



BOXSPAN® ROOF GUIDE
Non Cyclonic up to N3 Wind Class

Rafters → Lintels → Roof Beams

BOXSPAN®

FLOORING & ROOFING SYSTEMS

HALINA ENGINEERS PTY LTD

ABN: 85 639 248 114

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t: 0402 296 323

Our Reference **3333-05-SL01_A***Tuesday, 29 November 2022*

STRUCTURAL DESIGN CERTIFICATION
Structural Assessment of Spantec Boxspan Span Tables
Standard Residential Publication – November 2022

This assessment has been certified by the undersigned for the structural selection programs and span tables as described in Spantec Boxspan Span Tables: Standard Residential.

I consider that the guideline complies with the following structural provisions on the National Construction Code of Australia (NCC) 2022:

- Volume Two, Steel Frame, Part 3.4.2.

The assessment considered the following:

- 1) The design programs to determine the values of beam load width, beam spacing, member span and connection capacity to calculate the span tables in the publication, comply with generally accepted engineering principles and these following Australian Standards:
 - AS1170.0:2002 Structural Design Actions - Part 0: General Principles
 - AS1170.1:2002 Structural Design Actions - Part 1: Permanent Imposed and other Actions.
 - AS1170.2-2021: Wind Actions
 - AS4055-2021: Wind Loads for Housing.
 - AS4600:2018 Cold-Formed Steel Structures.
 - AS3566.1-2002 Self Drilling Screws for the Building and Construction Industries - Part 1 General Requirements and Mechanical Properties.
 - NASH Standard 2005: Residential and Low-Rise Steel Framing - Part 1: Design Criteria.
 - AS1397: 2011 - Steel Sheet and Strip Hot Dipped Zinc Coated or Aluminium/Zinc Coated.

29/11/2022

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- 2) The design capacities of Bending (**Mb**), Shear (**Vv**) and Bearing (**Rb**) have been determined in accordance with engineering calculations, laboratory testing and Australian Standard AS4600 Cold Formed Steel Structures.
- 3) The ultimate limit strength and serviceability limits of the Boxspan members have been determined using AS1170.0-2002, AS4600-2018 and testing results of Spantec.
- 4) The wind actions for strength and serviceability limits have been determined using AS1170.2-2021 (Wind Actions) and AS4055-2021 (Wind Loads for Housing).

This certification may be considered as “Evidence of Suitability” under the National Construction Code of Australia (NCC), Volume One Clause A2.2 Performance Solutions. Information in the Spantec Systems Publication not specifically referenced in this certification is outside the scope of this assessment. This certification does not relieve other parties of their duties and responsibilities. The tables describe many different structures and any specific structure should be fully described with geometry and loading.

The span tables are part of a system with included the Spantec Boxspan Brackets and Fixing.

The system can be considered complete for its intended purpose provide that:

- Connections, fixings and details are in accordance with system specifications, documentation and drawings which must be verified by the certifier.
- Supporting structural is stable, able to withstand the wind uplift, beam reactions and separately certified.
- The beams are installed in accordance with the designs and professional building standards.

If you have any further enquiries regarding this matter, please do not hesitate to contact the undersigned.

Yours faithfully

HALINA ENGINEERS PTY LTD

Ha Nguyen

BE(Hons) PhD MIEAust CPEng NER4188792 PE0001349 RPEQ24385

PRE-0000735 DEP-0000876

Principal Structural Engineer/Director

29/11/2022

BOXSPAN - STEEL BEAMS USED IN AUSTRALIAN BUILDING FOR OVER 30 YEARS

Boxspan® is a roll formed beam manufactured from two interlocked "C" shaped sections of high tensile, zinc coated steel, which provide a rectangular profile resembling traditional timber. Unlike timber, the high-tensile steel and hollow section produces a strong and long spanning beam, which will not twist or sag with time. This unique system provides the benefits of a full protective zinc coating on the inside and outside of the beam.

Boxspan® has the unique qualities of having a double thickness flange and a single thickness web that effectively puts the strength where it needs to be. The beam is strong, easy to use and has high torsional stability, unlike some other steel profiles.

Boxspan is manufactured in a range sizes from 100 x 50 mm to 250 x 50 mm, ensuring that an economical beam selection can be obtained for each project.

The beams are produced to controlled tolerances to the required length up to 12m or can be easily cut on site if necessary. The extensive range of brackets and accessories available with Boxspan makes it easy to use and a simple substitute for timber.



The Benefits of using Boxspan

- **Great spans**
- **Minimal maintenance**, galvanized inside and out.
- **Rolled to exact lengths**, minimal waste produced.
- **Won't rot, twist or shrink**, steel is a stable, durable product that is not permanently affected by the environment.
- **Straight and true to size**, manufactured to tight tolerances.
- **Termites won't eat it**, will not attract or harbor termites and no on-going chemical treatments required.
- **Lightweight**, the efficient use of steel allows a strong beam to be produced from thin steel sheet.
- **Easy to install**, an extensive range of brackets ensures easy fixing in a large range of applications.
- **Non-combustible**, steel is a non-flammable material and ideal for construction in bushfire prone areas.



1. These span tables have been prepared for a range of roofing applications in non-cyclonic wind regions using Boxspan® steel beams and brackets produced by Spantec Systems Pty Ltd.
2. This Design Notes section shall be read in conjunction with Boxspan Residential Span Tables – Non Cyclonic Areas publication.
3. Spantec Boxspan and connection components, comply with the following Australian Standards:
 - AS 1397:2011 Steel sheet and strip – Hot dipped zinc-coated or aluminium/zinc-coated
 - AS 3566.1:2002 Self drilling screws
4. The design of Boxspan and connection components, comply with the following Australian Standards:
 - AS/NZS 1170.0:2002 Structural design actions – Part 0: General principles
 - AS/NZS 1170.1:2002 Structural design actions – Part 1: Permanent imposed and other actions
 - AS/NZS 1170.2:2011 Structural design actions – Part 2: Wind actions
 - AS 4055:2012 Wind loads for housing
 - AS/NZS 4600:2005 Cold-formed steel structures
 - NASH Standard, Residential and Low-rise Steel Framing, Part 1: Design Criteria 2005
5. The connection details shall be in accordance with the details in this publication. For the complete range of connections please refer to the Spantec.com.au website.
6. The loads to determine the span tables in the Spantec publication – Boxspan Residential Span Tables – Non Cyclonic Areas are as follows:

ROOF LOADS

 - Dead Loads: 0.20kPa, 0.40kPa (includes the weight of the roof (sheeting & flashings) and Boxspan beams only).
 - Dead Loads: 0.15kPa (includes the weight of plasterboard ceiling and Boxspan beams only).
 - Live Loads: 0.25kPa (non trafficable roof). The span tables have NOT considered the 1.4kN maintenance loading and propping and crawl boards are recommended when accessing the roof.
7. The maximum height of single storey construction allowed for in the Boxspan span tables shall be in accordance with AS/NZS 1170.2:2011 requirements.
8. These span tables do not take into account the design, certification or structural adequacy of any:
 - Existing foundation
 - New foundation
 - Connection to the foundation
 - Connection to the existing structure
 - Structural adequacy of the structure to support additional floor and or roof loads

The builder/owner is to ensure that the necessary approvals (certifications) are obtained for the structure from a structural engineer or other relevant parties.

The builder/owner should also ensure the requirements of local authorities and government regulations are addressed.
9. Proprietary items supplied by others shall be installed in accordance with the manufacturer's specification.
10. The span tables have been prepared for attached 1 side and free-standing, 4 sides open or 3 sides open/1 enclosed sides pitched roofs that are 'Empty Under' ($\leq 50\%$ blocking) in accordance with AS/NZS 1170.2:2011 requirements. For other awning arrangements, use the 'Awning Selection Tables' section to determine type and reduction factor.
11. The designer shall ensure that the Boxspan protective coating (Z450 meets acceptable construction practice (steel framing) reference NCC 3.4.2.1 & 2. Z450 coating is available on most products should a higher coating be required.

RAFTERS

- Roof Live Load: **0.25kPa**
- Terrain: **Suburban Sheltered**
- Wind Class: **N3**

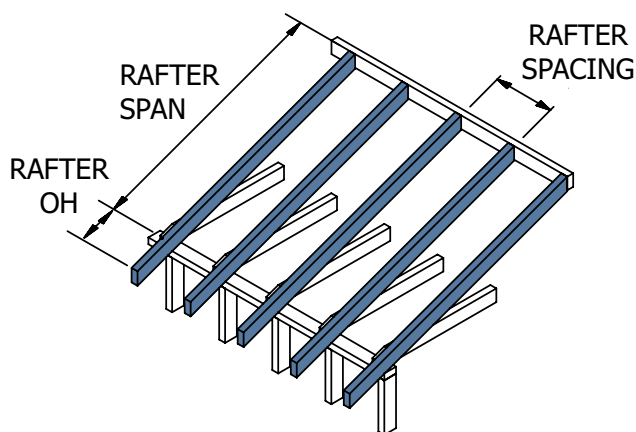


Table 16 **MAXIMUM RAFTER SPAN (m)**

BOXSPAN SECTION	SINGLE SPAN						CONTINUOUS SPAN					
	RAFTER SPACING (m)						RAFTER SPACING (m)					
	0.45	0.6	0.9	1.2	1.5	1.8	0.45	0.6	0.9	1.2	1.5	1.8
SHEET ROOF & CEILING 40kg/m²												
B100-12	4.62	4.23	3.73	3.41	3.17	2.99	6.19	5.67	5.00	4.56	4.25	4.01
B100-16	5.01	4.61	4.07	3.72	3.47	3.27	6.72	6.18	5.46	4.99	4.65	4.39
B150-16	6.77	6.24	5.53	5.06	4.72	4.46	9.08	8.37	7.41	6.79	6.33	5.92
B150-20	7.19	6.65	5.91	5.42	5.06	4.78	9.64	8.91	7.92	7.26	6.78	6.40
B200-16	8.41	7.77	6.90	6.32	5.90	5.57	11.21	9.86	8.18	7.14	6.42	5.88
B200-20	8.92	8.26	7.36	6.76	6.32	5.97	11.96	11.07	9.87	9.06	8.23	7.54
B250-20	10.58	9.82	8.77	8.06	7.53	7.12	14.09	12.46	10.40	9.10	8.20	7.52
TILED ROOF & CEILING 90kg/m²												
B100-12	3.59	3.28	2.88	2.62	2.43	2.29	4.82	4.40	3.86	3.51	3.26	3.07
B100-16	3.93	3.59	3.15	2.87	2.67	2.51	5.26	4.81	4.22	3.85	3.58	3.37
B150-12	4.89	4.46	3.92	3.57	3.32	3.13	6.43	5.60	4.60	4.00	3.58	3.27
B150-16	5.34	4.88	4.29	3.91	3.64	3.43	7.15	6.54	5.75	5.25	4.88	4.48
B150-20	5.70	5.22	4.60	4.20	3.91	3.68	7.65	7.00	6.17	5.63	5.24	4.94
B200-16	6.66	6.10	5.37	4.90	4.56	4.30	8.66	7.57	6.24	5.43	4.87	4.45
B200-20	7.11	6.52	5.75	5.25	4.89	4.61	9.53	8.75	7.71	6.97	6.25	5.72
B250-20	8.47	7.78	6.87	6.27	5.84	5.51	10.99	9.64	7.97	6.95	6.24	5.71

MAXIMUM RAFTER OVERHANG (m)

BOXSPAN SECTION	RAFTER SPACING (m)						RAFTER SPACING (m)					
	RAFTER SPACING (m)						RAFTER SPACING (m)					
	0.45	0.6	0.9	1.2	1.5	1.8	0.45	0.6	0.9	1.2	1.5	1.8
SHEET ROOF & CEILING 40kg/m²												
B100-12	2.45	2.28	2.06	1.91	1.71	1.55	2.02	1.88	1.70	1.58	1.49	1.40
B100-16	2.63	2.45	2.21	2.06	1.95	1.85	2.17	2.02	1.83	1.70	1.61	1.53
B150-16	3.34	3.11	2.81	2.61	2.47	2.34	2.75	2.56	2.32	2.16	2.04	1.95
B150-20	3.53	3.29	2.97	2.76	2.61	2.50	2.91	2.71	2.45	2.28	2.16	2.06
B200-16	3.97	3.69	3.34	3.10	2.94	2.66	3.27	3.04	2.75	2.56	2.42	2.31
B200-20	4.19	3.90	3.53	3.28	3.10	2.97	3.46	3.22	2.91	2.71	2.56	2.45
B250-20	4.80	4.47	4.04	3.76	3.55	3.40	3.96	3.69	3.33	3.10	2.93	2.80

RIDGE & INTERMEDIATE BEAMS

- Roof Live Load: **0.25kPa**
- Terrain: **Suburban Sheltered**
- Wind Class: **N3**

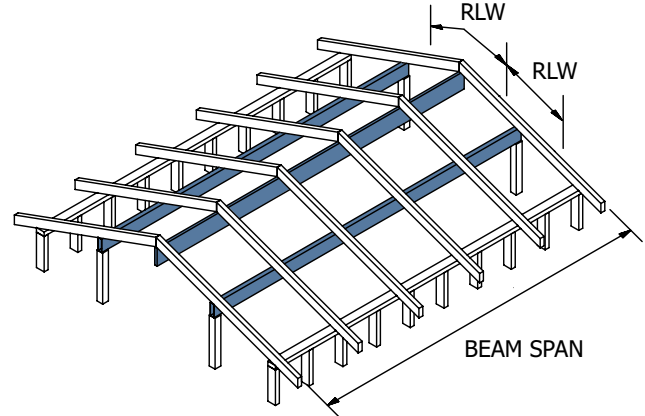
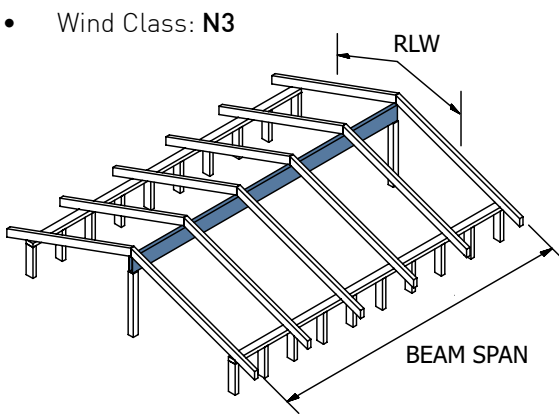


Table 17 MAXIMUM BEAM SPAN BETWEEN SUPPORTS (m)

BOXSPAN SECTION	SINGLE SPAN							CONTINUOUS SPAN						
	ROOF LOAD WIDTH RLW (m)***							ROOF LOAD WIDTH RLW (m)***						
	2.0	3.0	4.0	5.0	6.0	8.0	9.0	2.0	3.0	4.0	5.0	6.0	8.0	9.0
SHEET ROOF & CEILING 40kg/m²														
B100-16	3.16	2.77	2.53	2.35	2.21	2.01	1.93	4.24	3.72	3.38	3.10	2.83	2.46	2.32
B150-16	4.31	3.78	3.45	3.20	3.02	2.74	2.64	5.62	4.61	4.00	3.58	3.28	2.84	2.68
B150-20	4.62	4.06	3.70	3.44	3.24	2.95	2.84	6.19	5.44	4.83	4.33	3.96	3.43	3.24
B200-16	5.39	4.74	4.31	4.01	3.78	3.44	3.25	5.59	4.59	3.98	3.57	3.26	2.83	2.67
B200-20	5.78	5.08	4.63	4.31	4.06	3.70	3.56	7.17	5.89	5.12	4.59	4.19	3.64	3.43
B250-20	6.89	6.07	5.53	5.15	4.85	4.42	4.19	7.15	5.88	5.11	4.58	4.19	3.63	3.43
2/B100-16	3.94	3.47	3.16	2.94	2.77	2.53	2.43	5.28	4.65	4.24	3.95	3.72	3.38	3.26
2/B150-16	5.36	4.72	4.31	4.01	3.78	3.45	3.32	7.18	6.33	5.62	5.04	4.61	4.00	3.78
2/B150-20	5.73	5.06	4.62	4.30	4.06	3.70	3.56	7.67	6.78	6.19	5.77	5.44	4.83	4.56
2/B200-16	6.68	5.90	5.39	5.02	4.74	4.31	4.15	7.79	6.42	5.59	5.02	4.59	3.98	3.76
2/B200-20	7.14	6.32	5.78	5.39	5.08	4.63	4.46	9.57	8.23	7.17	6.44	5.89	5.12	4.83
2/B250-20	8.50	7.53	6.89	6.43	6.07	5.53	5.33	9.91	8.20	7.15	6.42	5.88	5.11	4.82
TILED ROOF & CEILING 90kg/m²														
B100-16	2.43	2.13	1.93	1.80	1.69	1.54	1.48	3.26	2.85	2.59	2.34	2.13	1.85	1.74
B150-16	3.32	2.90	2.64	2.45	2.31	2.10	2.02	4.25	3.48	3.02	2.70	2.47	2.14	2.02
B150-20	3.56	3.12	2.84	2.64	2.48	2.26	2.17	4.77	4.18	3.65	3.26	2.98	2.58	2.44
B200-16	4.15	3.64	3.31	3.07	2.89	2.63	2.53	4.23	3.46	3.01	2.69	2.46	2.13	2.01
B200-20	4.46	3.91	3.56	3.30	3.11	2.83	2.72	5.44	4.46	3.87	3.46	3.16	2.74	2.59
B250-20	5.33	4.67	4.25	3.95	3.72	3.38	3.25	5.43	4.45	3.86	3.46	3.16	2.74	2.58
2/B100-16	3.05	2.67	2.43	2.26	2.13	1.93	1.86	4.08	3.58	3.26	3.03	2.85	2.59	2.46
2/B150-16	4.15	3.64	3.32	3.08	2.90	2.64	2.54	5.56	4.88	4.25	3.81	3.48	3.02	2.85
2/B150-20	4.45	3.91	3.56	3.31	3.12	2.84	2.73	5.97	5.24	4.77	4.44	4.18	3.65	3.44
2/B200-16	5.19	4.56	4.15	3.86	3.64	3.31	3.18	5.93	4.87	4.23	3.79	3.46	3.01	2.83
2/B200-20	5.57	4.89	4.46	4.15	3.91	3.56	3.42	7.46	6.26	5.44	4.87	4.46	3.87	3.65
2/B250-20	6.65	5.84	5.33	4.96	4.67	4.25	4.09	7.58	6.24	5.43	4.86	4.45	3.86	3.64

*** RLW: refer to page 4 for roof load width types.

LINTELS

SUPPORTING ROOF LOADS ONLY

- Eave Overhang: **550mm**
- Max Deflection: **5mm**
- Wind Class: **N3**

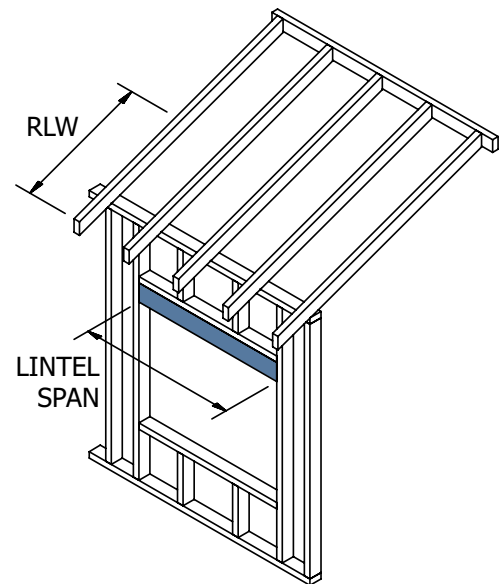


Table 13		MAXIMUM SINGLE SPAN (m)						
BOXSPAN SECTION	ROOF LOAD WIDTH – RLW (m)***							
	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0
SHEET ROOF & CEILING 40kg/m²								
B100-16	2.76	2.49	2.32	2.19	2.09	2.01	1.89	1.80
B150-16	3.48	3.15	2.93	2.77	2.64	2.54	2.39	2.27
B150-20	3.67	3.32	3.09	2.92	2.79	2.68	2.52	2.40
B200-16	4.12	3.72	3.47	3.28	3.13	3.01	2.83	2.69
B200-20	4.34	3.93	3.65	3.46	3.30	3.18	2.99	2.84
B250-20	4.95	4.48	4.18	3.95	3.78	3.63	3.41	3.25
2/B150-20	4.31	3.91	3.65	3.45	3.30	3.18	2.99	2.85
2/B200-20	5.09	4.62	4.31	4.09	3.91	3.76	3.54	3.37
2/B250-20	5.79	5.27	4.92	4.67	4.46	4.30	4.04	3.85
TILED ROOF & CEILING 90kg/m²								
B100-16	2.33	2.08	1.92	1.81	1.73	1.66	1.55	1.48
B150-16	2.94	2.62	2.43	2.29	2.18	2.10	1.96	1.86
B150-20	3.10	2.77	2.56	2.42	2.30	2.21	2.07	1.97
B200-16	3.48	3.11	2.88	2.71	2.58	2.48	2.18	1.96
B200-20	3.67	3.28	3.04	2.86	2.73	2.62	2.46	2.33
B250-20	4.19	3.75	3.47	3.27	3.12	3.00	2.81	2.56
2/B150-20	3.66	3.28	3.04	2.87	2.73	2.63	2.46	2.34
2/B200-20	4.33	3.88	3.60	3.39	3.24	3.11	2.92	2.77
2/B250-20	4.94	4.43	4.11	3.88	3.70	3.56	3.33	3.17

*** RLW: refer to page 4 for roof load width types.

LINTELS

SUPPORTING GIRDER TRUSS

- Truss Centres: **600mm**
- Eave Overhang: **550mm**
- Max Deflection: **5mm**
- Wind Class: **N3**

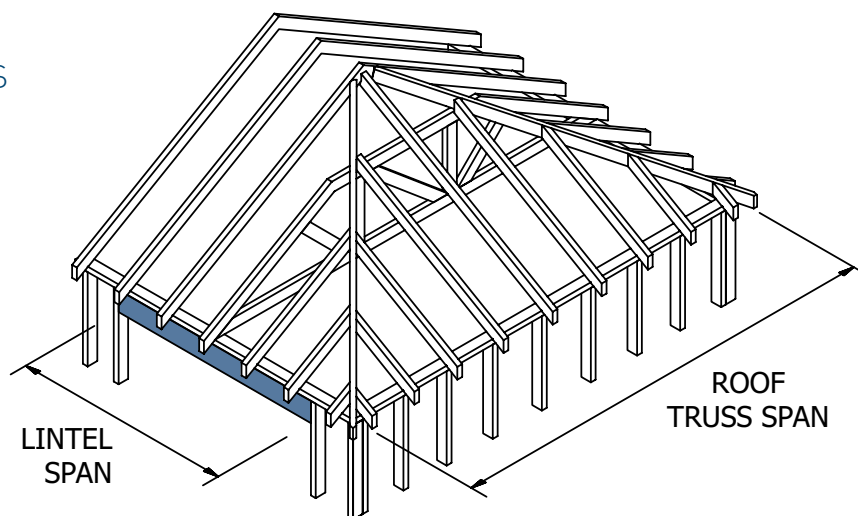


Table 14		MAXIMUM SINGLE SPAN (m)							
BOXSPAN SECTION	SHEET ROOF & CEILING – 40Kg/m ²				TILED ROOF & CEILING – 90Kg/m ²				
	ROOF TRUSS SPAN (m)				ROOF TRUSS SPAN (m)				
	6.0	8.0	10.0	12.0	6.0	8.0	10.0	12.0	
B100-16	1.99	1.86	1.76	1.68	1.64	1.53	1.44	1.38	
B150-16	2.51	2.35	2.22	2.13	2.07	1.93	1.82	1.74	
B150-20	2.65	2.48	2.35	2.25	2.18	2.03	1.93	1.84	
B200-16	2.97	2.78	2.63	2.52	2.45	2.28	2.16	1.97	
B200-20	3.14	2.93	2.78	2.66	2.59	2.41	2.28	2.18	
B250-20	3.59	3.35	3.18	3.04	2.96	2.76	2.61	2.50	
2/B150-20	3.14	2.94	2.78	2.67	2.59	2.42	2.29	2.19	
2/B200-20	3.72	3.48	3.30	3.16	3.07	2.86	2.71	2.59	
2/B250-20	4.25	3.97	3.77	3.61	3.51	3.27	3.10	2.96	

LINTELS

SUPPORTING ROOF & SINGLE STOREY FLOOR LOADS

- Roof Live Load: **0.25kPa**
- Wall: **0.45kPa @ 2.7m Ht**
- Eave Overhang: **550mm**
- Floor Live Load: **1.5kPa**
- Floor Dead Load: **0.75kPa**
- Max Deflection: **5mm**

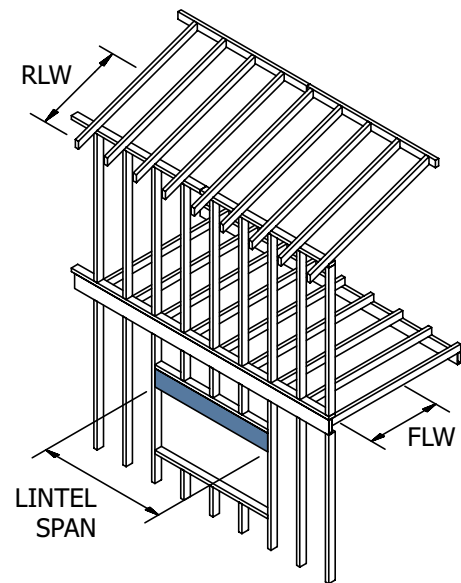


Table 15		MAXIMUM SINGLE SPAN (m)															
BOXSPAN SECTION	ROOF LOAD WIDTH – RLW (m)***																
	2				4.5				6				8				
	FLOOR LOAD WIDTH – FLW (m)*																
	0.9	1.2	2.1	3.0	0.9	1.2	2.1	3.0	0.9	1.2	2.1	3.0	0.9	1.2	2.1	3.0	
	SHEET ROOF & CEILING 40kg/m ²																
B100-16	2.15	2.07	1.89	1.71	1.96	1.90	1.78	1.62	1.87	1.83	1.73	1.58	1.78	1.75	1.67	1.52	
B150-16	2.72	2.61	2.31	1.95	2.47	2.40	2.15	1.86	2.37	2.31	2.07	1.81	2.25	2.21	1.98	1.74	
B150-20	2.87	2.76	2.52	2.35	2.61	2.54	2.37	2.24	2.50	2.44	2.30	2.19	2.38	2.33	2.22	2.11	
B200-16	3.22	2.91	2.35	1.99	2.86	2.63	2.19	1.89	2.68	2.49	2.11	1.84	2.49	2.34	2.01	1.77	
B200-20	3.40	3.26	2.99	2.57	3.09	3.00	2.81	2.44	2.96	2.89	2.73	2.37	2.82	2.76	2.60	2.29	
B250-20	3.88	3.73	3.06	2.60	3.53	3.43	2.86	2.47	3.38	3.25	2.75	2.40	3.22	3.05	2.63	2.31	
TILED ROOF & CEILING 90kg/m ²																	
B100-16	1.92	1.87	1.76	1.61	1.69	1.66	1.60	1.46	1.60	1.58	1.53	1.39	1.51	1.50	1.43	1.31	
B150-16	2.43	2.37	2.12	1.84	2.14	2.10	1.87	1.67	2.02	1.97	1.76	1.59	1.87	1.80	1.63	1.49	
B150-20	2.56	2.50	2.35	2.22	2.26	2.22	2.13	2.02	2.14	2.11	2.04	1.92	2.02	2.00	1.94	1.81	
B200-16	2.79	2.57	2.16	1.87	2.29	2.17	1.90	1.70	2.10	2.00	1.79	1.61	1.90	1.83	1.66	1.52	
B200-20	3.04	2.96	2.78	2.42	2.67	2.63	2.46	2.19	2.53	2.50	2.31	2.09	2.39	2.37	2.15	1.96	
B250-20	3.47	3.36	2.81	2.44	2.99	2.83	2.48	2.21	2.74	2.61	2.33	2.10	2.48	2.39	2.17	1.98	

* FLW: refer to page 4 for floor load width calculations. *** RLW: refer to page 4 for roof load width types.

CEILING JOISTS

- Dead Load: **0.15kPa**
- Terrain: **Suburban Sheltered**
- Wind Class: **N3**

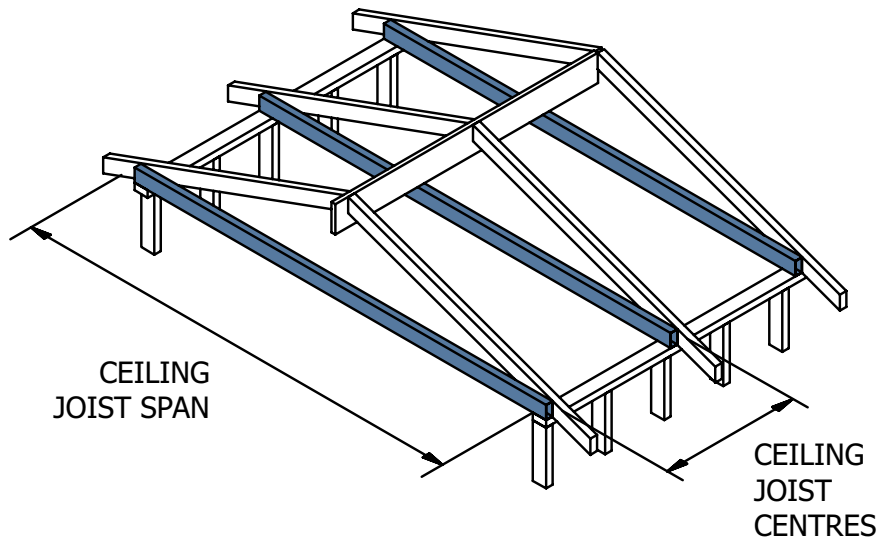


Table 18		MAXIMUM CEILING JOIST SPAN [m]							
BOXSPAN SECTION	SINGLE SPAN				CONTINUOUS SPAN				
	CEILING JOIST CENTRES (mm)				CEILING JOIST CENTRES (mm)				
	450	600	900	1200	450	600	900	1200	
B100-12	5.50	5.00	4.37	3.97	7.37	6.70	5.85	5.32	
B100-16	6.02	5.47	4.78	4.34	8.07	7.33	6.41	5.82	
B150-16	8.24	7.49	6.54	5.94	11.05	10.04	8.77	7.97	
B150-20	8.84	8.03	7.02	6.38	11.86	10.77	9.41	8.55	
B200-16	10.34	9.40	8.21	7.46	13.87	12.60	11.01	10.00	
B200-20	11.09	10.08	8.80	8.00	14.87	13.51	11.81	10.73	
B250-20	13.28	12.07	10.54	9.58	17.81	16.18	14.14	12.84	

BOXSPAN

Boxspan® light structural steel beam is a cold formed structural 'box-section' manufactured from two high tensile zinc coated 'C'- sections which are interlocked together by a patented staking process on the top and bottom flanges to form a rigid rectangular hollow section.



IDENTIFICATION

Boxspan members are identified by the marking system as follows.

Product Description (Boxspan: B)	Depth of section (mm)	Material Gauge Total thickness of metal at the Flange. 2 x Base Metal Thickness (BMT) x 10
B	100	20

Other variations of Boxspan beams with prefixes are: (XB: Boxspan Z450 Coating, SB: Smart Bearer)

DIMENSIONS

The dimensions and mass of Boxspan members are shown in the tables that follow.

	Boxspan Section	Dimensions D x W (mm)	Base Material Thickness BMT (mm)	Mass (kg/m)
	B100-12	100 x 50	0.60	2.13
B100-16	100 x 50	0.80	2.80	
B150-16	150 x 50	0.80	3.50	
B150-20	150 x 50	1.00	4.32	
B200-16	200 x 50	0.80	4.11	
B200-20	200 x 50	1.00	5.10	
B250-20	250 x 50	1.00	5.91	

BOXSPAN SECTION PROPERTIES - AS/NZS 4600:2005

Boxspan Section	Depth	Width	Web Thickness	Mass	Effective Area	Effective section modulus	Yield strength	Second moment of area	Nominal section moment capacity	Nominal shear capacity of web	Nominal bearing capacity ⁽¹⁾	Nominal bearing capacity ⁽²⁾
	D	W	BMT	m	Ae	Zex x 10 ³	Fy	Ix x 10 ⁶	□Ms	□Vv	□Rb(1)	□Rb(2)
	[mm]	[mm]	[mm]	[kg/m]	[mm ²]	[mm ³]	[MPa]	[mm ⁴]	[kNm]	[kN]	[kN]	[kN]
B100-12	100	50	0.6	2.13	268.9	8.46	550	0.421	4.27	12.04	8.17	7.80
B100-16	100	50	0.8	2.8	358.5	11.28	550	0.562	5.79	26.61	13.12	12.80
B150-16	150	50	0.8	3.5	438.5	19.47	550	1.457	9.88	19.00	13.49	12.80
B150-20	150	50	1.0	4.32	548.1	24.33	550	1.821	12.55	36.80	19.97	18.92
B200-16	200	50	0.8	4.11	518.5	29.04	550	2.901	14.28	9.75	13.49	12.80
B200-20	200	50	1.0	5.1	648.1	36.30	550	3.626	18.47	18.89	19.97	18.92
B250-20	250	50	1.0	5.91	747.7	49.90	550	6.228	24.53	14.47	19.97	18.92

BOXSPAN MATERIAL SPECIFICATION

Boxspan light structural steel beams are made from zinc coated high tensile grade G550 steel complying with the AS 1397:2011 (AS1397/G550 Z450). Base metal thicknesses (BMT) of the products are: 0.60mm; 0.80mm and 1.00mm.

COATING SPECIFICATION

Boxspan is rolled from sheet metal with zinc coating of Z450 (or equivalent). The Z450 (or equivalent) coating relates to a minimum zinc coating in accordance with AS 1397:2011.

The Building Code of Australia provides guidance on the minimum coating class required for cold-formed steel members with regards to the surrounding environmental conditions (i.e., industrial or coastal). The designer shall approve the adequacy of the coating for the intended use of Boxspan.

MANUFACTURING TOLERANCES

The tolerances for Boxspan members are within the manufacturing tolerance requirements outlined in Appendix D of the NASH Standard, Residential and Low-rise Steel Framing, Part 1: Design Criteria 2005.

BRACKETS

Spantec produce a range of brackets that allow a very large number of floor and roof configurations to be assembled. The arrangement of the brackets are outlined in the 'Connection & Installation Details' section.

The brackets are supplied to suit the different Boxspan depths as well as a range of angles and roof pitches.

BRACKET MATERIAL SPECIFICATION

Boxspan structural brackets are made from zinc coated G2 grade steel complying with (AS1397/G2 Z450) and AS/NZS 1365:1996. Base metal thicknesses (BMT) of the brackets range from 0.9mm – 1.55mm.

COATING SPECIFICATION

The brackets are rolled from sheet metal with the zinc coating of Z450. The Z450 (or equivalent) coating relates to a minimum zinc coating in accordance with AS 1397:2011).

The Building Code of Australia provides guidance on the minimum coating class required for cold-formed steel members with regards to the surrounding environmental conditions (i.e., industrial or coastal). The designer shall approve the adequacy of the coating for the intended use of Boxspan.

Hot dipped galvanized (to a coating level of 600g/m²) brackets are also available for fixing Boxspan with higher zinc coating.

FASTENERS

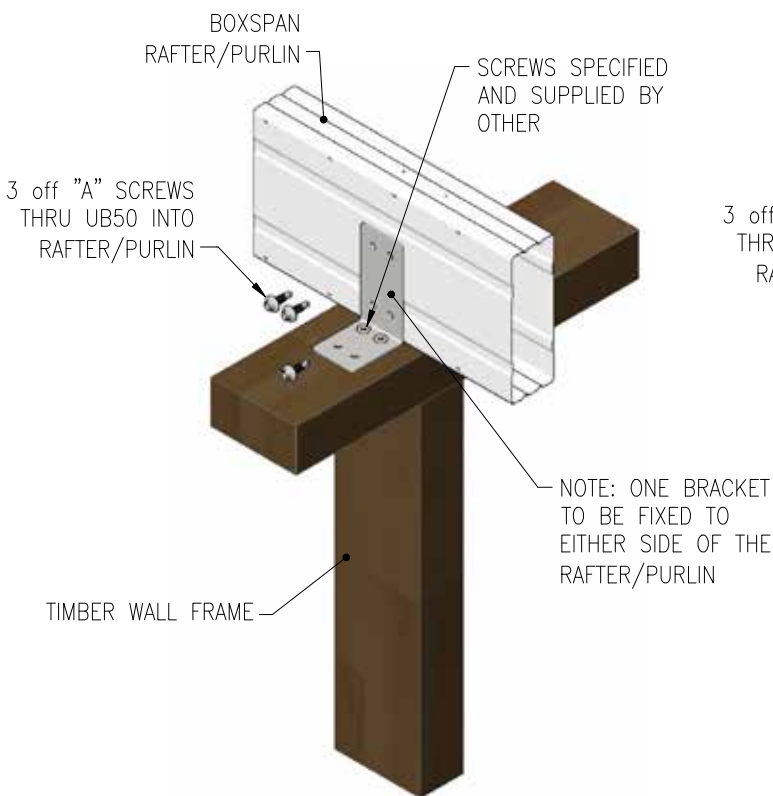
Spantec supply a range of fasteners for bracket fixing and fixing to structural steel. The class of finish on the screws shall comply with requirements of AS 3566.1:2002 or other applicable standard. The fastener type and quantity required for the connection type are shown in a table with the connection detail.

The screws in the Connection Details section are the minimum size for the quantity shown. A larger screw size with the same head type may be substituted.

Description	Application	Class of Finish
12-14x20mm Hex Head self drilling screw (Tek screw)	To connect brackets to Boxspan	Class 3 (AS 3566)
10-16x16mm Wafer Head self drilling screw (Tek screw)		
12-24x20mm Hex Head self drilling screw (3-5mm thickness)	To connect brackets to structural steel	Class 3 (AS 3566)
12-24x32mm Hex Head self drilling screw (4-10mm thickness)		
12-14x75mm Hex Head self drilling screw (Tek screw)	Long fixing screws to laminate beams and to fix to brackets from one side only.	Class 3 (AS 3566)

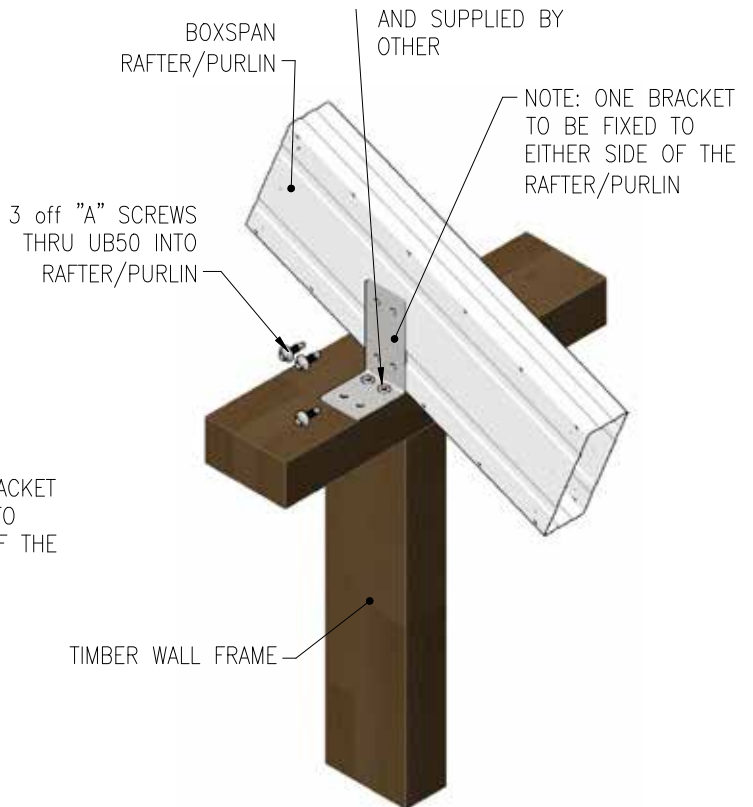


UB50 Bracket



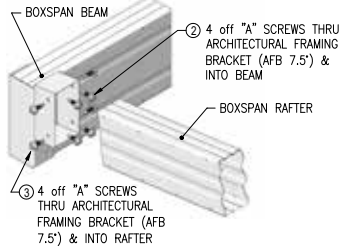
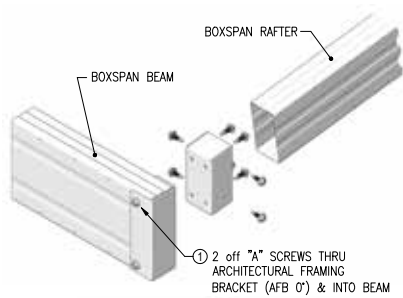
UB50 TO WALL FRAME DETAIL

ADOPTED WHERE FIXING A RAFTER/PURLIN TO A WALL FRAME UNDER.

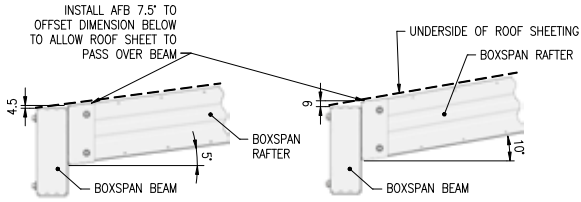


UB50 TO WALL FRAME DETAIL

ADOPTED WHERE FIXING A RAFTER/PURLIN AT A PITCH OF 22° OR LESS TO A WALL FRAME UNDER.

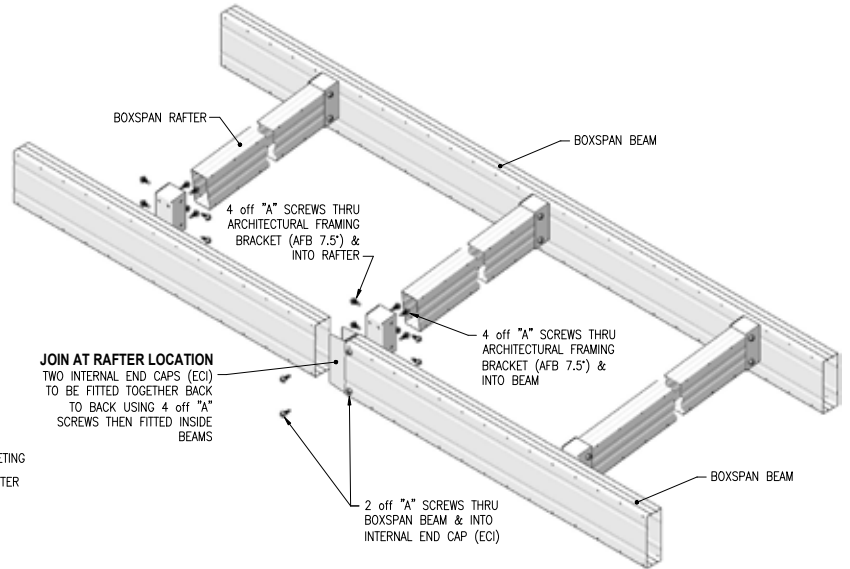


CORNER CONNECTION DETAIL



5° PITCH BRACKET OFFSET DISTANCE

10° PITCH BRACKET OFFSET DISTANCE

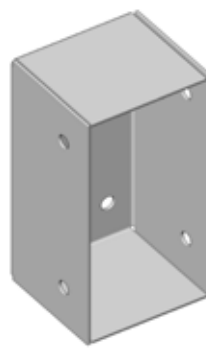


**ARCHITECTURAL FRAMING BRACKET 7.5°
AND JOIN CONNECTION DETAIL**

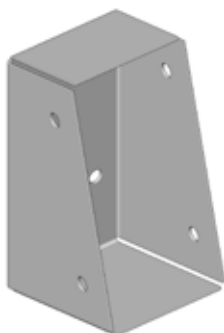
ADOPTED WHERE FIXING RAFTER TO RIDGE, FASCIA AND INTERMEDIATE MEMBERS, WHERE PITCH FALLS WITHIN 5°-10°



AFB Bracket



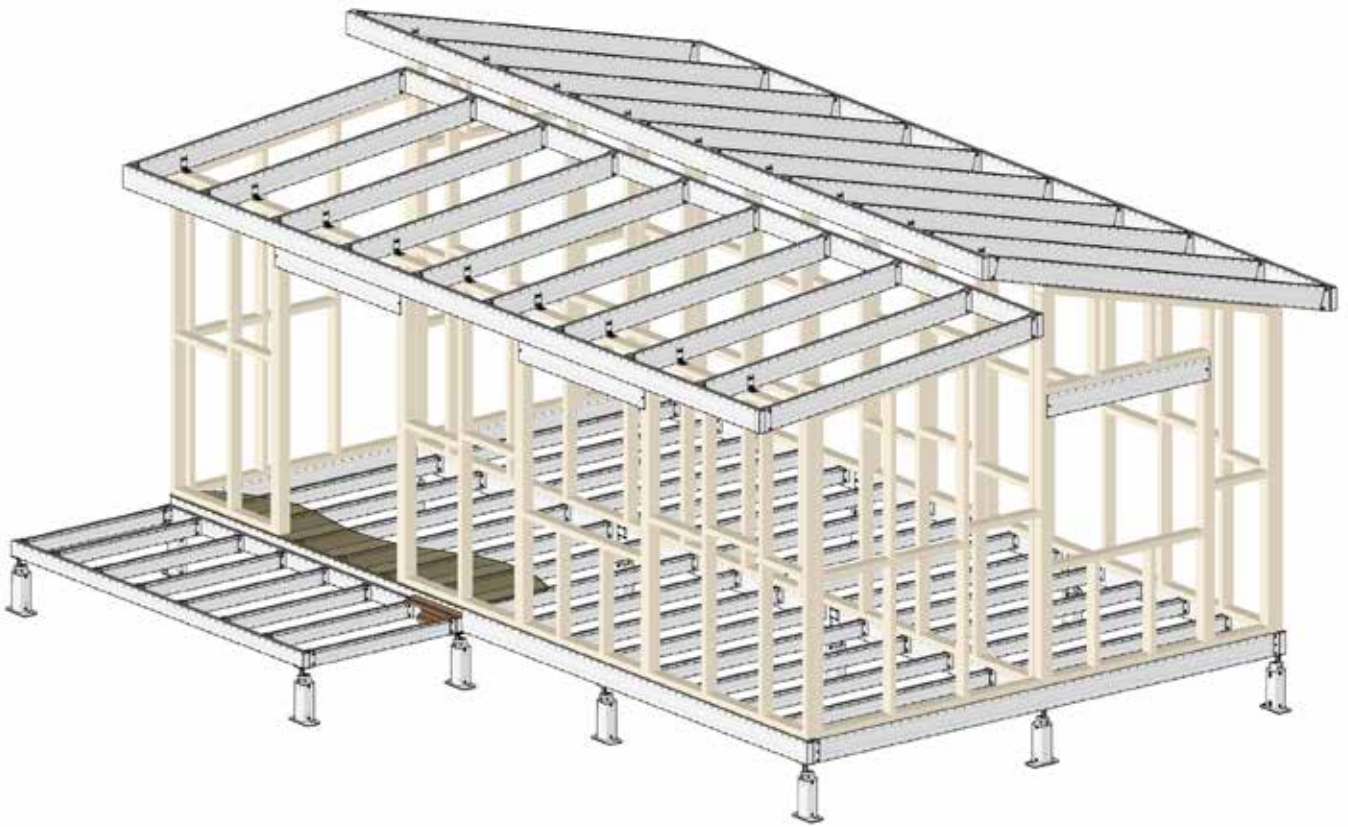
AFB 7° Bracket



AFB 15° Bracket



AFB 22° Bracket



SPANTEC™

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