

BLUERISE FLOORING

SPAN TABLES/TECHNICAL MANUAL

DEFINITIONS TABLE

Designed for residential construction and loading conditions

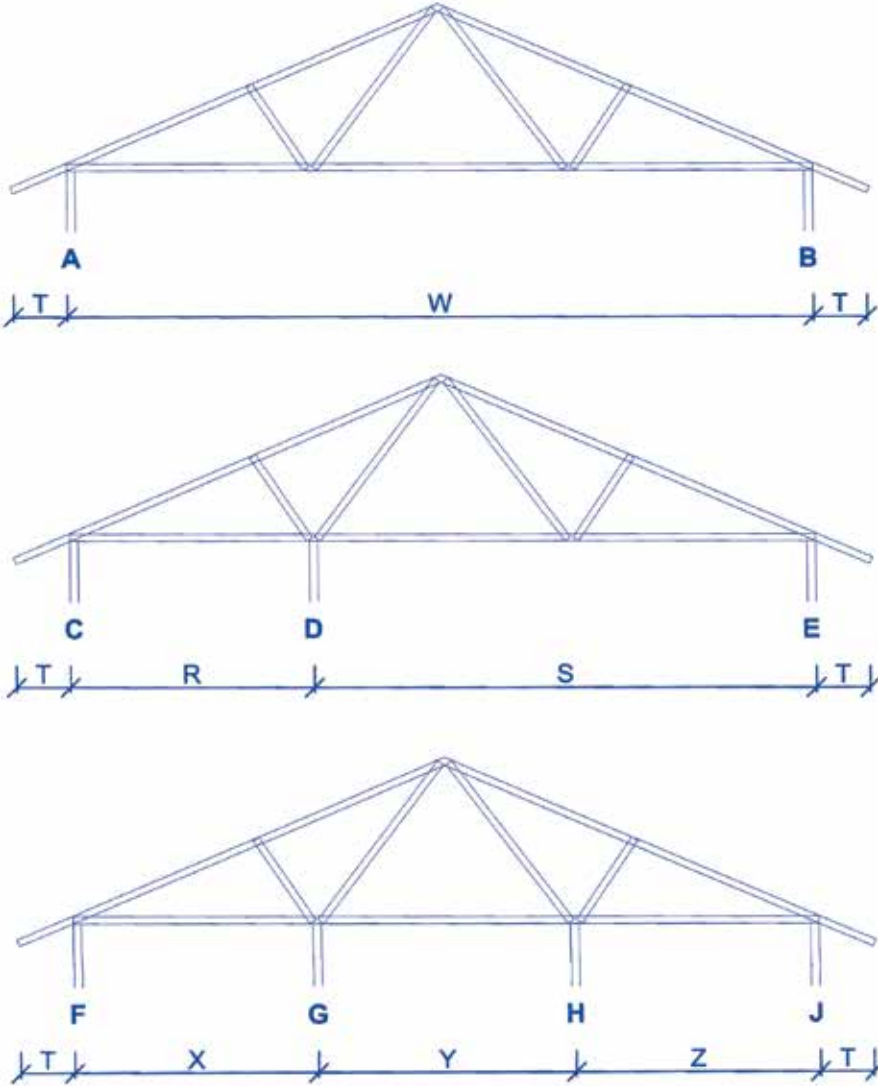
LOADING	MATERIALS	TYPICAL AREAS
STANDARD G = 0.8kpa SIDL = 0.5kpa Q = 1.5kpa	<ul style="list-style-type: none"> • 19mm PARTICAL BOARD FLOORING • CARPET/VINYL/TIMBER • 13mm PLASTERBOARD ON BATTENS 	BEDROOM LIVING ROOM NON-TILED KITCHEN
TILED G = 1.2kpa SIDL = 0.5kpa Q = 1.5kpa	<ul style="list-style-type: none"> • 19mm PARTICAL BOARD • 6mm CEMENT SHEET TILE UNDERLAY • 9mm CERAMIC TILE FLOOR • 13mm PLASTERBOARD ON BATTENS 	BATHROOM KITCHEN MEALS
ADDITIONAL G = 1.5kpa SIDL = 0.5kpa Q = 1.5kpa	<ul style="list-style-type: none"> • 19mm PARTICLE BOARD • 6mm CEMENT SHEET TILE UNDERLAY • 9mm CERAMIC TILE FLOOR • 13mm PLASTERBOARD ON BATTENS • BATHTUBS/STONE BENCH TOPS UP TO 40mm THICK 	BATHTUBS KITCHEN
BALCONY G = 1.65kpa SIDL = 0.5kpa Q = 2kpa	<ul style="list-style-type: none"> • 19mm CEMENT SHEET • CEMENT SCREED • 9mm TILES • 13mm PLASTERBOARD ON BATTENS 	SEALED BALCONY

Other loading situations can be engineered to suit each case's specific situation, consult Steel Frame Solutions.

Other loading situation examples include: billiard tables, hot tub, claw foot bath, slate tile floor and full bathroom step downs.

BlueRise Flooring System has been designed with $\frac{\text{span}}{500}$ to a 10mm maximum deflection.

ROOF LOAD WIDTH (RLW) CALCULATION

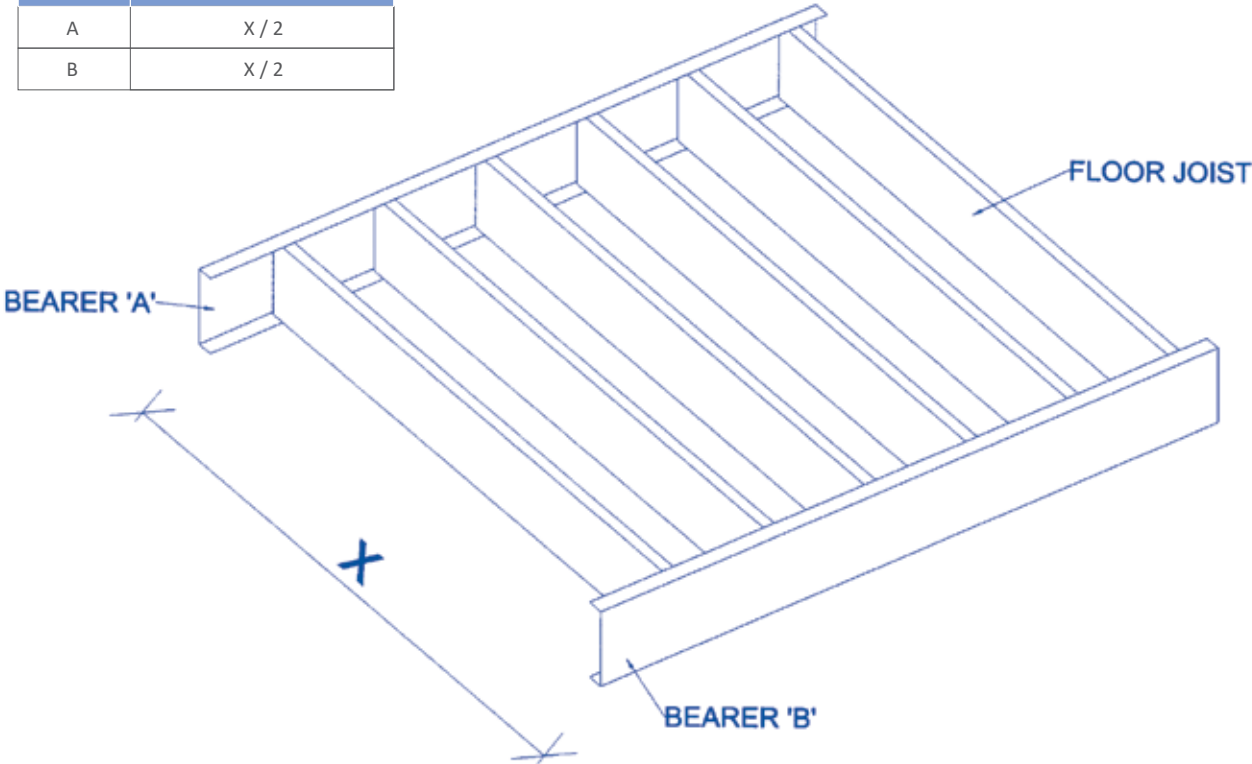


Roof load width (RLW) formulas for each load bearing wall case:

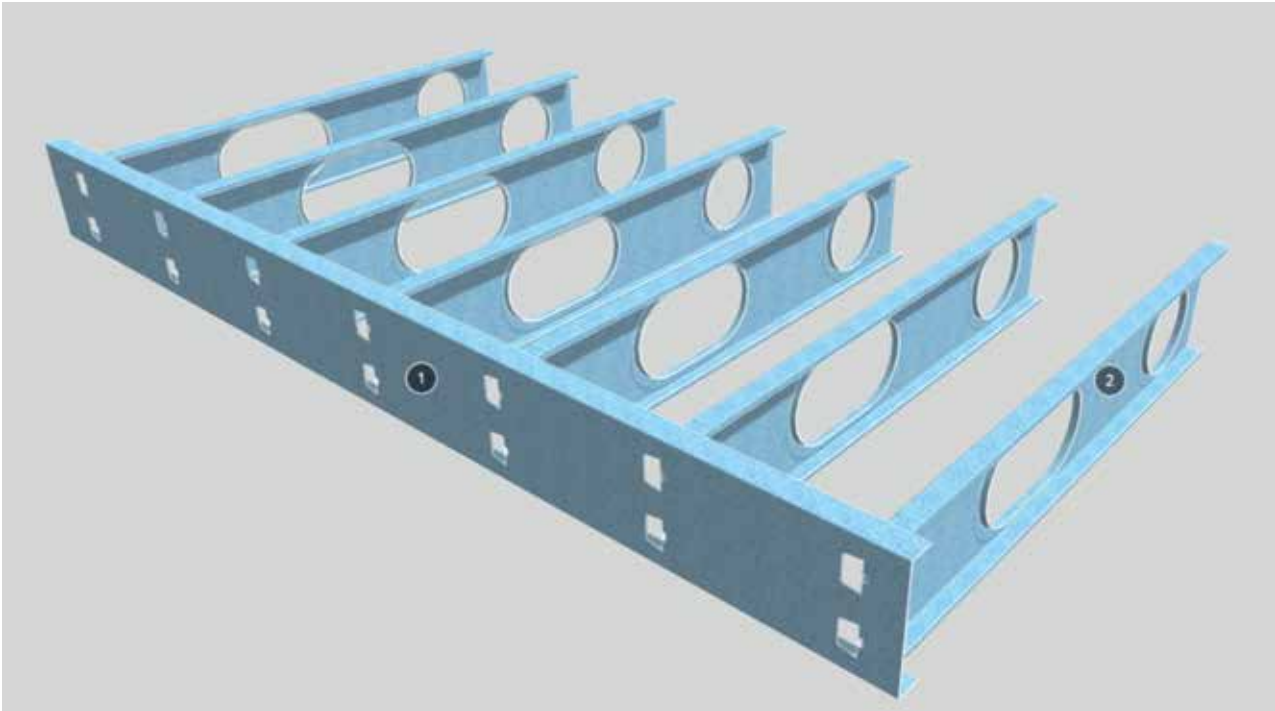
$A = (W/2) + T$
$B = (W/2) + T$
$C = (R/2) + T$
$D = (R/2) + (S/2)$
$E = (S/2) + T$
$F = (X/2) + T$
$G = (X/2) + (Y/2)$
$H = (Y/2) + (Z/2)$
$J = (Z/2) + T$

FLOOR LOAD WIDTH (FLW) CALCULATION

BEARER	FLOOR LOAD WIDTH 'FLW'
A	$X/2$
B	$X/2$



COMMON FLOOR JOIST



UPPER FLOOR JOIST SPAN TABLE

Joist Type	Joist Centres mm	Floor Type			
		Standard	Tiled	Additional	Balcony
C30015	600	5300	5100	4900	4700
C30019	600	5700	5500	5300	5100
C30024	600	6200	5900	5700	5500
C30015	450	5700	5500	5300	5100
C30019	450	6200	5900	5700	5500
C30024	450	6700	6300	6200	6000
C30015	300	6200	6000	5900	5700
C30019	300	6800	6500	6300	6100
C30024	300	7400	7000	6800	6600

- Ceiling battens required under floor joists.
- 600mm joist centres require floor sheeting to be upgraded.

PERIMETER BEARER



PERIMETER BEARER SPANNING OVER GROUND FLOOR OPENINGS

Perimeter bearer can be applied to various situations:

- Bearer spanning over ground floor opening, creating lintel in floor space.
- Ground floor lintel over opening can be designed by others/client.
- Lintel in wall below can be designed with in wall separately, refer to lower storey wall lintel.

COMMON PERIMETER BEARER - Lower Storey

SHEET ROOF - Standard Floor

SECTION	BEARER SPAN (m)																			
	ROOF LOAD WIDTH (m)																			
	1					2					4					6				
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
U30015	2.9	2.4	2.1	1.5	1.2	2.8	2.4	2.0	1.4	1.1	2.6	2.3	1.8	1.4	1.1	2.5	2.2	1.7	1.3	1.0
U30019	3.2	2.6	2.3	2.1	2.0	3.1	2.6	2.3	2.1	2.0	2.8	2.5	2.2	2.1	1.9	2.7	2.4	2.2	2.0	2.0
U30024	3.4	2.9	2.5	2.3	2.2	3.4	2.8	2.5	2.3	2.2	3.1	2.7	2.4	2.3	2.1	3.0	2.7	2.4	2.2	2.1
BOXC30015	5.3	4.7	4.2	3.0	2.3	5.0	4.6	4.0	2.9	2.3	4.7	4.3	3.7	2.7	2.2	4.5	4.2	3.4	2.6	3.4
BOXC30019	5.6	5.0	4.5	4.2	4.0	5.4	4.9	4.5	4.2	3.9	5.1	4.7	4.3	4.1	3.8	4.8	4.5	4.2	3.9	3.7

SHEET ROOF - Tiled Floor

SECTION	BEARER SPAN (m)																			
	ROOF LOAD WIDTH (m)																			
	1					2					4					6				
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
U30015	2.8	2.3	1.9	1.3	1.0	2.8	2.3	1.8	1.3	1.0	2.6	2.2	1.7	1.2	1.0	2.4	2.2	1.6	1.2	0.9
U30019	3.1	2.5	2.2	2.0	1.9	3.0	2.5	2.2	2.0	1.9	2.8	2.4	2.1	2.0	1.8	2.7	2.4	2.1	1.9	1.9
U30024	3.4	2.8	2.4	2.2	2.1	3.3	2.7	2.4	2.2	2.1	3.1	2.7	2.3	2.2	2.0	2.9	2.6	2.3	2.1	2.0
BOXC30015	5.2	4.6	3.8	2.7	2.1	5.0	4.5	3.6	2.6	2.0	4.7	4.3	3.4	2.5	2.0	4.4	4.1	3.1	2.3	3.2
BOXC30019	5.6	4.9	4.4	4.1	3.8	5.4	4.8	4.3	4.0	3.7	5.0	4.6	4.2	3.9	3.6	4.8	4.4	4.1	3.8	3.6

SHEET ROOF - Additional Floor

SECTION	BEARER SPAN (m)																			
	ROOF LOAD WIDTH (m)																			
	1					2					4					6				
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
U30015	2.8	2.3	1.8	1.3	1.0	2.7	2.2	1.7	1.2	1.0	2.5	2.2	1.6	1.2	0.9	2.4	2.1	1.5	1.1	0.9
U30019	3.0	2.5	2.1	2.0	1.8	3.0	2.4	2.1	2.0	1.8	2.8	2.4	2.1	1.9	1.8	2.7	2.3	2.0	1.9	1.8
U30024	3.3	2.7	2.3	2.2	2.0	3.2	2.7	2.3	2.2	2.0	3.1	2.6	2.3	2.1	2.0	2.9	2.5	2.2	2.1	2.0
BOXC30015	5.2	4.5	3.6	2.5	1.9	5.0	4.4	3.4	2.4	1.9	4.6	4.2	3.2	2.3	1.8	4.4	4.0	3.0	2.2	3.1
BOXC30019	5.5	4.8	4.3	3.9	3.6	5.3	4.7	4.2	3.9	3.6	5.0	4.5	4.1	3.8	3.5	4.7	4.4	4.0	3.7	3.5

- Perimeter bearer spans designed with no point loads, designed with distributed loads.
- Perimeter bearer must not join over ground floor opening.
- Perimeter bearers taking point loads can be engineered for specific situations, contact BlueRise Solutions.

COMMON PERIMETER BEARER - Lower Storey

TILE ROOF - Standard Floor

SECTION	BEARER SPAN (m)																			
	ROOF LOAD WIDTH (m)																			
	1					2					4					6				
FLOOR LOAD WIDTH (m)																				
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
U30015	2.7	2.4	2.0	1.5	1.1	2.5	2.2	1.9	1.4	1.1	2.2	2.1	1.6	1.2	1.0	2.0	1.9	1.4	1.1	0.9
U30019	3.0	2.6	2.3	2.1	2.0	2.7	2.4	2.2	2.1	2.0	2.4	2.3	2.1	2.0	1.9	2.3	2.1	2.0	1.9	1.8
U30024	3.2	2.8	2.5	2.3	2.1	3.0	2.7	2.4	2.3	2.1	2.7	2.5	2.3	2.2	2.1	2.5	2.3	2.2	2.1	2.0
BOXC30015	5.1	4.6	4.0	2.9	2.3	4.7	4.4	3.7	2.7	2.2	4.3	4.0	3.2	2.5	2.0	4.0	3.8	2.8	2.2	3.2
BOXC30019	5.4	4.9	4.5	4.2	3.9	5.1	4.7	4.3	4.1	3.8	4.6	4.4	4.1	3.8	3.6	4.3	4.1	3.9	3.7	3.5

TILE ROOF - Tiled Floor

SECTION	BEARER SPAN (m)																			
	ROOF LOAD WIDTH (m)																			
	1					2					4					6				
FLOOR LOAD WIDTH (m)																				
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
U30015	2.6	2.3	1.8	1.3	1.0	2.5	2.1	1.7	1.2	1.0	2.2	2.0	1.5	1.1	0.9	2.0	1.8	1.3	1.0	0.8
U30019	2.9	2.5	2.2	2.0	1.9	2.7	2.3	2.1	2.0	1.9	2.4	2.2	2.0	1.9	1.8	2.2	2.1	1.9	1.8	1.7
U30024	3.2	2.7	2.4	2.2	2.0	3.0	2.6	2.3	2.2	2.0	2.7	2.4	2.2	2.1	2.0	2.4	2.3	2.1	2.0	1.9
BOXC30015	5.0	4.5	3.7	2.6	2.0	4.7	4.3	3.4	2.5	2.0	4.3	4.0	3.0	2.2	1.8	4.0	3.7	2.6	2.1	3.1
BOXC30019	5.4	4.8	4.3	4.0	3.7	5.1	4.6	4.2	3.9	3.6	4.6	4.3	4.0	3.7	3.5	4.3	4.1	3.8	3.5	3.4

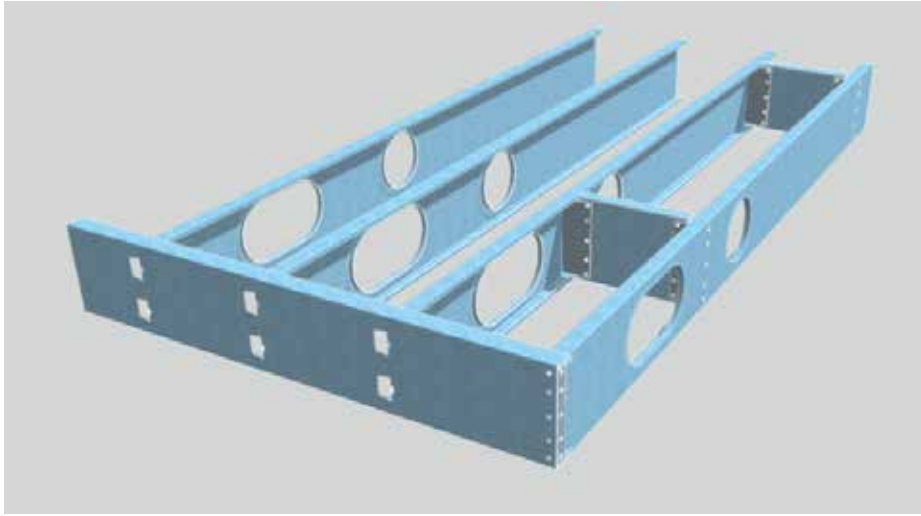
TILE ROOF - Additional Floor

SECTION	BEARER SPAN (m)																			
	ROOF LOAD WIDTH (m)																			
	1					2					4					6				
FLOOR LOAD WIDTH (m)																				
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
U30015	2.6	2.2	1.7	1.2	1.0	2.5	2.1	1.6	1.2	0.9	2.2	2.0	1.4	1.1	0.9	2.0	1.8	1.3	1.0	0.8
U30019	2.9	2.4	2.1	1.9	1.8	2.7	2.3	2.0	1.9	1.8	2.4	2.2	2.0	1.8	1.7	2.2	2.1	1.9	1.8	1.6
U30024	3.1	2.6	2.3	2.1	2.0	2.9	2.5	2.3	2.1	2.0	2.6	2.4	2.1	2.0	1.9	2.4	2.2	2.1	2.0	1.9
BOXC30015	5.0	4.4	3.4	2.5	1.9	4.7	4.2	3.2	2.3	1.8	4.3	3.9	2.8	2.1	1.7	4.0	3.6	2.5	1.9	3.0
BOXC30019	5.3	4.7	4.2	3.9	3.6	5.0	4.5	4.1	3.8	3.5	4.6	4.3	3.9	3.6	3.4	4.3	4.0	3.7	3.5	3.2

- Perimeter bearer spans designed with no point loads, designed with distributed loads.
- Perimeter bearer must not join over ground floor opening.
- Perimeter bearers taking point loads can be engineered for specific situations, contact BlueRise Solutions.

TERMINAL JOIST

Last joist over an external wall



SECTION	TERMINAL JOIST SPAN (m)			
	ROOF LOAD WIDTH (m)			
	1	2	4	6
C30015	4.4	4.2	3.9	3.6
C30019	4.7	4.5	4.2	4.0
C30024	5.1	4.9	4.6	4.4
BOXC30015	5.3	5.0	4.7	4.5
BOXC30019	5.6	5.4	5.1	4.8

SHEET ROOF Standard Floor	
joist blocked at 1800mm max c's	
C30015	4.4
C30019	4.7
C30024	5.1
BOXC30015	5.3
BOXC30019	5.6

SHEET ROOF Tiled Floor	
joist blocked at 1800mm max c's	
C30015	4.4
C30019	4.7
C30024	5.1
BOXC30015	5.2
BOXC30019	5.6

SHEET ROOF Additional Floor	
joist blocked at 1800mm max c's	
C30015	4.3
C30019	4.7
C30024	5.0
BOXC30015	5.2
BOXC30019	5.5

- Spans based on 450mm common joist centres.

TERMINAL JOIST

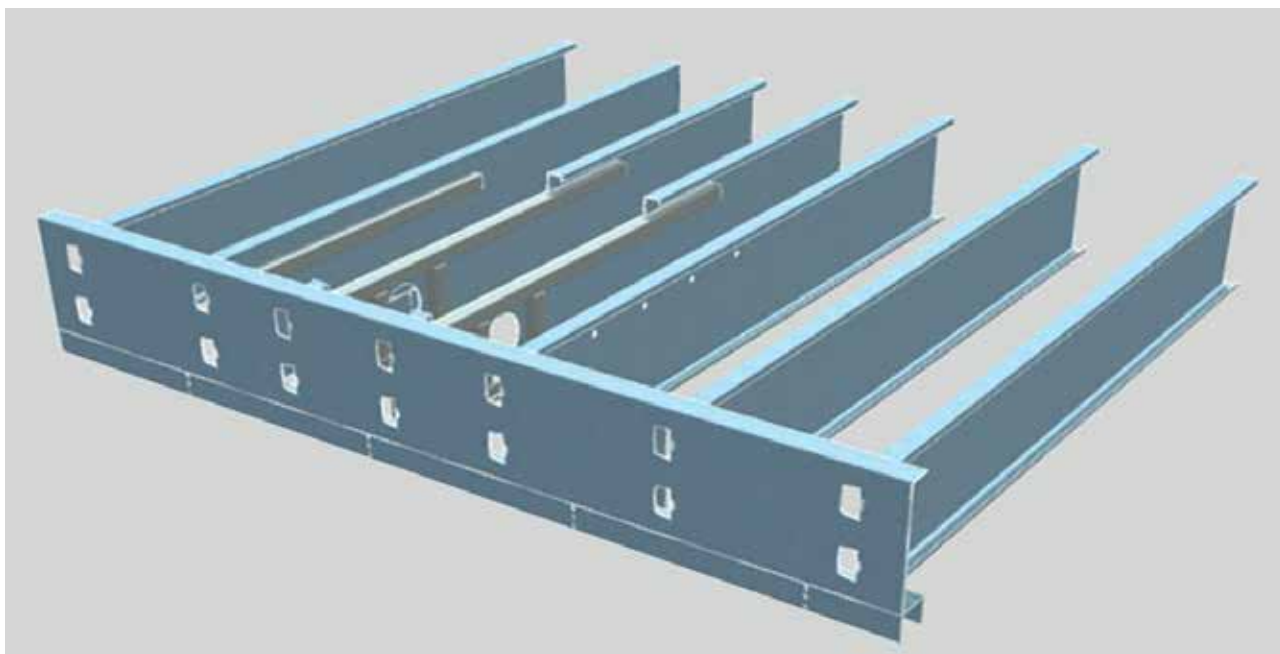
Last joist over an external wall

SECTION	TERMINAL JOIST SPAN (m)			
	ROOF LOAD WIDTH (m)			
	1	2	4	6
<hr/>				
TILE ROOF Standard Floor joist blocked at 1800mm max c's				
C30015	4.2	3.9	3.4	2.6
C30019	4.6	4.3	3.8	3.5
C30024	4.9	4.6	4.2	3.9
BOXC30015	5.1	4.7	4.3	4.0
BOXC30019	5.4	5.1	4.6	4.3
<hr/>				
TILE ROOF Tiled Floor joist blocked at 1800mm max c's				
C30015	4.2	3.9	3.3	2.6
C30019	4.5	4.2	3.8	3.5
C30024	4.9	4.6	4.2	3.8
BOXC30015	5.0	4.7	4.3	4.0
BOXC30019	5.4	5.1	4.6	4.3
<hr/>				
TILE ROOF Additional Floor joist blocked at 1800mm max c's				
C30015	4.2	3.9	3.3	2.6
C30019	4.5	4.2	3.8	3.5
C30024	4.9	4.6	4.2	3.8
BOXC30015	5.0	4.7	4.3	4.0
BOXC30019	5.3	5.0	4.6	4.3

- Spans based on 450mm common joist centres.

STEP DOWN JOIST

Typically suited for in-situ shower situations where a 50mm step down in the floor is required.

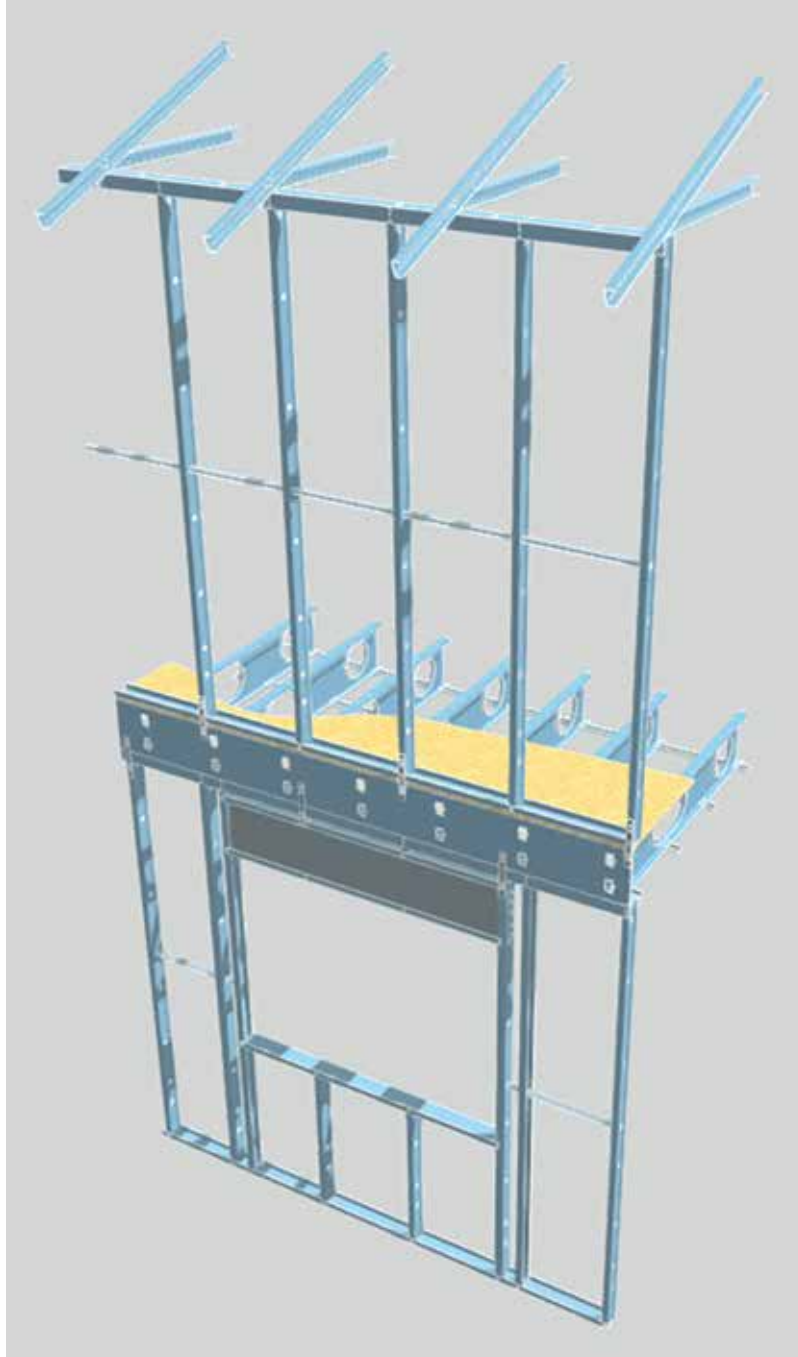


STEP DOWN JOIST SPAN TABLE

Joist Type	Joist Centres mm	Bathroom	
		central cut-down	full floor cut-down
C30015	600	4700	4400
C30019	600	5100	4800
C30024	600	5100	4900
C30015	450	5200	4900
C30019	450	5600	5200
C30024	450	5700	5300
C30015	300	5900	5600
C30019	300	6300	6000
C30024	300	6400	6100

- Central cut-down span allows for shower step down notch to be positioned anywhere along joist.
- Step down joist span table joist spans have been designed with a maximum 1800mm long step down.

LOWER STOREY WALL LINTEL



Span tables do not take into account the contribution of the floor perimeter bearer.
Positioning of lintel within wall can be above opening or under wall top plate.

LOWER STOREY WALL LINTEL

SHEET ROOF - Standard Floor

SECTION	BEARER SPAN (m)																			
	1					2					4					6				
	ROOF LOAD WIDTH (m)																			
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
C30015	2.9	2.4	2.1	1.5	1.2	2.8	2.4	2.0	1.4	1.1	2.6	2.3	1.8	1.4	1.1	2.5	2.2	1.7	1.3	1.0
C30019	3.2	2.6	2.3	2.1	2.0	3.1	2.6	2.3	2.1	2.0	2.8	2.5	2.2	2.1	1.9	2.7	2.4	2.2	2.0	2.0
C30024	3.4	2.9	2.5	2.3	2.2	3.4	2.8	2.5	2.3	2.2	3.1	2.7	2.4	2.3	2.1	3.0	2.7	2.4	2.2	2.1
BOXC30015	5.3	4.7	4.2	3.0	2.3	5.0	4.6	4.0	2.9	2.3	4.7	4.3	3.7	2.7	2.2	4.5	4.2	3.4	2.6	3.4
BOXC30019	5.6	5.0	4.5	4.2	4.0	5.4	4.9	4.5	4.2	3.9	5.1	4.7	4.3	4.1	3.8	4.8	4.5	4.2	3.9	3.7

SHEET ROOF - Tiled Floor

SECTION	BEARER SPAN (m)																			
	1					2					4					6				
	ROOF LOAD WIDTH (m)																			
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
C30015	2.8	2.3	1.9	1.3	1.0	2.8	2.3	1.8	1.3	1.0	2.6	2.2	1.7	1.2	1.0	2.4	2.2	1.6	1.2	0.9
C30019	3.1	2.5	2.2	2.0	1.9	3.0	2.5	2.2	2.0	1.9	2.8	2.4	2.1	2.0	1.8	2.7	2.4	2.1	1.9	1.9
C30024	3.4	2.8	2.4	2.2	2.1	3.3	2.7	2.4	2.2	2.1	3.1	2.7	2.3	2.2	2.0	2.9	2.6	2.3	2.1	2.0
BOXC30015	5.2	4.6	3.8	2.7	2.1	5.0	4.5	3.6	2.6	2.0	4.7	4.3	3.4	2.5	2.0	4.4	4.1	3.1	2.3	3.2
BOXC30019	5.6	4.9	4.4	4.1	3.8	5.4	4.8	4.3	4.0	3.7	5.0	4.6	4.2	3.9	3.6	4.8	4.4	4.1	3.8	3.6

SHEET ROOF - Additional Floor

SECTION	BEARER SPAN (m)																			
	1					2					4					6				
	ROOF LOAD WIDTH (m)																			
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
C30015	2.8	2.3	1.8	1.3	1.0	2.7	2.2	1.7	1.2	1.0	2.5	2.2	1.6	1.2	0.9	2.4	2.1	1.5	1.1	0.9
C30019	3.0	2.5	2.1	2.0	1.8	3.0	2.4	2.1	2.0	1.8	2.8	2.4	2.1	1.9	1.8	2.7	2.3	2.0	1.9	1.8
C30024	3.3	2.7	2.3	2.2	2.0	3.2	2.7	2.3	2.2	2.0	3.1	2.6	2.3	2.1	2.0	2.9	2.5	2.2	2.1	2.0
BOXC30015	5.2	4.5	3.6	2.5	1.9	5.0	4.4	3.4	2.4	1.9	4.6	4.2	3.2	2.3	1.8	4.4	4.0	3.0	2.2	3.1
BOXC30019	5.5	4.8	4.3	3.9	3.6	5.3	4.7	4.2	3.9	3.6	5.0	4.5	4.1	3.8	3.5	4.7	4.4	4.0	3.7	3.5

- Lower storey wall Lintel spans designed with no point loads, designed with distributed loads.
- Lower storey wall lintels must not be join over ground floor opening.
- Lower storey wall lintels taking point loads can be engineered for specific situations, contact BlueRise Solutions.

LOWER STOREY WALL LINTEL

TILE ROOF - Standard Floor

SECTION	BEARER SPAN (m)																			
	1					2					4					6				
	ROOF LOAD WIDTH (m)																			
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
C30015	2.7	2.4	2.0	1.5	1.1	2.5	2.2	1.9	1.4	1.1	2.2	2.1	1.6	1.2	1.0	2.0	1.9	1.4	1.1	0.9
C30019	3.0	2.6	2.3	2.1	2.0	2.7	2.4	2.2	2.1	2.0	2.4	2.3	2.1	2.0	1.9	2.3	2.1	2.0	1.9	1.8
C30024	3.2	2.8	2.5	2.3	2.1	3.0	2.7	2.4	2.3	2.1	2.7	2.5	2.3	2.2	2.1	2.5	2.3	2.2	2.1	2.0
BOXC30015	5.1	4.6	4.0	2.9	2.3	4.7	4.4	3.7	2.7	2.2	4.3	4.0	3.2	2.5	2.0	4.0	3.8	2.8	2.2	3.2
BOXC30019	5.4	4.9	4.5	4.2	3.9	5.1	4.7	4.3	4.1	3.8	4.6	4.4	4.1	3.8	3.6	4.3	4.1	3.9	3.7	3.5

TILE ROOF - Tiled Floor

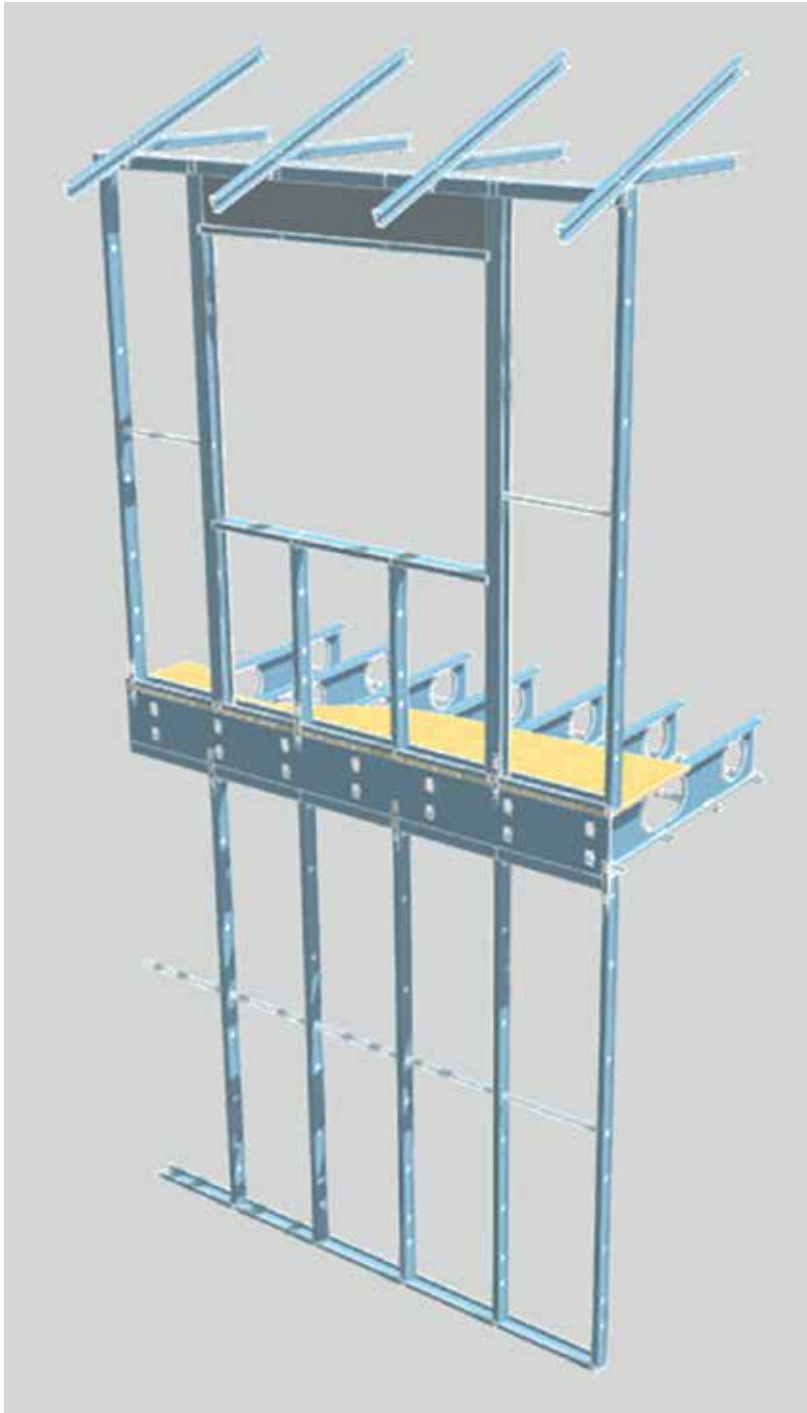
SECTION	BEARER SPAN (m)																			
	1					2					4					6				
	ROOF LOAD WIDTH (m)																			
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
C30015	2.6	2.3	1.8	1.3	1.0	2.5	2.1	1.7	1.2	1.0	2.2	2.0	1.5	1.1	0.9	2.0	1.8	1.3	1.0	0.8
C30019	2.9	2.5	2.2	2.0	1.9	2.7	2.3	2.1	2.0	1.9	2.4	2.2	2.0	1.9	1.8	2.2	2.1	1.9	1.8	1.7
C30024	3.2	2.7	2.4	2.2	2.0	3.0	2.6	2.3	2.2	2.0	2.7	2.4	2.2	2.1	2.0	2.4	2.3	2.1	2.0	1.9
BOXC30015	5.0	4.5	3.7	2.6	2.0	4.7	4.3	3.4	2.5	2.0	4.3	4.0	3.0	2.2	1.8	4.0	3.7	2.6	2.1	3.1
BOXC30019	5.4	4.8	4.3	4.0	3.7	5.1	4.6	4.2	3.9	3.6	4.6	4.3	4.0	3.7	3.5	4.3	4.1	3.8	3.5	3.4

TILE ROOF - Additional Floor

SECTION	BEARER SPAN (m)																			
	1					2					4					6				
	ROOF LOAD WIDTH (m)																			
SECTION	FLOOR LOAD WIDTH (m)																			
	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4	0.25	1	2	3	4
C30015	2.6	2.2	1.7	1.2	1.0	2.5	2.1	1.6	1.2	0.9	2.2	2.0	1.4	1.1	0.9	2.0	1.8	1.3	1.0	0.8
C30019	2.9	2.4	2.1	1.9	1.8	2.7	2.3	2.0	1.9	1.8	2.4	2.2	2.0	1.8	1.7	2.2	2.1	1.9	1.8	1.6
C30024	3.1	2.6	2.3	2.1	2.0	2.9	2.5	2.3	2.1	2.0	2.6	2.4	2.1	2.0	1.9	2.4	2.2	2.1	2.0	1.9
BOXC30015	5.0	4.4	3.4	2.5	1.9	4.7	4.2	3.2	2.3	1.8	4.3	3.9	2.8	2.1	1.7	4.0	3.6	2.5	1.9	3.0
BOXC30019	5.3	4.7	4.2	3.9	3.6	5.0	4.5	4.1	3.8	3.5	4.6	4.3	3.9	3.6	3.4	4.3	4.0	3.7	3.5	3.2

- Lower storey wall Lintel spans designed with no point loads, designed with distributed loads.
- Lower storey wall lintels must not be join over ground floor opening.
- Lower storey wall lintels taking point loads can be engineered for specific situations, contact BlueRise Solutions.

UPPER STOREY LINTEL



Lintel over first floor opening **MUST** be positioned under wall top plate.

SINGLE AND UPPER STOREY LINTEL-SHEET ROOF - N2 Wind Classification

Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	4000	3600	3400	3200	3000	2900	2800	2700	2700	2600	2500	2500	2400	2400
C30019	4400	4000	3700	3500	3300	3200	3100	3000	2900	2800	2800	2700	2700	2600
C30024	4900	4400	4100	3900	3700	3500	3400	3300	3200	3100	3100	3000	2900	2900
BOXC30015	8000	8000	7600	7200	6900	6700	6400	6200	6100	5900	5800	5700	5600	5500
BOXC30019	8000	8000	8000	7700	7400	7100	6900	6700	6500	6300	6200	6100	6000	5900

SINGLE AND UPPER STOREY LINTEL-SHEET ROOF - N3 Wind Classification

Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	3500	3100	2900	2700	2600	2500	2400	2400	2300	2200	2200	2100	2100	2100
C30019	3800	3400	3200	3000	2900	2700	2600	2600	2500	2400	2400	2300	2300	2300
C30024	4200	3800	3500	3300	3100	3000	2900	2800	2700	2700	2600	2600	2500	2500
BOXC30015	8000	8000	7600	7200	6900	6700	6300	6000	5700	5500	5300	5100	4900	4800
BOXC30019	8000	8000	8000	7700	7400	7100	6900	6700	6500	6300	6100	5800	5700	5500

SINGLE AND UPPER STOREY LINTEL-TILE ROOF - N2 Wind Classification

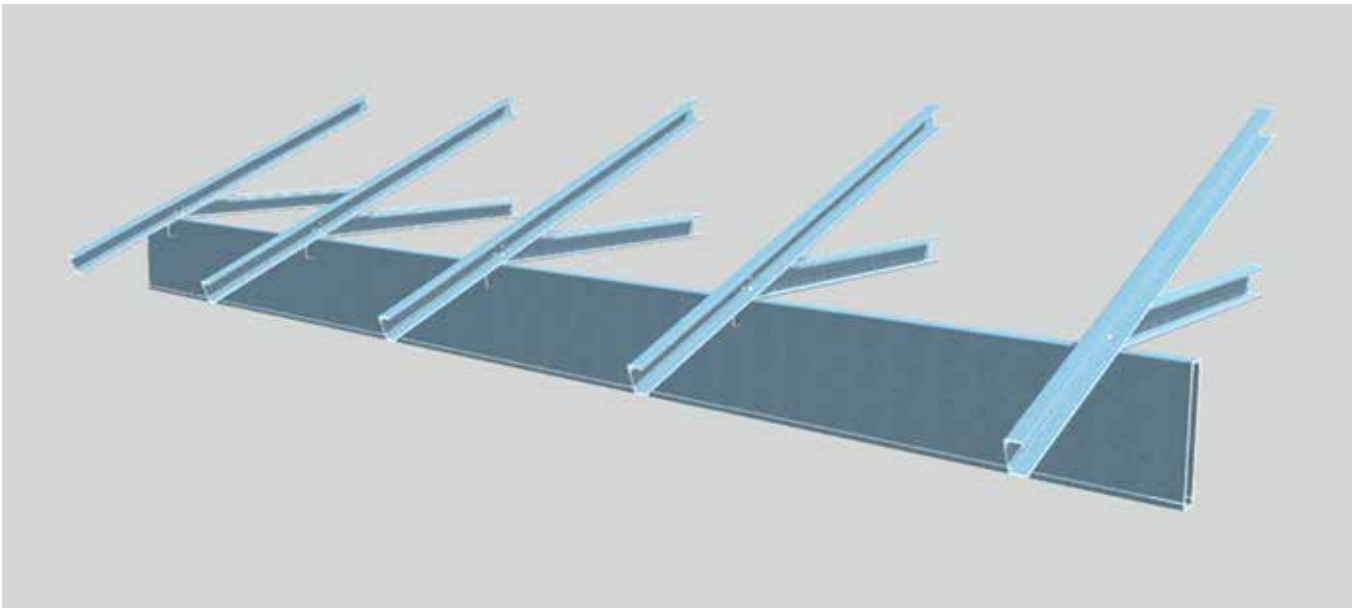
Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	5100	4600	4200	4000	3800	3600	3500	3300	3200	3100	3000	2900	2800	2700
C30019	5600	5000	4700	4400	4200	4000	3900	3800	3600	3500	3400	3300	3200	3100
C30024	6300	5600	5200	4900	4600	4400	4300	4100	4000	3900	3800	3800	3700	3600
BOXC30015	7200	6500	6000	5700	5500	5300	5100	4900	4800	4700	4600	4500	4400	4300
BOXC30019	7700	6900	6500	6100	5800	5600	5400	5300	5100	5000	4900	4800	4700	4600

SINGLE AND UPPER STOREY LINTEL-TILE ROOF - N3 Wind Classification

Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	3800	3500	3200	3000	2900	2800	2700	2600	2500	2500	2400	2400	2300	2300
C30019	4200	3800	3500	3300	3200	3000	2900	2800	2800	2700	2600	2600	2500	2500
C30024	4700	4200	3900	3600	3500	3300	3200	3100	3000	3000	2900	2800	2800	2700
BOXC30015	7200	6500	6000	5700	5500	5300	5100	4900	4800	4700	4600	4500	4400	4300
BOXC30019	7700	6900	6500	6100	5800	5600	5400	5300	5100	5000	4900	4800	4700	4600

ALFRESCO AND GARAGE LINTEL

C300 used as spanning beams supporting roof load in alfresco and garage situations.



ALFRESCO AND GARAGE LINTELS-SHEET ROOF - N2 Wind Classification

Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	3400	3100	2900	2700	2600	2500	2400	2300	2300	2200	2200	2100	2100	2000
C30019	3800	3400	3100	3000	2800	2700	2600	2500	2500	2400	2400	2300	2300	2200
C30024	4200	3700	3500	3300	3100	3000	2900	2800	2700	2600	2600	2500	2500	2400
BOXC30015	8000	8000	7600	7200	6900	6600	6200	5900	5600	5400	5200	5000	4800	4700
BOXC30019	8000	8000	8000	7700	7400	7100	6900	6700	6400	6200	5900	5700	5500	5400

ALFRESCO AND GARAGE LINTELS-SHEET ROOF - N3 Wind Classification

Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	3000	2700	2500	2400	2300	2200	2100	2100	2000	2000	1900	1900	1800	1800
C30019	3300	3000	2800	2600	2500	2400	2300	2200	2200	2100	2100	2000	2000	2000
C30024	3700	3300	3000	2900	2700	2600	2500	2500	2400	2300	2300	2200	2200	2200
BOXC30015	8000	7800	6800	6200	5700	5300	5000	4700	4500	4300	4100	4000	3800	3700
BOXC30019	8000	8000	7800	7100	6600	6100	5800	5500	5200	5000	4800	4600	4400	4300

ALFRESCO AND GARAGE LINTELS-TILE ROOF - N2 Wind Classification

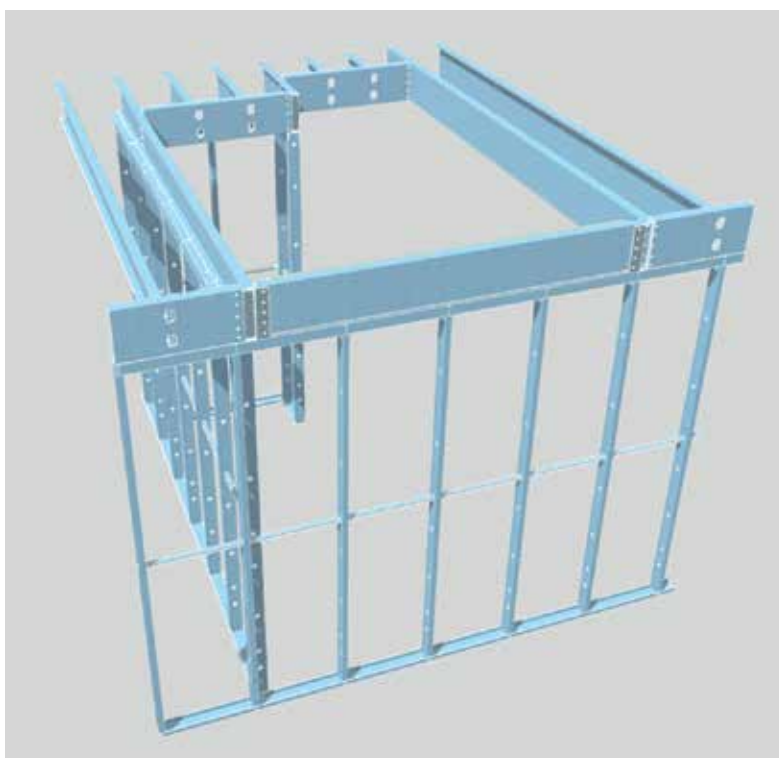
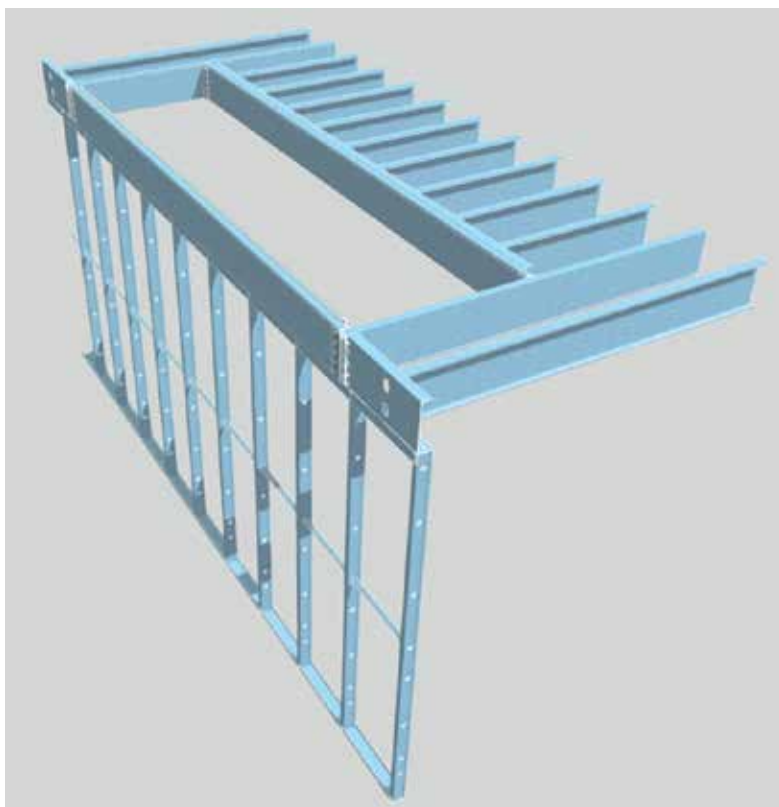
Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	5100	4600	4200	4000	3800	3600	3500	3300	3200	3100	3000	2900	2800	2700
C30019	5600	5000	4700	4400	4200	4000	3900	3800	3600	3500	3400	3300	3200	3100
C30024	6300	5600	5200	4900	4600	4400	4300	4100	4000	3900	3800	3800	3700	3600
BOXC30015	7200	6500	6000	5700	5500	5300	5100	4900	4800	4700	4600	4500	4400	4300
BOXC30019	7700	6900	6500	6100	5800	5600	5400	5300	5100	5000	4900	4800	4700	4600

ALFRESCO AND GARAGE LINTELS-TILE ROOF - N3 Wind Classification

Beam Type	Lintel Span (mm)													
	Roof Load Width (m)													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
C30015	3800	3500	3200	3000	2900	2800	2700	2600	2500	2500	2400	2400	2300	2300
C30019	4200	3800	3500	3300	3200	3000	2900	2800	2800	2700	2600	2600	2500	2500
C30024	4700	4200	3900	3600	3500	3300	3200	3100	3000	3000	2900	2800	2800	2700
BOXC30015	7200	6500	6000	5700	5500	5300	5100	4900	4800	4700	4600	4500	4400	4300
BOXC30019	7700	6900	6500	6100	5800	5600	5400	5300	5100	5000	4900	4800	4700	4600

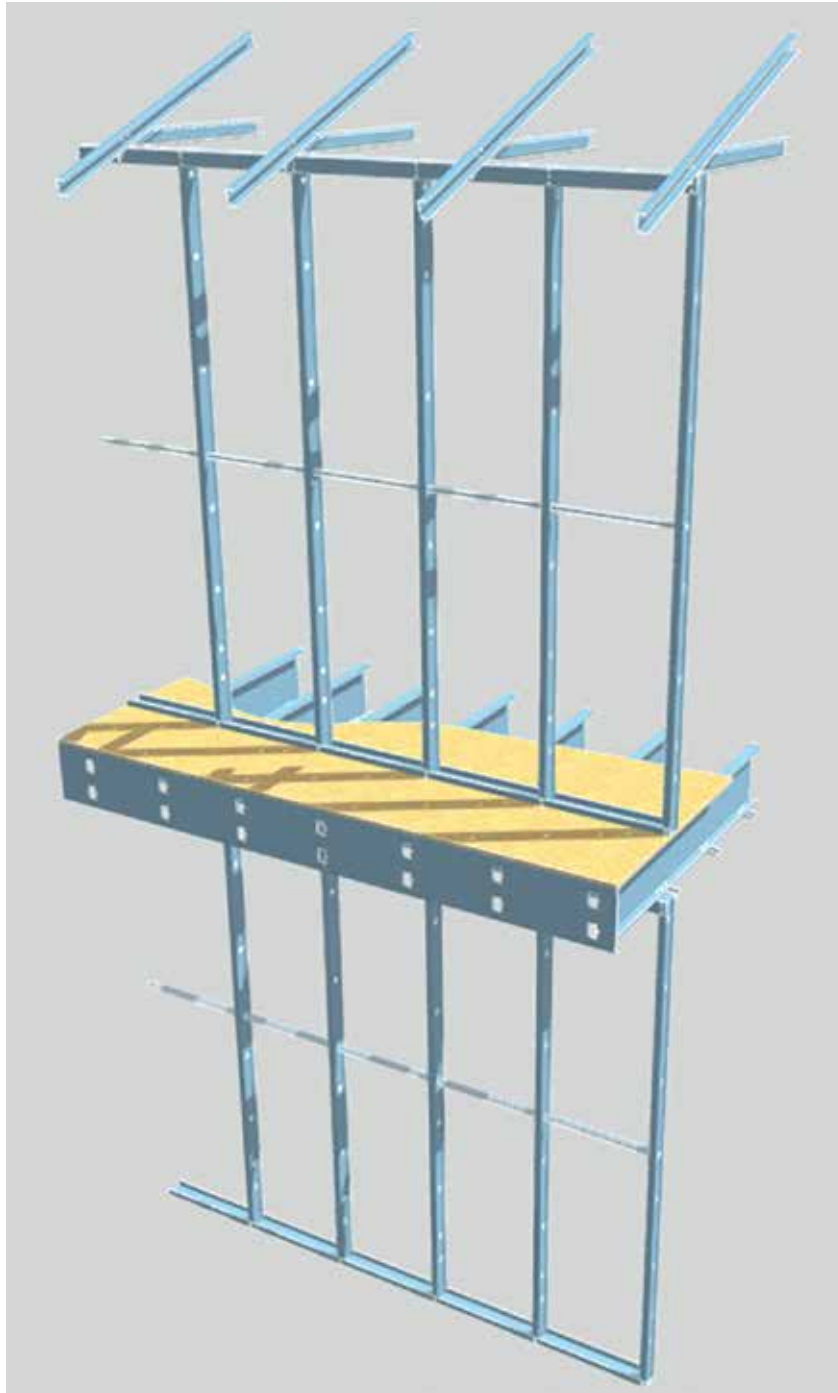
STAIR EXAMPLE

Typical stair examples of floor beams and joists around a straight run stair return. Consult BlueRise Solutions for engineered beam design to suit specific stair situations.



CANTILEVERS

Typical example of floor joists cantilevering over ground floor external wall to support first floor external wall.

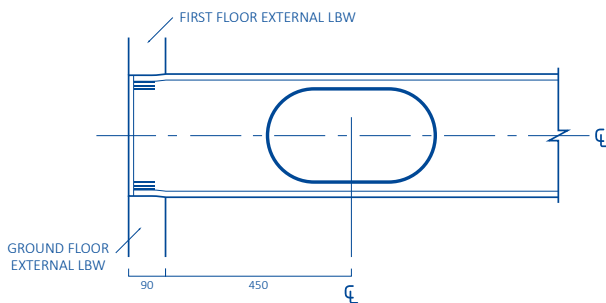


Floor system can cantilever up to 1800mm, consult BlueRise Solutions as each case needs to be engineered to suit its specific requirements.

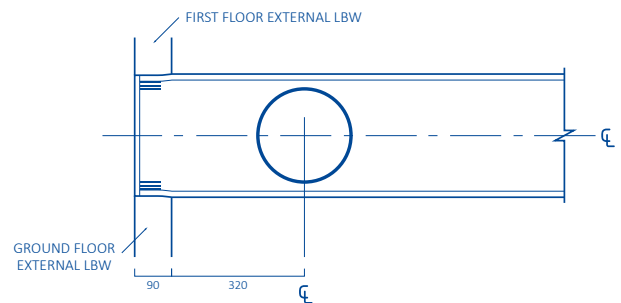
SERVICE HOLE RULES

When designing a floor the following service hole rules need to be followed for the common floor joist spans shown on sheet 2 and 3.

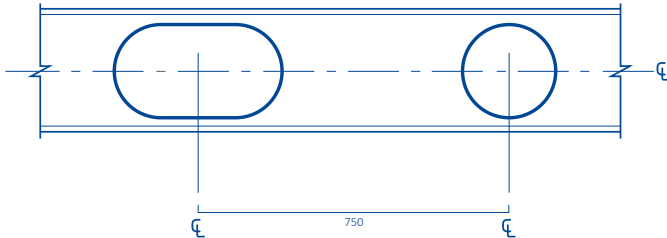
OVAL HOLE TO EXTERNAL WALL



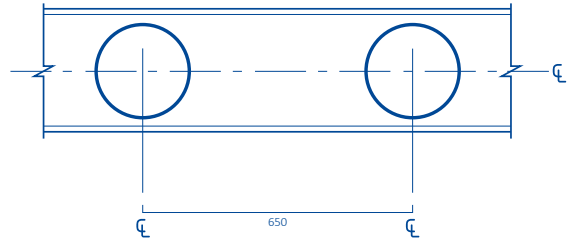
ROUND HOLE TO EXTERNAL WALL



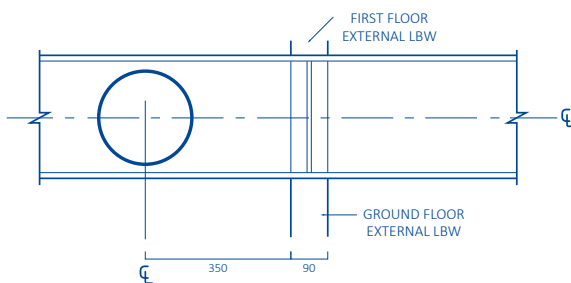
OVAL HOLE TO ROUND HOLE



ROUND HOLE TO ROUND HOLE



ROUND HOLE TO INTERNAL WALL



NOTE:

- Joist can have a maximum of 6 service holes (3 per end).
- Oval service hole can only be used as first hole in from external/internal load bearing walls.
- Holes in bearers and beams are to be specifically engineered for the situation.
- Holes are punched and flared not cut during manufacture. Any additional on site holes are to be engineered on a case by case basis.

Consult BlueRise Solutions if different service hole locations are required.

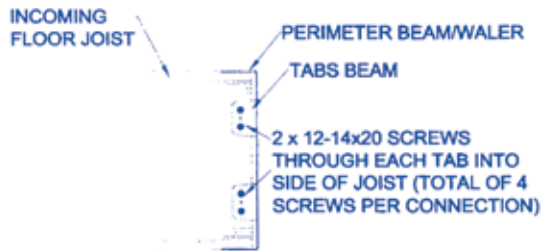
SERVICE HOLE IN STEP DOWN JOISTS



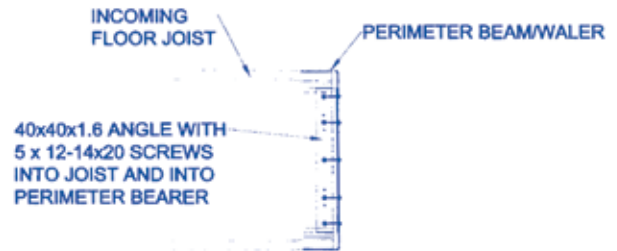
- A 125mm diameter service hole can be added to the notched section of step down joists. A reinforcing piece is required around the service hole to strengthen the joist
- Oval and round service holes can be positioned a minimum of 400mm from edge of shower notch to centre of service hole.

STANDARD CONNECTION DETAILS

JOIST TO PERIMETER BEARER TAB CONNECTION



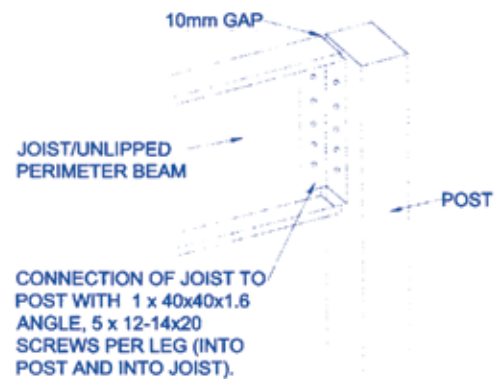
JOIST TO PERIMETER BEARER ANGLE CONNECTION



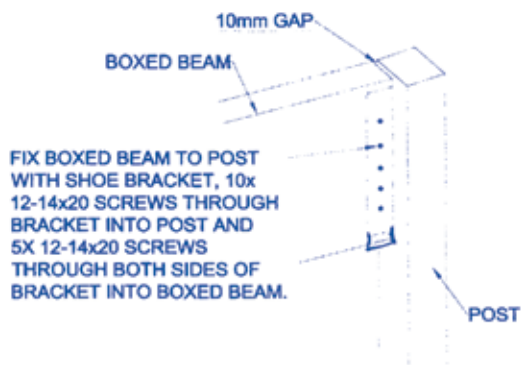
JOIST TO BOXED BEAM ANGLE CONNECTION



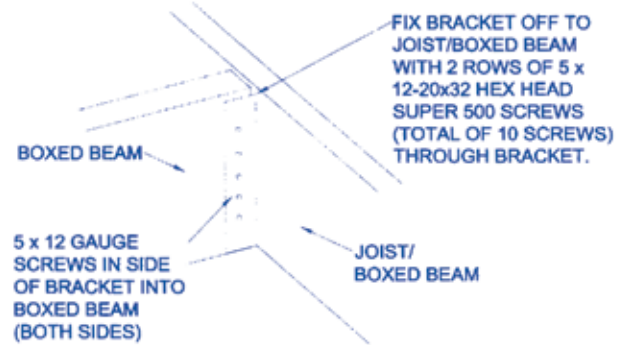
STANDARD JOIST/BEARER TO POST CONNECTION



STANDARD BOXED BEAM TO POST CONNECTION

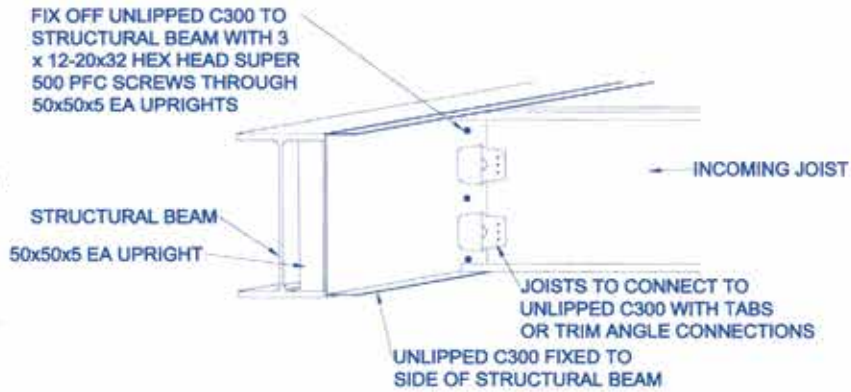


STANDARD BEAM TO BEAM/JOIST CONNECTION

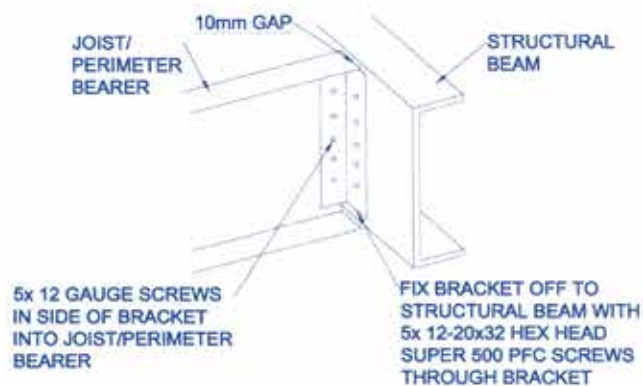


STANDARD CONNECTION DETAILS

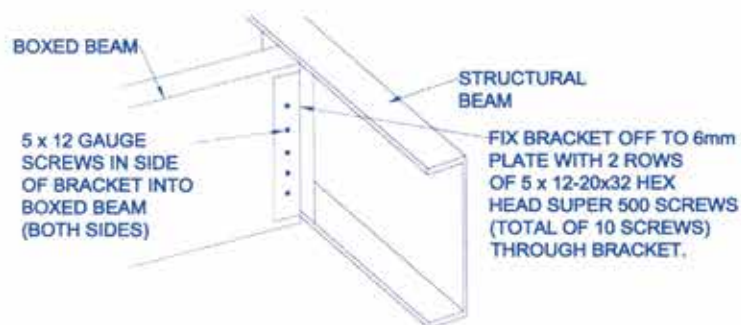
STANDARD BEARER TO STRUCTURAL BEAM CONNECTION



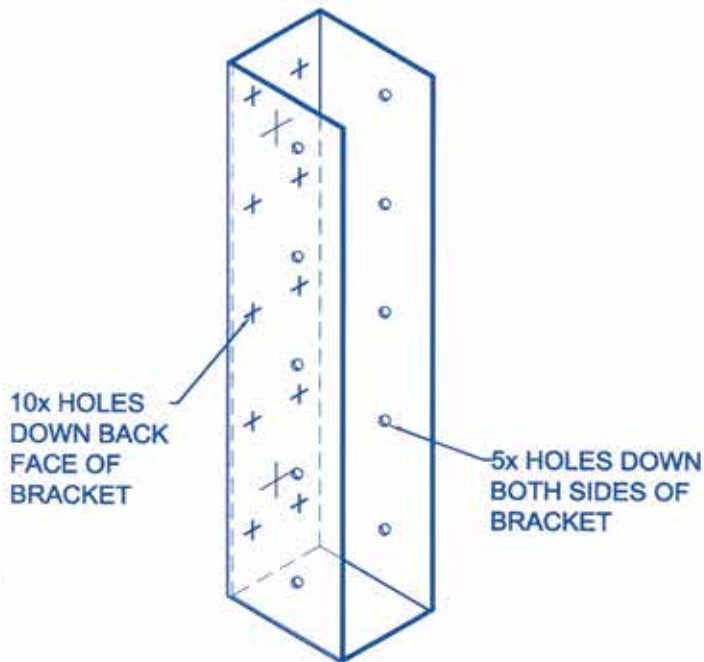
STANDARD JOIST/BEARER TO STRUCTURAL BEAM CONNECTION



STANDARD BEAM TO STRUCTURAL BEAM CONNECTION

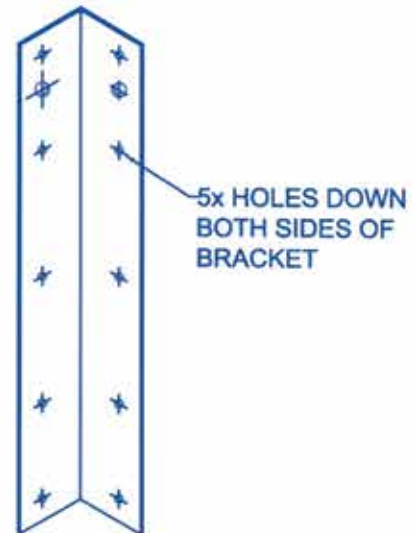


CONNECTION BRACKETS



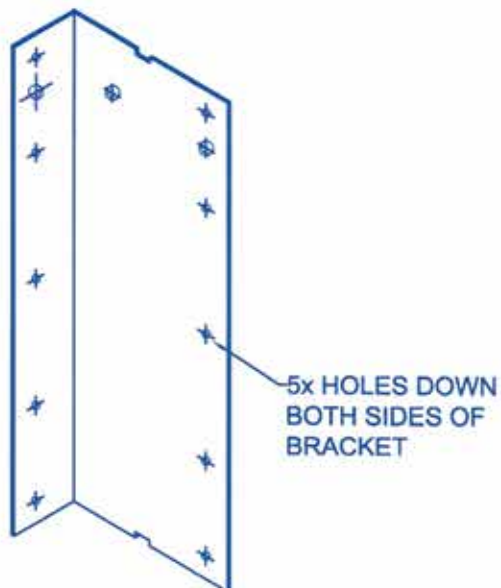
SHOE BRACKET

BRACKET IS USED FOR BOXED BEAM CONNECTIONS



40x40x1.5 ANGLE BRACKET

BRACKET IS USED TO CONNECT A MEMBER WHEN A TAB IS NOT ABLE TO BE USED

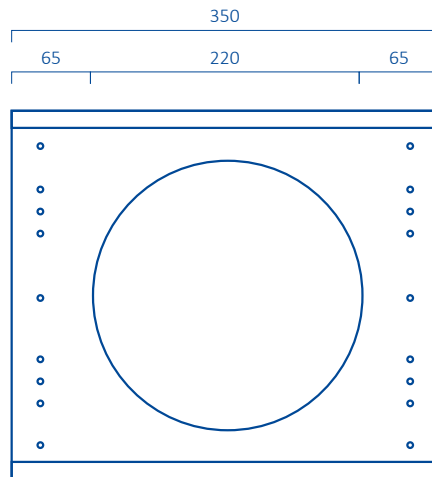


100x40x1.5 ANGLE BRACKET

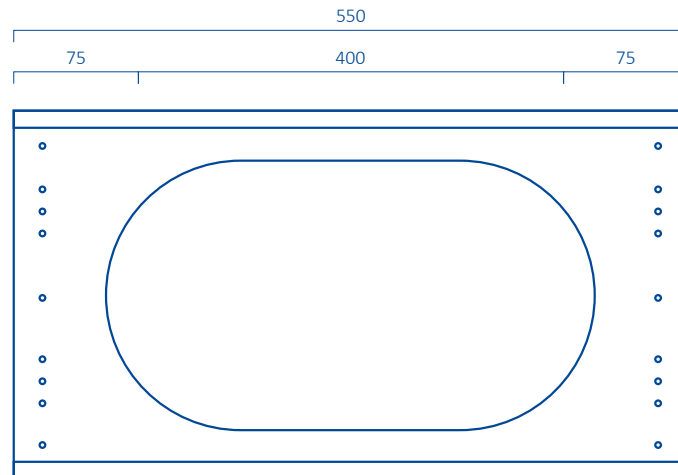
BRACKET IS TYPICALLY USED WHEN A BLOCKING PIECE IS CONNECTING TO THE OPEN FACE OF A JOIST

PENETRATION PIECES

220mm DIA ROUND SERVICE HOLE



OVAL SERVICE HOLE



BlueRise Solutions offers off the shelf penetration pieces that can be used to reinforce a joist to add an additional service hole where required. Consult BlueRise Solutions for advice if required.

Steelframe Solutions C300 system brochure

The Steel Frame Solutions C300 system brochure span tables comply with the:

National Construction Code of Australia NCC 2019 Volume 2 Part 3.4.2 Steel Framing

National Construction Code of Australia NCC 2019 Volume 1 Part B1 Structural Provisions

The span tables were based on, generally, accepted engineering principles and comply with the, following, Australian Standards:

AS 1170.0 Structural Design Actions General Principles

AS 1170.1 Structural Design Actions Permanent, Imposed and Other Actions

AS 1170.0 Structural Design Actions Wind Actions

AS 4055 Wind Loads for Housing

AS 4600 Cold-formed Steel Structures

NASH Standard Residential and Low-rise Steel Framing Part 1: Design Criteria



Daryl Collins
CPEng (mech, civil)
Build Pract (civil)

COLD-FORMED STEEL 300 SERIES BEAMS

Dimensions and Properties

DESIGNATION	DIMENSIONS					MATERIAL					GEOMETRIC PROPERTIES					EFFECTIVE SECTION PROPERTIES						
	Thickness t mm	Depth of section d mm	Flange Width b mm	Lip Length l mm	Corner Radius (inside) r mm	Area mm ²	Grade (yield) x10 ³ MPa	Elastic Modulus E x10 ³ MPa	Shear Modulus G x10 ³ MPa	Mass kg/m	Radius of Gyration r(x) mm	r(y) mm	rol mm	Centroid x mm	y mm	Shear Centre x0 mm	Torsional Constant J x10 ³ mm ⁴	Warping Constant Iw x10 ⁹ mm ⁶	Second Moment of Area Ixx x10 ⁶ mm ⁴	Iyy x10 ⁶ mm ⁴	Zx x10 ³ mm ³	Zy1 x10 ³ mm ³
U30015	1.5	300	60	N/A	3	623	0.45	80	5	108	15	112	150	8.8	25	0.47	2.63	3.6	0.15	18	4	17
U30019	1.9	300	60	N/A	3	787	0.45	80	6.3	108	15	122	150	8.8	25	0.96	3.25	5.8	0.19	31	5	22
U30024	2.4	300	60	N/A	3	991	0.45	80	7.9	107	15	111	150	8.9	25	1.94	3.99	8.7	0.23	51	6	26
C30015	1.5	300	48	15	3	621	0.45	80	4.9	108	15	112	150	9	25	0.47	2.64	6	0.14	35	4	16
C30019	1.9	300	48	15	3	784	0.45	80	6.2	108	15	112	150	9	25	0.96	3.24	8.1	0.17	50	4	19
C30024	2.4	300	48	15	3	985	0.45	80	7.8	108	14	112	150	9	24	1.92	3.95	10.9	0.2	71	5	23
Boxed C30015	1.5	300	48	15	3	1242	0.45	80	9.8	108	22	111	150	24	0	1675	0	12.9	0.58	75	15	66
Boxed C30019	1.9	300	48	15	3	1567	0.45	80	12.4	108	21	110	150	24	0	2085	0	16.8	0.72	103	18	82



THE STORY BEHIND STEEL FRAME SOLUTIONS' **BLUERISE FLOORING**

When Steel Frame Solutions decided to design its floor system we based the design on 5 basic principles:

- Cost
- Market leading floor spans
- Optimum access for service
- Ease of assembly
- Compatibility with existing building systems

With this in mind we set out to optimise our product in line with these principles, along the way we discovered designing what we believe to be the best floor system available on the market was not as easy as it sounds.

The most common intermediate floor system uses a joist 300mm deep which has become a default depth for the market, to quote a colleague "I can buy a 250mm joist but I will only have to pack it up to 300mm so you might as well just use the space provided". So why is 300mm so commonly used? Its because of the need to compromise between overall building height which is trying to get the lowest depth joist available, the desire for maximum clear spans which requires a larger joist depth and access for services such as sewerage and heating ducts which need to pass through joists.

So at Steel Frame Solutions we standardised on a 300mm joist depth. The next challenge was to minimise the amount of material needed for maximum span which led to our current profile, 45mm wide (the minimum width to accommodate a floor sheet join) and 300 deep. We offer

this in 3 gauges; 1.5mm with spans up to 6.0 meters, 1.9mm with spans up to 6.5 meters and 2.4mm with spans up to 7.0 meters.

Next we looked at products currently on the market and determined the largest service hole size available was around 220mm so we started with a service hole of 220mm and quickly discovered that bigger was better, now we offer a 220mm diameter hole or an oblong hole of 220mm x 400mm. This doesn't leave much material either side of the hole to provide strength to the joist so we flanged the hole to strengthen the joist. This is the secret to maximising floor spans with large service holes.

The next challenge was to make assembly easy, after all being on a building site on top of a ladder is not the best working environment. The answer is to build all of the connections into the joists and bearers, this has the added advantage that the job is already marked out. You won't be needing your tape measure, the joists are clearly marked so just follow the joist layout provided and put the screws through the pre-punched holes provided.

Finally the BlueRise Solutions floor system can be used anywhere a timber joist can be used, you don't have to be using steel frames to get the benefits of a steel flooring system. In addition, due to the strength of the perimeter bearer many of your lower floor lintels can be removed. Less LVL's means less weight and less cost in your lower storey framing.

OTHER NOTES:

REFER TO BLUESCOPE BULLETINS SO ADDITIONAL INFORMATION

www.steelproducts.bluescopesteel.com.au/category/technical-bulletins

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