

BOXSPAN[®] RESIDENTIAL DECK GUIDE
Non Cyclonic up to N3 Wind Class

Decks → Joists → Bearers

BOXSPAN[®]

STRONG, STRAIGHT, TRUE

BOXSPAN BENEFITS

- Certified and engineered.
- Australian manufactured from BlueScope coil.
- Strong, straight and true to size.
- All Boxspan beams are dimensionally accurate providing a dead level deck frame.
- Box like shape provides simple assembly of brackets.
- Cut to size or available in standard lengths.
- Large in-house stock control.
- Greater spans.
- All products are galvanised for increased durability.
- Associated bracket range.
- Light weight.
- Will not warp, twist or rot.
- Simple installation.
- Manufactured lengths of up to 12 metres.
- Beams sizes ranging from 100x50 to 250x50.

EZIPIER BENEFITS

- Certified and engineered.
- Cast iron designed top and base providing maximum strength and corrosion resistance.
- Three components consisting of a base plate, post and adjustable head.
- Large product range, including post to handrail and roof.
- True adjustability, before and after your deck is built.
- Ezipier is offset to enable a flush finish to the building line making it a neater finish for builders.
- Ezipier suits three standard post sizes, 75x75x2, 90x90x2, 89x89x3.5.
- Post material available in 1, 2, 4 and 8 metre lengths for flexibility.
- Clear termite inspection point that does not protrude past the building line.
- Non-combustible, perfect bushfire solution.

BOXSPAN®
STEEL FLOORING SYSTEMS

Spantec Systems Pty. Ltd.
PO Box 81
Mittagong, NSW, 2575

Certification**Structural Assessment of Spantec Systems BOXSPAN® Residential Span Tables Publication - January 2016**

This assessment has been certified by Spantec's Engineer for the structural design spreadsheets and span tables as described in Spantec Systems publication **BOXSPAN® Residential Span Tables - January 2016** and consider that they comply with the following structural provisions on the National Construction Code of Australia (NCC) 2019:

- Volume One, Structural Provisions - Part B1.4
- Volume Two, Steel Framing - Part 3.4.2

The assessment considered the following

- The design spreadsheets to determine the values of frame spacing, member span, and connection capacity to populate the span tables in this publication comply with generally accepted engineering principles and 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 4055-2012 Wind Loads for Housing
 - AS/NZS 4600- 2018 Cold-Formed Steel Structures
 - AS 3566.1-2002 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
- The design capacities of: Shear (Vv), Compression (Nc), Tension (Nt), Bearing (Rb); and connection capacities have been determined in accordance with Australian Standards AS/NZS 4600:2018 – Cold-formed steel structures and AS 3566.1:2002 – Self drilling screws for the building and constructions industries – Pat 1: General requirements and mechanical properties
- For wind loading Serviceability wind speeds have a default minimum value as presented in AS 4055-2012 Wind loads for housing
- The scope of this structural assessment considers design wind pressures for Non-Cyclonic Areas only

This certification may be considered as "Evidence of Suitability" under the National Construction Code of Australia (NCC) 2019, Volume One Clause A2.2 Performance Solution. 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 responsibilities.

Peter J. Barreca
Civil & Structural Engineer
BE, MIE Aust CPEng NER N° 353640
Spantec Systems Pty. Ltd

JOISTS
SUPPORTING DECKS MORE THAN
1m ABOVE GROUND

- Live Load: **2.0kPa**
- Dead Load: **0.75kPa**

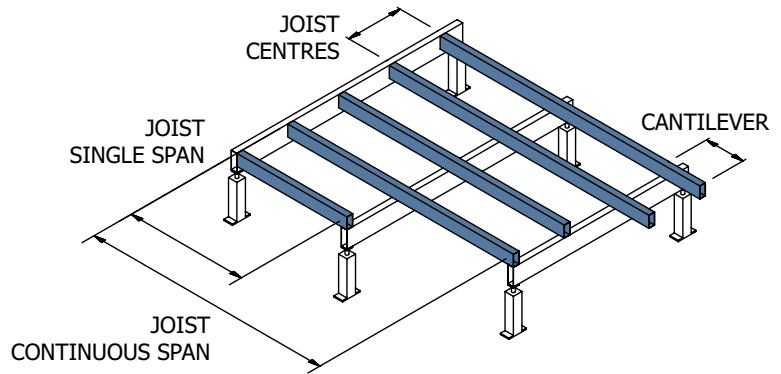


Table 5		MAXIMUM FLOOR JOIST SPAN (m)								
BOXSPAN SECTION	SINGLE SPAN			CONTINUOUS SPAN			CANTILEVERED SPAN			
	FLOOR JOIST CENTRES (mm)									
	400	450	600	400	450	600	400	450	600	
B100-12	2.48	2.38	2.20	2.77	2.50	2.27	1.33	1.28	1.03	
B100-16	2.73	2.60	2.41	3.03	2.78	2.53	1.46	1.40	1.27	
B150-16	3.48	3.35	3.04	4.30	4.14	3.76	2.06	1.98	1.67	
B150-20	3.74	3.55	3.22	4.62	4.44	4.03	2.22	2.13	1.94	
B200-16	4.69	4.47	4.13	5.62	5.30	4.82	2.68	2.50	2.13	
B200-20	5.03	4.63	4.43	6.02	5.78	5.25	2.89	2.78	2.52	
B250-20	6.03	5.74	5.31	7.37	6.84	6.22	3.54	3.40	3.09	

Spans governed by dynamic performance

FLOOR PERFORMANCE

Suspended floor frame performance can be subjective based on the end user’s perception. In order to satisfy the large majority of users it is noted that:

1. The maximum allowable spans have been designed to meet the strength and serviceability limits specified in NASH Standard, Residential and Low-rise Steel Framing, Part 1: Design Criteria 2005.
2. In some cases spans calculated by the above criteria have been reduced based on testing carried out at a NATA approved testing laboratory and extensive field testing carried out over more than 20 years.

Should a stiffer floor be required joist spans or joist spacing can be reduced or mid span blocking introduced. It is noted that floor carrying higher distributed loads (such as floor tiles or aerated concrete floors panels) or supporting non load bearing walls will be stiffer than floors carrying lower loads.

Floors will not reach their peak performance until carrying design dead loads. This includes, in particular, loads applied by internal and external walls including plasterboard and (for upper floors) ceilings fixed below.

BEARERS
SUPPORTING DECKING MORE THAN
1m ABOVE GROUND

- Decking boards
- 15mm compressed FC sheeting + tiles
- Live Load: **2.0kPa**
- Dead Load: **0.75kPa**

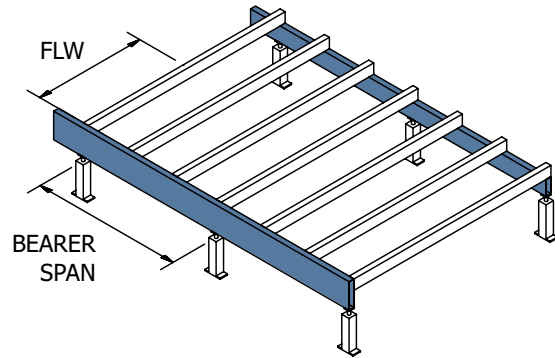
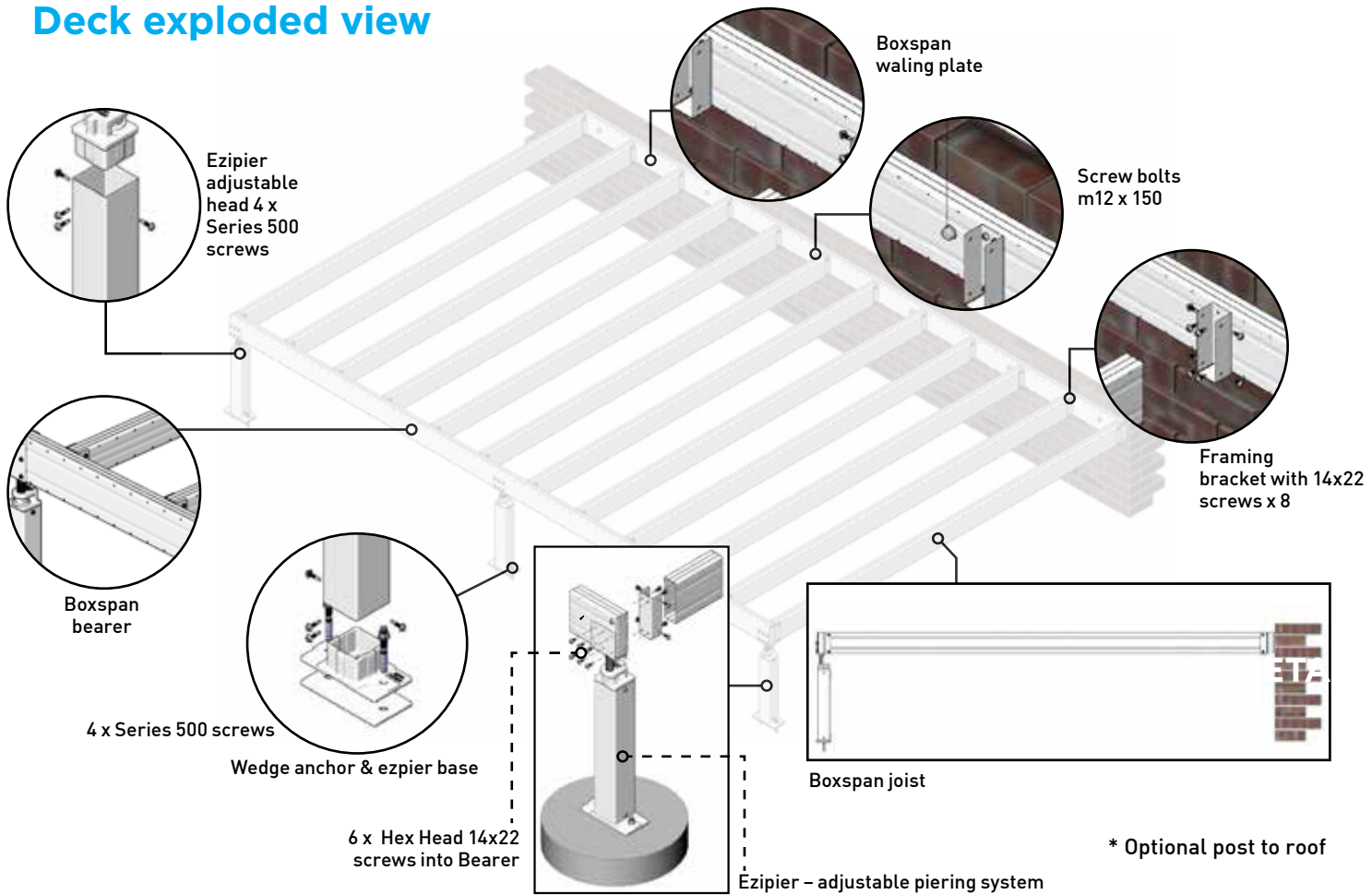


Table 6 MAXIMUM BEARER SPAN (m)											
BOXSPAN SECTION	FLOOR LOAD WIDTH – FLW (m)*										
	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.8	5.4
SINGLE SPAN**											
B100-16	2.15	1.95	1.81	1.70	1.62	1.55	1.44	1.35	1.28	1.23	1.18
B150-16	2.94	2.67	2.48	2.33	2.21	2.12	1.97	1.85	1.76	1.68	1.62
B150-20	3.15	2.86	2.66	2.50	2.38	2.27	2.11	1.99	1.89	1.80	1.73
B200-16	3.69	3.35	3.11	2.75	2.36	2.06	1.65	1.38	1.18	1.03	0.92
B200-20	3.95	3.59	3.33	3.14	2.98	2.85	2.65	2.49	2.29	2.00	1.78
B250-20	4.73	4.30	3.99	3.76	3.50	3.06	2.45	2.04	1.75	1.53	1.36
2/B100-16	2.70	2.46	2.28	2.15	2.04	1.95	1.81	1.70	1.62	1.55	1.49
2/B150-16	3.70	3.36	3.12	2.94	2.79	2.67	2.48	2.33	2.21	2.12	2.04
2/B150-20	3.97	3.61	3.35	3.15	2.99	2.86	2.66	2.50	2.38	2.27	2.19
2/B200-16	4.64	4.22	3.92	3.69	3.50	3.35	3.11	2.75	2.36	2.06	1.83
2/B200-20	4.98	4.53	4.20	3.95	3.76	3.59	3.33	3.14	2.98	2.85	2.74
2/B250-20	5.96	5.42	5.03	4.73	4.50	4.30	3.99	3.76	3.50	3.06	2.72
CONTINUOUS DOUBLE SPAN**											
B100-16	2.80	2.28	1.93	1.68	1.49	1.34	1.09	0.91	0.78	0.68	0.61
B150-16	3.20	2.57	2.16	1.82	1.56	1.37	1.09	0.91	0.78	0.68	0.61
B150-20	4.09	3.33	2.82	2.46	2.18	1.97	1.60	1.34	1.15	1.00	0.89
B200-16	3.47	2.74	2.19	1.82	1.56	1.37	1.09	0.91	0.78	0.68	0.61
B200-20	4.51	3.64	3.07	2.65	2.29	2.00	1.60	1.34	1.15	1.00	0.89
B250-20	4.84	3.87	3.21	2.67	2.29	2.00	1.60	1.34	1.15	1.00	0.89
2/B100-16	3.62	3.29	3.06	2.80	2.51	2.28	1.93	1.68	1.49	1.34	1.22
2/B150-16	4.96	4.30	3.66	3.20	2.85	2.57	2.16	1.82	1.56	1.37	1.22
2/B150-20	5.32	4.84	4.49	4.09	3.67	3.33	2.82	2.46	2.18	1.97	1.78
2/B200-16	5.83	4.73	4.00	3.47	3.08	2.74	2.19	1.82	1.56	1.37	1.22
2/B200-20	6.68	6.03	5.15	4.51	4.03	3.64	3.07	2.65	2.29	2.00	1.78
2/B250-20	7.99	6.53	5.55	4.84	4.30	3.87	3.21	2.67	2.29	2.00	1.78
CONTINUOUS TRIPLE SPAN**											
B100-16	2.65	2.41	2.18	1.90	1.68	1.52	1.24	1.04	0.89	0.78	0.69
B150-16	3.61	2.90	2.44	2.07	1.78	1.55	1.24	1.04	0.89	0.78	0.69
B150-20	3.89	3.54	3.18	2.77	2.46	2.22	1.82	1.52	1.30	1.14	1.01
B200-16	3.92	3.11	2.49	2.07	1.78	1.55	1.24	1.04	0.89	0.78	0.69
B200-20	4.89	4.10	3.46	3.00	2.60	2.28	1.82	1.52	1.30	1.14	1.01
B250-20	5.45	4.37	3.64	3.04	2.60	2.28	1.82	1.52	1.30	1.14	1.01
2/B100-16	3.34	3.03	2.82	2.65	2.52	2.41	2.18	1.90	1.68	1.52	1.38
2/B150-16	4.57	4.15	3.86	3.61	3.21	2.90	2.44	2.07	1.78	1.55	1.38
2/B150-20	4.91	4.46	4.14	3.89	3.70	3.54	3.18	2.77	2.46	2.22	2.02
2/B200-16	5.74	5.21	4.51	3.92	3.47	3.11	2.49	2.07	1.78	1.55	1.38
2/B200-20	6.16	5.59	5.19	4.89	4.54	4.10	3.46	3.00	2.60	2.28	2.02
2/B250-20	7.37	6.70	6.22	5.45	4.85	4.37	3.64	3.04	2.60	2.28	2.02

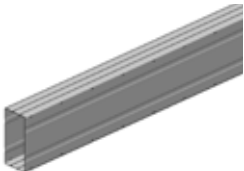









* FLW: refer to page 4 for floor load width calculations.

** Bearer Span: refer to page 4 for bearer span definitions.

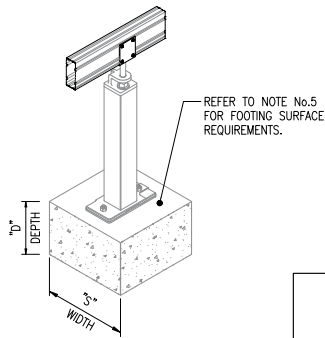
Deck exploded view



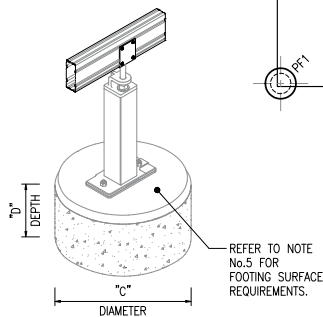
Connections

 <p>Boxspan Bearer & joist</p>	 <p>Framing bracket Connects joist to bearer</p>	 <p>Internal end cap Blocks bearer ends</p>	 <p>Ezipier Adjustable steel pier</p>
 <p>Screw for Ezipier Series 500 12-24 X 32</p>  <p>Screw for Boxspan 14-14 X 22</p>	 <p>Screw bolt M12 x 150 attach Boxspan to brick</p>  <p>Wedge anchor Fix Ezipier to footing</p>	 <p>Ezispanner Adjust pier & deck frame</p>	 <p>Ezibrace Cross brace for added strength</p>

Footings

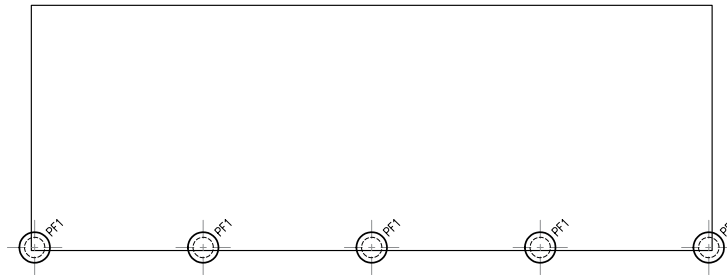


PF1 DETAIL
(SQUARE FOOTING)



PF1 DETAIL
(CIRCULAR FOOTING)

EZIDECK SQUARE CONCRETE PAD FOOTING SIZE (See Footing Notes)			
SITE/SOIL CLASSIFICATION (SEE NOTE 10)	"s" Width (mm)	"d" Depth (mm)	QTY per Pier 20kg bags of concrete
CLASS A & S	400	400	6.9
CLASS M	400	500	8.8

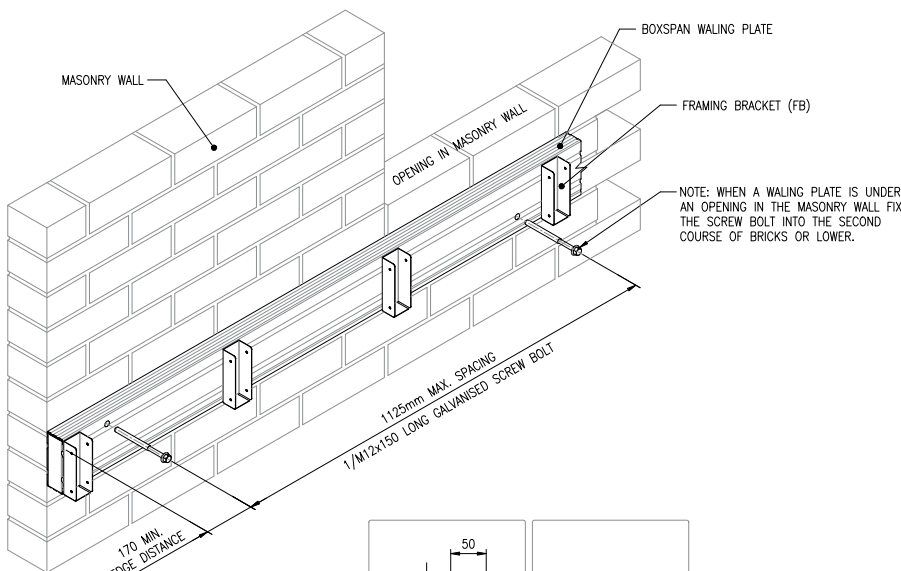


EZIDECK CIRCULAR CONCRETE PAD FOOTING SIZE (See Footing Notes)			
SITE/SOIL CLASSIFICATION (SEE NOTE 10)	"c" Diameter (mm)	"d" Depth (mm)	QTY per Pier 20kg bags of concrete
CLASS A & S	450	400	6.9
CLASS M	450	500	8.6

NOTES:

- FOOTINGS ARE DESIGNED USING THE FOOTING AND SLAB CODE AS2870 AND THE NCC VOL. 2.
- THE MINIMUM ALLOWABLE BEARING CAPACITY OF THE SOIL SHALL BE 100kPa (kN/sqm) IN ACCORDANCE WITH NCC TABLE 3.2.5.2 NOTE 5.
- THE DESIGN PARAMETERS ARE:
 - DEAD LOAD 0.75 kPa, CONSISTS OF TIMBER DECKING BOARDS OR TILE ON FC SHEET.
 - LIVE LOAD 2.0 kPa, IN ACCORDANCE WITH AS1170.1 LOADING CODE.
 - THE DECK STRUCTURE HAS BEEN DESIGNED FOR A MAXIMUM N3 (W41) WIND CLASSIFICATION FOR NORMAL WIND TO AS2055 WIND LOAD ON HOUSING.
- FOOTINGS CONSIST OF N25 STRENGTH MASS CONCRETE (NORMAL CONCRETE WITH 25 MPa COMPRESSIVE STRENGTH AT 28 DAYS AS PER AS3600 CONCRETE CODE, EXPOSURE CATEGORY ASSUMED A1).
- PAD FOOTING MUST BE ELEVATED ABOVE FINISHED GROUND LEVEL AND SLOPED TO EXCLUDE WATER AND DEBRIS.
- FOOTINGS MUST BE INTO NATURAL SOIL. THIS DESIGN DOES NOT COVER UNCOMPACTED FILL.
- SITE CLASSIFICATION SHOULD BE DONE BY A SUITABLY QUALIFIED BUILDER OR ENGINEER.
- FOOTINGS CAN BE SQUARE OR CIRCULAR AND THE SIZES IN THE TABLE ARE MINIMUMS AND COMPLY WITH THE NCC VOL. 2 CLAUSE 3.2.5.6
- THESE FOOTINGS HAVE NOT BEEN DESIGN TO SUPPORT AN AWNING OR ROOM OVER THE DECK.
- THE SITE/SOIL CLASSIFICATION IS DEFINED IN AS2870 AS FOLLOWS:
 - CLASS A – MOSTLY SAND AND ROCK SITES WITH LITTLE OR NO MOVEMENT FROM MOISTURE CHANGES.
 - CLASS S – SLIGHTLY REACTIVE CLAY SITES WITH ONLY SLIGHT GROUND MOVEMENT FROM MOISTURE CHANGES.
 - CLASS M – MODERATELY REACTIVE CLAY SITES, WHICH CAN EXPERIENCE MODERATE GROUND MOVEMENT FROM MOISTURE CHANGES.
- CALCULATIONS FOR CONCRETE VOLUMES ARE BASED ON A 20kg HAS A VOLUME OF 0.00925 CUBIC METRES.

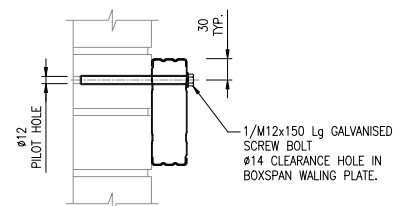
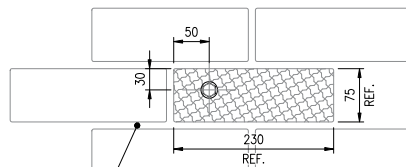
Fixing to an existing structure



FIXING TO THE MORTAR COURSE IS NOT RECOMMENDED AND MUST BE AVOIDED.

DETAIL A: SCREW BOLT MINIMUM EDGE DISTANCE IN BRICKWORK

NOTE: ONLY USE ONE SCREW BOLT PER BRICK



DETAIL B: SCREW BOLT INSTALLATION

HINT: USE HOLES IN WALING PLATE/BEARER AS A TEMPLATE FOR LOCATING HOLES IN BRICKWORK. THIS WILL ENSURE HOLES ALWAYS LINE UP.

NOTES:

- THIS CHART IS FOR USE WITH MASONRY THAT HAVE BEEN DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS3700 MASONRY CODE.
- IT IS THE BUILDER'S RESPONSIBILITY TO CONFIRM THAT THE MASONRY STRUCTURE IS IN GOOD, REASONABLE CONDITION.
- THE ENGINEERING IS FOR JOINING A FLOOR FRAME TO A BRICK OR CORE FILLED BLOCK WALL. THE MAXIMUM FASTENER SPACING SHALL BE 1125mm.
- DO NOT OVERTIGHTEN SCREW BOLTS ONTO BOXSPAN, MAINTAIN A MINIMUM WALING PLATE WIDTH OF 48mm.
- SCREW BOLTS SHALL BE M12x150 GALV. SEE PICTURE BELOW.



- DO NOT USE AN IMPACT TOOL TO TIGHTEN SCREW BOLTS.
- POSITION WALING PLATE/BEARER ON WALL AND MARK POSITION OF HOLES TO MEET THE REQUIREMENTS OF DETAIL: A

SPANTEC™

SPANTEC SYSTEMS PTY LTD

17 Drapers Road, Braemar (Mittagong) NSW 2575

Phone: (02) 4860 1000

Email: sales@spantec.com.au Website: www.spantec.com.au

BOXSPAN® is a registered trademark of Spantec Systems Pty Ltd.
ABN 56 053 584 384

© Spantec Systems Pty Ltd. February 2017