



## STRUCTURAL STEEL IN HOUSING - THIRD EDITION



Structural steel is playing an increasingly important role in traditional and medium density housing with its versatility, strength and competitive price.

OneSteel produces a unique range of steel beams, columns, channels and angles which are suitable for use in domestic housing as floor bearers, joists, roof strutting beams, lintels, piling and other applications.

This booklet has been compiled to assist builders, draftspersons and designers to specify and use OneSteel's range of structural steel. It contains span tables, surface treatment specifications and installation details on the use of OneSteel's structural steel products in various residential building applications.

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# Benefits of OneSteel's Structural Steels

Steel's inherent strength and consistent properties provides builders and home owners with many benefits. They include:

**Steel beam depths are around half that of timber beams offering greater usable space and lower costs of other materials**

**OneSteel's unique range of lightweight 'Lean Beam' sections in 300PLUS® grade offers efficient and cost effective design solutions**

**Superior spanning capabilities means fewer columns and more usable space**

**Steel does not warp, bow or twist due to shrinkage ensuring no long term movement problems with the steelwork**

**Unlike timber, steel does not creep and long term deflection is minimal**

**Consistent quality and dimensions ensuring ease of use and long life**



OneSteel's range of structural steel is available from hundreds of outlets Australia-wide.

Most suppliers offer cut to length and delivery services.

Many offer other services such as drilling, welding, installation and design advice.

**For an up-to-date list of suppliers please call:**

**OneSteel Direct Toll Free on 1800 1 STEEL (1800 1 78335)**

**or visit our website at [www.onesteel.com](http://www.onesteel.com)**





# PRODUCT DESCRIPTION & RANGE

OneSteel produces a large range of structural steel sections. The following sections and sizes are particularly useful for housing applications. All sections are produced in OneSteel's unique 300PLUS® steel grade offering high strength and lightweight design solutions. For information on OneSteel's full range of structural steel sections, refer to the OneSteel Product Catalogue - Structural Steel.

## PRODUCT DESCRIPTION

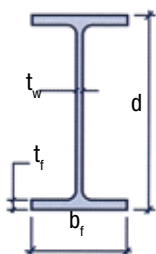
### UNIVERSAL BEAMS (UB)

Universal Beams are 'I' shaped members (refer diagram) designed to carry high loads over long spans. The thick flanges and thinner web efficiently proportions material to resist the high bending loads from beam applications.

A Universal Beam is designated as follows:

180	UB	18.1
Nominal depth, d	Universal Beam	mass/length kg/m

The 180 UB18.1 for example is 175mm deep (d), 90mm wide (b<sub>f</sub>) with 8mm flange (t<sub>f</sub>) and 5mm web (t<sub>w</sub>).



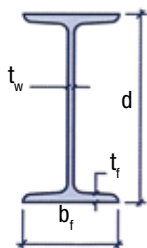
### TAPER FLANGE BEAMS (TFB)

Taper Flange Beams are similar in shape to Universal Beams except that they have tapered flanges.

A Taper Flange Beam is designated as follows:

125	TFB
depth, d	Taper Flange Beam

The 125 TFB for example is 125 mm deep (d), 65 mm wide (b<sub>f</sub>) with 8.5 mm flange (t<sub>f</sub>) and 5 mm web (t<sub>w</sub>).

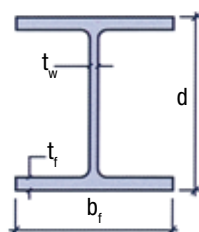


### UNIVERSAL COLUMNS (UC)

Universal Columns are stockier, wider 'I' section members designed to carry high axial loads, for applications such as columns and piles etc. These members are generally heavier than other steel sections and are useful as supports for retaining walls and the like. They can also be used as beam sections where headroom is of concern.

A Universal Column is designated as follows:

150	UC	37.2
Nominal depth, d	Universal Column	mass/length kg/m



The 150 UC 37.2 for example is 162mm deep (d), 154mm wide (b<sub>f</sub>) with 18mm flange (t<sub>f</sub>) and 8mm web (t<sub>w</sub>).

### PARALLEL FLANGE CHANNELS (PFC)

Parallel Flange Channels are a general purpose hot rolled 'C' section member useful in beam applications. PFC's provide excellent deflection resistance and strength characteristics. They are narrower than a UB of similar depth and provide a flat, flush back surface for mating with other building materials.

A Parallel Flange Channel is designated as follows:

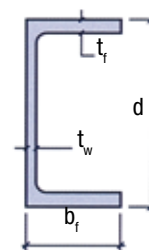
### 180

depth, d

### PFC

Parallel Flange Channel

The 180 PFC for example, is 180mm deep (d), 75mm wide (b<sub>f</sub>) with 11mm flange (t<sub>f</sub>) and 6mm web (t<sub>w</sub>).



### UNEQUAL ANGLES (UA) AND

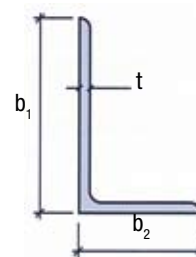
### EQUAL ANGLES (EA)

Angles are 'L' shaped sections and are ideal for use as lintels. One leg rests under the brickwork while the other resists the bending load over the window/door opening.

An angle is designated as follows:

150 x 90 x 8	UA(or EA)
leg length	leg length
thickness, t	Unequal Angle (or Equal Angle)
b <sub>1</sub>	b <sub>2</sub>

The 150x90x8UA for example has leg lengths of 150mm (b<sub>1</sub>) and 90mm (b<sub>2</sub>) and 8mm thickness (t).



## PRODUCT RANGE

Section Designation	Mass per Metre kg/m	Depth of Section d mm	Flange Width b <sub>f</sub> mm	Flange Thickness t <sub>f</sub> mm	Web Thickness t <sub>w</sub> mm
UNIVERSAL BEAMS					
150UB14.0	14.0	150	75	7.0	5.0
150UB18.0	18.0	155	75	9.5	6.0
180UB16.1	16.1	173	90	7.0	4.5
180UB18.1	18.1	175	90	8.0	5.0
180UB22.2	22.2	179	90	10.0	6.0
200UB18.2	18.2	198	99	7.0	4.5
200UB22.3	22.3	202	133	7.0	5.0
200UB25.4	25.4	203	133	7.8	5.8
200UB29.8	29.8	207	134	9.6	6.3
250UB25.7	25.7	248	124	8.0	5.0
250UB31.4	31.4	252	146	8.6	6.1
250UB37.3	37.3	256	146	10.9	6.4
310UB32.0	32.0	298	149	8.0	5.5
310UB40.4	40.4	304	165	10.2	6.1
310UB46.2	46.2	307	166	11.8	6.7
TAPER FLANGE BEAMS					
100 TFB	7.20	100	45	6.0	4.0
125 TFB	13.1	125	65	8.5	5.0
UNIVERSAL COLUMNS					
100UC14.8	14.8	97	99	7.0	5.0
150UC23.4	23.4	152	152	6.8	6.1
150UC30.0	30.0	158	153	9.4	6.6
150UC37.2	37.2	162	154	11.5	8.1
200UC46.2	46.2	203	203	11.0	7.3
PARALLEL FLANGE CHANNELS					
75 PFC	5.92	75	40	6.1	3.8
100 PFC	8.33	100	50	6.7	4.2
125 PFC	11.9	125	65	7.5	4.7
150 PFC	17.7	150	75	9.5	6.0
180 PFC	20.9	180	75	11.0	6.0
200 PFC	22.9	200	75	12.0	6.0
230 PFC	25.1	230	75	12.0	6.5
250 PFC	35.5	250	90	15.0	8.0
300 PFC	40.1	300	90	16.0	8.0

Section Designation	Mass per metre kg/m	Leg-Length b <sub>1</sub> mm x b <sub>2</sub> mm	Nominal Thickness mm
ANGLES			
75 x 75 x 6EA	6.81	75 x 75	6
90 x 90 x 6EA	8.22	90 x 90	6
90 x 90 x 8EA	10.6	90 x 90	8
100 x 100 x 6EA	9.16	100 x 100	6
100 x 100 x 8EA	11.8	100 x 100	8
100 x 75 x 6UA	7.98	100 x 75	6
100 x 75 x 8UA	10.3	100 x 75	8
125 x 75 x 6UA	9.16	125 x 75	6
125 x 75 x 8UA	11.8	125 x 75	8
150 x 90 x 8UA	14.3	150 x 90	8
150 x 100 x 10UA	18.0	150 x 100	10

All structural steel sections in this manual are designed to be 300PLUS® grade steel.



SPAN TABLE DESIGN DATA

In compiling the span tables in this publication all requirements of the relevant standards and codes have been adopted along with established practices for Domestic Housing Structures.

In particular, the following Australian Standards have been applied:

- ◆ AS1170 Parts 1 & 2-1989 SAA Loading Code and AS4055-1992 Wind Loads for Housing.
- ◆ AS4100-1998 Steel Structures.  
Other assumptions used in compiling the tables are as follows:
- ◆ All structural sections are 300PLUS® grade steel.
- ◆ Applied loads are evenly distributed along the span of the member with the exception of Strutting Beams and Lintels supporting Strutting Beams where a mid-span point load is assumed.
- ◆ Applied loads for each table are shown above the layout diagram All roof structure tables conform to wind classifications of either category N3 or N5/C2 as shown.
- ◆ Deflection limits for each table are shown above the layout diagram. Maximum deflections are for mid-span.

- ◆ All loads are static and are applied vertically.
- ◆ All members are simply supported single spans except for the continuous span floor bearer table.
- ◆ End support bearing distance for single spans is assumed to be at least that of the width of the member. For continuous spans, internal support bearing is to be at least 2 times the width of the member.
- ◆ Assumed restraint from lateral movement or buckling of the beams varies with application. The assumed conditions are given in the notes below the layout diagrams.
- ◆ The Lintels Supporting Masonry tables were compiled by BHP Research - Melbourne Laboratories before their closure in May 1998.

Applications not complying with the above conditions are outside the scope of this publication and advice should be sought from a structural engineer.

OneSteel  
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20 September 2002

Dear Sir

## DESIGN CERTIFICATION OF STEEL SECTION SPAN TABLES

The span tables on pages 7 to 21 presented in Edition 3 of "Structural Steel in Housing" have been prepared for the loads and restraint conditions specified in the tables.

The span tables have been calculated in accordance with the principles of structural mechanics using the following standards:

- a) Dead and live loads in accordance with AS1170-1 1989 (Loading Code).
- b) Wind loads in accordance with AS1170-2 1989. The classification from AS4055 Table 1 has been adopted in referring to wind classification.
- c) Member sizing in accordance with AS4100-1998 (Steel Structures)

The gravity loads adopted are accepted in normal practice. The live loads are those specified by AS1170-1.

Wind loads are derived from AS1170-2. The wind pressures are suitable for domestic structures in Regions A and B (AS1170-2) for maximum gust wind speeds of 41m/s in non-cyclonic areas with wind classification up to N3 (AS4055) or 60m/s for high wind areas with wind classification up to N5 or 50m/s for cyclone areas with wind classification C2. The tables do not apply to circumstances where exceptional exposure occurs due to hilly topography or lack of shelter by other buildings.

AS4100 gives suggestions on deflection limits for beams (Appendix B) but are not mandatory. In these tables the deflection limits for bearers and lintels are span/240 or 15mm for G+0.7Q and span/360 or 10mm for 0.7Q. The deflection limits for strutting beams are span/180 or 20mm for G+0.7Q and span/240 or 15mm for 0.7Q. These values have been generally used in the industry for many years. The values originated from the Australian Domestic Construction Manual. Users of the tables should ensure that deflections are suitable for their application. Deflection criteria has not been applied to wind loads.

All members have been sized for the restraint conditions specified in the tables. Users ensure that the constructions in their application achieves that restraint.

Yours faithfully



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Director

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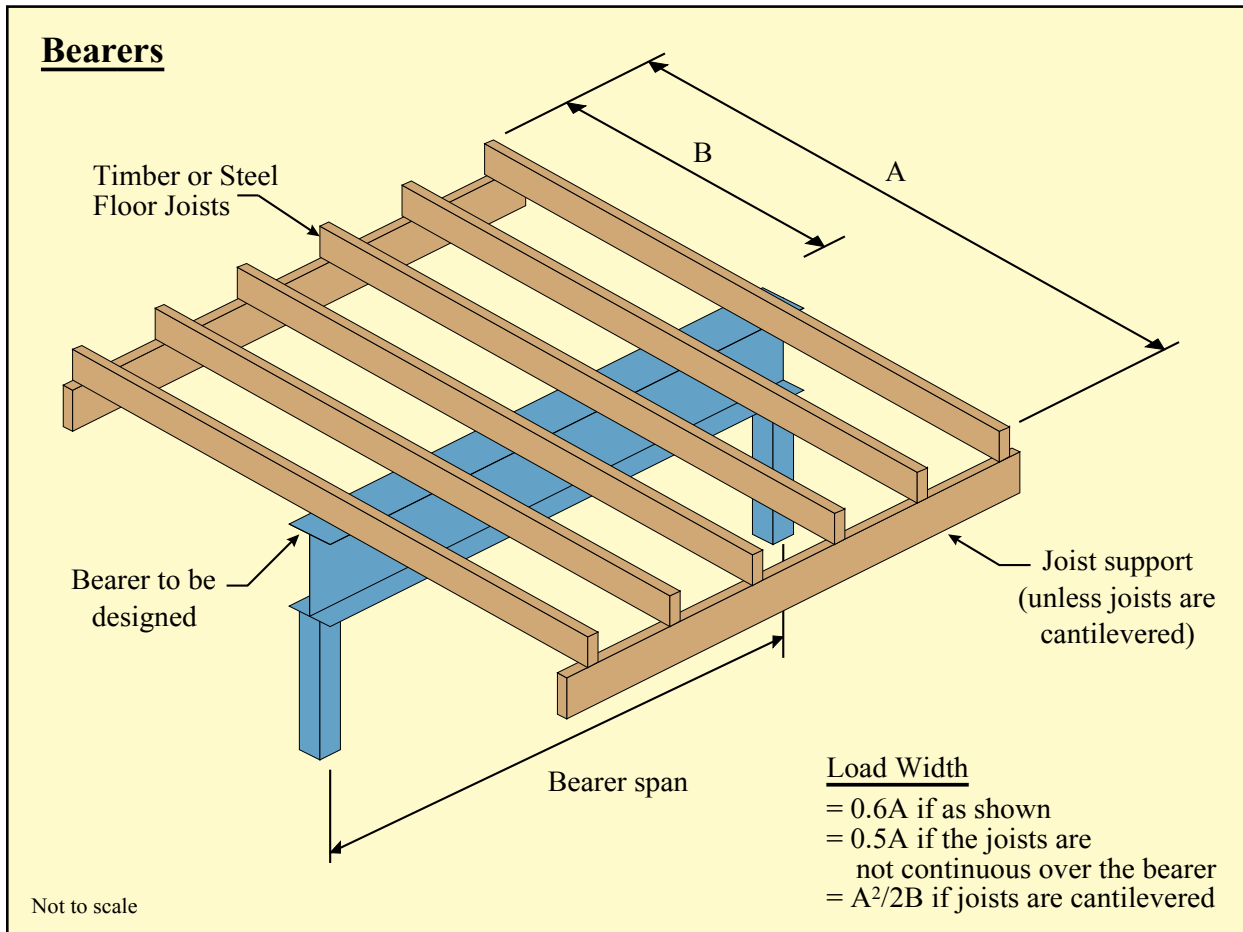
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# BEARERS

	Load (kg/m <sup>2</sup> )		Deflection Limit (mm)	
	Dead Load	Live Load	Dead & Live Load	Live Load
Bearers supporting a timber floor & non load-bearing wall	90	150 (or 180kg point load)	span/240 to 15	span/360 to 10



## Notes:

1. Allowance has been made in the table for a non-load bearing stud wall (not shown) within the floor area supported by the Bearer
2. The single span Bearer case is shown. For continuous Bearers over multiple spans, the variation in span between supports should not be more than 10%
3. The top flange of the bearer is assumed to be continuously laterally supported by floor joists spaced at 450mm centres



# **BEARER SUPPORTING A TIMBER FLOOR AND NON LOAD BEARING STUD WALL - SINGLE SPAN**

Section Designation	Load Width (m)						
	1.2	1.8	2.4	3.0	3.6	4.2	4.8
	MAXIMUM SPAN OF BEARER (m)						
100TFB	3.0	3.0	2.7	2.5	2.4	2.2	2.1
125TFB	4.4	4.1	3.8	3.6	3.4	3.2	3.1
150UB14.0	4.9	4.5	4.2	4.0	3.8	3.7	3.6
• 150UB18.0	5.3	4.8	4.6	4.3	4.1	4.0	3.8
180UB16.1	5.5	5.1	4.7	4.5	4.3	4.1	4.0
180UB18.1	5.7	5.2	4.9	4.6	4.4	4.3	4.1
• 180UB22.2	6.0	5.5	5.2	4.9	4.7	4.5	4.4
200UB18.2	6.1	5.6	5.2	5.0	4.7	4.6	4.4
200UB22.3	6.4	5.9	5.6	5.3	5.1	4.9	4.7
200UB25.4	6.6	6.1	5.7	5.5	5.2	5.0	4.9
• 200UB29.8	6.9	6.4	6.0	5.7	5.5	5.3	5.1
250UB25.7	7.3	6.7	6.3	6.0	5.8	5.6	5.4
250UB31.4	7.6	7.0	6.6	6.3	6.1	5.9	5.7
• 250UB37.3	7.9	7.4	7.0	6.7	6.4	6.2	6.0
310UB32.0	8.3	7.7	7.3	6.9	6.7	6.4	6.2
310UB40.4	8.8	8.2	7.7	7.4	7.1	6.9	6.7
310UB46.2	9.0	8.4	8.0	7.6	7.4	7.1	6.9
75PFC	2.4	2.3	2.1	1.9	1.8	1.7	1.7
100PFC	3.2	3.1	2.9	2.7	2.5	2.4	2.3
125PFC	4.2	4.0	3.7	3.5	3.3	3.1	3.0
150PFC	5.2	4.8	4.5	4.2	4.0	3.9	3.8
180PFC	5.9	5.4	5.1	4.8	4.6	4.4	4.3
200PFC	6.3	5.8	5.4	5.2	5.0	4.8	4.6
230PFC	6.8	6.3	5.9	5.6	5.4	5.2	5.0
250PFC	7.6	7.0	6.6	6.3	6.1	5.9	5.7
300PFC	8.4	7.9	7.4	7.1	6.8	6.6	6.4

Example:  
Refer to Fig. page 6  
Joists continuous over bearer  
Span of bearer=5.0m  
A=7.6m  
B=3.6m  
Load width =0.6A  
=0.6x7.6  
=4.6m  
Use a load width of 4.8  
in the adjacent table:  
a 250UB25.7 will span 5.4m  
  
This is lighter than a 200UB29.8

# **BEARER SUPPORTING A TIMBER FLOOR AND NON LOAD BEARING STUD WALL - CONTINUOUS SPAN**

Section Designation	Load Width (m)						
	1.2	1.8	2.4	3.0	3.6	4.2	4.8
	MAXIMUM SPAN OF BEARER (m)						
100TFB	3.4	3.4	3.1	2.8	2.5	2.3	2.2
125TFB	4.9	4.7	4.4	4.2	3.9	3.6	3.4
150UB14.0	5.6	5.2	4.9	4.6	4.4	4.0	3.8
• 150UB18.0	6.2	5.7	5.3	5.0	4.8	4.6	4.4
180UB16.1	6.5	5.9	5.5	5.2	5.0	4.7	4.4
180UB18.1	6.7	6.1	5.7	5.4	5.1	4.9	4.7
• 180UB22.2	7.1	6.4	6.0	5.7	5.4	5.2	5.1
200UB18.2	7.2	6.5	6.1	5.7	5.5	5.3	5.0
200UB22.3	7.7	7.0	6.5	6.2	5.9	5.7	5.5
200UB25.4	7.8	7.2	6.7	6.3	6.1	5.8	5.6
• 200UB29.8	8.2	7.5	7.0	6.7	6.4	6.1	5.9
250UB25.7	8.7	7.9	7.4	7.0	6.7	6.5	6.2
250UB31.4	9.0	8.4	7.8	7.4	7.1	6.8	6.6
• 250UB37.3	9.4	8.8	8.2	7.8	7.5	7.2	7.0
310UB32.0	9.9	9.1	8.5	8.1	7.7	7.5	7.2
310UB40.4	10.5	9.7	9.2	8.7	8.3	8.0	7.8
310UB46.2	10.7	10.0	9.5	9.0	8.6	8.3	8.1
75PFC	2.6	2.6	2.5	2.2	2.0	1.9	1.7
100PFC	3.6	3.6	3.4	3.0	2.8	2.6	2.4
125PFC	4.7	4.6	4.3	4.0	3.7	3.4	3.2
150PFC	6.1	5.5	5.2	4.9	4.7	4.5	4.3
180PFC	6.9	6.3	5.9	5.6	5.3	5.1	4.9
200PFC	7.5	6.8	6.3	6.0	5.7	5.5	5.4
230PFC	8.1	7.4	6.9	6.5	6.3	6.0	5.8
250PFC	9.0	8.4	7.8	7.4	7.1	6.8	6.6
300PFC	10.0	9.3	8.8	8.3	8.0	7.7	7.5

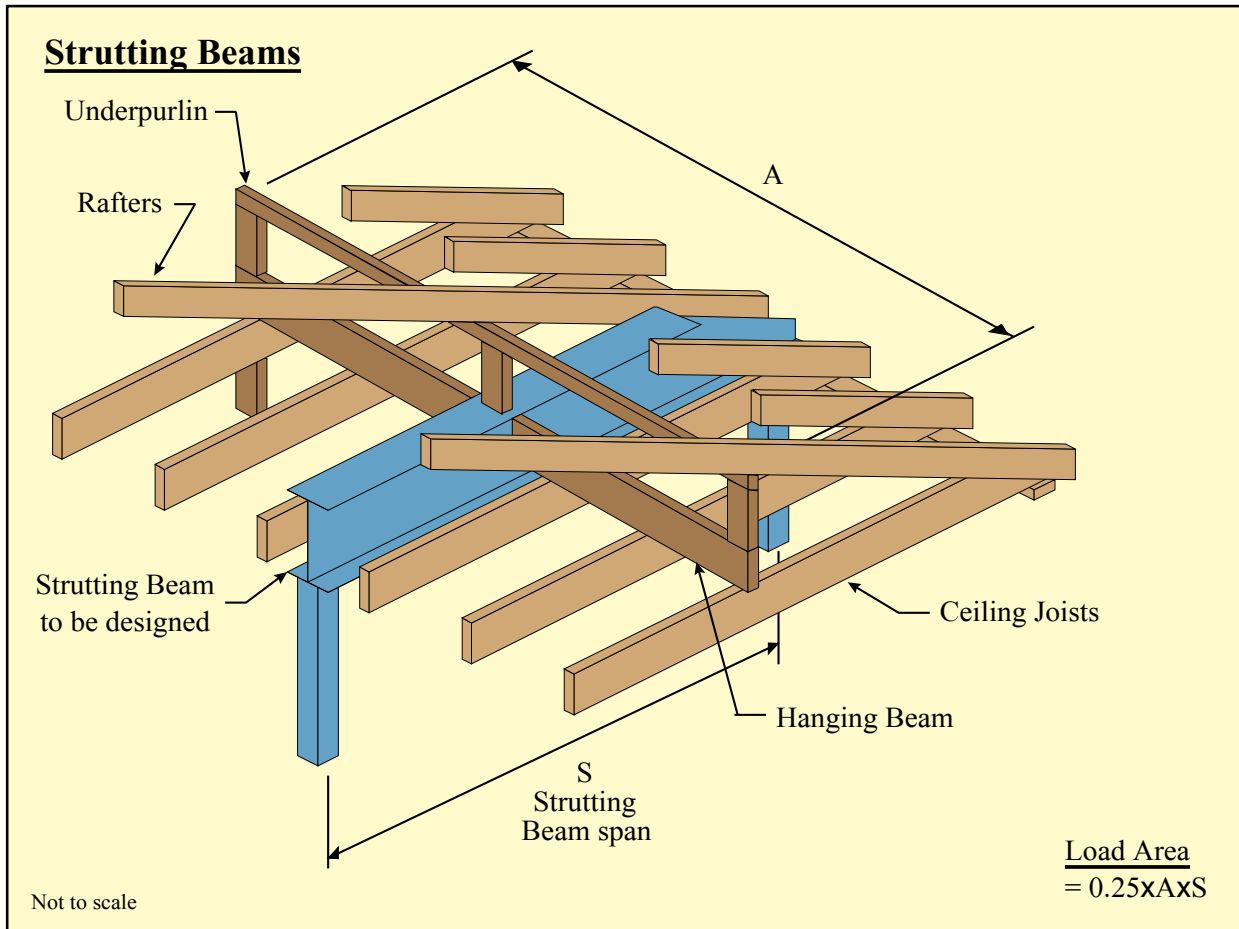
Example:  
Refer to Fig. page 6  
Joists cantilevered  
Span of bearer=5.0m  
A=5.6m  
B=3.4m  
Load width =A<sup>2</sup>/2B  
=5.6<sup>2</sup>/(2x3.4)  
=4.6m  
Use a load width of 4.8  
in the adjacent table:  
a 200UB18.2 will span 5.0m  
  
This is lighter than a 180UB22.2

## **Notes on Tables:**

1. The tables apply for 300PLUS® steel only. For details of your nearest 300PLUS® structural steel supplier, call OneSteel Direct toll free on 1800 1 STEEL (1800 1 78335), or visit our website at [www.onesteel.com](http://www.onesteel.com)
2. For sections marked '•' the next largest size may be more economical.

# STRUTTING BEAMS

	Load (kg/m <sup>2</sup> )		Deflection Limit (mm)	
	Dead Load	Live Load	Dead & Live Load	Live Load
Strutting Beam supporting a steel sheet roof & ceiling	40	25 (or $\geq 180/\text{Area} + 12$ )	span/180 to 20	span/240 to 15
Strutting Beam supporting a tiled roof & ceiling	90	25 (or $\geq 180/\text{Area} + 12$ )	span/180 to 20	span/240 to 15



## Notes:

1. The length of the Rafters and Ceiling Joists are assumed to be within 15% of the Strutting Beam span.
2. Both flanges of the Strutting Beam are assumed to be fully restrained at mid-span.

### STRUTTING BEAM SUPPORTING A STEEL SHEET ROOF AND CEILING - NORMAL WIND N3

Section	Load Area (m <sup>2</sup> )						
Designation	7	10	13	16	19	22	25
MAXIMUM SPAN OF BEAM (m)							
100TFB	3.4	2.7*	2.2*	1.8*	1.5*	1.3*	1.2*
125TFB	5.4	5.0*	4.7*	4.2*	3.6*	3.1*	2.8*
150UB14.0	6.2	5.7*	5.2*	4.6*	4.2*	3.9*	3.6*
• 150UB18.0		6.3*	5.9*	5.6*	5.3*	4.9*	4.6*
180UB16.1		6.7*	6.2*	5.7*	5.2*	4.8*	4.5*
180UB18.1		6.9*	6.5*	6.1*	5.8*	5.3*	5.0*
• 180UB22.2		7.4*	7.0*	6.6*	6.2*	6.0*	5.8*
200UB18.2		7.5*	7.1*	6.7*	6.1*	5.7*	5.4*
200UB22.3			7.7*	7.3*	6.9*	6.6*	6.4*
200UB25.4				7.5*	7.2*	6.9*	6.7*
• 200UB29.8				8.0*	7.6*	7.3*	7.1*
250UB25.7				8.6*	8.2*	7.8*	7.6*
250UB31.4					8.7*	8.4*	8.1*
• 250UB37.3						8.9*	8.7*
310UB32.0						9.4*	9.1*
310UB40.4							
75PFC	2.6	1.8*	1.4*	1.1*			
100PFC	4.0	3.5*	2.6*	2.1*	1.8*	1.5*	1.4*
125PFC	5.3	4.9*	4.5*	3.9*	3.3*	2.8*	2.5*
150PFC		6.1*	5.8*	5.4*	5.1*	4.9*	4.5*
180PFC			6.8*	6.4*	6.1*	5.8*	5.6*
200PFC			7.5*	7.1*	6.7*	6.4*	6.2*
230PFC				7.9*	7.5*	7.2*	6.9*
250PFC						8.4*	8.1*
300PFC							

**Example:**  
Refer to Fig. page 8  
Span S=6.1m  
A=7.0m  
Load area = 0.25xAxS  
= 0.25x7.0x6.1  
= 10.7m<sup>2</sup>  
Use a load area of 13  
sq metres in the adjacent table  
a 180UB16.1 will span 6.2m  
and requires a M10 anchor rod.

### STRUTTING BEAM SUPPORTING A TILED ROOF AND CEILING - NORMAL WIND N3

Section	Load Area (m <sup>2</sup> )						
Designation	7	10	13	16	19	22	25
100TFB	2.7	2.0	1.6*	1.3*	1.1*		
125TFB	4.6	4.1	3.7*	3.0*	2.5*	2.2*	2.0*
150UB14.0	5.2	4.8	4.2*	3.8*	3.2*	2.8*	2.3*
• 150UB18.0	5.8	5.2	4.9*	4.6*	4.3*	3.7*	3.3*
180UB16.1	6.1	5.5	5.1*	4.7*	4.3*	3.8*	3.4*
180UB18.1	6.4	5.8	5.4*	5.0*	4.7*	4.3*	3.8*
• 180UB22.2	6.8	6.2	5.8*	5.4*	5.1*	4.9*	4.7*
200UB18.2	6.9	6.3	5.9*	5.5*	5.0*	4.7*	4.4*
200UB22.3		6.9	6.4*	6.0*	5.7*	5.4*	5.3*
200UB25.4		7.1	6.6*	6.2*	5.9*	5.6*	5.5*
• 200UB29.8		7.6	7.1*	6.7*	6.3*	6.0*	5.8*
250UB25.7		8.1	7.6*	7.1*	6.8*	6.5*	6.2*
250UB31.4			8.1*	7.7*	7.3*	6.9*	6.7*
• 250UB37.3				8.2*	7.8*	7.4*	7.2*
310UB32.0				8.6*	8.1*	7.8*	7.5*
310UB40.4					9.0*	8.6*	8.3*
310UB46.2						9.0*	8.7*
75PFC	1.8	1.3	1.0*				
100PFC	3.3	2.4	1.8*	1.5*	1.3*	1.1*	
125PFC	4.4	4.0	3.4*	2.7*	2.3*	2.0*	1.8*
150PFC	5.6	5.1	4.7*	4.4*	4.1*	3.5*	3.1*
180PFC	6.6	6.1	5.6*	5.3*	5.0*	4.6*	4.1*
200PFC		6.7	6.2*	5.8*	5.5*	5.3*	5.0*
230PFC		7.4	6.9*	6.5*	6.2*	5.9*	5.7*
250PFC				7.7*	7.3*	7.0*	6.7*
300PFC					8.5*	8.1*	7.8*

**Example:**  
Refer to Fig. page 8  
Span S=6.1m  
A=7.0m  
Load area=0.25xAxS  
= 0.25x7.0x6.1  
= 10.7m<sup>2</sup>  
Use load area of 13  
sq metres in the adjacent table  
a 200UB22.3 will span 6.4m  
and requires a M10 anchor rod.

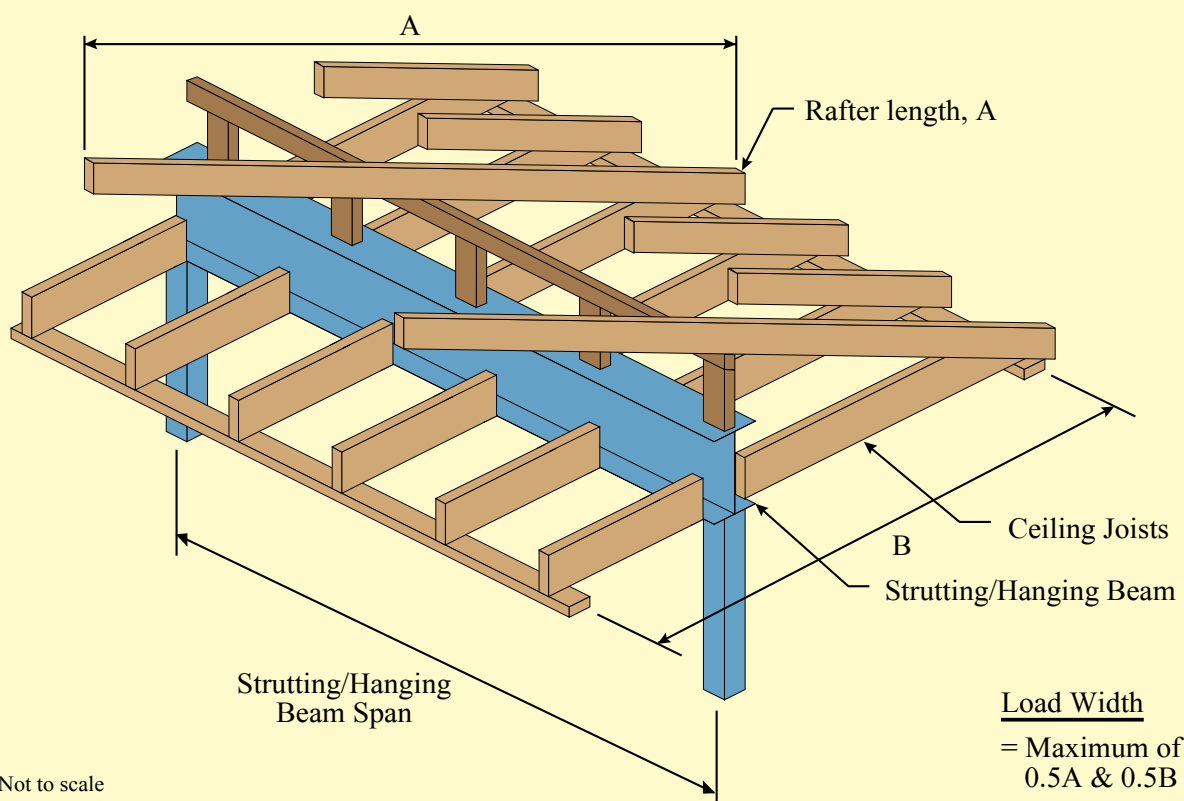
#### Notes on Tables:

- The tables apply for 300PLUS® steel only. For details of your nearest 300PLUS® structural steel supplier, call OneSteel Direct toll free on 1800 1 STEEL (1800 1 78335), or visit our website at [www.onesteel.com](http://www.onesteel.com)
- For sections marked '•' the next largest size may be more economical.
- No symbol next to the span indicates that only nominal holding down is required (uplift is less than 5 kN).  
A "\*" indicates a M10 holding down rod is required (uplift is between 5 and 19 kN).
- For a steel sheet roof in high wind load areas refer to the table on page 20.

# STRUTTING/HANGING BEAMS

	Load (kg/m <sup>2</sup> )		Deflection Limit (mm)	
	Dead Load	Live Load	Dead & Live Load	Live Load
Strutting/Hanging Beam supporting a steel sheet roof & ceiling	40	25 (or $\geq 180/\text{Area} + 12$ )	span/180 to 20	span/240 to 15
Strutting/Hanging Beam supporting a tiled roof & ceiling	90	25 (or $\geq 180/\text{Area} + 12$ )	span/180 to 20	span/240 to 15

## Strutting/Hanging Beams



### Notes:

1. The roof load is assumed to be evenly distributed along the Strutting/Hanging Beam.
2. The bottom flange of the Strutting/Hanging Beam is assumed to be continuously laterally supported by ceiling joists at 600mm maximum centres.

# STRUTTING/HANGING BEAM SUPPORTING A STEEL SHEET ROOF AND CEILING - NORMAL WIND N3

Section	Load Width (m)						
Designation	1.2	1.8	2.4	3.0	3.6	4.2	4.8
MAXIMUM SPAN OF BEAM (m)							
100TFB	3.1	2.8	2.6	2.4	2.2*	2.1*	2.0*
125TFB	5.0	4.4*	4.0*	3.7*	3.5*	3.3*	3.2*
150UB14.0	5.0	4.5*	4.1*	3.8*	3.6*	3.4*	3.2*
• 150UB18.0	6.0	5.3*	4.8*	4.5*	4.2*	4.0*	3.8*
180UB16.1	5.6	5.0*	4.6*	4.2*	4.0*	3.8*	3.7*
180UB18.1		5.4*	4.9*	4.6*	4.3*	4.1*	3.9*
• 180UB22.2		6.1*	5.6*	5.2*	4.9*	4.7*	4.5*
200UB18.2		5.4*	5.0*	4.6*	4.4*	4.2*	4.0*
200UB22.3		6.4*	5.9*	5.5*	5.2*	5.0*	4.8*
200UB25.4		6.9*	6.3*	5.9*	5.6*	5.3*	5.1*
• 200UB29.8		7.7*	7.0*	6.6*	6.2*	5.9*	5.7*
250UB25.7		6.8*	6.2*	5.8*	5.5*	5.3*	5.0*
250UB31.4			7.1*	6.7*	6.3*	6.0*	5.8*
• 250UB37.3			8.0*	7.5*	7.4*	6.8*	6.5+
310UB32.0			7.1*	6.7*	6.4*	6.1*	5.8*
310UB40.4				8.0*	7.5*	7.2+	6.9+
310UB46.2					8.2*	7.8+	7.5+
75PFC	3.1	2.8	2.5	2.3	2.2*	2.1*	2.0*
100PFC	4.0	3.5	3.2*	2.9*	2.8*	2.6*	2.5*
125PFC	5.1	4.5*	4.1*	3.8*	3.6*	3.4*	3.2*
150PFC		5.7*	5.2*	4.9*	4.6*	4.4*	4.2*
180PFC		6.3*	5.7*	5.3*	5.0*	4.8*	4.6*
200PFC		6.6*	6.1*	5.6*	5.3*	5.1*	4.8*
230PFC		6.8*	6.2*	5.8*	5.5*	5.2*	5.0*
250PFC				7.4*	7.0*	6.6*	6.3+
300PFC				7.7*	7.3*	7.0*	6.7+

**Example:**  
Refer to Fig. page 10  
Required beam span=4.0m  
A=7.8m, B=6.0m  
Load width= Maximum of  
=0.5A & 0.5B  
=0.5x7.8  
= 3.9m  
Use a load width of 4.2  
in the adjacent table  
a 150UB18.0 will span 4.0m  
and requires a M10 anchor rod.

# STRUTTING/HANGING BEAM SUPPORTING A TILED ROOF AND CEILING - NORMAL WIND N3

Section	Load Width (m)						
Designation	1.2	1.8	2.4	3.0	3.6	4.2	4.8
MAXIMUM SPAN OF BEAM (m)							
100TFB	2.7	2.4	2.2	2.1	1.9	1.8	1.7
125TFB	4.4	3.8	3.5	3.2	3.0*	2.9*	2.7*
150UB14.0	4.5	3.9	3.6	3.3	3.1*	3.0*	2.8*
• 150UB18.0	5.3	4.6	4.2	3.9*	3.7*	3.5*	3.3*
180UB16.1	5.0	4.4	4.0	3.7*	3.5*	3.3*	3.2*
180UB18.1	5.4	4.7	4.3	4.0*	3.8*	3.6*	3.4*
• 180UB22.2	6.1	5.4	4.9*	4.6*	4.3*	4.1*	3.9*
200UB18.2	5.4	4.8	4.4	4.1*	3.8*	3.7*	3.5*
200UB22.3	6.4	5.7	5.2*	4.9*	4.6*	4.4*	4.2*
200UB25.4	6.9	6.1	5.6*	5.2*	4.9*	4.7*	4.5*
• 200UB29.8	7.7	6.8	6.2*	5.8*	5.5*	5.2*	5.0*
250UB25.7	6.8	6.0	5.5*	5.1*	4.9*	4.6*	4.4*
250UB31.4		6.9	6.3*	5.9*	5.6*	5.3*	5.1*
• 250UB37.3		7.7*	7.1*	6.6*	6.3*	6.0*	5.7*
310UB32.0		6.9	6.4*	5.9*	5.6*	5.4*	5.2*
310UB40.4			7.5*	7.1*	6.7*	6.4*	6.1*
310UB46.2			8.2*	7.6*	7.2*	6.9*	6.6*
75PFC	2.7	2.4	2.2	2.0	1.9	1.8	1.7
100PFC	3.5	3.0	2.8	2.5	2.4	2.3	2.2
125PFC	4.5	3.9	3.6	3.3	3.1*	2.9*	2.8*
150PFC	5.7	5.0	4.6	4.3*	4.0*	3.8*	3.6*
180PFC	6.3	5.5	5.0*	4.7*	4.4*	4.2*	4.0*
200PFC	6.6	5.8	5.3*	4.9*	4.6*	4.4*	4.2*
230PFC	6.8	6.0	5.5*	5.1*	4.8*	4.6*	4.4*
250PFC		7.6*	7.0*	6.5*	6.1*	5.8*	5.6*
300PFC			7.3*	6.8*	6.5*	6.1*	5.9*

**Example:**  
Refer to Fig. page 10  
Required beam span=4.5m  
A=7.6m  
B=7.4m  
Load width=0.5A  
=0.5x7.6  
=3.8m  
Use a load width of 4.2  
in the adjacent table  
a 200UB25.4 will span 4.7m  
and requires a M10 anchor rod.

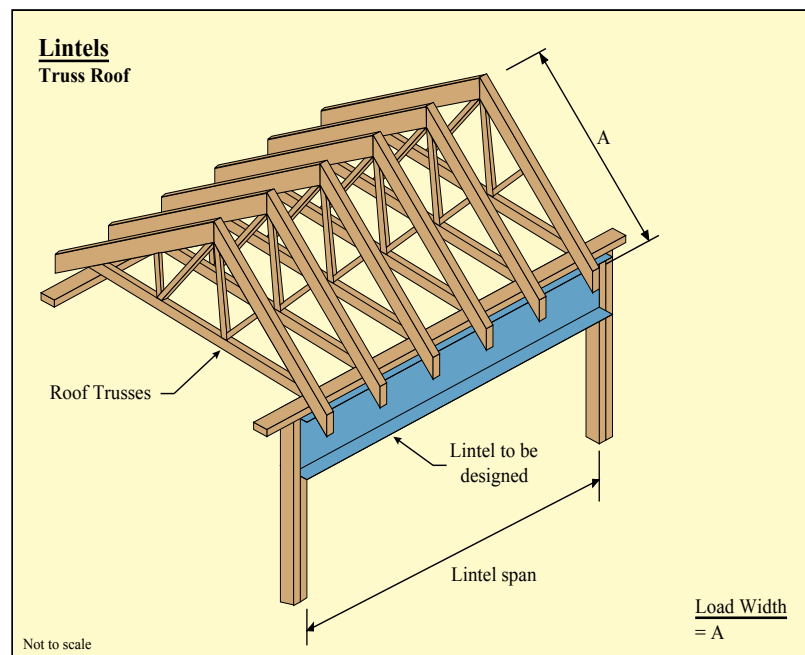
## Notes on Tables:

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- For sections marked '•' the next largest size may be more economical.
- No symbol next to the span indicates that only nominal holding down is required (uplift is less than 5 kN). A "\*" indicates a M10 holding down rod is required (uplift is between 5 and 19 kN). A "+" indicates a M12 holding down bolt is required (uplift is between 19 & 27 kN).
- For a steel sheet roof in high wind load areas refer to the table on page 20.



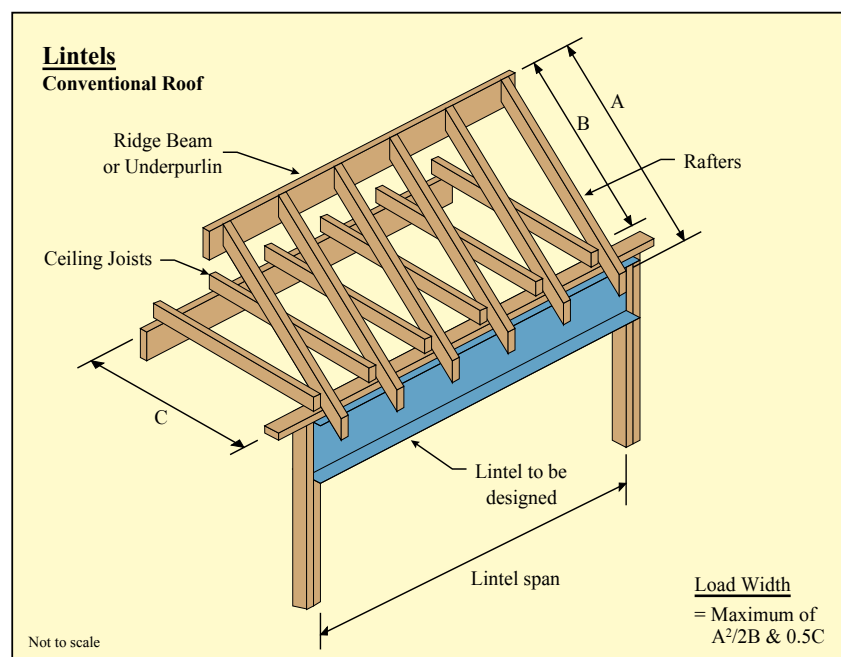
# LINTELS SUPPORTING ROOF

	Load (kg/m <sup>2</sup> )		Deflection Limit (mm)	
	Dead Load	Live Load	Dead & Live Load	Live Load
Lintel supporting a steel sheet roof & ceiling	40	25 (or $\geq 180/\text{Area} + 12$ )	span/240 to 15	span/360 to 10
Lintel supporting tiled roof & ceiling	90	25 (or $\geq 180/\text{Area} + 12$ )	span/240 to 15	span/360 to 10



## Notes:

1. Attention should be given to the load carrying capacity of the timber studs or steel columns that support the Lintel.
2. The top flange of Lintel is assumed to be continuously laterally supported by trusses spaced at 900mm maximum centres. Angles must also be prevented from twisting.



## Notes:

1. If A is much greater than C or vice versa, then the Lintel selection from the table will be conservative.
2. Attention should be given to the load carrying capacity of the timber studs or steel columns that support the Lintel.
3. The top flange of the Lintel is assumed to be continuously laterally supported by joists and rafters spaced at 900mm maximum centres. Angles must also be prevented from twisting.

# **LINTEL SUPPORTING A STEEL SHEET ROOF AND CEILING - NORMAL WIND N3**

Section Designation	Load Width (m)						
	1.2	1.8	2.4	3.0	3.6	4.8	6.0
	<b>MAXIMUM SPAN OF LINTEL (m)</b>						
100TFB	3.7	3.2	2.9	2.7*	2.5*	2.3*	2.1*
125TFB	5.7	5.1*	4.6*	4.2*	4.0*	3.6*	3.3*
150UB14.0	6.1	5.2*	4.7*	4.4*	4.1*	3.7*	3.4*
• 150UB18.0	6.8	6.2	5.6*	5.2*	4.9*	4.4*	4.0*
180UB16.1	6.8*	5.9*	5.4*	5.0*	4.7*	4.2*	3.9*
180UB18.1		6.4*	5.8*	5.3*	5.0*	4.5*	4.2*
• 180UB22.2		7.2*	6.6*	6.1*	5.7*	5.1*	4.7*
200UB18.2		6.5*	5.9*	5.4*	5.1*	4.6*	4.3*
200UB22.3		7.8*	7.1*	6.5*	6.1*	5.6*	5.2+
200UB25.4		8.0*	7.5*	7.0*	6.5*	5.9*	5.5+
• 200UB29.8		8.4*	7.9*	7.5*	7.2*	6.6+	6.1+
250UB25.7		8.3*	7.5*	6.9*	6.5*	5.9*	5.5+
250UB31.4			8.7*	8.0*	7.5*	6.8+	6.3+
250UB37.3			9.2*	8.8*	8.5+	7.7+	
75PFC	3.5	3.1	2.8	2.6*	2.4*	2.2*	2.0*
100PFC	4.5	4.0	3.6*	3.3*	3.1*	2.8*	2.5*
125PFC	5.6	5.2*	4.7*	4.3*	4.0*	3.6*	3.3*
150PFC		6.2*	5.9*	5.6*	5.2*	4.7*	4.3*
180PFC		7.1*	6.7*	6.2*	5.8*	5.2*	4.8+
200PFC		7.6*	7.1*	6.6*	6.2*	5.5*	5.1+
230PFC		8.2*	7.4*	6.8*	6.4*	5.8*	5.3+
250PFC			8.4*	8.0*	7.4+	6.8+	
75 x 75 x 5EA	2.8	2.5	2.3	2.1	1.9	1.6	
90 x 90 x 6EA	3.7	3.4	3.2	2.9*	2.6*	2.3*	
100 x 75 x 6UA	3.9	3.7	3.4*	3.0*	2.7*	2.4*	
100 x 100 x 6EA	4.0	3.8	3.5*	3.2*	2.9*	2.5*	
125 x 75 x 6UA	4.6	4.3*	4.0*	3.1*	3.2*	2.8*	
150 x 90 x 8UA	5.7	5.3*	5.0*	3.6*	4.6*	3.9*	
150 x 100 x 10UA	6.0	5.6*	5.3*	5.0*	4.9*	4.5*	

Example:  
Refer to Fig. page 12  
Lintel Span=4.6m, trussed roof  
A=4.7m  
Load width=A  
=4.7m  
Use a load width of 4.8 in  
the adjacent table a 200UB18.2  
will span 4.6m and requires a  
M10 anchor rod.

## **LINTEL SUPPORTING A TILED ROOF AND CEILING - NORMAL WIND N3**

Section Designation	Load Width (m)						
	1.2	1.8	2.4	3.0	3.6	4.8	6.0
	<b>MAXIMUM SPAN OF LINTEL (m)</b>						
100TFB	3.8	3.4	3.2	3.0	2.8	2.4*	2.2*
125TFB	5.0	4.6	4.3	4.1*	3.9*	3.7*	3.4*
150UB14.0	5.6	5.1	4.8*	4.6*	4.4*	4.1*	3.9*
• 150UB18.0	6.0	5.5	5.2*	4.9*	4.7*	4.4*	4.2*
180UB16.1	6.3	5.8	5.4*	5.1*	4.9*	4.6*	4.3*
180UB18.1	6.5	5.9	5.6*	5.3*	5.1*	4.7*	4.5*
• 180UB22.2	6.8	6.3	5.9*	5.6*	5.4*	5.0*	4.7*
200UB18.2	6.9	6.4	6.0*	5.7*	5.4*	5.1*	4.8*
200UB22.3	7.4	6.8*	6.4*	6.1*	5.8*	5.4*	5.1*
200UB25.4	7.6	7.0*	6.6*	6.2*	6.0*	5.6*	5.3*
• 200UB29.8	8.0	7.4*	6.9*	6.6*	6.3*	5.9*	5.6*
250UB25.7	8.4	7.8*	7.3*	6.9*	6.6*	6.2*	5.9*
250UB31.4		8.2*	7.7*	7.3*	7.0*	6.5*	6.2*
250UB37.3		8.6*	8.1*	7.7*	7.4*	6.9*	6.5*
75PFC	2.9	2.6	2.4	2.3	2.1	2.0	1.8*
100PFC	3.9	3.6	3.4	3.1	3.0	2.7*	2.5*
125PFC	4.9	4.5	4.2	4.0*	3.8*	3.6*	3.3*
150PFC	5.9	5.4	5.1*	4.8*	4.6*	4.3*	4.1*
180PFC	6.7	6.2	5.8*	5.5*	5.3*	4.9*	4.7*
200PFC	7.2	6.6*	6.2*	5.9*	5.7*	5.3*	5.0*
230PFC	7.8	7.2*	6.8*	6.4*	6.2*	5.8*	5.5*
250PFC		8.2*	7.7*	7.3*	7.0*	6.5*	6.2*
75 x 75 x 5EA	2.3	2.1	1.9	1.7	1.6	1.4	
90 x 90 x 6EA	3.1	2.8	2.6	2.4	2.2	1.9	
100 x 75 x 6UA	3.4	3.1	2.8	2.5	2.3	2.0	
100 x 100 x 6EA	3.5	3.2	2.9	2.7	2.4	2.1	
125 x 75 x 6UA	4.1	3.8	3.5	3.2	2.8	2.5*	
150 x 90 x 8UA	5.0	4.6	4.3	4.1*	4.0*	3.5*	
150 x 100 x 10UA	5.3	4.8	4.6	4.3*	4.2*	3.9*	

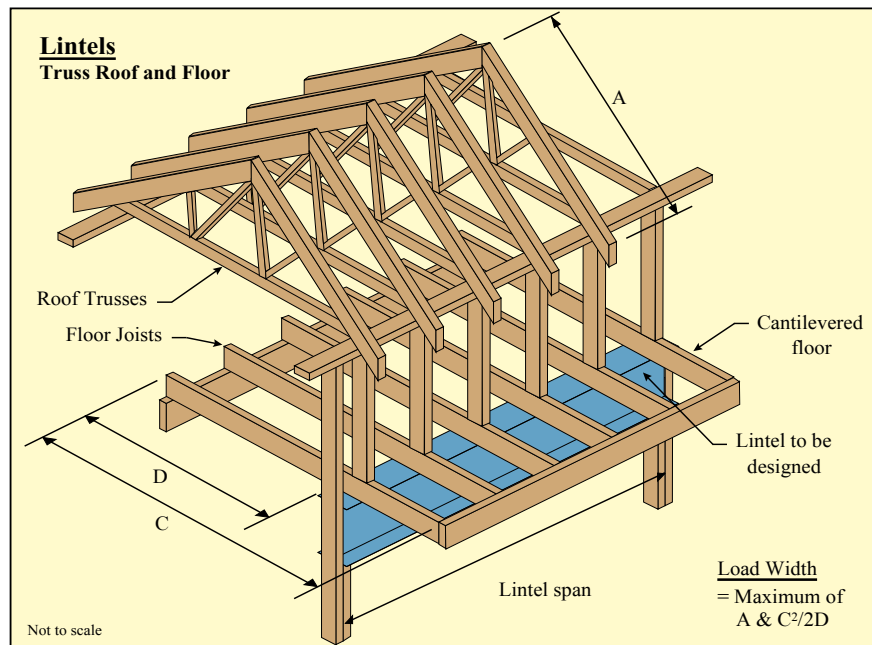
Example:  
Refer to Fig. page 12  
Lintel Span=4.6m,  
conventional roof  
A=3.9m  
B=3.0m, C=4.5m  
Load width=A<sup>2</sup>/(2B)  
=3.9<sup>2</sup>/(2x3.0)  
=2.5m  
Use a load width of 3.0  
in the adjacent table a 150UB14.0  
will span 4.6m and requires a  
M10 anchor rod.

### **Notes on Tables:**

- The tables apply for 300PLUS® steel only. For details of your nearest 300PLUS® structural steel supplier, call OneSteel Direct toll free on 1800 1 STEEL (1800 1 78335), or visit our website [www.onesteel.com](http://www.onesteel.com)
- For angle lintels, the first dimension corresponds to the vertical lintel leg, eg for 100x75x6UA, 100mm leg is vertical.
- For sections marked '•' the next largest size may be more economical.
- No symbol next to the span indicates that only nominal holding down is required (uplift is less than 5 kN).  
A "\*" indicates a M10 holding down rod is required (uplift is between 5 and 19 kN).  
A "+" indicates a M12 holding down bolt is required (uplift is between 19 and 27 kN).
- For a steel sheet roof in high wind load areas refer to the table on page 21.

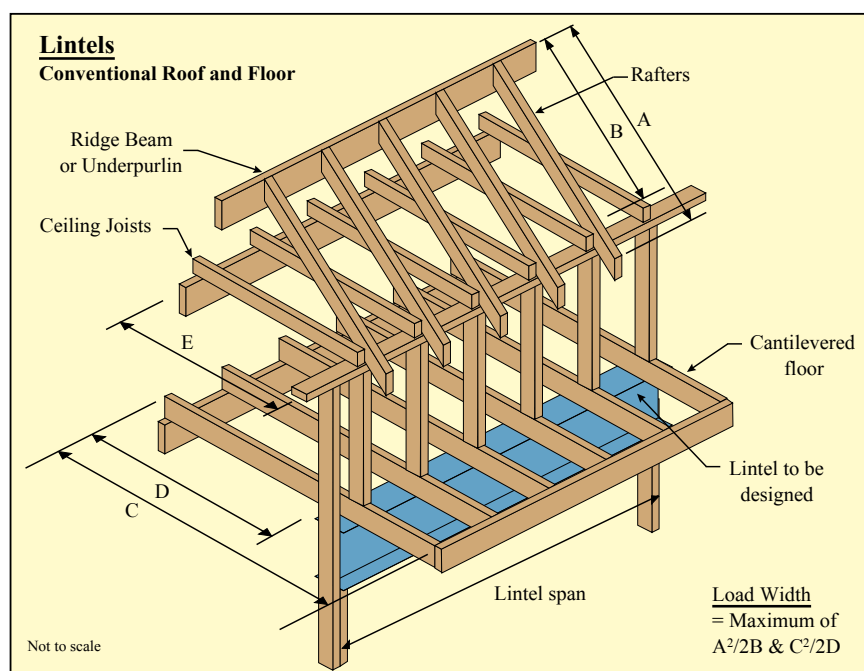
# LINTELS SUPPORTING ROOF AND FLOOR

	Load (kg/m <sup>2</sup> )		Deflection Limit (mm)	
	Dead Load	Live Load	Dead & Live Load	Live Load
Lintel supporting timber floor, steel sheet roof & ceiling	130	175	span/240 to 15	span/360 to 10
Lintel supporting timber floor, tiled roof & ceiling	130	175	span/240 to 15	span/360 to 10



## Notes:

1. If A is much greater than C or vice versa, then the Lintel selection from the table will be conservative.
2. If there is no cantilevered floor then set  $C=D$  in the calculation of Load Width.
3. Attention should be given to the load carrying capacity of the timber studs or steel columns that support the Lintel.
4. The top flange of the Lintel is assumed to be continuously laterally supported by floor joists spaced at 450mm centres.



## Notes:

1. If  $A^2/2B$  is much greater than  $C^2/2D$  or vice versa, then the Lintel selection from the table will be conservative.
2. E is to be no more than 10% greater than A.
3. If there is no cantilevered floor then set  $C=D$  in the calculation of Load Width.
4. Attention should be given to the load carrying capacity of the timber studs or steel columns that support the Lintel.
5. The top flange of the Lintel is assumed to be continuously laterally supported by Floor Joists spaced at 450mm centres.

# **LINTEL SUPPORTING A TIMBER FLOOR, STEEL SHEET ROOF AND CEILING - NORMAL WIND N3**

Section	Load Width (m)						
Designation	1.2	1.8	2.4	3.0	3.6	4.2	4.8
MAXIMUM SPAN OF LINTEL (m)							
100TFB	2.9	2.6	2.4	2.2	2.0	1.9	1.8
125TFB	4.0	3.7	3.4	3.2	3.0	2.9	2.7
150UB14.0	4.4	4.1	3.8	3.6	3.5	3.3	3.2
• 150UB18.0	4.8	4.4	4.1	3.9	3.8	3.6	3.5
180UB16.1	5.0	4.6	4.3	4.1	3.9	3.8	3.7
180UB18.1	5.2	4.7	4.4	4.2	4.0	3.9	3.8
• 180UB22.2	5.5	5.0	4.7	4.5	4.3	4.1	4.0
200UB18.2	5.5	5.1	4.8	4.5	4.3	4.2	4.0
200UB22.3	5.9	5.4	5.1	4.8	4.7	4.5	4.3
200UB25.4	6.1	5.6	5.2	5.0	4.8	4.6	4.5*
• 200UB29.8	6.4	5.9	5.5	5.3	5.0	4.9	4.7*
250UB25.7	6.7	6.2	5.8	5.5	5.3	5.1	5.0*
250UB31.4	7.1	6.5	6.1	5.8	5.6	5.4*	5.2*
250UB37.3	7.5	6.9	6.5	6.2	5.9	5.7*	5.5*
310UB32.0	7.7	7.1	6.7	6.4	6.1	5.9*	5.7*
310UB40.4	8.3	7.7	7.2	6.9	6.6	6.4*	6.2*
310UB46.2	8.6	8.0	7.5	7.1	6.9	6.6*	6.4*
75PFC	2.2	2.0	1.8	1.7	1.6	1.5	1.4
100PFC	3.1	2.7	2.5	2.3	2.2	2.1	2.0
125PFC	3.9	3.6	3.3	3.1	2.9	2.8	2.7
150PFC	4.7	4.3	4.0	3.8	3.7	3.6	3.4
180PFC	5.3	4.9	4.6	4.4	4.2	4.1	3.9
200PFC	5.8	5.3	5.0	4.7	4.5	4.4	4.2
230PFC	6.3	5.8	5.4	5.2	4.9	4.8	4.6*
250PFC	7.1	6.5	6.2	5.9	5.6	5.4	5.3*
300PFC	8.0	7.4	6.9	6.6	6.3	6.1*	5.9*

**Example:**  
Refer to Fig. page 14  
Lintel Span=4.6m, trussed roof  
A=3.8m  
C=3.0m      D=1.5m  
Load width is the max of  
    =A or C<sup>2</sup>/2D  
    =3.8 or 3.0<sup>2</sup>/(2x1.5)  
    =3.8m  
Use a load width of 4.2  
in the adjacent table  
a 200UB25.4 will span 4.6m.  
No anchor rod is required.

Example:  
Refer to Fig. page 14  
Lintel Span=4.6m, trussed roof  
A=3.8m  
C=3.0m D=1.5m  
Load width is the max of  
=A or C<sup>2</sup>/2D  
=3.8 or 3.0<sup>2</sup>/(2x1.5)  
=3.8m  
Use a load width of 4.2  
in the adjacent table  
a 200UB25.4 will span 4.6m.  
No anchor rod is required.

## **LINTEL SUPPORTING A TIMBER FLOOR, TILED ROOF AND CEILING - NORMAL WIND N3**

Section Designation	Load Width (m)						
	1.2	1.8	2.4	3.0	3.6	4.2	4.8
MAXIMUM SPAN OF LINTEL (m)							
100TFB	2.7	2.4	2.2	2.1	1.9	1.8	1.7
125TFB	3.8	3.5	3.2	3.0	2.8	2.7	2.6
150UB14.0	4.3	3.9	3.7	3.5	3.3	3.1	3.0
• 150UB18.0	4.6	4.2	4.0	3.8	3.6	3.5	3.3
180UB16.1	4.8	4.4	4.1	3.9	3.8	3.6	3.5
180UB18.1	5.0	4.6	4.3	4.1	3.9	3.7	3.6
• 180UB22.2	5.3	4.8	4.5	4.3	4.1	4.0	3.8
200UB18.2	5.3	4.9	4.6	4.3	4.2	4.0	3.9
200UB22.3	5.7	5.2	4.9	4.7	4.5	4.3	4.2
200UB25.4	5.9	5.4	5.0	4.8	4.6	4.4	4.3
• 200UB29.8	6.2	5.7	5.3	5.0	4.8	4.7	4.5
250UB25.7	6.5	5.9	5.6	5.3	5.1	4.9	4.7
250UB31.4	6.8	6.3	5.9	5.6	5.4	5.2	5.0
250UB37.3	7.2	6.6	6.2	5.9	5.7	5.5	5.3
310UB32.0	7.5	6.9	6.4	6.1	5.9	5.7	5.5
310UB40.4	8.0	7.4	7.0	6.6	6.3	6.1	5.9
310UB46.2	8.3	7.7	7.2	6.9	6.6	6.3	6.2
75PFC	2.1	1.9	1.7	1.6	1.5	1.4	1.3
100PFC	2.9	2.6	2.4	2.2	2.1	2.0	1.9
125PFC	3.8	3.4	3.1	2.9	2.7	2.6	2.5
150PFC	4.5	4.1	3.9	3.7	3.5	3.4	3.2
180PFC	5.2	4.7	4.4	4.2	4.0	3.9	3.8
200PFC	5.6	5.1	4.8	4.5	4.4	4.2	4.1
230PFC	6.0	5.5	5.2	4.9	4.7	4.6	4.4
250PFC	6.9	6.3	5.9	5.6	5.4	5.2	5.0
300PFC	7.7	7.1	6.7	6.3	6.1	5.9	5.7

**Example:**  
Refer to Fig. page 14  
Lintel Span=4.6m, trussed roof  
A=3.8m  
C=3.0m      D=1.0m  
Load width is the max of  
=A or (C<sup>2</sup>/2D)  
=3.8 or 3<sup>2</sup>/(2x1.0)  
=4.5m  
Use a load width of 4.8  
in the adjacent table  
a 200UB25.7 will span 4.7m.  
No anchor rod is required.

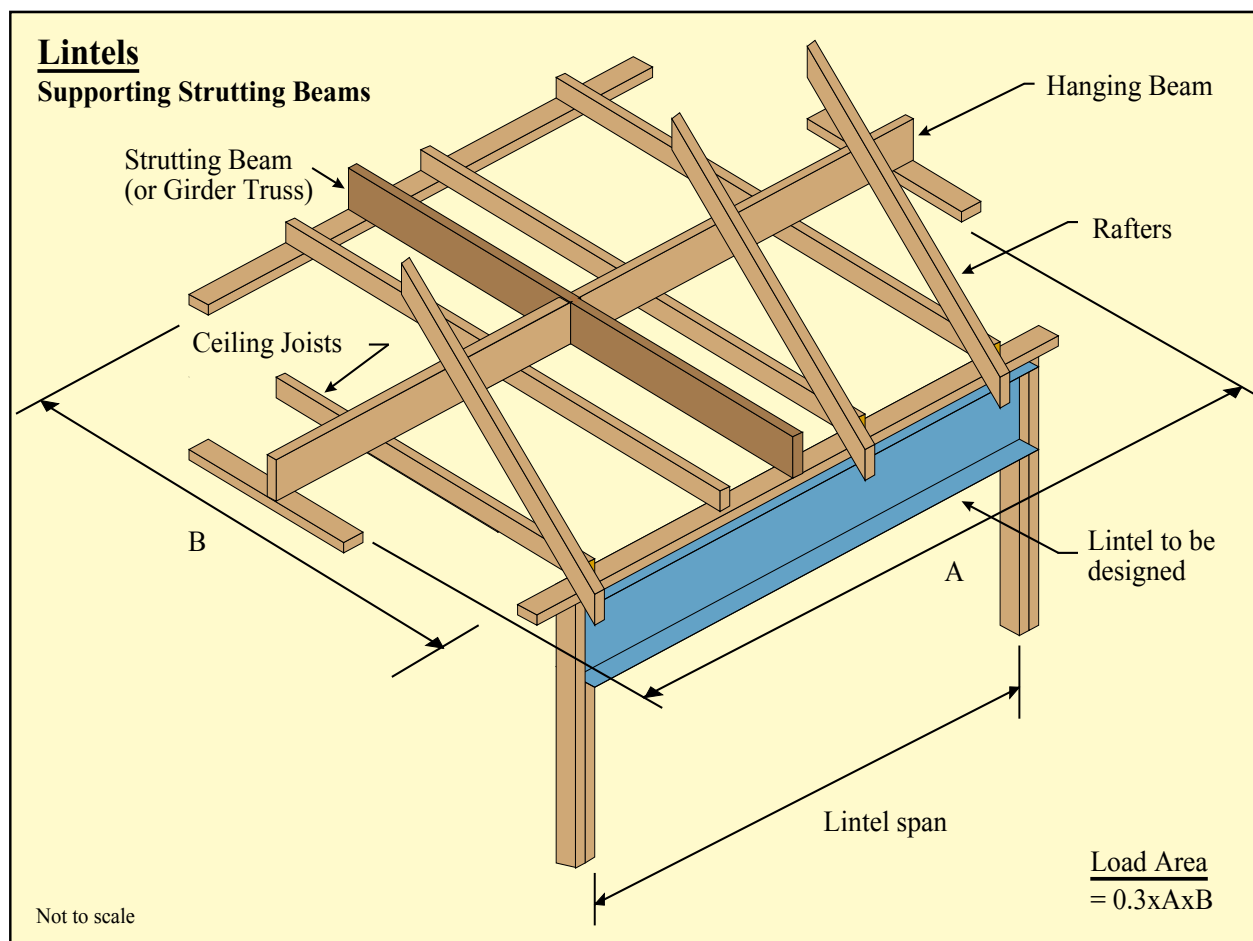
Example:  
Refer to Fig. page 14  
Lintel Span=4.6m, trussed roof  
A=3.8m  
C=3.0m D=1.0m  
Load width is the max of  
=A or (C<sup>2</sup>/2D)  
=3.8 or 3<sup>2</sup>/(2x1.0)  
=4.5m  
Use a load width of 4.8  
in the adjacent table  
a 200UB25.7 will span 4.7m.  
No anchor rod is required.

### **Notes on Tables:**

- The tables apply for 300PLUS® steel only. For details of your nearest 300PLUS® structural steel supplier, call OneSteel Direct toll free on 1800 1 STEEL (1800 1 78335), or visit our website at [www.onesteel.com](http://www.onesteel.com)
- For angle lintels, the first dimension corresponds to the vertical lintel leg, eg for 100x75x6UA, 100mm leg is vertical.
- For sections marked '•' the next largest size may be more economical.
- No symbol next to the span indicates that only nominal holding down is required (uplift is less than 5 kN).  
A "\*" indicates a M10 holding down rod is required (uplift is between 5 and 19 kN).

# LINTELS SUPPORTING STRUTTING BEAM (or Girder Truss)

	Load (kg/m <sup>2</sup> )		Deflection Limit (mm)	
	Dead Load	Live Load	Dead & Live Load	Live Load
Lintel supporting strutting beam, steel sheet roof and ceiling	40	25 (or $\geq 180/\text{Area} + 12$ )	span/240 to 15	span/360 to 10
Lintel supporting strutting beam, tiled roof and ceiling	90	25 (or $\geq 180/\text{Area} + 12$ )	span/240 to 15	span/360 to 10



## Notes:

1. The length of the rafters are assumed to be within 15% of the Strutting Beam span (B).
2. The Strutting Beam is assumed to be supported by the Lintel at mid-span.
3. The top flange of the Lintel is assumed to be laterally supported at mid-span.



# **LINTEL SUPPORTING A STRUTTING BEAM, STEEL SHEET ROOF AND CEILING - NORMAL WIND N3**

Section	Load Area (m <sup>2</sup> )						
Designation	7	10	13	16	19	22	25
MAXIMUM SPAN OF LINTEL (m)							
100TFB	2.2	1.8*	1.5*	1.3*	1.2*	1.1*	1.0*
125TFB	4.5	3.6*	3.1*	2.8*	2.5*	2.3*	2.1*
150UB14.0	4.7	3.8*	3.3*	3.0*	2.7*	2.5*	2.4*
• 150UB18.0	6.1	5.0*	4.3*	3.8*	3.5*	3.2*	3.0*
180UB16.1	5.6	4.7*	4.1*	3.7*	3.3*	3.1*	2.9*
180UB18.1		5.2*	4.5*	4.1*	3.7*	3.4*	3.2*
• 180UB22.2		6.4*	5.5*	4.9*	4.5*	4.1*	3.9*
200UB18.2		5.4*	4.7*	4.2*	3.9*	3.6*	3.4*
200UB22.3			6.2*	5.6*	5.1*	4.8*	4.5*
200UB25.4			6.8*	6.1*	5.6*	5.2*	4.9*
• 200UB29.8			7.7*	7.3*	6.6*	6.1*	5.8*
250UB25.7			6.8*	6.1*	5.6*	5.2*	4.9*
250UB31.4					6.9*	6.5*	6.1*
250UB37.3					8.3*	7.7*	7.2*
310UB32.0					7.1*	6.6*	6.3*
310UB40.4							8.1*
75PFC	2.0	1.6*	1.3*	1.1*			
100PFC	3.0	2.4*	2.1*	1.8*	1.6*	1.4*	1.4*
125PFC	4.6	3.7*	3.2*	2.8*	2.5*	2.3*	2.2*
150PFC		5.6*	4.8*	4.3*	3.9*	3.5*	3.3*
180PFC		6.6*	5.7*	5.0*	4.6*	4.2*	3.9*
200PFC			6.2*	5.5*	5.0*	4.6*	4.3*
230PFC			6.6*	5.9*	5.3*	4.9*	4.6*
250PFC					7.9*	7.2*	6.8*
300PFC							7.5*

**Example:**  
Refer to Fig. page 16  
Span=6.1m  
A=8.4m  
B=7.0  
Load area =0.3xAxB  
=0.3x8.4x7.0  
=17.6m<sup>2</sup>  
Use a load area of 19  
sq metres in the adjacent table  
a 200UB29.8 will span 6.6m  
and requires a M10 anchor rod.

# **LINTEL SUPPORTING A STRUTTING BEAM, TILED ROOF AND CEILING - NORMAL WIND N3**

Section	Load Area (m <sup>2</sup> )						
Designation	7	10	13	16	19	22	25
MAXIMUM SPAN OF LINTEL (m)							
100TFB	2.7	2.1	1.6*	1.3*	1.1*		
125TFB	4.1	3.7	3.5*	3.1*	2.5*	2.2*	2.0*
150UB14.0	4.8	4.3	3.9*	3.7*	3.3*	2.7*	2.5*
• 150UB18.0	5.3	4.8	4.4*	4.1*	4.0*	3.7*	3.3*
180UB16.1	5.5	5.0	4.7*	4.2*	4.1*	3.8*	3.4*
180UB18.1	5.8	5.3	4.9*	4.6*	4.4*	4.2*	3.8*
• 180UB22.2	6.2	5.7	5.3*	4.9*	4.7*	4.5*	4.3*
200UB18.2	6.3	5.7	5.3*	4.9*	4.7*	4.1*	4.1*
200UB22.3		6.3	5.8*	5.5*	5.2*	4.9*	4.8*
200UB25.4		6.5	6.0*	5.7*	5.4*	5.1*	5.0*
• 200UB29.8		6.9	6.5*	6.1*	5.7*	5.5*	5.3*
250UB25.7		7.4	6.9*	6.5*	6.1*	5.9*	5.7*
250UB31.4			7.4*	7.0*	6.6*	6.3*	6.1*
250UB37.3			7.9*	7.5*	7.1*	6.8*	6.6*
310UB32.0			8.3*	7.8*	7.4*	7.1*	6.9*
310UB40.4					8.2*	7.8*	7.6*
310UB46.2					8.5*	8.2*	7.9*
75PFC	1.8	1.3	1.0*				
100PFC	2.8	2.4	1.8*	1.5*	1.3*	1.1*	
125PFC	4.0	3.6	3.3*	2.7*	2.3*	2.0*	1.8*
150PFC	5.1	4.6	4.3*	4.0*	3.8*	3.5*	3.1*
180PFC	6.1	5.5*	5.1*	4.8*	4.5*	4.3*	4.1*
200PFC		6.1*	5.6*	5.3*	5.0*	4.8*	4.6*
230PFC		6.8*	6.3*	5.9*	5.6*	5.4*	5.2*
250PFC			7.4*	7.0*	6.6*	6.3*	6.1*
300PFC				8.1*	7.7*	7.4*	7.1*

**Example:**  
Refer to Fig. page 16  
Span=6.1m  
A=8.4m  
B=7.0m  
Load area =0.3xAxS  
=0.3x8.4x7.0  
=17.6m<sup>2</sup>  
Use a load area of 19  
sq metres in the adjacent table  
a 250UB25.7 will span 6.1m  
and requires a M10 anchor rod.

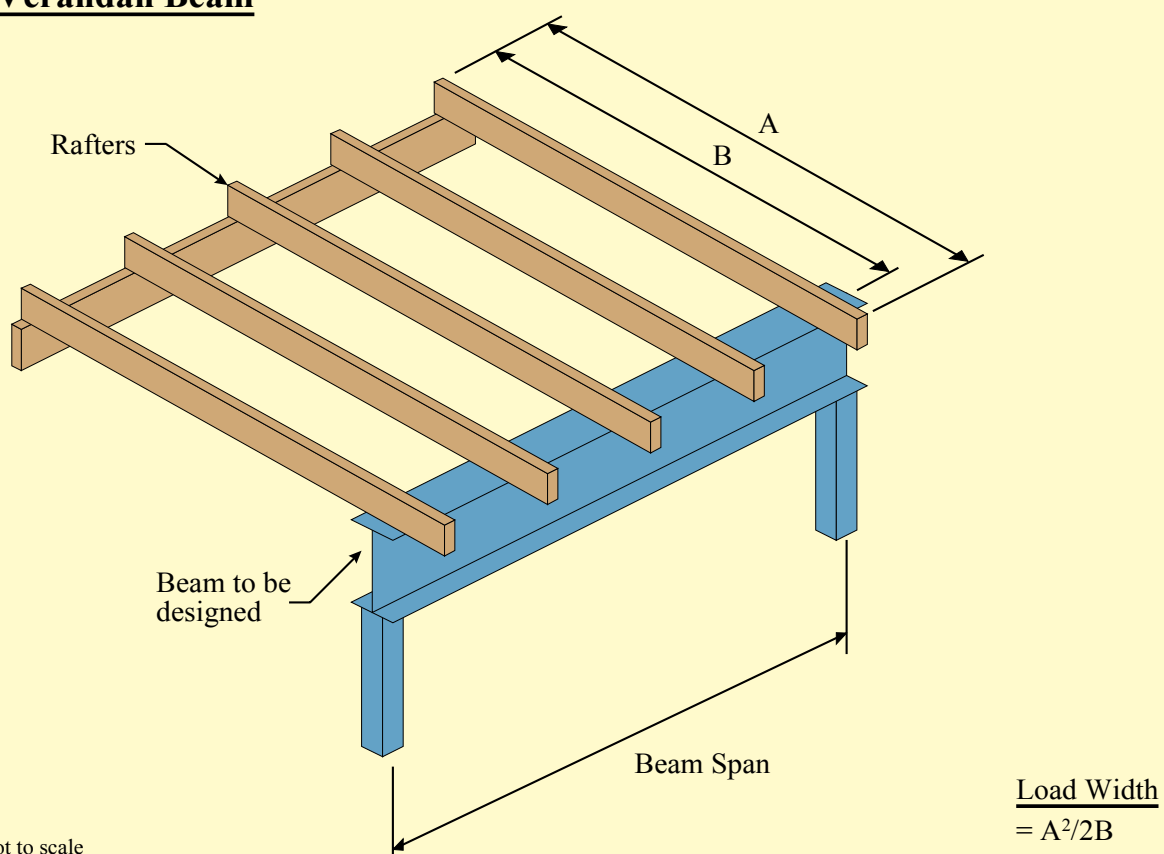
## **Notes on Tables:**

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- For sections marked '•' the next largest size may be more economical.
- No symbol next to the span indicates that only nominal holding down is required (uplift is less than 5 kN).  
A “\*” indicates a M10 holding down rod is required (uplift is between 5 and 19 kN).

# VERANDAH BEAMS

	Load (kg/m <sup>2</sup> )		Deflection Limit (mm)	
	Dead Load	Live Load	Dead & Live Load	Live Load
Beams supporting a steel sheet verandah roof or carport	40	25 (or $\geq 180/\text{Area} + 12$ )	span/240 to 15	span/360 to 10
Beams supporting a tiled verandah roof or carport	90	25 (or $\geq 180/\text{Area} + 12$ )	span/240 to 15	span/360 to 10

## Verandah Beam



### Notes:

1. The top flange of the Beam is assumed to be continuously laterally supported by rafters at 900mm maximum centres.

# **BEAM SUPPORTING A STEEL SHEET VERANDAH OR CARPORT ROOF - NORMAL WIND N3**

Section Designation	Load Width (m)						
	1.2	1.8	2.4	3.0	3.6	4.2	4.8
MAXIMUM SPAN OF BEAM (m)							
100TFB	3.2	2.8*	2.5*	2.3*	2.1*	2.0*	1.9*
125TFB	5.0*	4.3*	3.9*	3.6*	3.4*	3.2*	3.0*
150UB14.0	5.2*	4.5*	4.0*	3.7*	3.5*	3.3*	3.2*
• 150UB18.0	6.1*	5.3*	4.8*	4.4*	4.1*	3.9*	3.7*
180UB16.1	5.8*	5.1*	4.6*	4.2*	4.0*	3.8*	3.6*
180UB18.1		5.5*	4.9*	4.6*	4.3*	4.1*	3.9+
• 180UB22.2		6.2*	5.6*	5.2*	4.8*	4.6+	4.4+
200UB18.2		5.6*	5.0*	4.7*	4.4*	4.2*	4.0+
200UB22.3		6.7*	6.1*	5.6*	5.3+	5.0+	4.8+
200UB25.4		7.1*	6.5*	6.0*	5.6+	5.3+	5.1+
• 200UB29.8		8.0*	7.2*	6.7+	6.3+	5.9+	5.6^
250UB25.7		7.1*	6.4*	6.0*	5.6+	5.3+	5.1+
250UB31.4			7.4*	6.9+	6.5+	6.2+	5.9^
• 250UB37.3			8.4+	7.7+	7.3+	6.9^	6.6^
310UB32.0			7.5*	7.0+	6.6+	6.3+	6.0^
310UB40.4				8.3+	7.9^	7.5^	7.1^
310UB46.2					8.5^	8.0^	7.7^
75PFC	3.1	2.6	2.4*	2.2*	2.0*	1.9*	1.8*
100PFC	3.9	3.4*	3.0*	2.8*	2.6*	2.5*	2.3*
125PFC	5.1*	4.4*	4.0*	3.7*	3.4*	3.2*	3.1*
150PFC		5.7*	5.2*	4.8*	4.4*	4.2*	4.0+
180PFC		6.4*	5.7*	5.3*	4.9*	4.7+	4.4+
200PFC		6.7*	6.1*	5.6*	5.2+	4.9+	4.7+
230PFC		7.0*	6.3*	5.8*	5.4+	5.1+	4.9+
250PFC				7.5+	7.0+	6.6^	6.3^
300PFC				8.0+	7.4+	7.0^	6.7^

**Example:**  
Refer to Fig. page 18  
Span=6.1m  
A=7.0m, B=6.1m  
Load width=A<sup>2</sup>/2B  
=7.0<sup>2</sup>/(2x6.1)  
=4.0m  
Use a load width of 4.2  
in the adjacent table  
a 250UB31.4 will span 6.2m  
and requires a M12 anchor rod.

# **BEAM SUPPORTING A TILED VERANDAH OR CARPORT ROOF - NORMAL WIND N3**

Section Designation	Load Width (m)						
	1.2	1.8	2.4	3.0	3.6	4.2	4.8
MAXIMUM SPAN OF BEAM (m)							
100TFB	3.8	3.4	3.2	3.0	2.8	2.6*	2.4*
125TFB	5.0	4.6	4.3	4.1*	3.9*	3.8*	3.7*
150UB14.0	5.6	5.1	4.8*	4.6*	4.4*	4.2*	4.1*
• 150UB18.0	6.0	5.5	5.2*	4.9*	4.7*	4.5*	4.4*
180UB16.1	6.3	5.8	5.4*	5.1*	4.9*	4.7*	4.6*
180UB18.1	6.5	5.9	5.6*	5.3*	5.1*	4.9*	4.7*
• 180UB22.2	6.8	6.3	5.9*	5.6*	5.4*	5.2*	5.0*
200UB18.2	6.9	6.4	6.0*	5.7*	5.4*	5.2*	5.1*
200UB22.3	7.4	6.8*	6.4*	6.1*	5.8*	5.6*	5.4*
200UB25.4	7.6	7.0*	6.6*	6.2*	6.0*	5.8*	5.6*
• 200UB29.8	8.0	7.4*	6.9*	6.6*	6.3*	6.1*	5.9*
250UB25.7	8.4	7.8*	7.3*	6.9*	6.6*	6.4*	6.2*
250UB31.4		8.2*	7.7*	7.3*	7.0*	6.7*	6.5*
• 250UB37.3		8.6*	8.1*	7.7*	7.4*	7.1*	6.9*
310UB32.0		8.9*	8.4*	8.0*	7.6*	7.4*	7.1*
310UB40.4			9.0*	8.6*	8.2*	7.9*	7.7*
310UB46.2			9.3*	8.8*	8.5*	8.2*	8.0*
75PFC	2.9	2.6	2.4	2.3	2.1	2.0	2.0
100PFC	3.9	3.6	3.4	3.1	3.0	2.8*	2.7*
125PFC	4.9	4.5	4.2	4.0*	3.8*	3.7*	3.6*
150PFC	5.9	5.4	5.1*	4.8*	4.6*	4.4*	4.3*
180PFC	6.7	6.2	5.8*	5.5*	5.3*	5.1*	4.9*
200PFC	7.2	6.6*	6.2*	5.9*	5.7*	5.5*	5.3*
230PFC	7.8	7.2*	6.8*	6.4*	6.2*	6.0*	5.8*
250PFC		8.2*	7.7*	7.3*	7.0*	6.7*	6.5*
300PFC			8.6*	8.2*	7.9*	7.6*	7.4*

**Example:**  
Refer to Fig. page 18  
Required beam span=4.0m  
A=6.0m  
B=5.1m  
Load width=A<sup>2</sup>/2B  
=6.0<sup>2</sup>/(2x5.1)  
=3.5m  
Use a load width of 3.6  
in the adjacent table  
a 150UB14.0 will span 4.4m  
and requires a M10 anchor rod.

## **Notes on Tables:**

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- For sections marked '•' the next largest size may be more economical.
- No symbol next to the span indicates that only nominal holding down is required (uplift is less than 5 kN). A "\*" indicates a M10 holding down rod is required (uplift is between 5 and 19 kN). A "+" indicates a M12 holding down bolt is required (uplift is between 19 & 27 kN). A "^" indicates a M16 holding down bolt is required (uplift is between 27 and 50 kN).
- For a steel sheet roof in high wind load areas refer to table on page 21.

# STEEL SHEET ROOFS IN HIGH WIND AREAS

## STRUTTING BEAM SUPPORTING A STEEL SHEET ROOF AND CEILING - HIGH WIND N5/C2

Section	Load Area (m²)							Refer to page 8 for the layout diagram
Designation	7	10	13	16	19	22	25	
MAXIMUM SPAN OF BEAM (m)								
100TFB	1.7*	1.1*						<p><u>Example:</u> Refer to Fig. page 8 Span S=6.1m A=7.0m Load area=0.25xAxS =0.25x7.0x6.1 =10.7m²  Use a load area of 13 sq metres in the adjacent table a 200UB22.3 will span 6.1m and requires a M12 anchor rod.</p>
125TFB	4.0*	2.8*	2.1+	1.7+	1.4^	1.2^	1.1^	
150UB14.0	4.4*	3.6*	2.7+	2.2+	1.8^	1.6^	1.4^	
• 150UB18.0	5.6*	4.6*	3.6+	2.9+	2.5^	2.1^	1.9^	
180UB16.1	5.5*	4.5*	3.7+	3.0+	2.5^	2.2^	1.9^	
180UB18.1	6.1*	5.0*	4.2+	3.4+	2.9^	2.5^	2.2^	
• 180UB22.2	7.3*	6.0*	5.1+	4.3+	3.6^	3.1^	2.7^	
200UB18.2	6.4*	5.3*	4.6+	3.9+	3.3^	2.8^	2.5^	
200UB22.3		7.1*	6.1+	5.0+	4.2^	3.6^	3.2^	
200UB25.4		7.7*	6.6+	5.7+	4.8^	4.1^	3.7^	
• 200UB29.8		8.9*	7.7+	6.9^	5.9^	5.0^	4.5^	
250UB25.7		7.9*	6.9+	6.2+	5.6^	5.1^	4.5^	
250UB31.4			8.5+	7.6+	6.9^	6.3^	5.6^	
• 250UB37.3			9.9+	8.9+	8.1^	7.4^	6.9^	
310UB32.0			8.9+	8.0+	7.4^	6.8^	6.5^	
310UB40.4					9.4^	8.7^	8.2^	
310UB46.2						9.5^	8.9^	
75PFC	1.0							
100PFC	2.0*	1.4*	1.0+					
125PFC	3.6*	2.5*	1.9+	1.6+	1.3^	1.1^	1.0^	
150PFC	6.2*	4.5*	3.5+	2.8+	2.3^	2.0^	1.8^	
180PFC	7.4*	6.0*	4.6+	3.7+	3.1^	2.7^	2.4^	
200PFC		6.6*	5.6+	4.5+	3.8^	3.3^	2.9^	
230PFC		7.2*	6.2+	5.4+	4.7^	4.0^	3.6^	
250PFC			9.0+	7.9+	7.1^	6.8^	5.6^	
300PFC				9.0+	8.2^	7.5^	7.0^	

## STRUTTING/HANGING BEAM SUPPORTING A STEEL SHEET ROOF AND CEILING - HIGH WIND N5/C2

Section	Load Width (m)							Refer to page 10 for the layout diagram
Designation	1.2	1.8	2.4	3.0	3.6	4.2	4.8	
MAXIMUM SPAN OF BEAM (m)								
100TFB	2.7*	2.3*	2.1*	2.0*	1.8*	1.7*	1.7*	<p>Example: Refer to Fig. page 10 Span=4.6m A=3.0m B=2.9m Load width=0.5A =0.5x3.0 =1.5 Use a load width of 1.8 in the adjacent table a 200UB18.2 will span 4.6m and requires a M10 anchor rod.</p>
125TFB	4.2*	3.7*	3.3*	3.1*	2.9*	2.7+	2.6+	
150UB14.0	4.3*	3.7*	3.4*	3.2*	3.0*	2.8+	2.7+	
• 150UB18.0	5.0*	4.4*	4.0*	3.7*	3.5+	3.3+	3.2+	
180UB16.1	4.8*	4.2*	3.8*	3.6*	3.4+	3.2+	3.1+	
180UB18.1	5.1*	4.5*	4.1*	3.8*	3.6+	3.4+	3.3+	
• 180UB22.2	5.8*	5.1*	4.7*	4.4+	4.1+	3.9+	3.7^	
200UB18.2	5.2*	4.6*	4.2*	3.9+	3.7+	3.5+	3.3+	
200UB22.3	6.2*	5.5*	5.0+	4.7+	4.4+	4.2^	4.0^	
200UB25.4	6.6*	5.8*	5.3+	5.0+	4.7^	4.5^	4.3^	
• 200UB29.8	7.4*	6.5*	6.0+	5.5+	5.2^	5.0^	4.8^	
250UB25.7	6.5*	5.8*	5.3+	4.9+	4.7^	4.4^	4.3^	
250UB31.4		6.6*	6.1+	5.7^	5.3^	5.1^	4.9^	
• 250UB37.3		7.4+	6.8+	6.4^	6.0^	5.7^	5.5^	
310UB32.0		6.6*	6.1+	5.7^	5.4^	5.2^	5.0^	
310UB40.4		7.9+	7.3^	6.8^	6.4^	6.1^	5.9^	
310UB46.2			7.8^	7.3^	6.9^	6.6^	6.3^	
75PFC	2.7*	2.3*	2.1*	1.9*	1.8*	1.7*	1.6*	
100PFC	3.3*	2.9*	2.6*	2.4*	2.3*	2.1*	2.0*	
125PFC	4.3*	3.7*	3.4*	3.1*	2.9*	2.8+	2.7+	
150PFC	5.5*	4.8*	4.4*	4.1+	3.8+	3.6+	3.4^	
180PFC	6.0*	5.3*	4.8*	4.5+	4.2+	4.0^	3.8^	
200PFC	6.3*	5.6*	5.1+	4.7+	4.4+	4.2^	4.0^	
230PFC	6.5*	5.7*	5.2+	4.9+	4.6+	4.3^	4.2^	
250PFC		7.3+	6.7+	6.2^	5.8^	5.6^	5.3^	
300PFC		7.7+	7.0+	6.6^	6.2^	5.9^	5.6^	

### LINTEL SUPPORTING A STEEL SHEET ROOF AND CEILING - HIGH WIND N5/C2

Section	Load Width (m)							Refer to page 12 for the layout diagram
Designation	1.2	1.8	2.4	3.0	3.6	4.8	6.0	
MAXIMUM SPAN OF LINTEL (m)								
100TFB	2.7*	2.3*	2.1*	1.9*	1.8*	1.6*	1.5*	<b>Example:</b> Refer to Fig. page 12 Lintel Span=4.6m, trussed roof A=3.8m Load width=A =3.8m Use a load width of 4.8 in the adjacent table a 250UB29.8 will span 4.8m and requires a M16 anchor rod.
125TFB	4.3*	3.7*	3.3*	3.0*	2.8*	2.5+	2.3+	
150UB14.0	4.4*	3.8*	3.4*	3.2*	3.0*	2.7+	2.5+	
• 150UB18.0	5.2*	4.5*	4.1*	3.7*	3.5+	3.1+	2.9^	
180UB16.1	5.0*	4.3*	3.9*	3.6*	3.4+	3.1+	2.9^	
180UB18.1	5.4*	4.7*	4.2*	3.9+	3.6+	3.3+	3.0^	
• 180UB22.2	6.1*	5.3*	4.8*	4.4+	4.1+	3.7^	3.4^	
200UB18.2	5.5*	4.8*	4.3*	4.0+	3.8+	3.4^	3.2^	
200UB22.3	6.6*	5.7*	5.2+	4.8+	4.5+	4.1^	3.8^	
200UB25.4	7.0*	6.1*	5.5+	5.1+	4.8^	4.3^	4.0^	
• 200UB29.8	7.9*	6.8+	6.1+	5.7^	5.3^	4.8^	4.4^	
250UB25.7	7.0*	6.1*	5.5+	5.1+	4.8^	4.4^	4.1^	
250UB31.4		7.0+	6.4+	5.9^	5.6^	5.1^	4.7^	
• 250UB37.3		7.9+	7.1^	6.6^	6.2^	5.6^	5.2^	
75PFC	2.6*	2.2*	2.0*	1.8*	1.7*	1.5*	1.4*	
100PFC	3.3*	2.9*	2.6*	2.3*	2.2*	2.0*	1.8*	
125PFC	4.3*	3.7*	3.3*	3.1*	2.9*	2.6+	2.4+	
150PFC	5.6*	4.9*	4.4*	4.0+	3.7+	3.4+	3.1^	
180PFC	6.2*	5.4*	4.8*	4.5+	4.2+	3.7^	3.4^	
200PFC	6.6*	5.7*	5.1+	4.7+	4.4+	4.0^	3.7^	
230PFC	6.8*	5.9*	5.3+	4.9+	4.6^	4.2^	3.8^	
250PFC		7.6+	6.8+	6.3^	5.9^	5.3^	4.9^	

### BEAM SUPPORTING A STEEL SHEET VERANDAH OR CARPORT ROOF - HIGH WIND N5/C2

Section	Load Width (m)							Refer to page 18 for the layout diagram
Designation	1.2	1.8	2.4	3.0	3.6	4.2	4.8	
MAXIMUM SPAN OF BEAM (m)								
100TFB	2.7*	2.3*	2.1*	1.9*	1.8*	1.7*	1.6*	<p><u>Example:</u> Refer to Fig. page 18 Span=4.6m A=3.8m B=3.0m Load width    = A<sup>2</sup>/2B                   = 3.8<sup>2</sup>/(2x3.0)                   = 2.4m  Use a load width of 2.4 in the adjacent table a 180UB22.2 will span 4.8m and requires a M10 anchor rod.</p>
125TFB	4.3*	3.7*	3.3*	3.0*	2.8*	2.7*	2.5+	
150UB14.0	4.4*	3.8*	3.4*	3.2*	3.0*	2.8+	2.7+	
• 150UB18.0	5.2*	4.5*	4.1*	3.7*	3.5+	3.3+	3.1+	
180UB16.1	5.0*	4.3*	3.9*	3.6*	3.4+	3.2+	3.1+	
180UB18.1	5.4*	4.7*	4.2*	3.9+	3.6+	3.5+	3.3+	
• 180UB22.2	6.1*	5.3*	4.8*	4.4+	4.1+	3.9+	3.7^	
200UB18.2	5.5*	4.8*	4.3*	4.0+	3.8+	3.6+	3.4^	
200UB22.3	6.6*	5.7*	5.2+	4.8+	4.5+	4.3^	4.1^	
200UB25.4	7.0*	6.1*	5.5+	5.1+	4.8^	4.5^	4.3^	
• 200UB29.8	7.9*	6.8+	6.1+	5.7^	5.3^	5.0^	4.8^	
250UB25.7	7.0*	6.1*	5.5+	5.1+	4.8^	4.6^	4.4^	
250UB31.4		7.0+	6.4+	5.9^	5.6^	5.3^	5.1^	
• 250UB37.3		7.9+	7.1^	6.6^	6.2^	5.9^	5.6^	
310UB32.0		7.1+	6.5+	6.0^	5.7^	5.4^	5.2^	
310UB40.4		8.5+	7.7^	7.2^	6.7^	6.4^	6.1^	
310UB46.2			8.3^	7.7^	7.2^	6.9^		
75PFC	2.6*	2.2*	2.0*	1.8*	1.7*	1.6*	1.5*	
100PFC	3.3*	2.9*	2.6*	2.3*	2.2*	2.1*	2.0*	
125PFC	4.3*	3.7*	3.3*	3.1*	2.9*	2.7*	2.6+	
150PFC	5.6*	4.9*	4.4*	4.0+	3.7+	3.5+	3.4+	
180PFC	6.2*	5.4*	4.8*	4.5+	4.2+	3.9^	3.7^	
200PFC	6.6*	5.7*	5.1+	4.7+	4.4+	4.2^	4.0^	
230PFC	6.8*	5.9*	5.3+	4.9+	4.6^	4.4^	4.2^	
250PFC		7.6+	6.8+	6.3^	5.9^	5.6^	5.3^	
300PFC		8.1+	7.3^	6.8^	6.3^	6.0^	5.7^	

#### Notes on Tables:

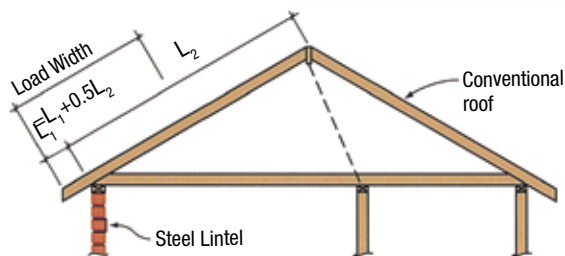
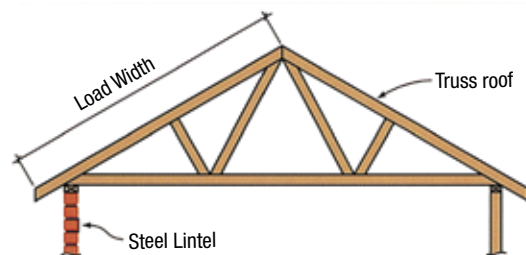
- The tables apply for 300PLUS® steel only. For details of your nearest 300PLUS® structural steel supplier, call OneSteel Direct toll free on 1800 1 STEEL (1800 1 78335), or visit our website at [www.onesteel.com](http://www.onesteel.com)
- For angle lintels, the first dimension corresponds to the vertical lintel leg. eg for 100x75x6UA, 100mm leg is vertical.
- For sections marked '•' the next largest size may be more economical.
- No symbol next to the span indicates that only nominal holding down is required (uplift is less than 5 kN).  
A "\*" indicates a M10 holding down rod is required (uplift is between 5 and 19 kN).  
A "+" indicates a M12 holding down bolt is required (uplift is between 19 and 27 kN).  
A "^" indicates a M16 holding down bolt is required (uplift is between 27 and 50 kN).



# LINTELS SUPPORTING MASONRY

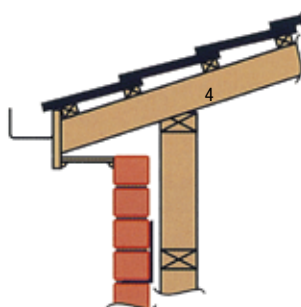
These span tables provide details for building houses using standard practices and traditional materials.

- ◆ Point loads are not covered by these tables.
- ◆ These tables cover normal loads (roof, ceiling and floors), which must be uniformly distributed, on the masonry over an opening.
- ◆ A minimum of three courses of brickwork are required over the opening for load bearing walls.
- ◆ For lintels to be used in a lower floor of two storey construction refer to a structural engineer.



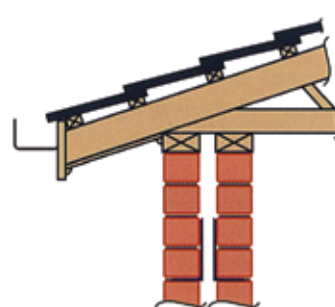
## CONSTRUCTION TYPES

Illustrations of construction types A, B, C and D refer to the maximum clear span loading on the tables opposite.



### Construction Type A:

Typical brick veneer construction with non load bearing brickwork and roof supported on internal timber or steel timber.



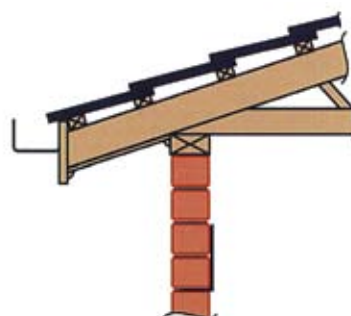
### Construction Type B:

Cavity wall construction with timber or steel truss tiled roof supported equally on both leaves of brickwork.



### Construction Type C:

Light weight metal sheet roof supported on single leaf of brickwork.



### Construction Type D:

Tiled roof with timber or steel truss and sheet ceiling supported on single leaf of brickwork.

### LINTEL SUPPORTING MASONRY - LOAD WIDTH UP TO 2400mm

Steel Lintel	Mass (kg/m)	A	Construction type B	C	D
MAXIMUM CLEAR SPAN OF LINTEL (mm)					
75 x 75 x 6EA	6.81	2650	1930	1930	1570
# 75 x 100 x 6UA	7.98	2770	2050	2050	1690
# 75 x 100 x 8UA	10.3	2770	2170	2170	1810
90 x 90 x 6EA	8.22	3010	2410	2410	1930
100 x 75 x 6UA	7.98	3010	2530	2530	2170
90 x 90 x 8EA	10.6	3010	2530	2530	2170
100 x 100 x 6EA	9.16	3130	2530	2650	2170
100 x 100 x 8EA	11.8	3370	2770	2770	2410
125 x 75 x 6UA	9.16	3610	3010	3010	2650
125 x 75 x 8UA	11.8	3730	3130	3250	2770
150 x 90 x 8UA	14.3	4210	3610	3730	3250
150 x 100 x 10UA	18.0	4330	3850	3850	3490
Square Edge Flats					
75 x 8SEF		490	250		
75 x 10SEF		610	370	250	250

### LINTEL SUPPORTING MASONRY - LOAD WIDTH FROM 2400mm TO 4800mm

Steel Lintel	Mass (kg/m)	A	Construction type B	C	D
MAXIMUM CLEAR SPAN OF LINTEL (mm)					
75 x 75 x 6EA	6.81	2650	1690	1690	1330
# 75 x 100 x 6UA	7.98	2770	1690	1690	1330
# 75 x 100 x 8UA	10.3	2770	1810	1810	1450
90 x 90 x 6EA	8.22	3010	2050	2050	1570
100 x 75 x 6UA	7.98	3010	2170	2170	1690
90 x 90 x 8EA	10.6	3010	2170	2170	1810
100 x 100 x 6EA	9.16	3130	2290	2290	1810
100 x 100 x 8EA	11.8	3370	2410	2410	1930
125 x 75 x 6UA	9.16	3610	2530	2650	2050
125 x 75 x 8UA	11.8	3730	2770	2890	2410
150 x 90 x 8UA	14.3	4210	3370	3370	2770
150 x 100 x 10UA	8.0	4330	3490	3610	3010
Square Edge Flats					
75 x 8SEF		490	250		
75 x 10SEF		610	250	250	250

# Section with short leg vertical for wide base support of brickwork.

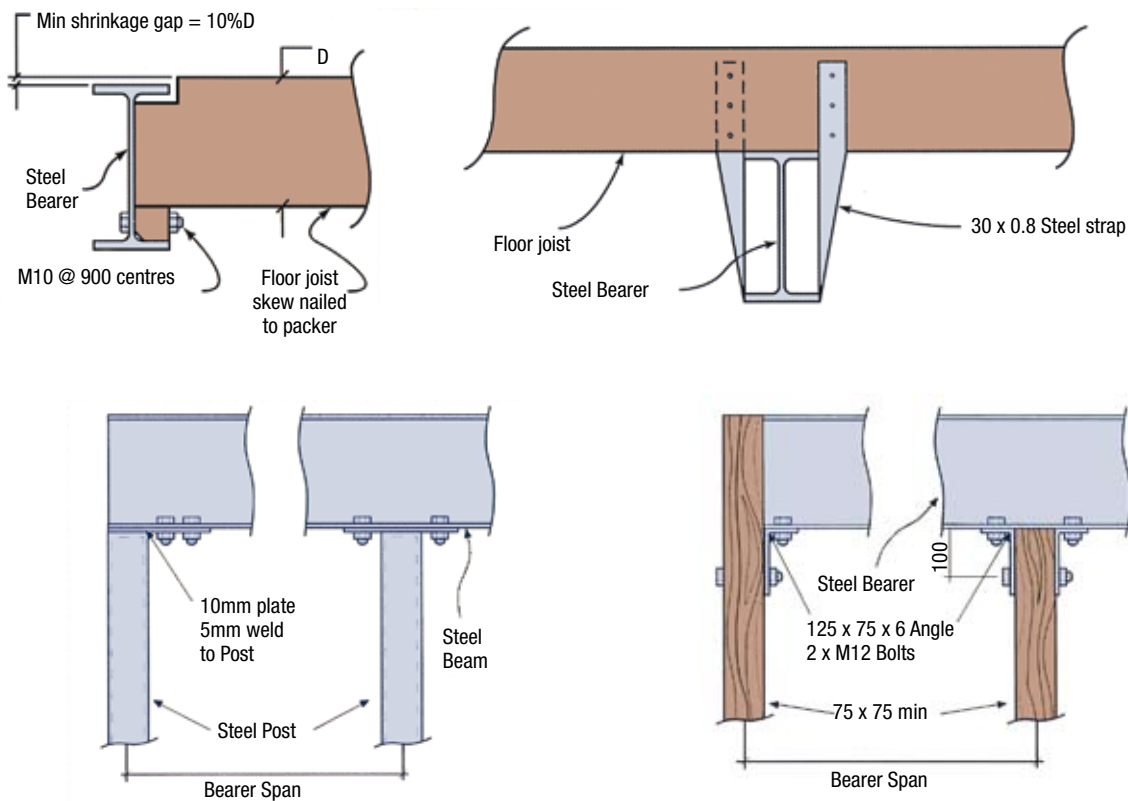
#### Notes on Tables:

1. The tables apply for 300PLUS® steel only. For details of your nearest 300PLUS® structural steel supplier, call OneSteel Direct toll free on 1800 1 STEEL (1800 1 78335), or visit our website at [www.onesteel.com](http://www.onesteel.com)
2. For Clear span ≤ 1000mm, Min Bearing Length = 100mm, ie. Min Lintel Length = Clear Span + 200mm.  
For Clear span > 1000mm, Min Bearing Length = 150mm, ie. Min Lintel Length = Clear Span + 300mm.
3. All lintels should be propped during brickwork construction to ensure level alignment.
4. The maximum rafter spacing should not be greater than 600mm.
5. There must be at least three courses of brickwork over clear span opening for all load bearing walls.
6. All loads are uniformly distributed (point loads are not allowed).
7. First dimension corresponds to the vertical lintel leg, eg. 75x100x6 lintel, 75mm leg vertical.

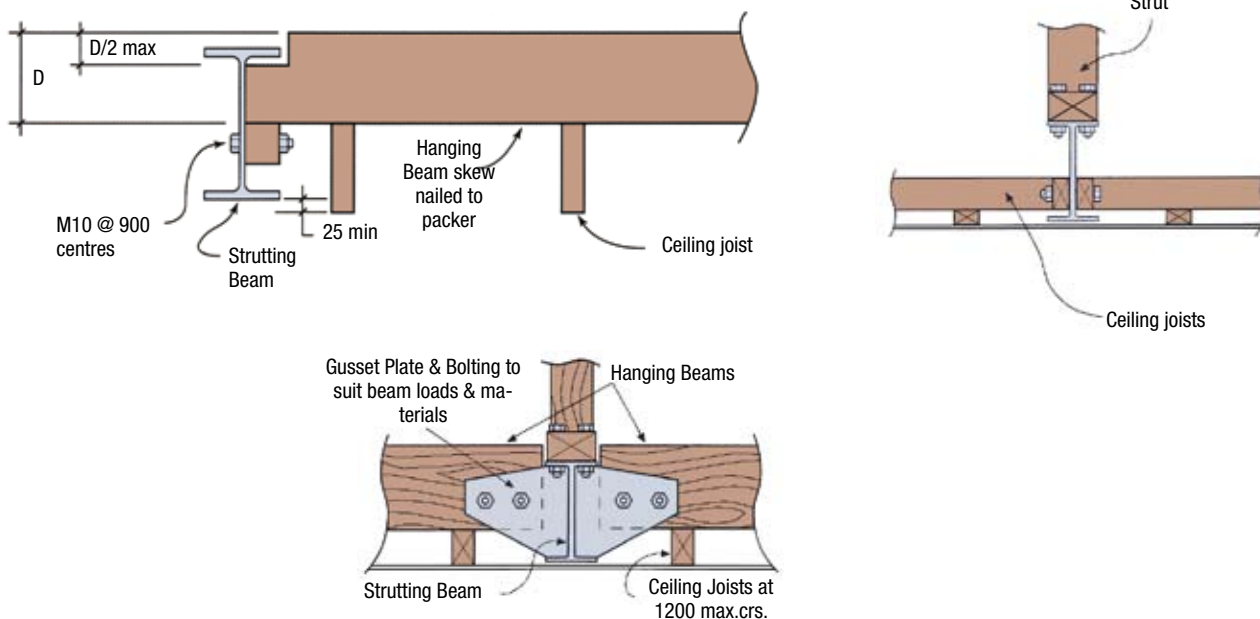
# CONNECTION EXAMPLES

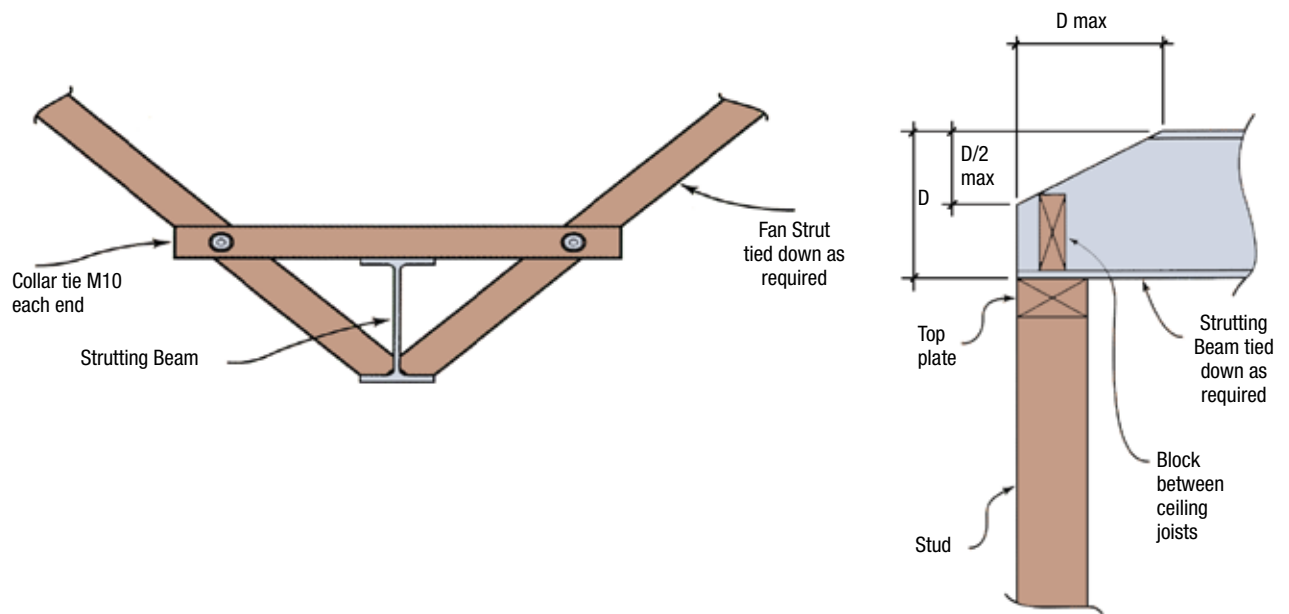
The following diagrams provide some example arrangements for common connections using structural steel members. Please note that it is the reader's responsibility to ensure that all connections, including tie downs, are sufficient for the application.

## BEARERS

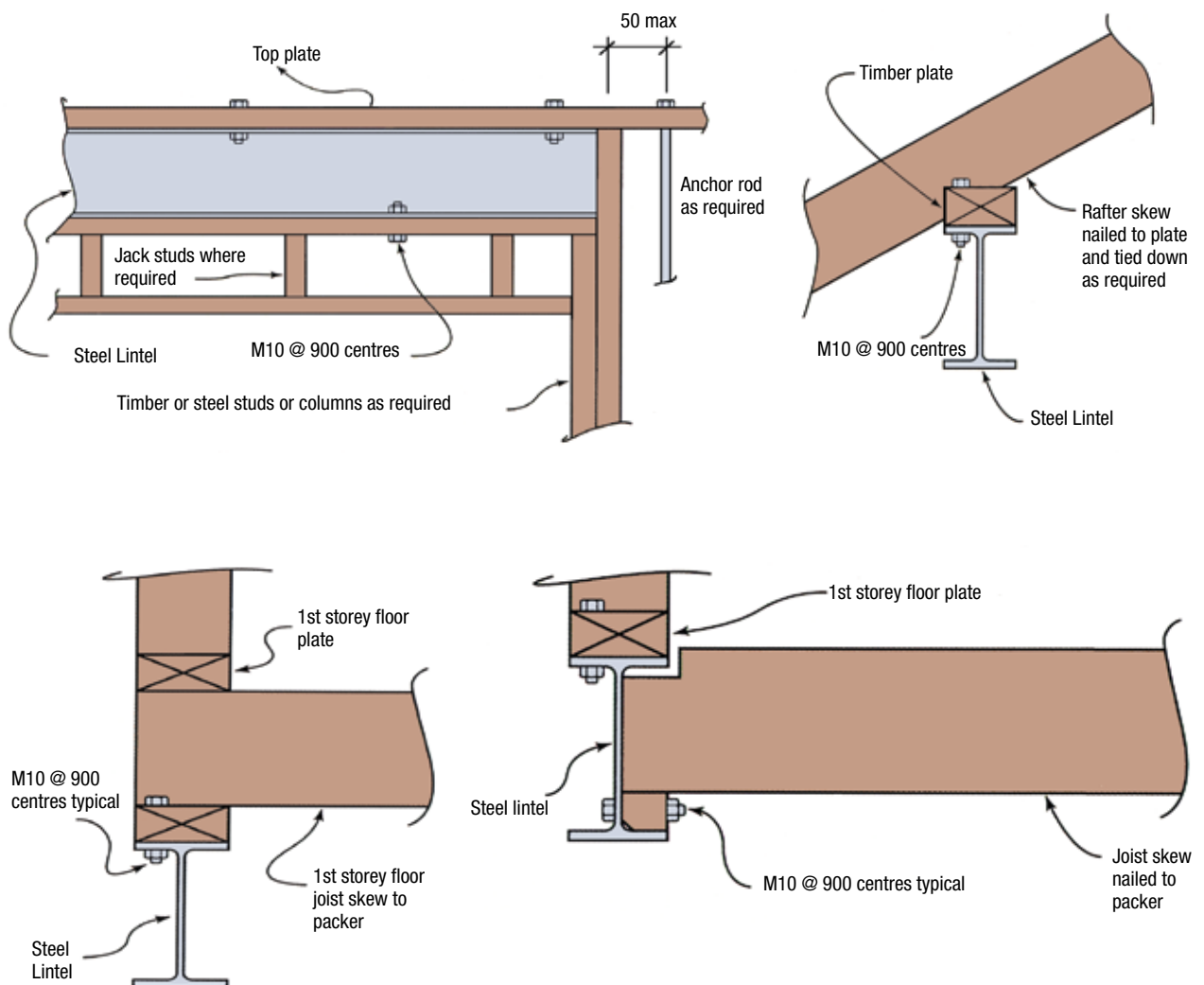


## STRUTTING BEAMS





## LINTELS



# SURFACE TREATMENT

The requirements for surface treatment vary with the location of the house and the degree of enclosure around the supporting steelwork.

For three sources of corrosion, and depending on whether the house is in an exposed or protected position, a level of corrosion potential may be established based on the distance of the house from the source of corrosion Figure 1, Table 1. The degree of enclosure of the supporting steelwork must then be considered. If it is enclosed by masonry walls (which include provision for sub-floor ventilation) with a maximum size/area of openings as shown in Figure 2, it is deemed to be 'enclosed'. Otherwise it is deemed to be 'unenclosed'.

The required surface treatment for each level of corrosion potential and for 'enclosed' or 'unenclosed' steelwork can then be determined from Table 2. Finally, the required treatment can be determined from Table 3.

TABLE 1

LEVELS OF SURFACE TREATMENT

Distance From Source of Corrosion:	House Site in:	
	Protected Position*	Exposed Position
<b>Ocean OR Heavy industrial area</b>		
Over 3 km	Level 1	Level 1
1.5–3 km	Level 1	Level 2
0.75–1.5 km	Level 2	Level 3
Within 0.75 km	Level 3	Level 3
<b>Salt-water bay</b>		
Over 1.5 km	Level 1	Level 1
0.75–1.5 km	Level 1	Level 2
Within 0.75 km	Level 2	Level 2

\*A protected position is one that is more than 0.5 km from the nearest location that is in line of sight of the source of corrosion Figure 1.

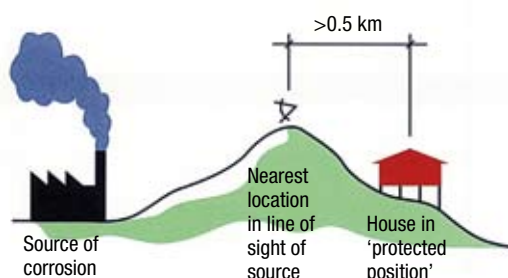


Figure 1 Definition of a 'protected position'

TABLE 2

SURFACE TREATMENT TYPE

Degree of Enclosure	Level of corrosion potential		
	Level 1	Level 2	Level 3
Enclosed	A	B	C
Unenclosed	B	C	D

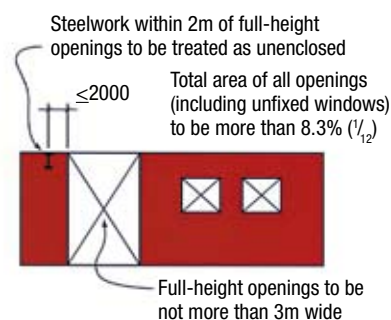


Figure 2 Maximum extent of openings in masonry walls for steelwork to be deemed to be 'enclosed'



TABLE 3

TREATMENTS REQUIRED TO ACHIEVE REQUIRED SURFACE TREATMENT TYPE

Surface Treatment Type	Black Steel	Galvanised Steel
A	No protection required.	No additional protection required.
B	Remove loose scale by hand or power wire brushing. Paint with one coat of a rust inhibitive alkyd primer or equivalent.	No additional protection required.
C	Prepare surface by power wire brushing or abrasive grit blasting. Apply one coat of a rust inhibitive alkyd primer, followed by one finish coat of all-weather gloss acrylic paint.	No additional protection required.
D	Prepare surface by abrasive grit blasting or pickling (class 2 1/2) followed by one of the following: <ul style="list-style-type: none"> <li>• Apply one coat of an inorganic zinc silicate, followed by one coat of all-weather gloss acrylic with UV protector.</li> <li>• Hot dip galvanising.</li> <li>• Epoxy high corrosion-resistant system or equivalent.</li> </ul>	Apply primer coat followed by a finish coat, both of zinc dust or zinc oxide type. Both coats may either be brushed or sprayed. In the case of decking, the treatment should be applied to the underside before installation.

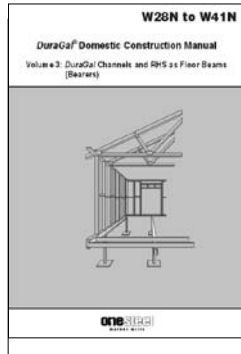
\*Note: For lintels supporting masonry some building authorities may require a higher level of surface treatment.

## OTHER PUBLICATIONS

OneSteel produces a number of publications. Others related to residential construction include:



**DuraGal Flooring  
System® Brochure**



**DuraGal® Construction  
Manual**



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