



**SPANTEC™**  
MAKING  
BUILDING  
EASY

**BOXSPAN® RESIDENTIAL UPPER FLOOR GUIDE**  
Non Cyclonic up to N3 Wind Class

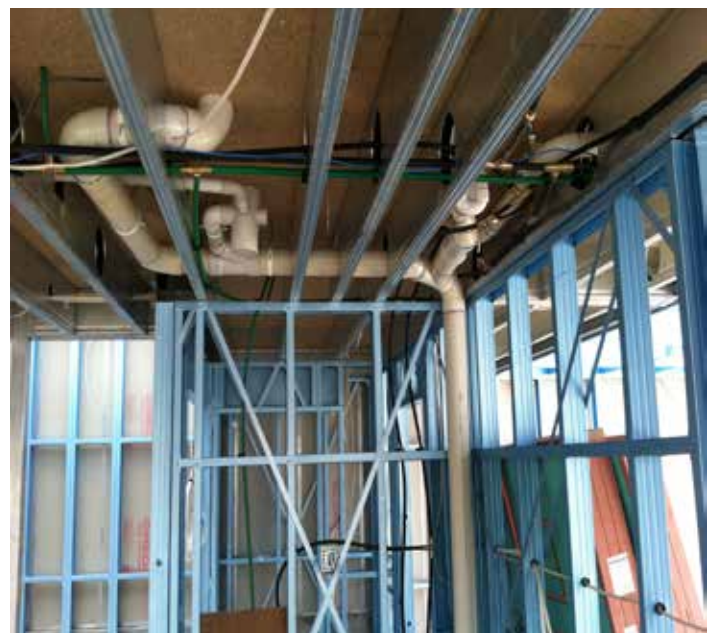
Upper Floors → Joists → Bearers

**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 upper floor 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.



**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 UPPER FLOORS

- 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 UPPER FLOORS**

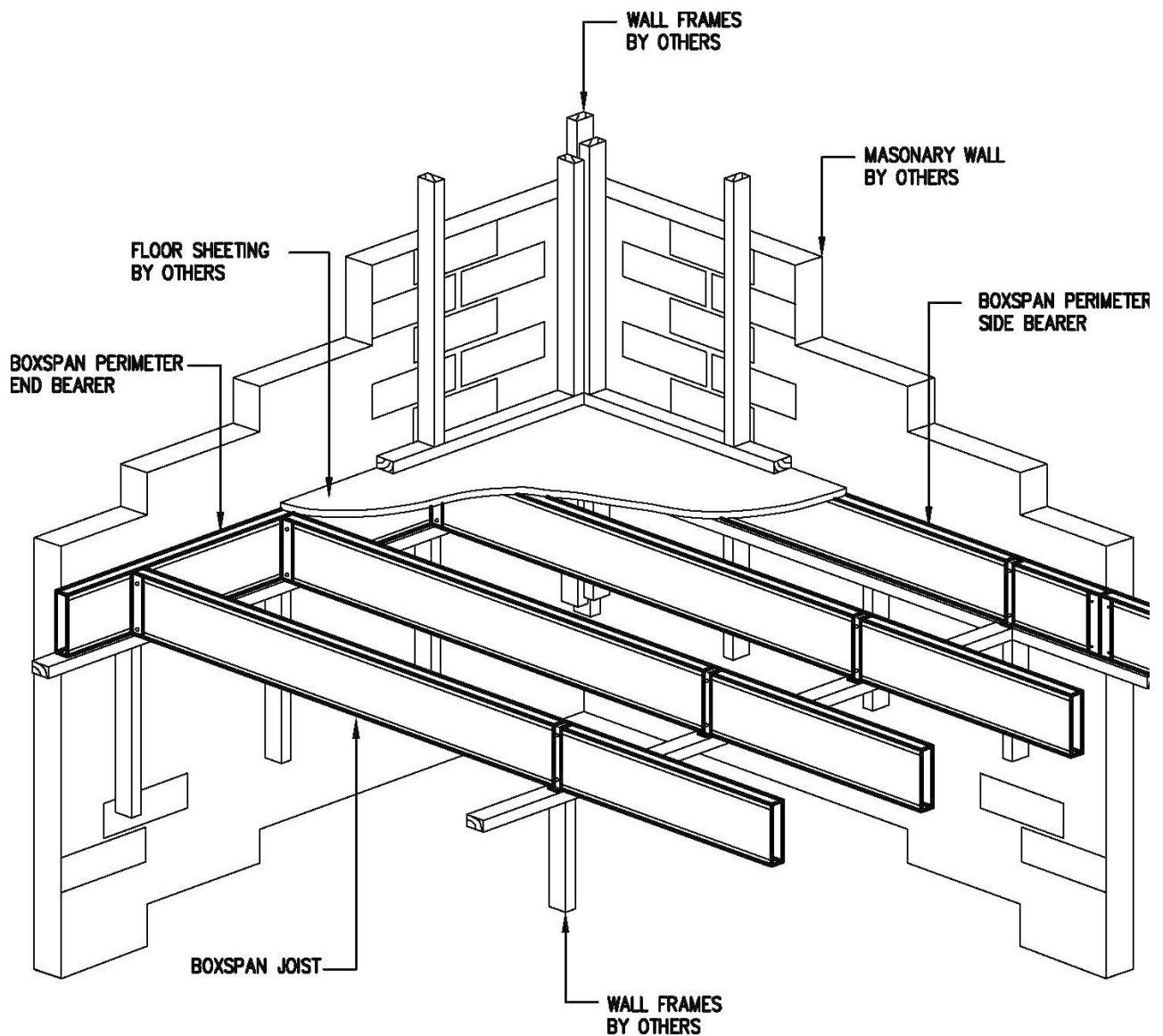
- 15mm compressed FC sheeting + tiles
- Live Load: **2.0kPa**
- Dead Load: **0.75kPa**

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

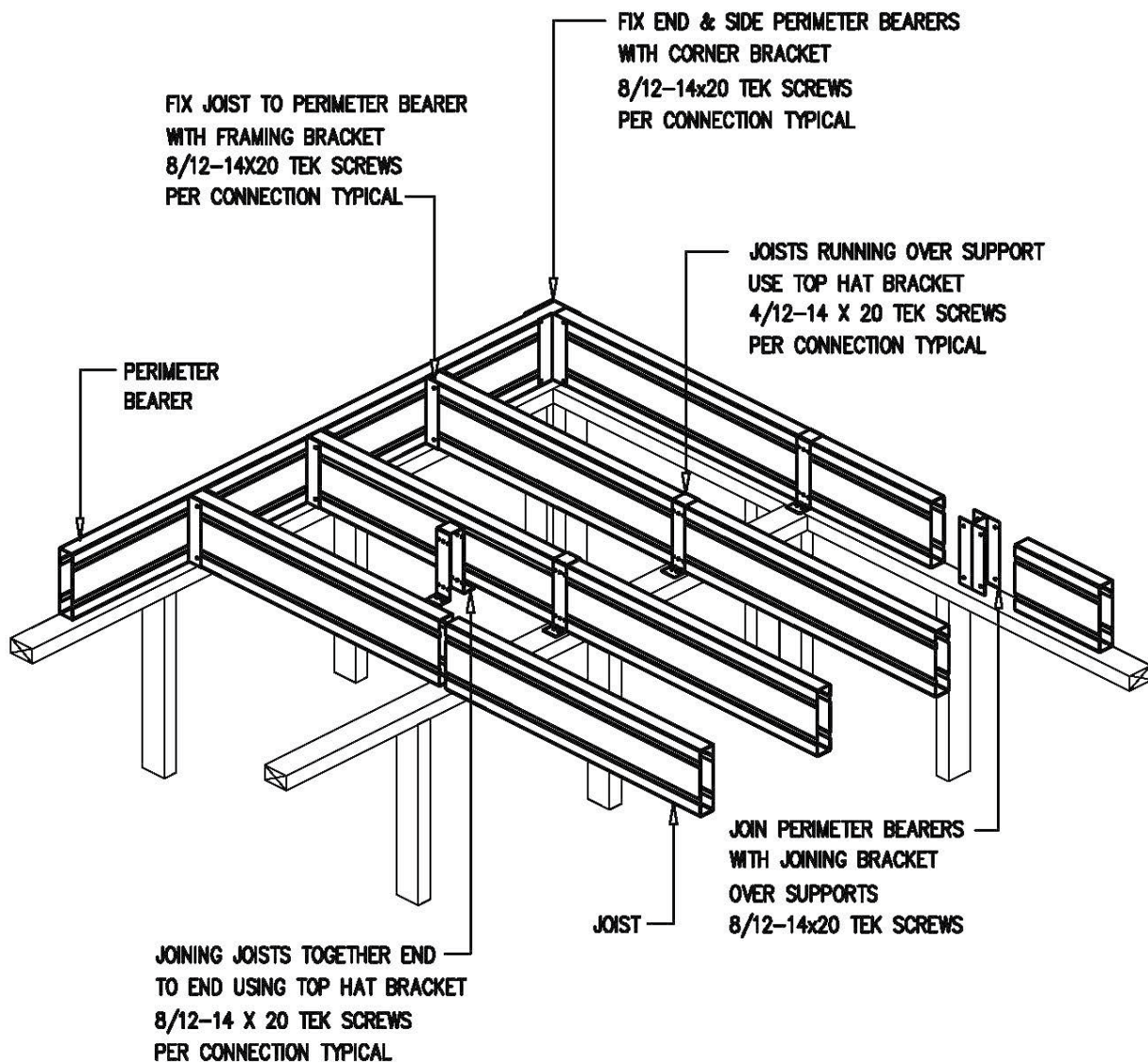
\* FLW: refer to page 4 for floor load width calculations.

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

## MONOPLANE FLOOR SYSTEM OVERVIEW (BRICK VENEER CONSTRUCTION)

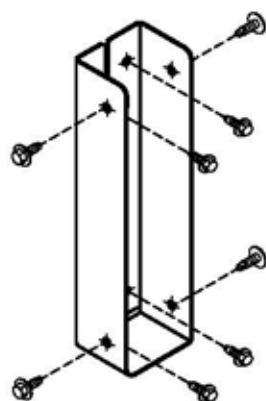


## MONOPLANE FLOOR SYSTEM (FLOOR MEMBER ARRANGEMENT)

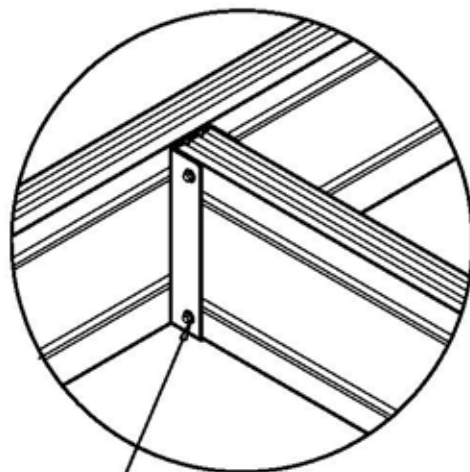


**FRAMING BRACKET (FB)**

(FOR FIXING JOISTS TO BEARERS PERPENDICULAR TO EACH OTHER)



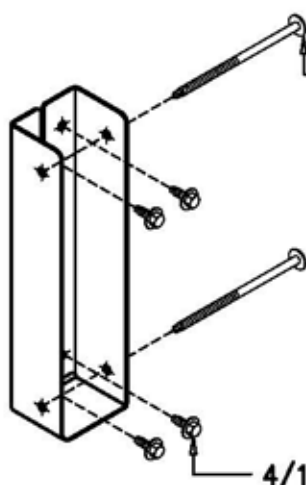
FB100  
FB150  
FB200  
FB250



8/12-14x75 TEK SCREWS

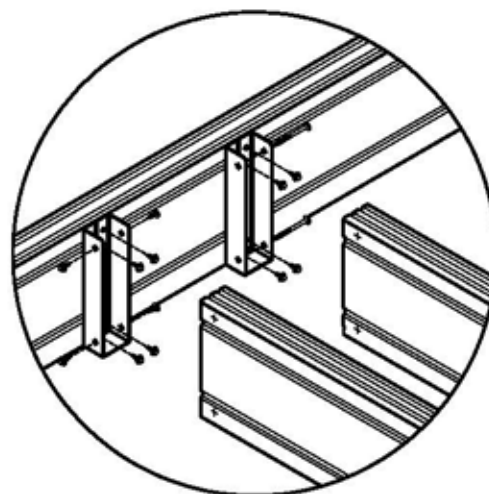
**FRAMING BRACKET (FB – SINGLE SIDE FIXING)**

FOR FIXING JOISTS TO BEARERS WHEN AND ACCESS IS DIFFICULT



2/12-14x75 TEK SCREWS

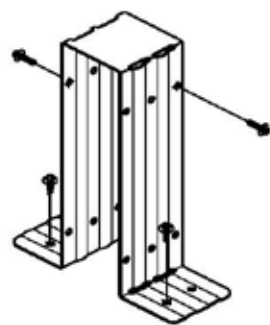
4/12-14x20 TEK SCREWS



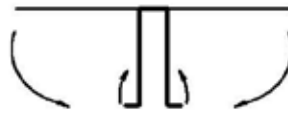


**TOP HAT BRACKET (TH)**

(FOR FIXING OF JOIST TO WALL FRAMES UNDER)



TH100  
TH150  
TH200  
TH250

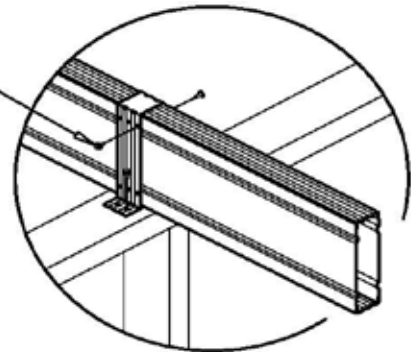


FOLD AS INDICATED

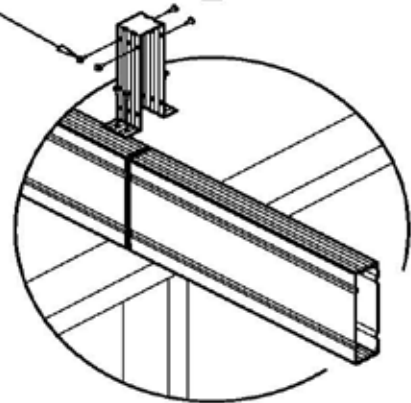
**JOINING JOISTS END TO END**

WHERE JOISTS ARE TO BE JOINED OVER BEARERS, FIX TOP HAT OVER JOIN LOCATION WITH 2/12-14x20 TEK SCREWS INTO BEARER TOP FLANGE EACH SIDE OF JOISTS AND MIN 2/12-14x20 TEK SCREWS INTO WEB OF EACH SIDE OF JOISTS

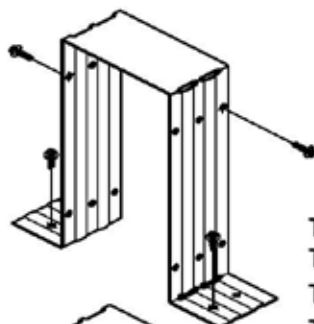
4/12-14x20  
TEK SCREWS  
PER BRACKET



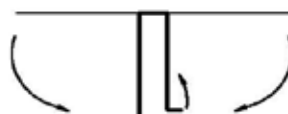
8/12-14x20  
TEK SCREWS  
PER BRACKET

**TOP HAT DOUBLE BRACKET (THD)**

FOR FIXING DOUBLE JOISTS TO WALLN FRAMES UNDER

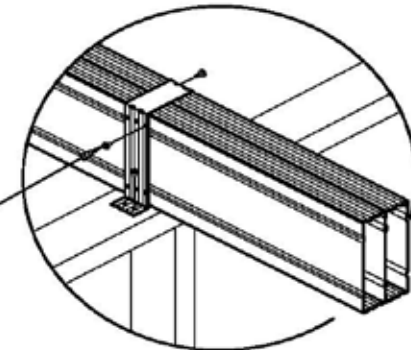


THD100  
THD150  
THD200  
THD250

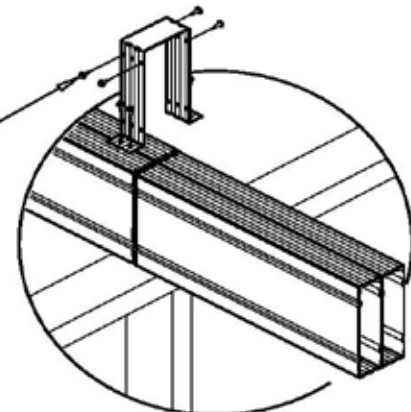


FOLD AS INDICATED

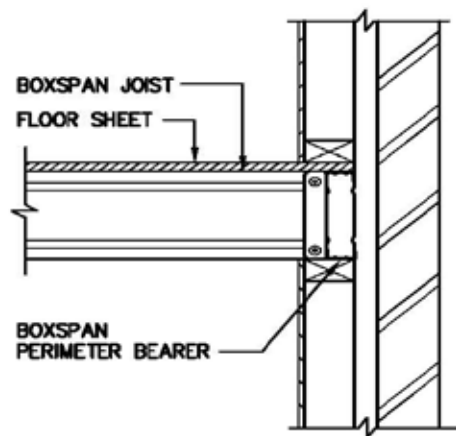
4/12-14x20  
TEK SCREWS  
PER BRACKET



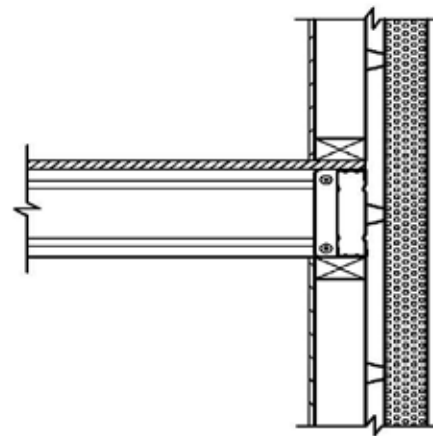
8/12-14x20  
TEK SCREWS  
PER BRACKET



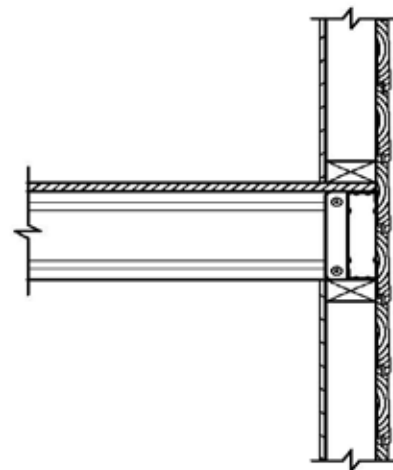
## PERIMETER CONSTRUCTION DETAILS (FOR UPPER FLOOR MONOPLANE SYSTEMS)



**BRICK VENEER**



**HEBEL FRAME**



**CLAD FRAME**



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