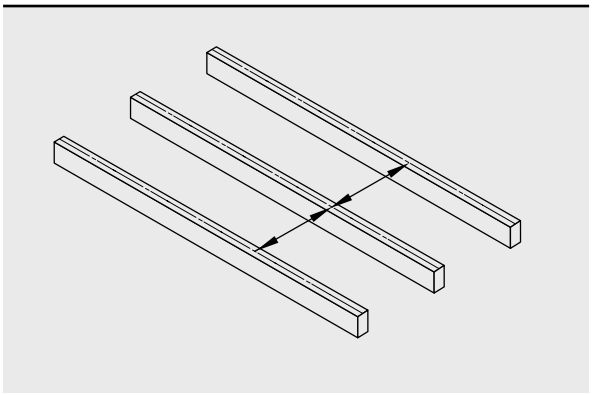
**Figure 12: Holes in Futurebuild® LVL Members**




## 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

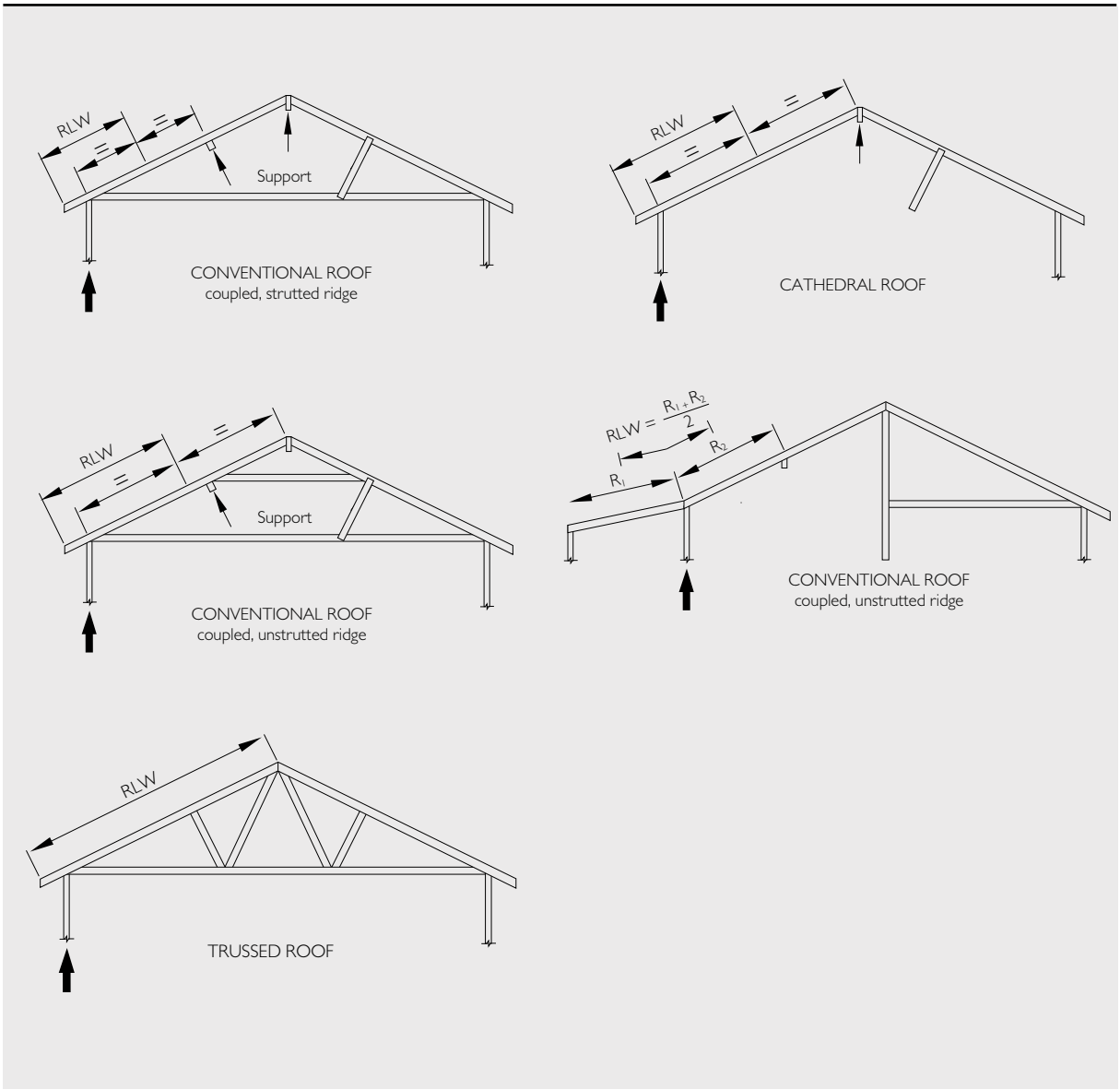
Load width is used in these tables in order to determine the load applied to isolated beams such as lintels, bearers, hanging beams, etc. Roof load width (RLW), ceiling load width (CLW) and floor load width (FLW) are measures of the load applied from roofs, ceilings and floors respectively.

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.

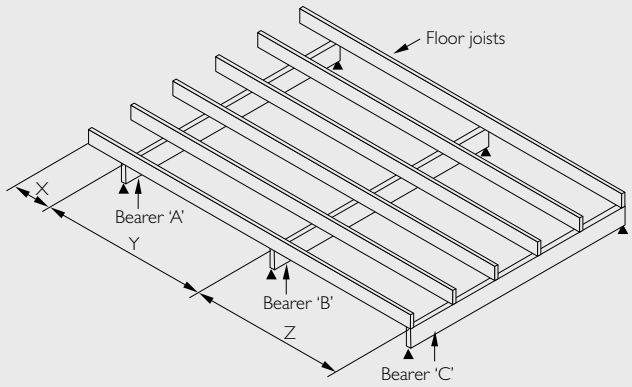
## 6.6 DETERMINATION OF ROOF LOAD WIDTH

**Figure 14: Roof Loads Width**



## 6.7 DETERMINATION OF FLOOR LOAD WIDTH

**Figure 15: Floor Load Width**




| Bearer | Floor Load Width 'FLW' |
|---|---|
| A | $FLW = X + \frac{Y}{2}$ |
| B | $FLW = \frac{Y + Z}{2}$ |
| C | $FLW = \frac{Z}{2}$ |

## 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 Futurebuild LVL.

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

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

# 7.0 SPAN TABLES

## 7.1 FLOOR BEAMS OR BEARERS

**Design Deflection Limits:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 12 mm | 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 ■ |

■ 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:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 12 mm | 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 ■ | # |

■ 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:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 12 mm | OR 9 mm |

## Table 9: Bearers – Supporting Single or Upper Storey Walls

| Section D x B (mm) | Product | Light Roof and Ceiling | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Floor Load Width 'FLW' (m) | | | | | | | | | | | | | | |
| | | 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® | 1.5 | 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).

**Design Deflection Limits:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 12 mm | OR 9 mm |

## Table 9 Continued: Bearers – Supporting Single or Upper Storey Walls

| Section D x B (mm) | Product | Heavy Roof and Ceiling | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Floor Load Width 'FLW' (m) | | | | | | | | | | | | | | |
| | | 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:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 12 mm | OR 9 mm |

## Table 10: Bearers – Supporting Two Storey Load Bearing Walls

| Section D x B (mm) | Product | Light Roof and Ceiling | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Floor Load Width 1 'FLW1' (m) | | | | | | | | | | | |
| | | 1.5 | | | | | | 3.0 | | | | | |
| | | Floor Load Width 2 'FLW2' (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® | 1.2 | 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).

**Design Deflection Limits:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 12 mm | OR 9 mm |

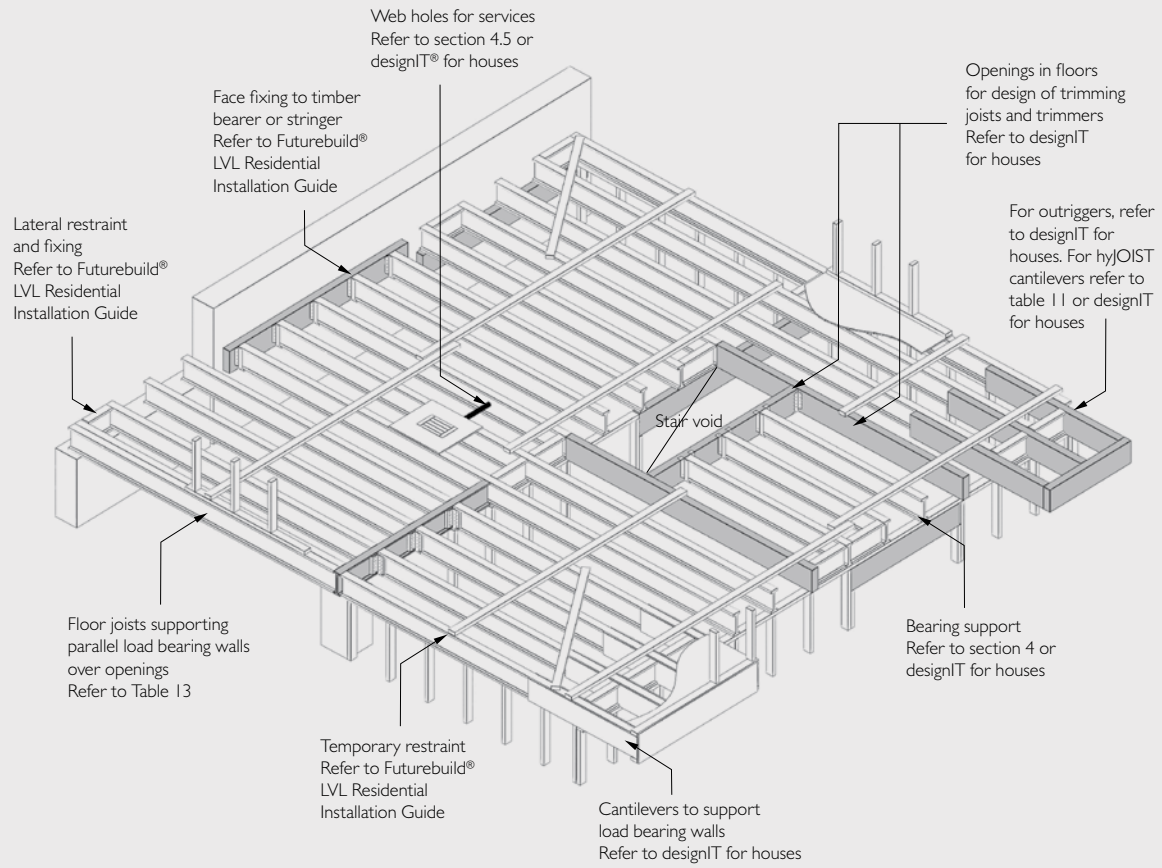
## Table 10 Continued: Bearers – Supporting Two Storey Load Bearing Walls

| Section D x B (mm) | Product | Heavy Roof and Ceiling | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ground Floor Load Width 'FLW' (m) | | | | | | | | | | | |
| | | 1.5 | | | | | | 3.0 | | | | | |
| | | 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

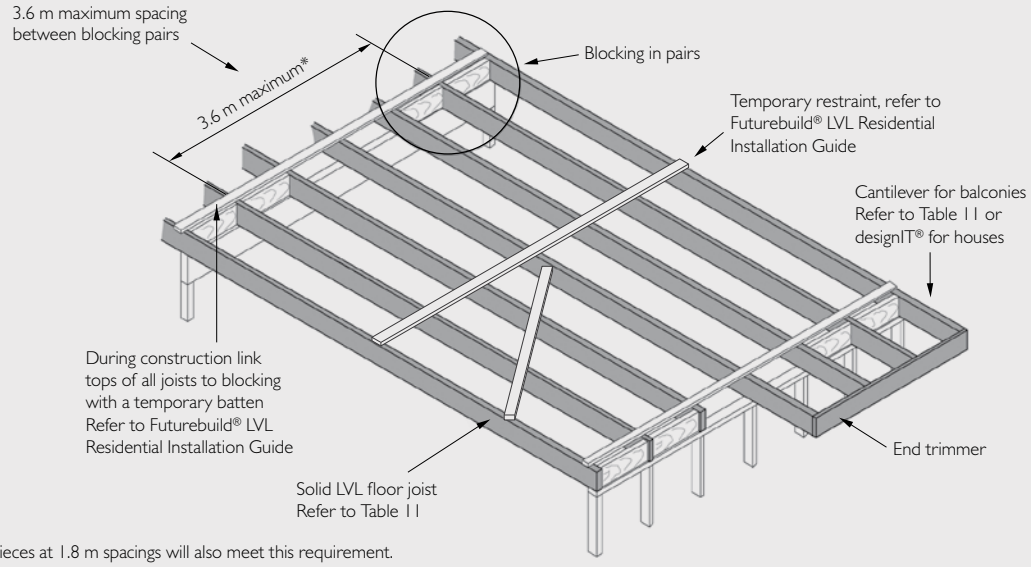
**Figure 16: Typical hyJOIST® Floor Layout**




- 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.




*Individual blocking pieces at 1.8 m spacings will also meet this requirement.

**Design Deflection Limits:**

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

## Table 11: Floor Joists

| Floor Joists Section D x B (mm) | Product | Cross Section | Max hole diameter[1] (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® | | 113 | 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 45 | hyJOIST | | 153 | 5 | 1.8 | 4.6 | 1.6 | 4.3 | 1.6 | 3.9 | 1.4 |
| HJ240 63 | hyJOIST | | 153 | 5.4 | 1.5 | 5.0 | 1.4 | 4.9 | 1.3 | 4.5 | 1.2 |
| HJ300 45 | hyJOIST | | 213 | 5.7 | 2 | 5.3 | 1.9 | 5.1 | 1.8 | 4.7 | 1.7 |
| 240 x 45 | hySPAN | | 50 | 5.7 | 1.6 | 5.3 | 1.5 | 5.1 | 1.4 | 4.8 | 1.3 |
| HJ240 90 | hyJOIST | | 153 | 6.0 | 1.7 | 5.6 | 1.5 | 5.4 | 1.5 | 5.0 | 1.4 |
| HJ300 63 | hyJOIST | | 213 | 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 | | 213 | 6.8 | 1.9 | 6.3 | 1.8 | 6.1 | 1.7 | 5.6 | 1.6 |
| HJ360 63 | hyJOIST | | 273 | 6.9 | 1.9 | 6.4 | 1.8 | 6.2 | 1.7 | 5.7 | 1.6 |
| HJ360 90 | hyJOIST | | 273 | 7.4 | 2.1 | 6.9 | 2.0 | 6.7 | 1.9 | 6.2 | 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 | | 313 | 7.9 | 2.3 | 7.3 | 2.1 | 7.1 | 2.0 | 6.6 | 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 | | 113 | 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 45 | hyJOIST | | 153 | 5.7 | 1.8 | 5.3 | 1.6 | 5.1 | 1.6 | 4.7 | 1.4 |
| HJ240 63 | hyJOIST | | 153 | 6.2 | 1.5 | 5.7 | 1.4 | 5.5 | 1.3 | 5.1 | 1.2 |
| HJ300 45 | hyJOIST | | 213 | 6.5 | 2 | 6 | 1.9 | 5.8 | 1.8 | 5.4 | 1.7 |
| 240 x 45 | hySPAN | | 50 | 6.6 | 1.6 | 6.2 | 1.5 | 6.0 | 1.4 | 5.6 | 1.3 |
| HJ240 90 | hyJOIST | | 153 | 6.8 | 1.7 | 6.3 | 1.5 | 6.1 | 1.5 | 5.6 | 1.4 |
| HJ300 63 | hyJOIST | | 213 | 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 | | 213 | 7.8 | 1.9 | 7.2 | 1.8 | 7.0 | 1.7 | 6.4 | 1.6 |
| HJ360 63 | hyJOIST | | 273 | 7.8 | 1.9 | 7.2 | 1.8 | 6.9 | 1.7 | 6.1 | 1.6 |
| HJ360 90 | hyJOIST | | 273 | 8.5 | 2.1 | 7.9 | 2.0 | 7.6 | 1.9 | 7.0 | 1.8 |
| 360 x 45 | hySPAN | | 50 | - | - | 8.3 | 2.0 | 8.1 | 2.0 | 7.5 | 1.8 |
| HJ400 90 | hyJOIST | | 313 | - | - | 8.3 | 2.1 | 7.9 | 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/m² but are not greater than 100 kg/m². For other loading options consult designIT® for Houses.

**Design Deflection Limits:**

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

| Section D x B (mm) | Product | Cross Section | Max hole diameter[1] (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 | 113 | 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 45 | hyJOIST | I | 153 | 4.7 | 4.3 | 4.1 | 3.7 |
| HJ240 63 | hyJOIST | I | 153 | 5.0 | 4.7 | 4.5 | 4.1 |
| HJ300 45 | hyJOIST | I | 213 | 5.3 | 5 | 4.8 | 4.4 |
| 240 x 45 | hySPAN | ▮ | 50 | 5.3 | 4.9 | 4.8 | 4.5 |
| HJ240 90 | hyJOIST | I | 153 | 5.5 | 5.2 | 5.0 | 4.7 |
| HJ300 63 | hyJOIST | I | 213 | 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 | 213 | 6.2 | 5.9 | 5.7 | 5.2 |
| HJ360 63 | hyJOIST | I | 273 | 6.4 | 5.8 | 5.6 | 5.3 |
| 360 x 45 | hySPAN | ▮ | 50 | 7.0 | 6.6 | 6.4 | 6.0 |
| HJ360 90 | hyJOIST | I | 273 | 6.8 | 6.4 | 6.2 | 5.8 |
| HJ400 90 | hyJOIST | I | 313 | 7.3 | 6.8 | 6.6 | 6.1 |
| 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 | 113 | 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 45 | hyJOIST | I | 153 | 5.4 | 5 | 4.8 | 4.3 |
| HJ240 63 | hyJOIST | I | 153 | 5.8 | 5.4 | 5.2 | 4.3 |
| HJ300 45 | hyJOIST | I | 213 | 6.2 | 5.7 | 5.5 | 5 |
| 240 x 45 | hySPAN | ▮ | 50 | 6.2 | 5.8 | 5.7 | 5.3 |
| HJ240 90 | hyJOIST | I | 153 | 6.4 | 6.0 | 5.8 | 5.3 |
| HJ300 63 | hyJOIST | I | 213 | 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 | 213 | 7.2 | 6.7 | 6.5 | 6.0 |
| HJ360 63 | hyJOIST | I | 273 | 7.3 | 6.8 | 6.5 | 5.8 |
| HJ360 90 | hyJOIST | I | 273 | 7.9 | 7.4 | 7.1 | 6.6 ■ |
| 360 x 45 | hySPAN | ▮ | 50 | 8.3 | 7.8 | 7.6 | 7.2 |
| HJ400 90 | hyJOIST | I | 313 | 8.4 | 7.8 | 7.6 | 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 - Support Parallel Load Bearing Wall Over Openings

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.

**Design Deflection Limits:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 15 mm | OR 9 mm |

| Section D x B (mm) | Product | Cross Section | Light Roof and 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 | Refer to designIT® for Houses | | | | | | | | |
| 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 | Refer to designIT® for Houses | | | | | | | | |
| 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. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 15 mm | 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 and 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® | | 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 | | 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 | | 5.7 | 4.5 | 3.7 | 3.2 | 2.8 | 2.7 | 2.4 | 2.2 | 2.0 |
| HJ300 90 | hyJOIST | | 5.9 ■ | 3.5 ■ | 2.9 ■ | 2.7 ■ | 2.3 ■ | 2.1 ■ | 1.9 ■ | 1.7 ■ | 1.6 ■ |
| HJ360 90 | hyJOIST | | Refer to designIT® for Houses | | | | | | | | |
| HJ400 90 | hyJOIST | | Refer to designIT® for Houses | | | | | | | | |
| 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 | | 6.5 | 5.9 | 4.9 | 4.2 | 3.7 | 3.6 | 3.2 | 2.9 | 2.7 |
| 2/HJ360 63 | hyJOIST | | 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 and intermediate supports = 60 mm, unless otherwise indicated.

**Design Deflection Limits:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 15 mm | 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 and 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® | I | 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 | I | 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 | I | 4.1 | 3.4 | 3.2 | 3.0 | 2.6 | 2.3 | 2.1 | 1.9 | 1.7 |
| HJ300 90 | hyJOIST | I | 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 | I | 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 | I | Refer to designIT® for Houses | | | | | | | | |
| HJ400 90 | hyJOIST | I | Refer to designIT® for Houses | | | | | | | | |
| 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 | I | 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. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 15 mm | 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 and 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® | | 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 | | 4.1 | 2.6 | 2.2 | 1.8 | 1.6 | 1.3 | 1.2 | 1.1 | 1.0 |
| HJ360 90 | hyJOIST | | Refer to designIT® for Houses | | | | | | | | |
| HJ400 90 | hyJOIST | | Refer to designIT® for Houses | | | | | | | | |
| 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 | | 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 | | 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 | | 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 | | 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 and intermediate supports = 60 mm, except where indicated otherwise.

## 7.3 WALLS

**Design Deflection Limits:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 15 mm | OR 9 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:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 10 mm | 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:**

| D.L. | L.L. |
|---|---|
| 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:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/360 |
| OR 10 mm | 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 | 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® | 1.1 | 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:**

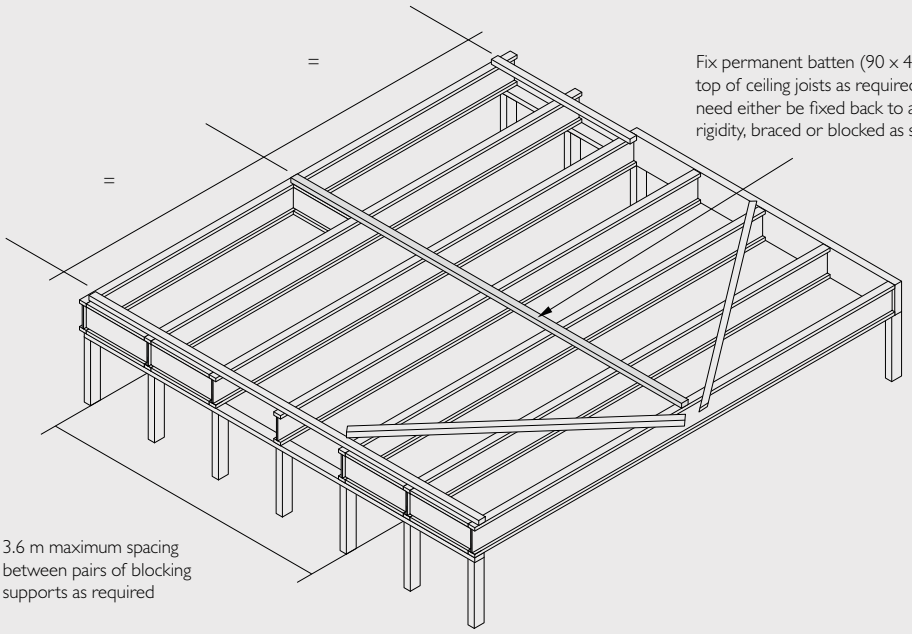
D.L.
SPAN/400
OR 12 mm

**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® | I | 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 | I | 7.2 ■ | 6.8 ■ | 6.3 ■ | 5.9 ■ | - | 8.4 ■ | 7.7 ■ | 7.2 ■ |
| HJ300 63 | hyJOIST | I | 7.3 ■ | 6.9 ■ | 6.3 ■ | 6.1 ■ | 8.6 ■ | 8.1 ■ | 7.4 ■ | 7.2 ■ |
| HJ240 90 | hyJOIST | I | 7.6 ■ | 7.3 ■ | 6.8 ■ | 6.4 ■ | - | - | 8.3 ■ | 7.9 ■ |
| HJ300 90 | hyJOIST | I | 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:**

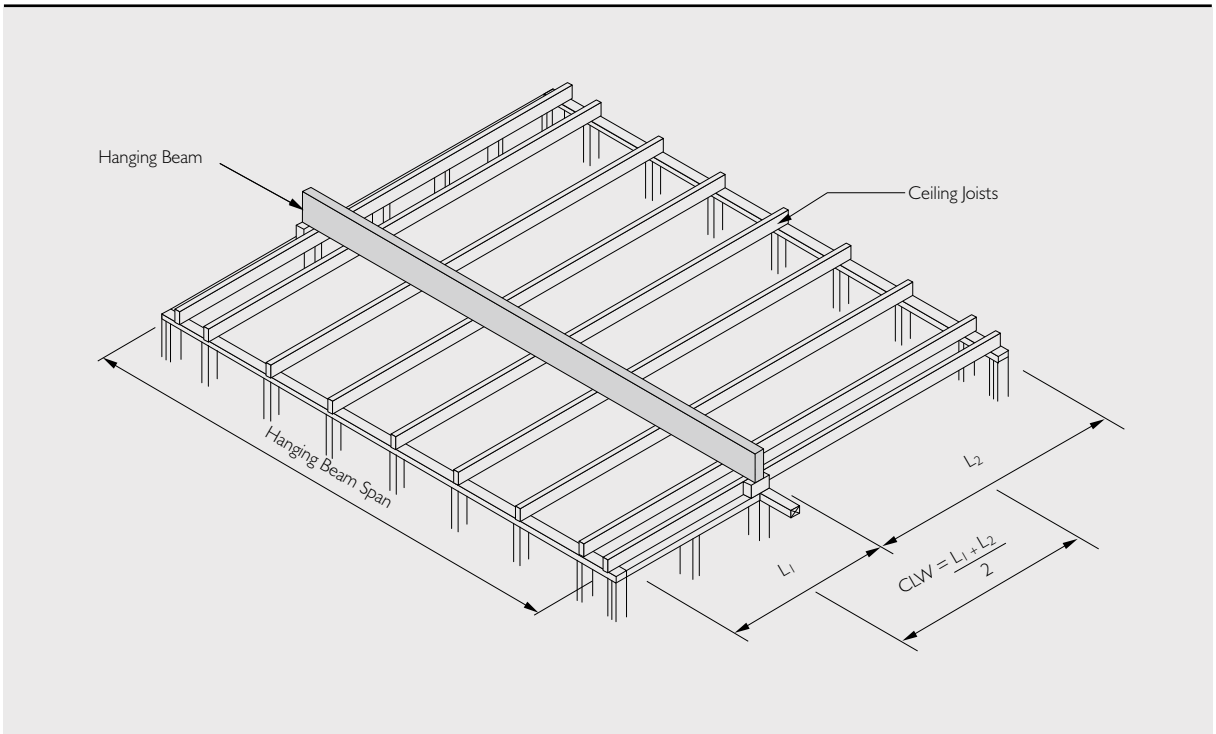
| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/270 |
| OR 20 mm | OR 50 mm |

**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 |
| | | Maximum Span (m) | | | | | | | | | |
| 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/m$^2$.
- Minimum bearing at end supports 30 mm.

**Figure 19: Hanging Beams**



## 7.6 HIP OR VALLEY RAFTERS

**Design Deflection Limits:**

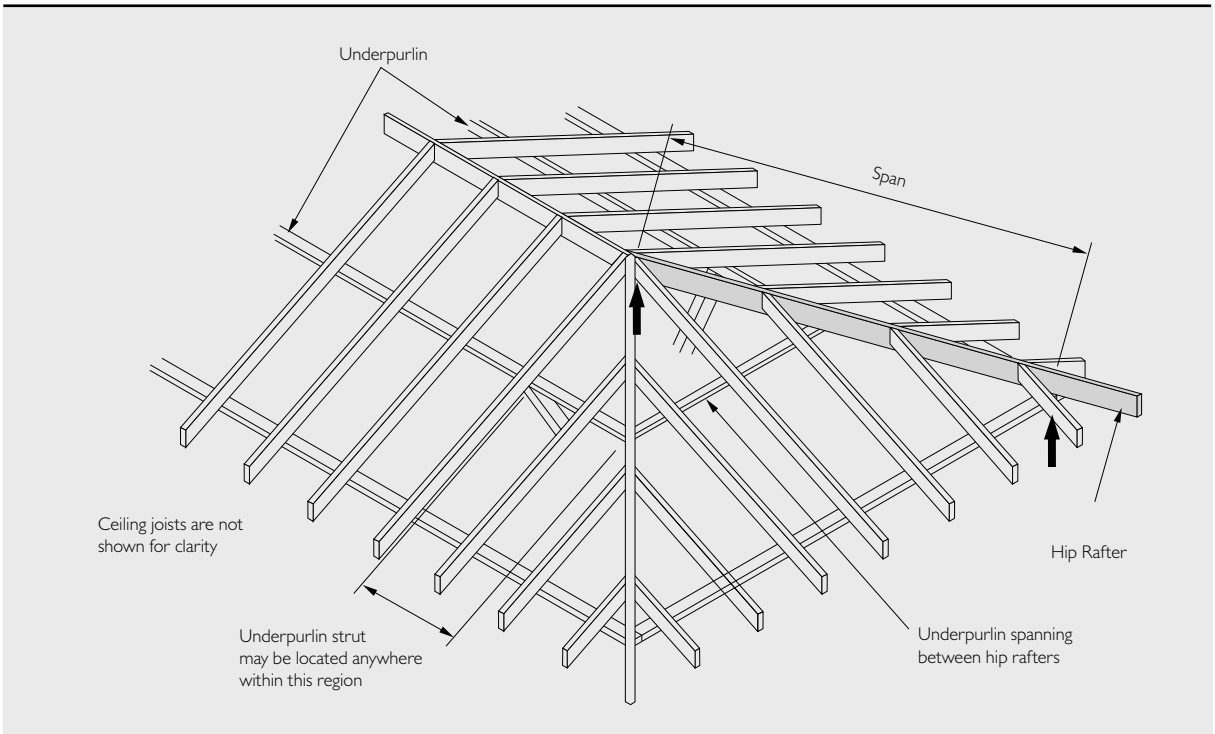
| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/250 |
| OR 20 mm | OR 20 mm |

**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**

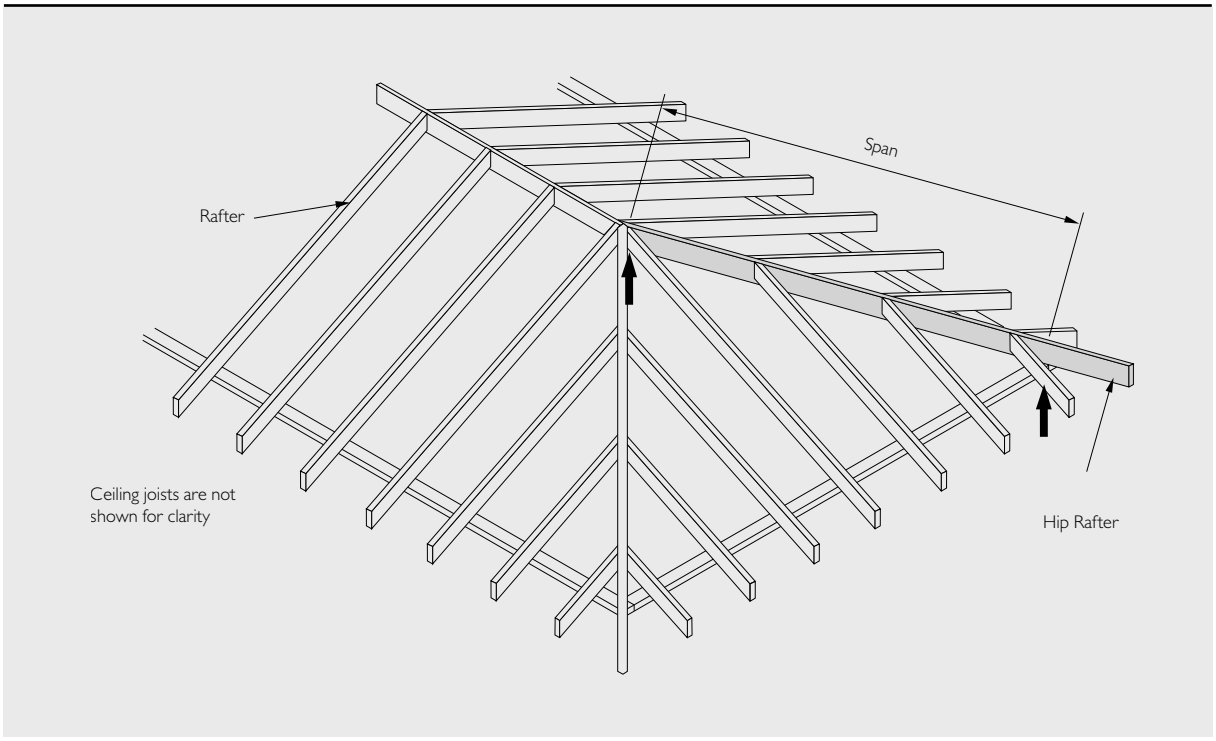
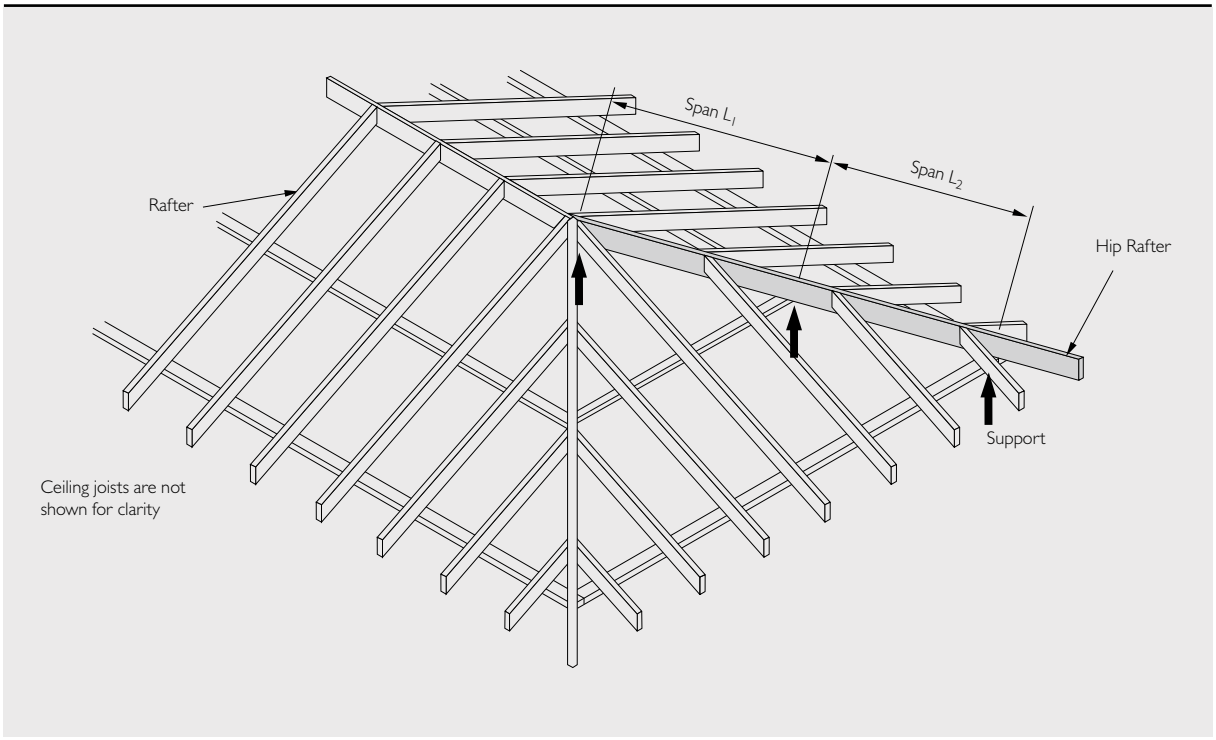



**Figure 22: Continuous Span Hip Rafter**




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:**

| D.L. | L.L. |
|---|---|
| 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 and Ceiling | Heavy Roof | Heavy Roof and 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**

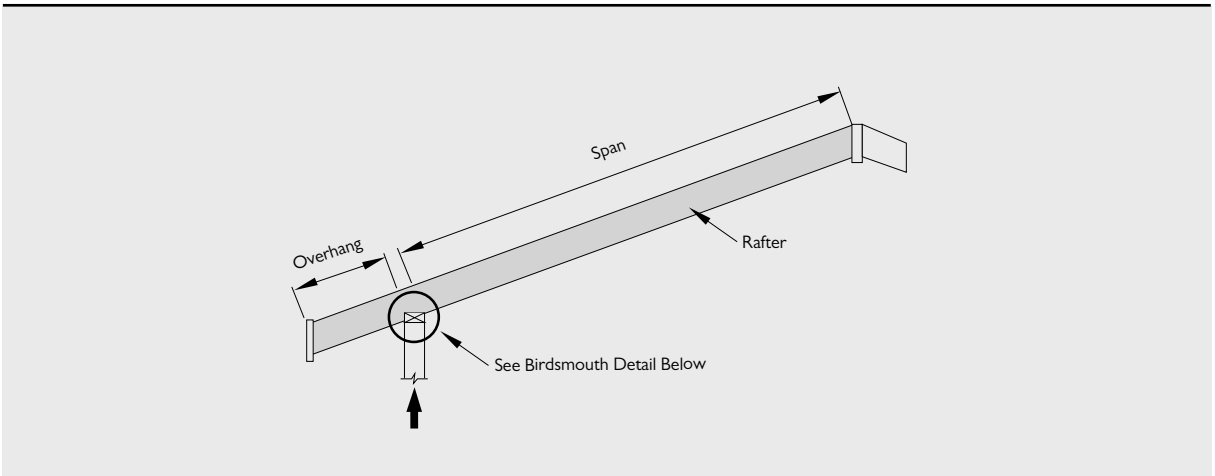
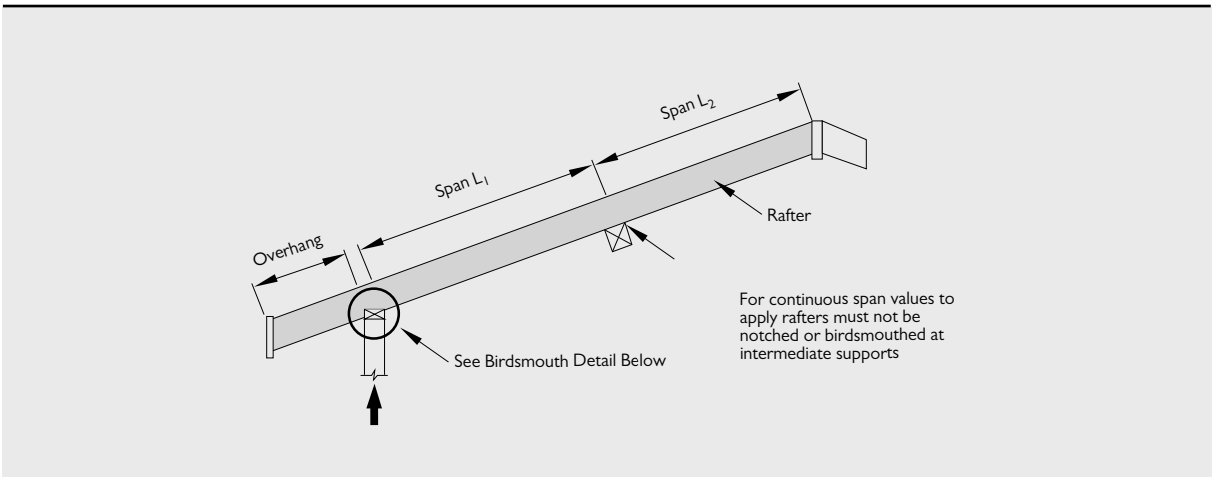



**Figure 24: Continuous Span Rafter**




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**

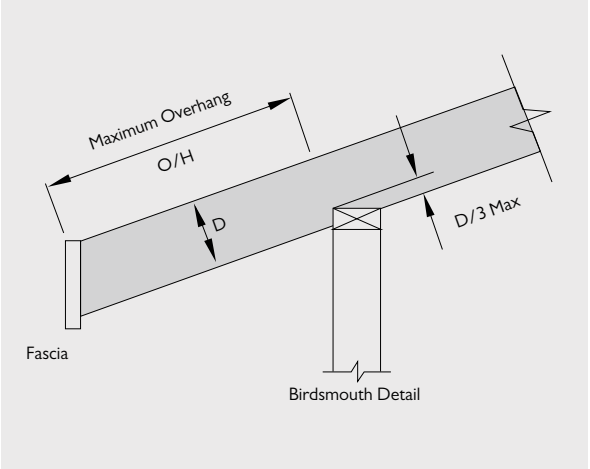
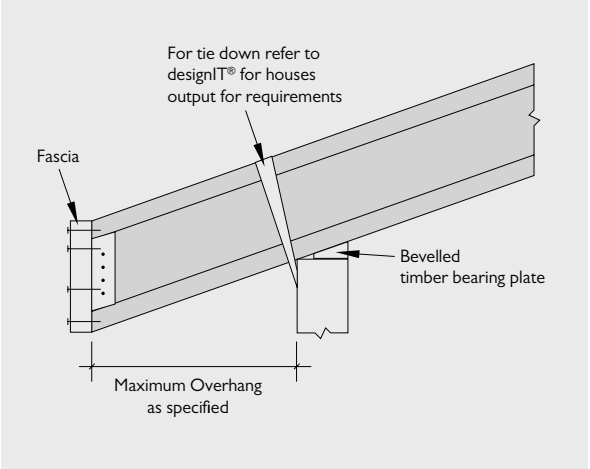



**Figure 26: Rafter Overhang – hyJOIST® I-Beams**




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

# 7.8 RAFTER SPAN TABLES

**Design Deflection Limits:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/250 |
| OR 20 mm | 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/m² | | | | | | | | | | | | | | | |
| | | | 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® | | 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 | | 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 | 2.3 | - | - | - | - | 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 | | 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/m² | | | | | | | | | | | | | | | |
| | | | 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 | 1.8 |
| 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 | | 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 | | 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 | | 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/m² | | | | | | | | | | | | | | | |
| | | | 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

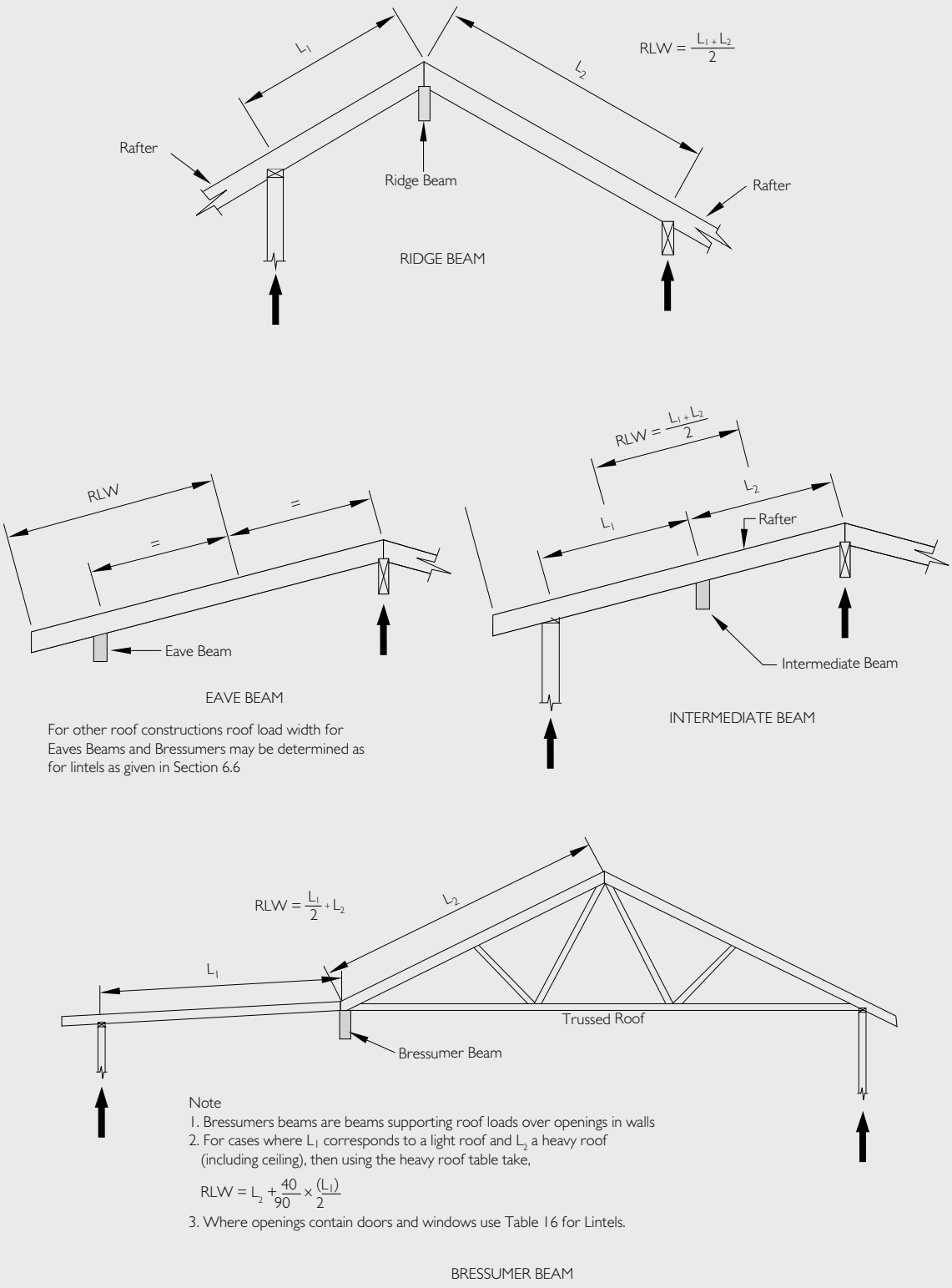
| Section D x B (mm) | Product | Cross Section | Single Span | | | | | | | | Continuous Span | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 450 | | 600 | | 900 | | 1200 | | 450 | | 600 | | 900 | | 1200 | |
| | | | Maximum Rafter Span and Overhang 'O/H' (m) for Heavy Roofs and Ceilings = 90 kg/m² | | | | | | | | | | | | | | | |
| | | | 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. | L.L. |
|---|---|
| SPAN/300 | SPAN/250 |
| OR 20 mm | OR 20 mm |

## Table 22A: Roof Beams

| Section D x B (mm) | Product | Light Roof and Ceiling<br>Roof Load Width 'RLW' (m)<br>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:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/250 |
| OR 20 mm | 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:**

| D.L. | L.L. |
|---|---|
| SPAN/300 | SPAN/250 |
| OR 20 mm | OR 20 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/m² | | | | | | | | | | | | | |
| 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 |

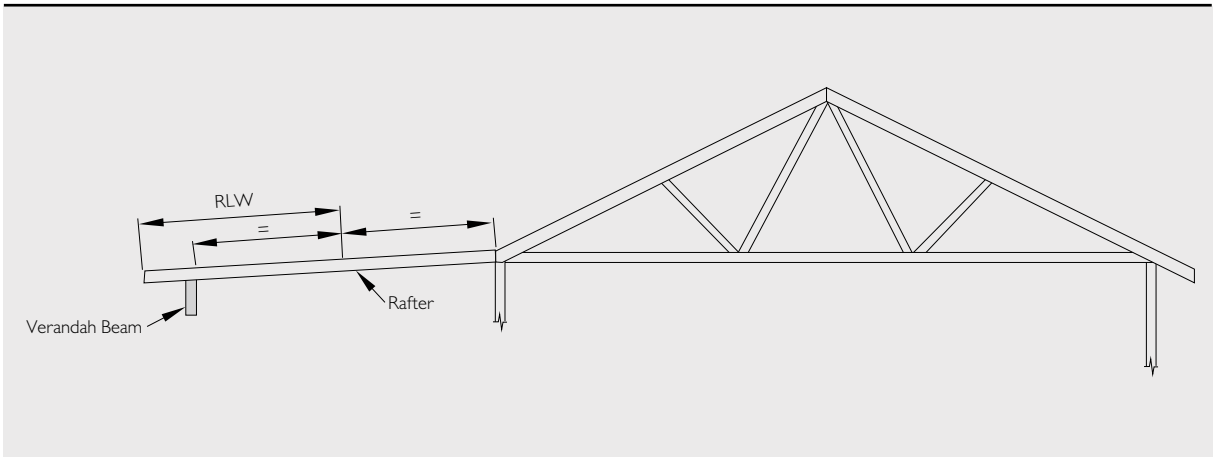
**Table 23B: Verandah Beams – High and Very High Winds**

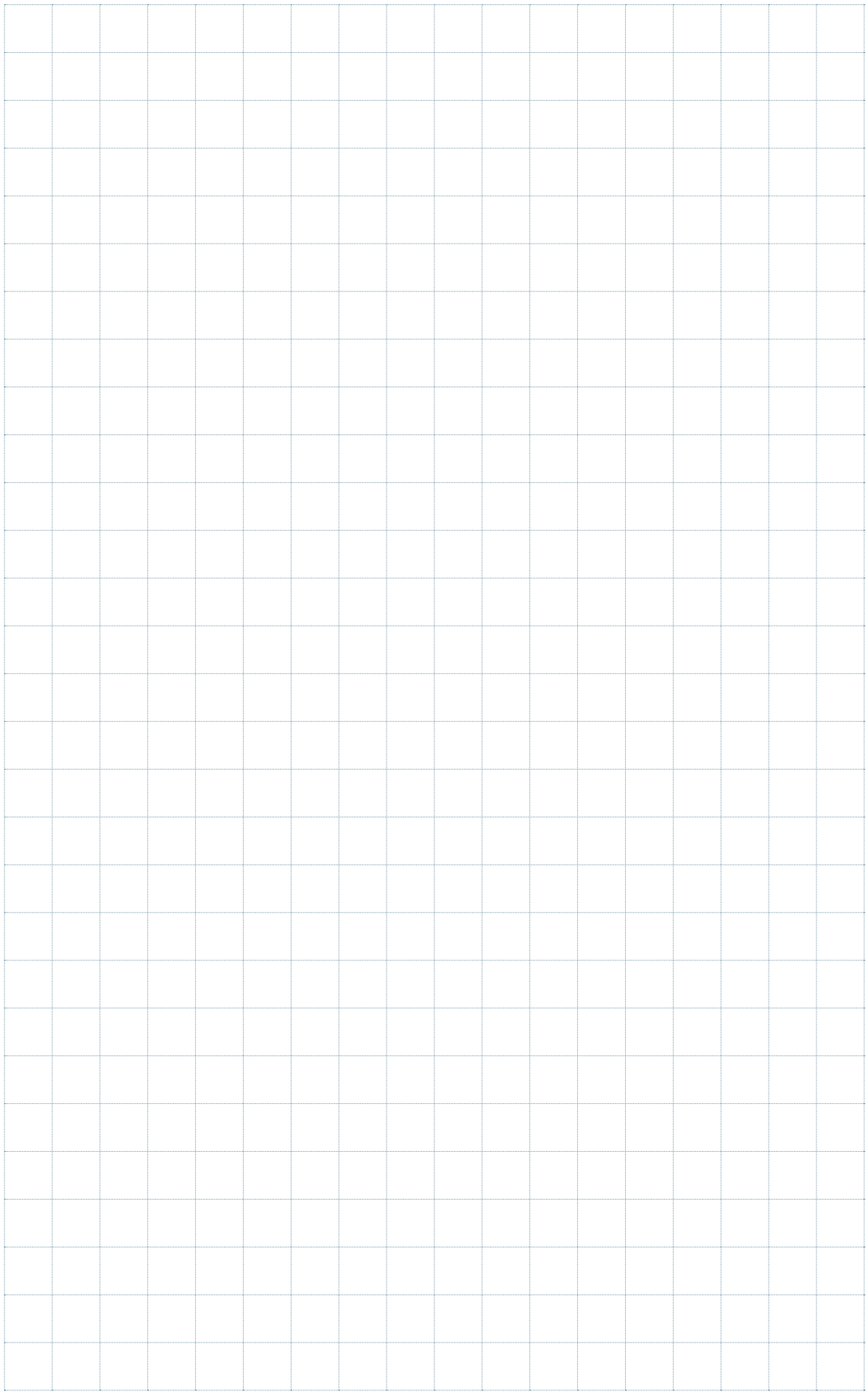
| Section D x B (mm) | Product | Single Span | | | | | | | Continuous Span | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Roof Load Width 'RLW' (m) | | | | | | | | | | | | | |
| | | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 |
| | | Maximum Span (m) for Roof Mass = 40 kg/m² | | | | | | | | | | | | | |
| 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 and intermediate supports = 90 mm.

**Figure 28: Verandah Beams**





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