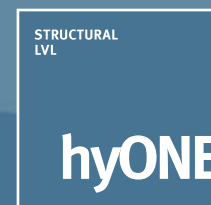


# hyONE: Lintel Span Tables for Residential Buildings

April 2008



hyONE is the highest stiffness laminated veneer lumber product manufactured by CHH Woodproducts.

hyONE is aimed at long span, highly loaded beam or lintel applications.

hyONE is ideally suited in applications where depth is restricted or when a timber solution is sought over a steel solution.

## hyONE also has some other important qualities:

- Straight and true for ease of installation.
- Ready availability
- High strength yet light to handle
- Manufactured from 100% NZ grown plantation pine – a totally renewable resource
- Wood based product– use of structural wood stores carbon and helps reduce greenhouse gas emissions
- Manufactured and properties evaluated in accordance with AS/NZS4357 Structural Laminated Veneer Lumber – totally compatible for engineering design in accordance with NZS3603:1993 Timber Structures Standard.

## hyONE Specification

hyONE is structural laminated veneer lumber manufactured in accordance with AS/NZS4357 and has the structural design properties specified in Table 1.

### Veneer

Thickness (nominal)	3 – 4mm
Species	Radiata Pine
Grade	Sonically tested
Joints face	Scarf
Joints other	Butt/Scarf

**Moisture Content:** 7% - 15%

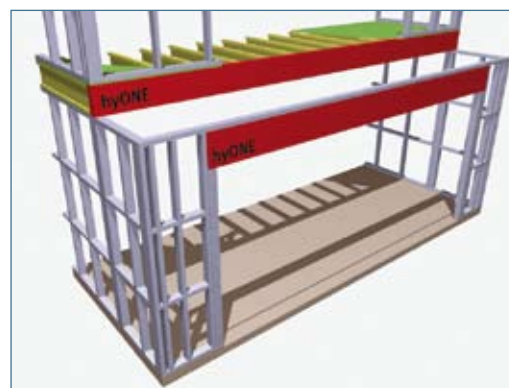
### Dimensional Tolerances:

Depth	-0mm, + 2mm
Thickness	-2mm, + 2mm

**Density:** 620kg/m<sup>3</sup> (approximately)

**Adhesive & bond:** Phenolic adhesive Type "A" (marine) bond  
Refer AS/NZS2098 and AS2754

**Branding:** Each piece of hyONE is branded at least once with the hyONE, PAA and JAS-ANZ logos for identification and evidence of compliance with manufacturing quality control standards



## Application

These span tables are intended to be used by designers or builders to select the appropriate sizes of hyONE for members used in the framing of lintels in houses and similar buildings.

The tabulated data given only applies for hyONE members installed in accordance with traditionally recognised framing practice as described in NZS 3604 Timber Framed Buildings and other installation information contained in this brochure.

## Wind Loading

The tables given in this brochure are suitable for applications in building wind zones up to very high (VH) exposure.

## Snow Loading

All tables are suitable for snow loads up to 0.5 kPa. For snow loads up to 1.0 kPa modification factors from NZS 3604 can be applied where lintels supporting roof loads only should have the maximum span multiplied by 0.8 to provide the equivalent maximum span supporting up to 1.0 kPa of snow load. Lintels in lower storey load bearing walls supporting roof, wall and floor loads within this brochure need not be factored for snow loads up to 1.0 kPa.

## designIT Software

Carter Holt Harvey's easy to use designIT software program will assist you in the design of elements of houses and other similar structures using the whole LVL range of products produced by CHH. designIT enables a wide range of applications to be considered, including floor, wind and other loads, not included in this publication.

## Design Criteria

These Lintel span tables have been designed in accordance with the latest design methodologies from Australian and New Zealand standards, AS/NZS 1170:2002 structural design actions, Parts 0,1 and 2 and AS 1684.1-1999 Residential timber framed construction. Part 1: Design criteria

Design deflection limits applied:

Permanent load: SPAN/300 or 10mm, whichever is smaller

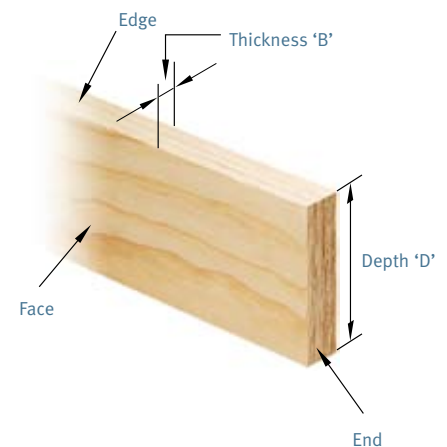
Wind load: SPAN/150

## Fastening hyONE

hyONE may be nailed, bolted or screw fixed exactly the same way as seasoned timber. For installation and performance of fasteners there is no need to distinguish between fasteners installed into either the face or edge (see diagram). Because of the relatively higher density of hyONE, to ensure adequate driving, pneumatic nailers should be operated at slightly higher pressures than normally used.

Standard edge and 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 hyONE depends on the type of fastener and its orientation. Refer to Table 3 of Technical Note 82, "Limit States Design Information".



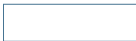




## Terminology used in these tables

Light roof and ceiling	Allowance of 40 kg/m <sup>2</sup> to include for lightweight roofing (steel sheet or tiles), roof framing, insulation, and ceiling linings (plywood, plasterboard or t&g boards)
Heavy roof and ceiling	Allowance of 90 kg/m <sup>2</sup> to include for heavyweight roofing (concrete tiles), roof framing, insulation, and ceiling linings (plywood, plasterboard or t&g boards)

## Bearing at supports

Tables are shaded based on bearing requirements as detailed below.

Minimum bearing at each end of lintel assuming section bears over full width of section.

35mm		90mm	
45mm		105mm	
70mm			

## Recommendation

Prop lintels spanning over 3 metres at mid-span until the building is closed in and the lintel is dry and protected from the weather.

## Lintel in Single or Upper Storey Load Bearing External Walls

Supporting roof and ceiling only

Light roof and ceiling										
hyONE Section D x B (mm)	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)									
240 x 90	5.2	4.9	4.7	4.5	4.3	4.2	4.0	3.9	3.9	3.8
300 x 90	6.1	5.7	5.5	5.3	5.1	5.0	4.8	4.8	4.6	4.5
360 x 90	7.0	6.5	6.2	6.0	5.8	5.6	5.5	5.3	5.3	5.1
400 x 90	7.5	7.1	6.8	6.5	6.2	6.0	5.9	5.7	5.6	5.5

Heavy roof and ceiling										
hyONE Section D x B (mm)	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)									
240 x 90	4.3	4.0	3.8	3.7	3.6	3.5	3.4	3.2	3.2	3.1
300 x 90	5.1	4.8	4.6	4.3	4.2	4.0	3.9	3.8	3.8	3.7
360 x 90	5.9	5.5	5.2	5.0	4.8	4.7	4.5	4.4	4.3	4.2
400 x 90	6.3	5.9	5.6	5.4	5.2	5.0	4.9	4.8	4.7	4.6

Notes: 1. Guidance on 'RLW' can be found on page 8 of hySPAN Span Tables for Residential Building Edition 3

## Lintel in Lower Storey Load Bearing External Walls

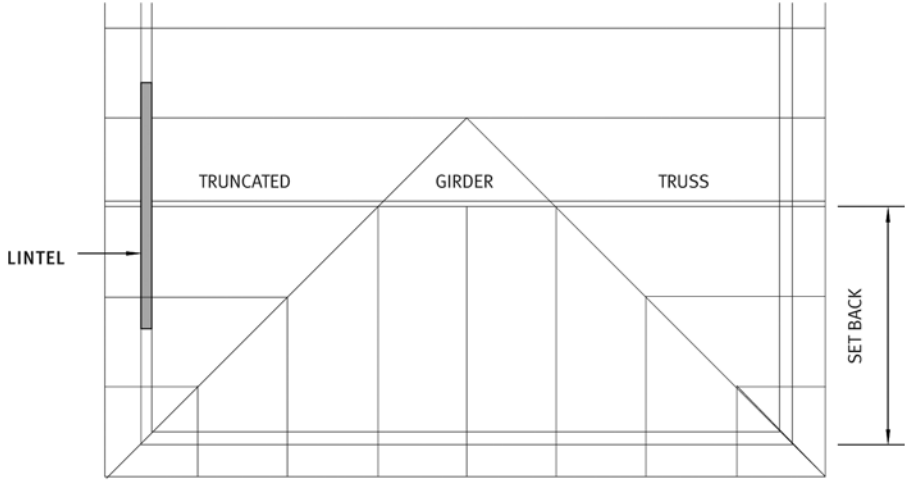
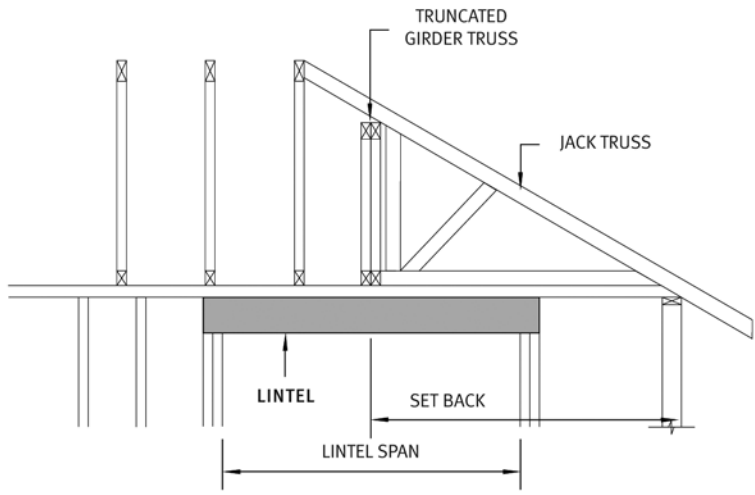
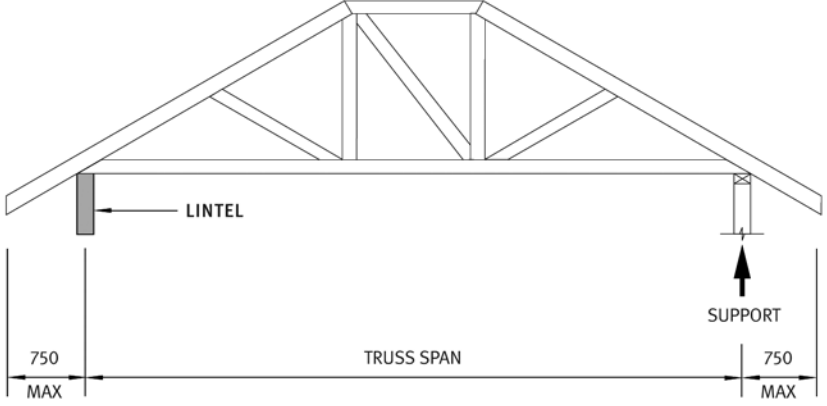
Supporting roof, lightweight wall and floor

Light roof and ceiling															
hyONE Section D x B (mm)	Floor Load Width 'FLW' (m)														
	1.8					2.4					3.6				
	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)															
240 x 90	3.8	3.7	3.6	3.5	3.4	3.7	3.6	3.5	3.4	3.3	3.4	3.3	3.3	3.2	3.1
300 x 90	4.5	4.4	4.2	4.1	4.0	4.3	4.2	4.1	4.0	3.9	4.0	3.9	3.8	3.8	3.7
360 x 90	5.2	5.0	4.8	4.7	4.6	4.9	4.8	4.7	4.5	4.4	4.6	4.5	4.4	4.3	4.2
400 x 90	5.6	5.4	5.2	5.1	4.9	5.3	5.2	5.0	4.9	4.8	5.0	4.8	4.7	4.6	4.6

Heavy roof and ceiling															
hyONE Section D x B (mm)	Floor Load Width 'FLW' (m)														
	1.8					2.4					3.6				
	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)															
240 x 90	3.6	3.4	3.2	3.1	3.0	3.5	3.3	3.1	3.0	2.9	3.3	3.1	3.0	2.9	2.8
300 x 90	4.2	4.0	3.8	3.6	3.5	4.1	3.9	3.7	3.6	3.5	3.8	3.7	3.5	3.4	3.3
360 x 90	4.8	4.6	4.3	4.2	4.0	4.7	4.4	4.2	4.1	4.0	4.4	4.2	4.1	3.9	3.8
400 x 90	5.2	4.9	4.7	4.5	4.4	5.1	4.8	4.6	4.4	4.3	4.8	4.6	4.4	4.3	4.1

Notes: 1. Guidance on 'RLW' and 'FLW' can be found on page 8 of hySPAN Span Tables for Residential Building Edition 3

Lintel Supporting Truncated Girder Truss (TGT)

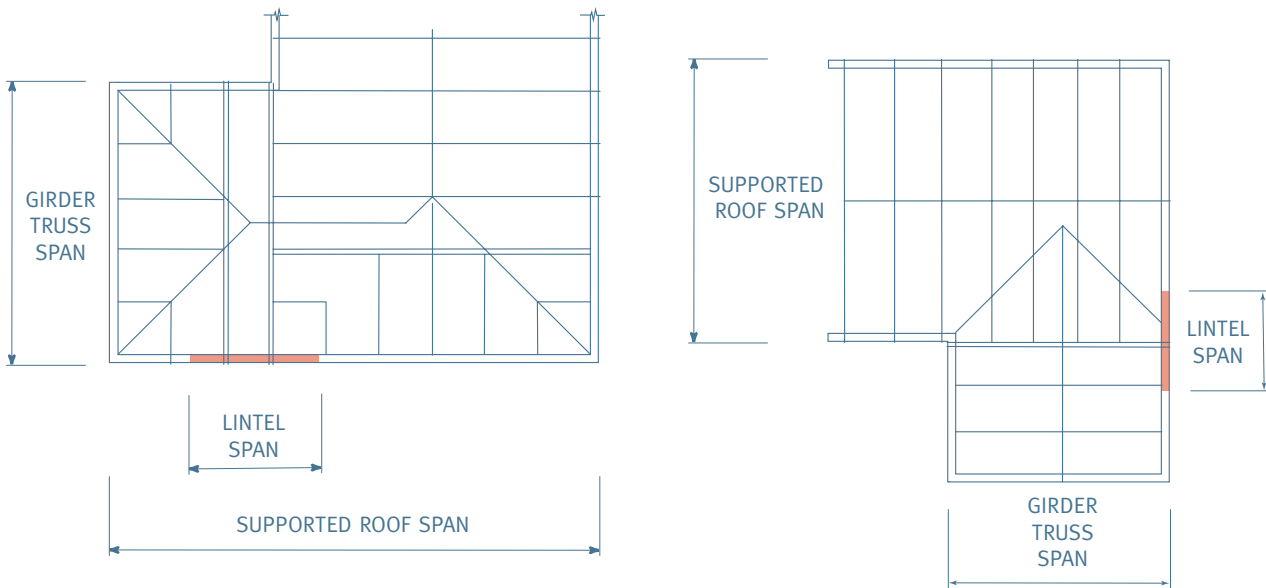


Lintel Supporting Truncated Girder Truss (TGT)

Light roof and ceiling										
hyONE Section DxB (mm)	TGT Setback (m)	Truss Span (m)								
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
		Maximum Span (m)								
240 x 90	2.0	4.6	4.5	4.4	4.3	4.1	4.1	3.9	3.9	3.8
	3.0	-	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6
	4.0	-	-	-	4.0	3.8	3.8	3.7	3.6	3.5
	5.0	-	-	-	-	-	3.7	3.6	3.5	3.4
	6.0	-	-	-	-	-	-	-	3.4	3.3
300 x 90	2.0	5.5	5.3	5.2	5.1	5.0	4.9	4.8	4.7	4.6
	3.0	-	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.4
	4.0	-	-	-	4.8	4.7	4.5	4.4	4.4	4.3
	5.0	-	-	-	-	-	4.4	4.3	4.3	4.2
	6.0	-	-	-	-	-	-	-	4.2	4.0
360 x 90	2.0	6.3	6.1	5.9	5.8	5.7	5.6	5.5	5.4	5.3
	3.0	-	5.9	5.8	5.6	5.5	5.4	5.3	5.2	5.1
	4.0	-	-	-	5.5	5.4	5.3	5.1	5.1	5.0
	5.0	-	-	-	-	-	5.1	5.1	5.0	4.8
	6.0	-	-	-	-	-	-	-	4.8	4.8
400 x 90	2.0	6.8	6.6	6.4	6.3	6.1	6.0	5.9	5.8	5.7
	3.0	-	6.4	6.2	6.1	5.9	5.9	5.7	5.6	5.5
	4.0	-	-	-	5.9	5.8	5.7	5.6	5.5	5.4
	5.0	-	-	-	-	-	5.6	5.5	5.3	5.3
	6.0	-	-	-	-	-	-	-	5.3	5.2

Heavy roof and ceiling										
hyONE Section DxB (mm)	TGT Setback (m)	Truss Span (m)								
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
		Maximum Span (m)								
240 x 90	2.0	3.8	3.7	3.5	3.5	3.3	3.3	3.2	3.1	3.1
	3.0	-	3.5	3.4	3.3	3.2	3.1	3.1	3.0	2.9
	4.0	-	-	-	3.2	3.1	3.0	2.9	2.8	2.7
	5.0	-	-	-	-	-	2.9	2.8	2.7	2.6
	6.0	-	-	-	-	-	-	-	2.6	2.6
300 x 90	2.0	4.5	4.4	4.2	4.1	4.0	3.9	3.9	3.8	3.7
	3.0	-	4.2	4.1	4.0	3.8	3.8	3.2	3.6	3.5
	4.0	-	-	-	3.8	3.8	3.7	3.6	3.5	3.4
	5.0	-	-	-	-	-	3.6	3.5	3.4	3.3
	6.0	-	-	-	-	-	-	-	3.3	3.3
360 x 90	2.0	5.2	5.0	4.9	4.8	4.6	4.6	4.4	4.4	4.3
	3.0	-	4.9	4.7	4.6	4.5	4.4	4.3	4.2	4.1
	4.0	-	-	-	4.5	4.3	4.3	4.1	4.0	4.0
	5.0	-	-	-	-	-	4.1	4.0	3.9	3.9
	6.0	-	-	-	-	-	-	-	3.9	3.8
400 x 90	2.0	5.6	5.5	5.3	5.2	5.0	5.0	4.9	4.8	4.7
	3.0	-	5.3	5.1	5.0	4.9	4.8	4.7	4.6	4.5
	4.0	-	-	-	4.9	4.7	4.7	4.5	4.4	4.4
	5.0	-	-	-	-	-	4.5	4.4	4.3	4.2
	6.0	-	-	-	-	-	-	-	4.2	4.1

### Lintel Supporting Girder Truss

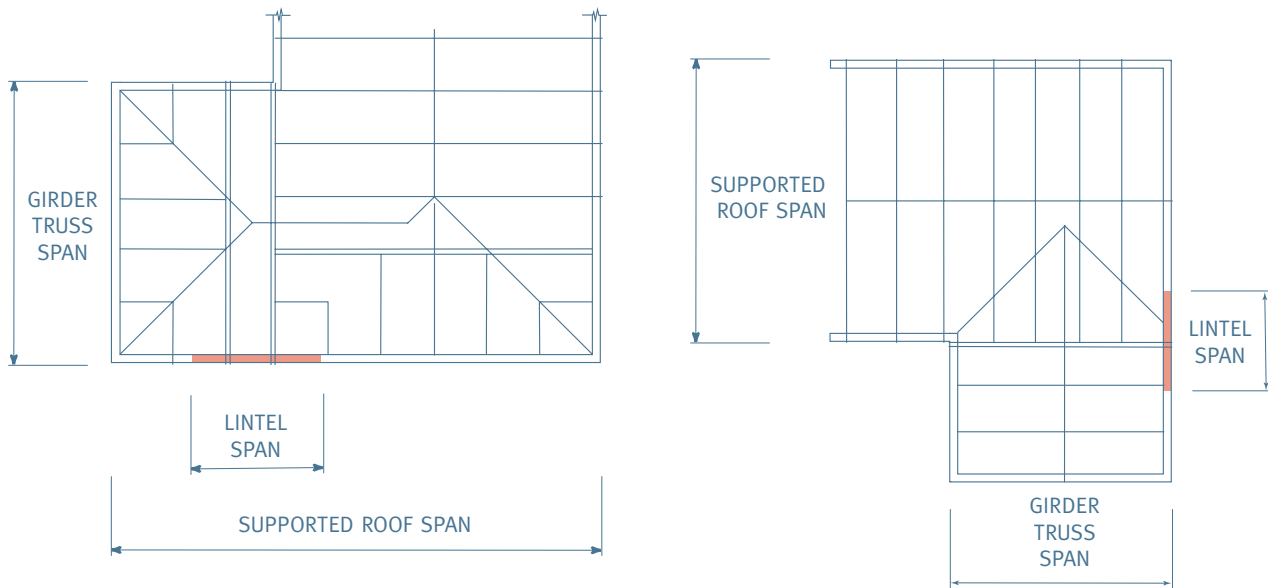


### Lintel Supporting Girder Truss (light roof and ceiling)

Note: maximum roof slope 30°

hyONE Section D x B (mm)	Supported roof span (m)	Girder truss span (m)								
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
		Maximum span (m)								
240 x 90	2	4.3	4.1	4.0	3.8	3.7	3.6	3.5	3.4	3.3
	4	4.0	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.1
	6	3.8	3.6	3.5	3.3	3.2	3.1	3.0	2.9	2.9
	8	3.6	3.4	3.3	3.1	3.0	2.9	2.9	2.8	2.8
	10	3.5	3.3	3.1	3.0	2.9	2.8	2.7	2.6	2.6
300 x 90	2	5.2	4.9	4.7	4.6	4.4	4.3	4.2	4.1	4.0
	4	4.9	4.6	4.4	4.3	4.1	4.0	3.9	3.8	3.7
	6	4.6	4.4	4.2	4.0	3.9	3.8	3.7	3.6	3.5
	8	4.4	4.2	4.0	3.9	3.7	3.6	3.5	3.4	3.3
	10	4.3	4.0	3.8	3.7	3.6	3.4	3.5	3.3	3.2
360 x 90	2	6.0	5.7	5.5	5.3	5.1	5.0	4.9	4.7	4.6
	4	5.7	5.4	5.2	5.0	4.8	4.7	4.6	4.5	4.4
	6	5.4	5.2	4.9	4.7	4.6	4.5	4.3	4.2	4.1
	8	5.2	4.9	4.7	4.5	4.4	4.2	4.1	4.0	3.9
	10	5.0	4.7	4.5	4.4	4.2	4.1	4.0	3.9	3.8
400 x 90	2	6.5	6.2	6.0	5.8	5.6	5.4	5.3	5.2	5.1
	4	6.2	5.9	5.7	5.5	5.3	5.1	5.0	4.9	4.8
	6	5.9	5.6	5.4	5.2	5.0	4.9	4.7	4.6	4.5
	8	5.7	5.4	5.2	5.0	4.8	4.7	4.5	4.4	4.3
	10	5.5	5.2	5.0	4.8	4.6	4.5	4.4	4.2	4.1

### Lintel Supporting Girder Truss



### Lintel Supporting Girder Truss (heavy roof and ceiling)

Note: maximum roof slope 30°

hyONE Section D x B (mm)	Supported roof span (m)	Girder truss span (m)								
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
240 x 90	2	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.7
	4	3.2	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.4
	6	3.0	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1
	8	2.8	2.7	2.5	2.4	2.3	2.1	2.0	2.0	1.6
	10	2.7	2.5	2.3	2.2	2.1	2.0	1.4	0.9	0.7
300 x 90	2	4.2	4.0	3.8	3.7	3.5	3.4	3.4	3.3	3.2
	4	3.9	3.7	3.5	3.4	3.3	3.2	3.1	3.0	3.0
	6	3.7	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.8
	8	3.5	3.3	3.1	3.0	2.9	2.8	2.7	2.7	2.6
	10	3.3	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.0
360 x 90	2	4.8	4.6	4.4	4.3	4.1	4.0	3.9	3.8	3.7
	4	4.5	4.3	4.1	4.0	3.8	3.7	3.6	3.5	3.5
	6	4.3	4.1	3.9	3.7	3.6	3.5	3.4	3.3	3.2
	8	4.1	3.9	3.7	3.5	3.4	3.3	3.2	3.1	3.1
	10	3.9	3.7	3.6	3.4	3.3	3.2	3.1	3.0	2.9
400 x 90	2	5.2	5.0	4.8	4.6	4.5	4.3	4.2	4.1	4.1
	4	5.0	4.7	4.5	4.3	4.2	4.1	4.0	3.9	3.8
	6	4.7	4.5	4.3	4.1	4.0	3.8	3.7	3.7	3.6
	8	4.5	4.3	4.1	3.9	3.8	3.7	3.5	3.5	3.4
	10	4.3	4.1	3.9	3.8	3.6	3.5	3.4	3.3	3.2

**Table 1 – The Limit States Design characteristic properties for hyONE**

hyONE			
Elastic Moduli (MPa)			
Modulus of elasticity	E		16,000
Modulus of rigidity	G		660
Characteristic Strengths (MPa)			
Bending	$f_b$		48
Tension parallel to grain	$f_t$		33
Compression parallel to grain	$f_c$		45
Shear in beams	$f_s$		5.3
Compression perpendicular to grain	$f_p$		12
Joint Group: varies with fastener type*			

\* For design information and guidance for Limit States Design for all futurebuild LVL products refer to Technical Note 82 "Limit States Design Information."

Standard section sizes, properties and design capacities for hyONE are detailed in table 2.

**Table 2 – hyONE Section Sizes and Properties**

Product Code	Dimensions (mm)	Mass (kg/m)	$I_{xx}$ ( $10^6\text{mm}^4$ )	$Z_{xx}$ ( $10^3\text{mm}^3$ )	J ( $10^6\text{mm}^4$ )	EI ( $10^9\text{mm}^2$ )	$\phi f_b Z_x$ (kNm)
HO240x90	240 x 90	13.4	104	864	44.5	1659	37.3
HO300x90	300 x 90	16.7	203	1350	59.1	3240	58.3
HO360x90	360 x 90	20.1	350	1944	73.7	5599	84.0
HO400x90	400 x 90	22.3	480	2400	83.4	7680	103.7

hyONE is available in pack lengths of 4.8, 5.4, 6.0 and 7.2m, and piece lengths of 5.4 m and 7.2m.

Contact CHH Woodproducts for availability of non-standard sizes and lengths.

## Design with hyONE

Specify hyONE members using the designIT software or by specific design. Further guidance for specific design is available in Technical Note 82 "Limit States Design Information."

### Durability

hyONE products are manufactured to meet the requirements of NZS 3602 Timber and Wood based Products for use in Buildings. As such, if the product is used in accordance with CHH Woodproducts product literature, it will meet the durability clauses of the New Zealand Building Code.

hyONE products must be protected from water, condensation and dampness by good detailing. For uses where there is risk of moisture, use appropriate treatment levels (see below).

Consult the CHH Woodproducts Durability Statement for more information.

### External Use.

hyONE is NOT recommended for fully weather exposed applications, such as open deck bearers and pergola beams.

### Preservative Treatment.

For hyONE and other CHH LVL products, treatment providers use the H3 (LOSP, solvent based) target specification in AS/NZS 1604.4 (Specification for Preservative Treatment – Laminated Veneer Lumber) to deliver an envelope treatment that is fit for purpose for in New Zealand applications where solid timber is required to be H1.2 or H3.1 in NZS 3602.

Refer to our website for the technical note on treatment for requirements when cutting treated LVL.

**Technical Helpline:**  
**Freephone: 0800 808 131**  
**Email: [designit@chh.co.nz](mailto:designit@chh.co.nz)**  
**[www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz)**

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