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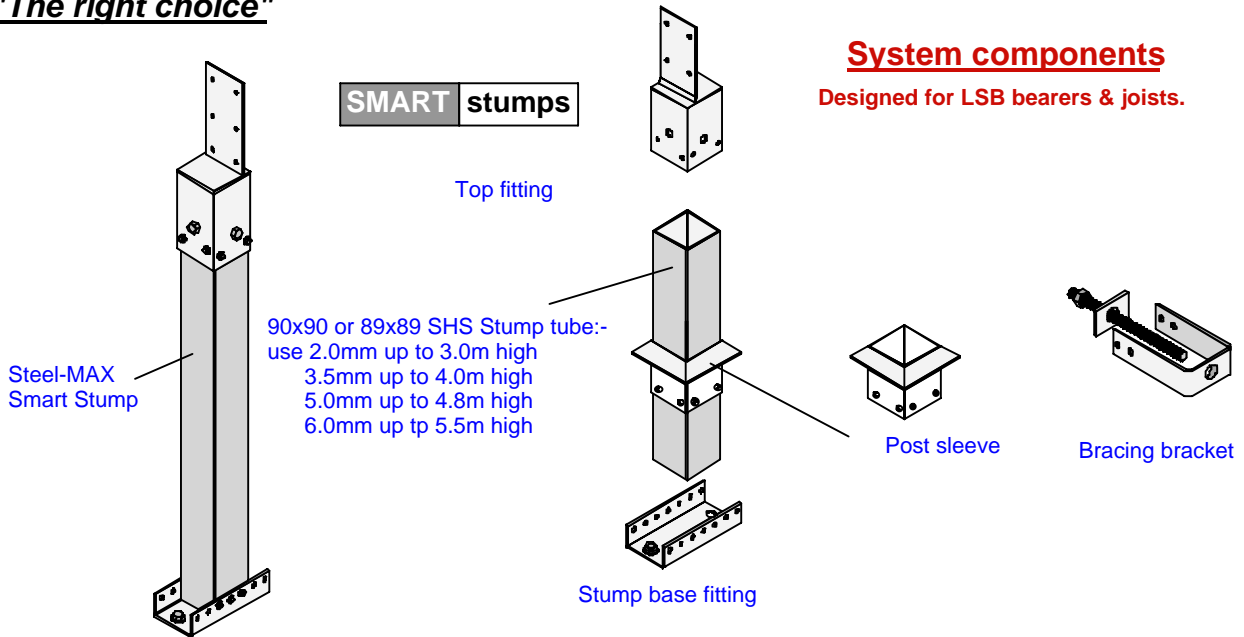
## **Steel - MAX**

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Contact: Greg Yorkston. Mob: 0438 748 381  
[distribution@steelmax.com.au](mailto:distribution@steelmax.com.au)

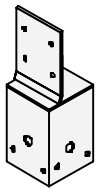
Design enquiries Ph: (07) 5450 6070  
[info@steelmax.com.au](mailto:info@steelmax.com.au)

### System components

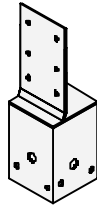
Designed for LSB bearers & joists.



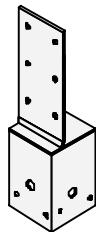
### STUMP TOPS



T-150



T-200



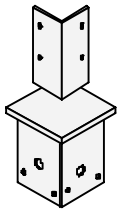
T-250



Screw tops

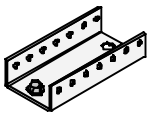


MT-LSB

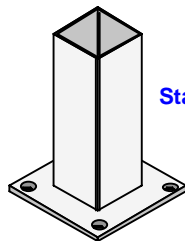


Mult-tops

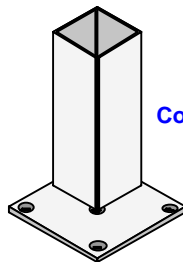
### STUMP BASES



B-90 Stump base fitting



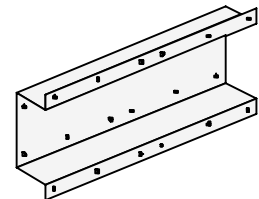
Standard



Corner

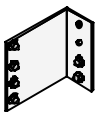
Moment base plates

### LSB Joiners

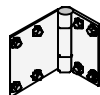


Joiners to suit 150 & 200mm LSB bearers & joists.

### CONNECTOR BRACKETS



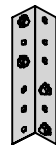
"L" bracket



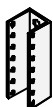
"H" hinge bracket



Joist connector  
40x40x200

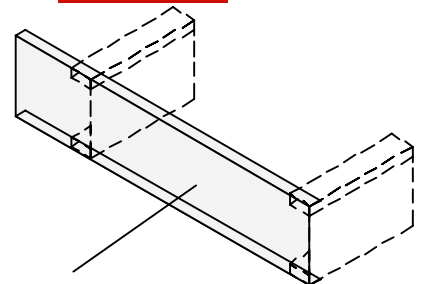


Joist connector  
50x50x295



B-50  
Heavy duty bracket

### Fascia trim



Fascia-trim channel, provides blocking and lateral stability to joists, as well as fixing for cladding.

### 1. SMART STUMPS

Steel-MAX has designed a special range of stumps specifically to suit the LiteSteel Flooring System.

- **STUMP TUBE:-**

The stump tube is 89x89 or 90x90 Gal. SHS and will vary in wall thickness to suit load requirements.

- **STUMP BASES:-**

Stump bases are in the form of a "U" shaped bracket, for multi-position and multi-angle connection to footings. Special "Moment Base plates" are available for mezzanine floors and where maximum bracing stability is required.

- **STUMP TOPS:-**

Stump tops fit any wall thickness tube and are telescopically height adjustable up to 75mm. They have vertical "fin plates" to suit 150, 200, 250 & 300mm LSB bearers. They provide maximum support and hold-down, through the bearer's web, giving the bearers lateral stability.

Special screw adjustable tops are also available and are particularly useful for reactive soil conditions.

Multi-top stumps are also available for applications where bearers can be joined at "T" intersections and 90 deg corners.

- **POST SLEEVES:-**

Post sleeves may be used to carry bearers which need to be fixed to the face of a verandah post, or a higher stump which continues up to support a different level floor, such as in split levels.

### 2. BRACING:-

"U" shaped bracing brackets are connected to stumps and bearers, to carry either 12mm or 16mm threaded bracing rod, to form sub-floor cross bracing sets. They yield up to 15 kN or 22 kN capacities respectively.

### 3. CONNECTORS:-

- "L" fixed angle brackets may be used at 90 deg member connections in a variety of applications. They are also useful when connecting trimmers around stair voids.
- Hinged "H" brackets can be used at angled connections, similar to the "L" brackets.
- Joist connector brackets are in the form of an angle, which are usually fixed vertically to the webs of both the bearers & joists.

They help support both members and provide good hold-down and lateral stability to joists. They are available in 200mm and 295mm lengths.

### 4. DURABILITY:-

All Steel-MAX products have corrosion protection, such as Dacrotising ( refer to web site at: <http://www.dacro.co.kr/eng-3.htm> ) as well as Galvanizing and Galvabond finishes. Refer also to the LiteSteelbeam web site as well as the Steel-MAX corrosion protection recommendations.

### 5. TECHNICAL SUPPORT:-

Contact Steel-MAX via the web site, email, phone or fax; or ask your LiteSteel representative.

### 6. ENGINEERING:-

Engineering design and certification is provided by H.R. Design Group P/L (Hunt Robinson Engineers) for the Steel-MAX products for use with the LiteSteel Floor Framing System.

A copy of the standard letter of certification is available from the Steel-MAX web site.

Both LiteSteel Technologies and Steel-MAX do not provide individual job certification, footing or sub-floor bracing designs, or certificates of compliance. These are generally site specific and should be provided by the project engineer.

### **7. JOB DESIGN:-**

Use the Pryda LiteSteel Beam Selector software to determine the most suitable LSB member sizes for your project, or ask your LiteSteel representative for assistance from Steel-MAX to offer a floor design solution for your project, including all necessary Steel-MAX companion products to complete the floor system.

### **8. FIXINGS:-**

Refer to the Steel-MAX load capacity tables on page 18, (provided by the H.R. Group) and have your project engineer specify your individual job requirements. However; for uniformly loaded domestic applications, consider the following as a guide only :-

Stump bases to stump tube = 6 / 14 g hex teks ( 3 in each face )

Stump tops to stump tube = 8 / 14 g teks up to 8 m2 of floor area carried by the stump, then 1 / screw per m2 or 1/M12 bolt per 5 m2 of area extra over the first 8 m2.

Sleeves to tube = 8 / 14 g teks per sleeve.

Bracing brackets = 4 / 14 g teks per bracket for 12mm rod and 1 / M16 bolt per bracket for 16mm rod.

"L" & "H" connector brackets = 8 / 10 g teks for joist to bearer connections and 8 / 14 g teks for bearer to bearer connections.

Joist connector brackets = use 6 / teks per brackets ( 3 in each member ) Use 10 g. teks for 200mm brackets and 14 g. teks for 295mm brackets.

### **9. AVAILABILITY:-**

All necessary Steel-MAX "Companion products" to the LiteSteel Floor Framing System are available from your participating LSB supplier, or by contacting **Steel-MAX Distribution** by calling (07) 3831 5444 or Mob: 0438 748 381 Fax: 07 3831 5666 email [distribution@steelmax.com.au](mailto:distribution@steelmax.com.au)

### **10. APPLICATION DETAILS:-**

The following diagrams are suggested methods of using Steel-MAX "Companion products" in relation to the LSB sections for a restricted number of common construction applications. Additional information and special designs are also available from Steel-MAX.

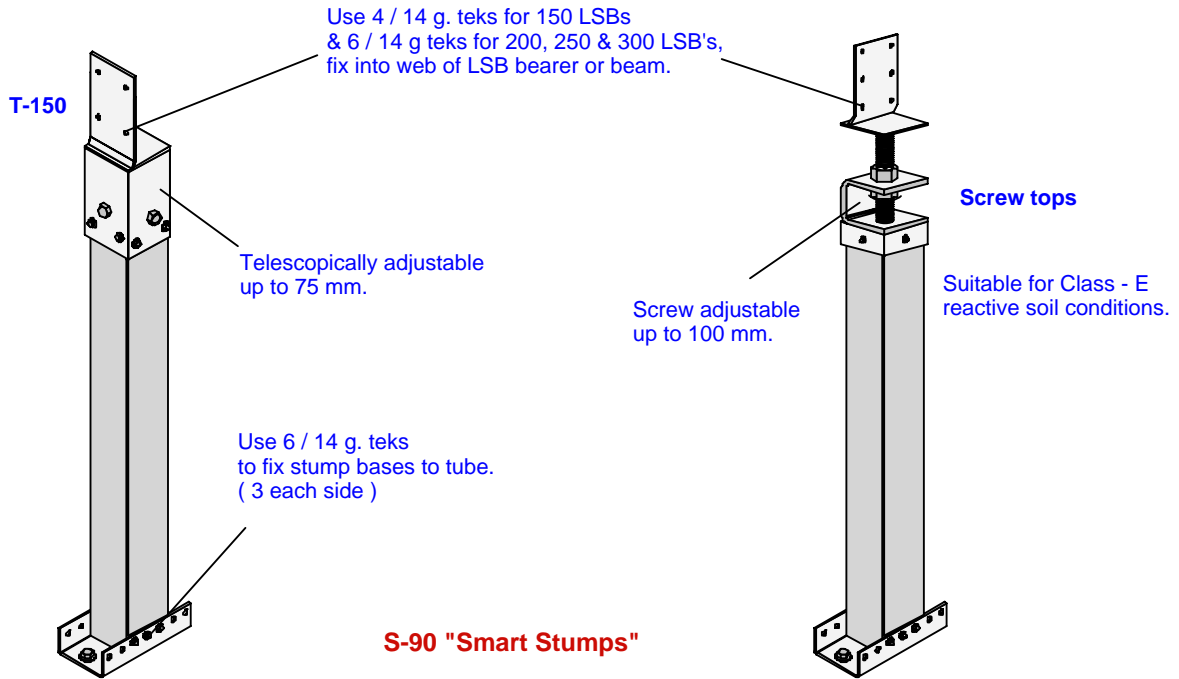
The information contained within this document or any other provided by Steel-MAX does not represent, form or replace LiteSteel Technologies' official documentation, relating to the LiteSteel Floor Framing System.

All information shown, enclosed and contained within this and associated documents represents suggested methods of using Steel-MAX components in conjunction with LSB sections and may not suit your particular job requirements and application.

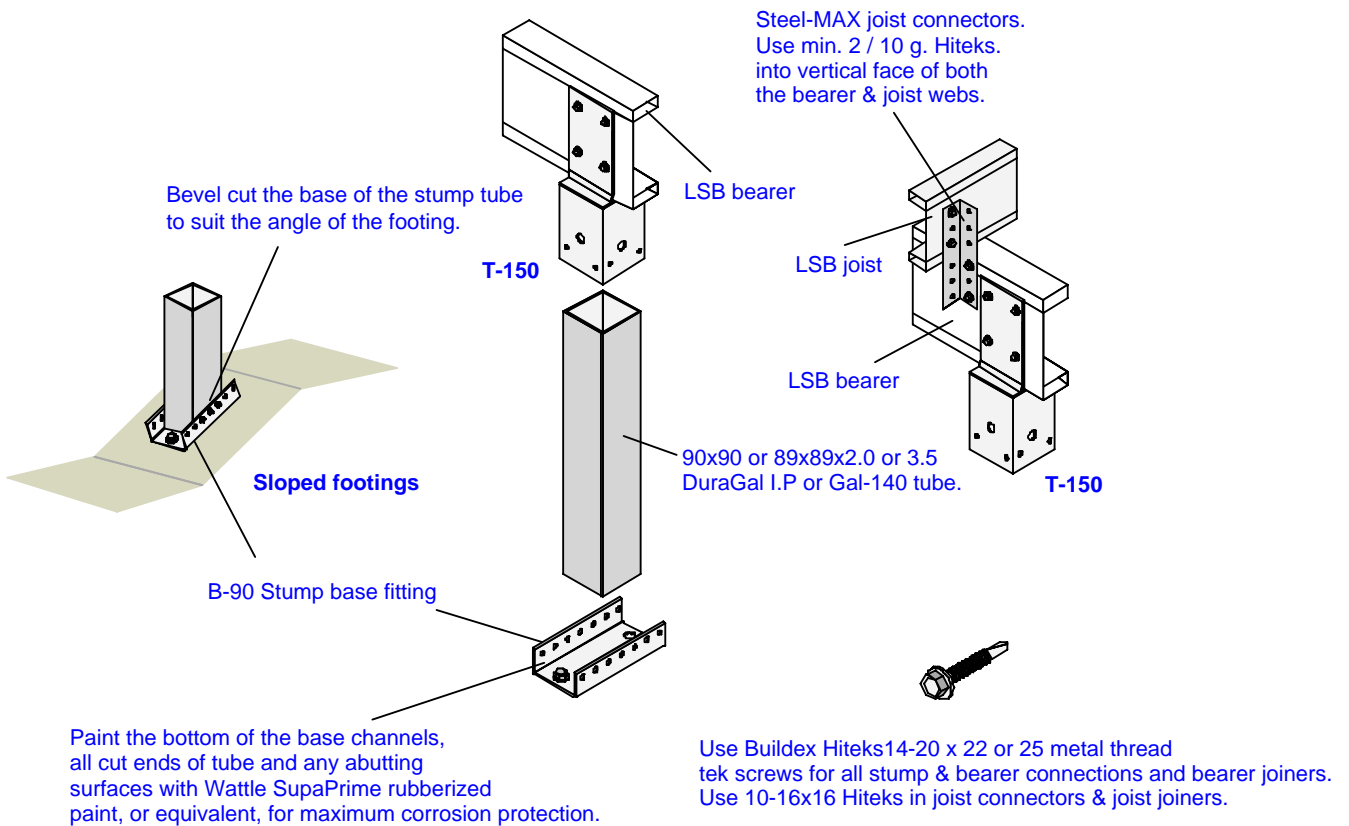
We offer design solutions as a suggestion, for the consideration of the customer and his project engineer.

It is imperative that the customer's project engineer looks at the suggested details and either incorporates them into his whole job structural design, or alters them to suit his requirements, for the project.

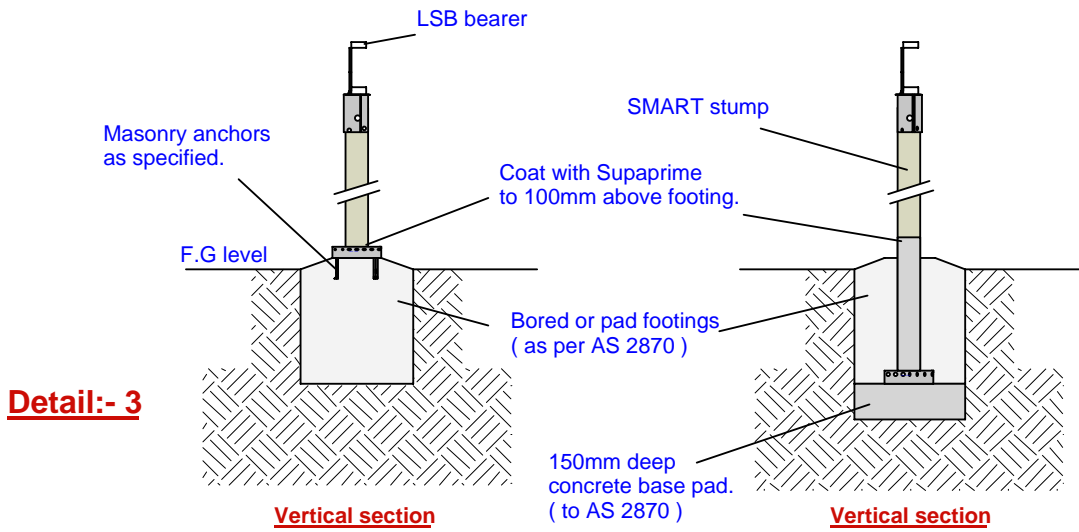
It is always possible that there could be influencing elements within the structure, that we are not aware of, which could effect and alter the following suggested details and information..



### Detail:- 1

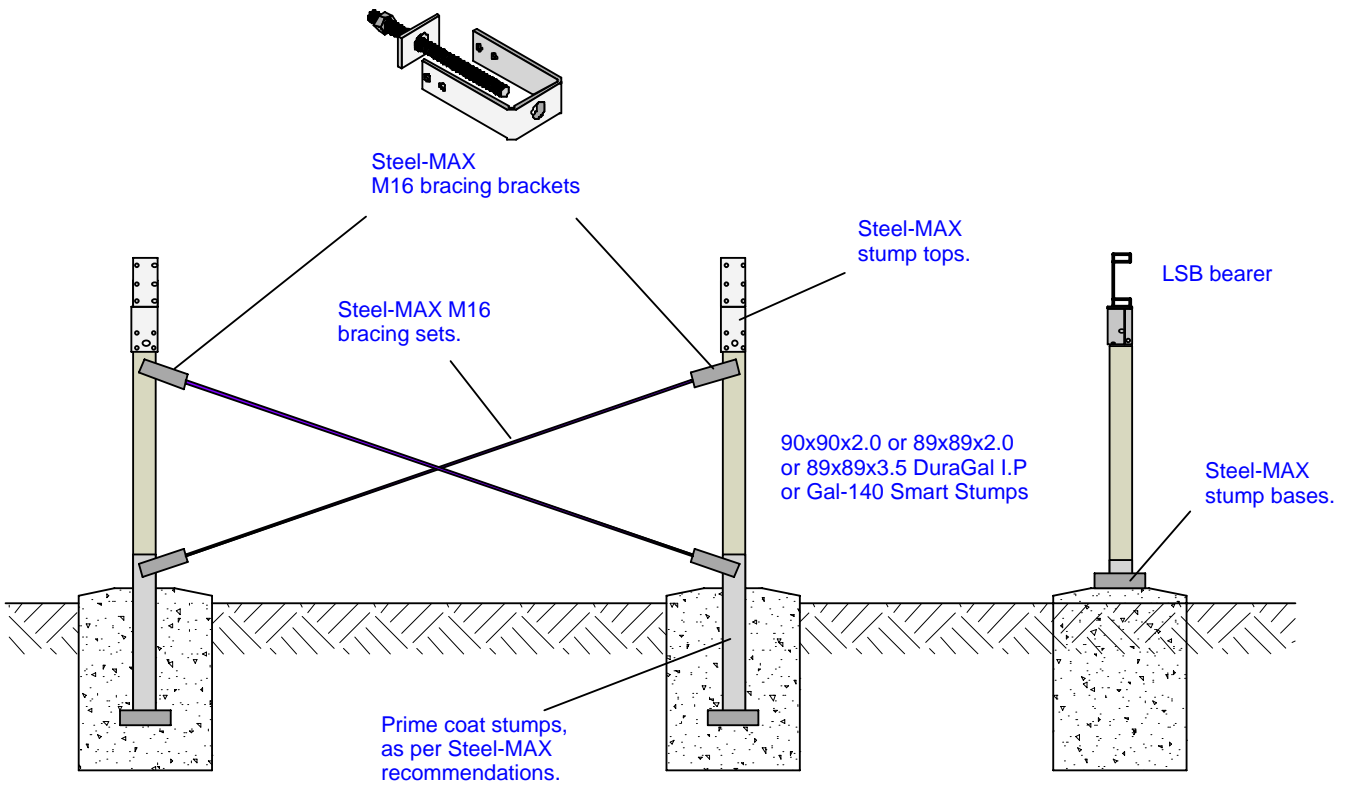


### Detail:- 2



**Detail:- 3**

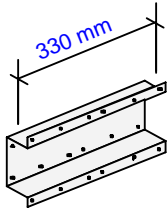
### FOOTINGS



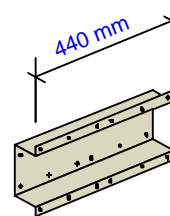
### BRACING

Refer to the Steel-MAX web site for bracing values of cast-in stumps and cross bracing.

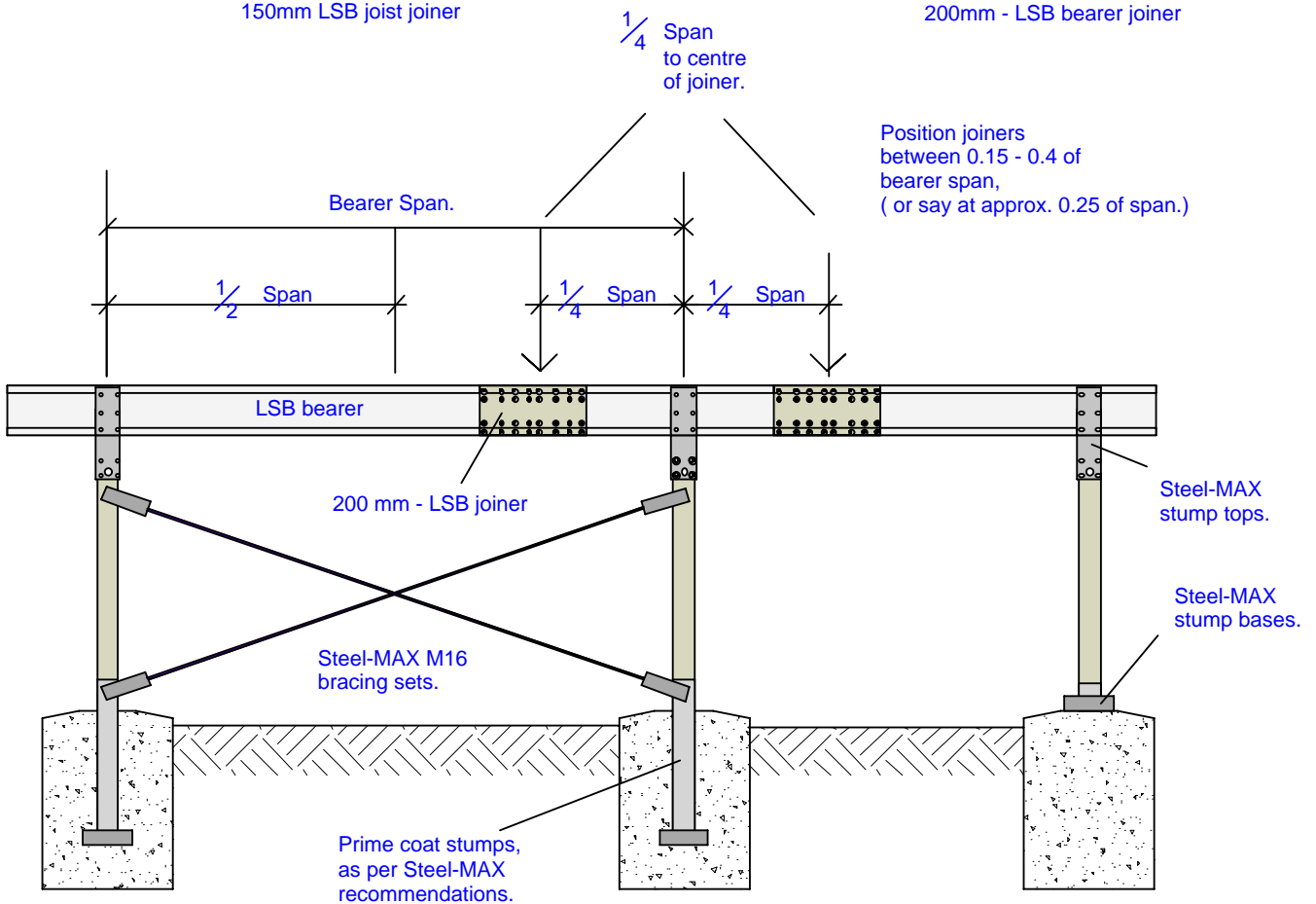
**Detail:- 4**



150mm LSB joist joiner

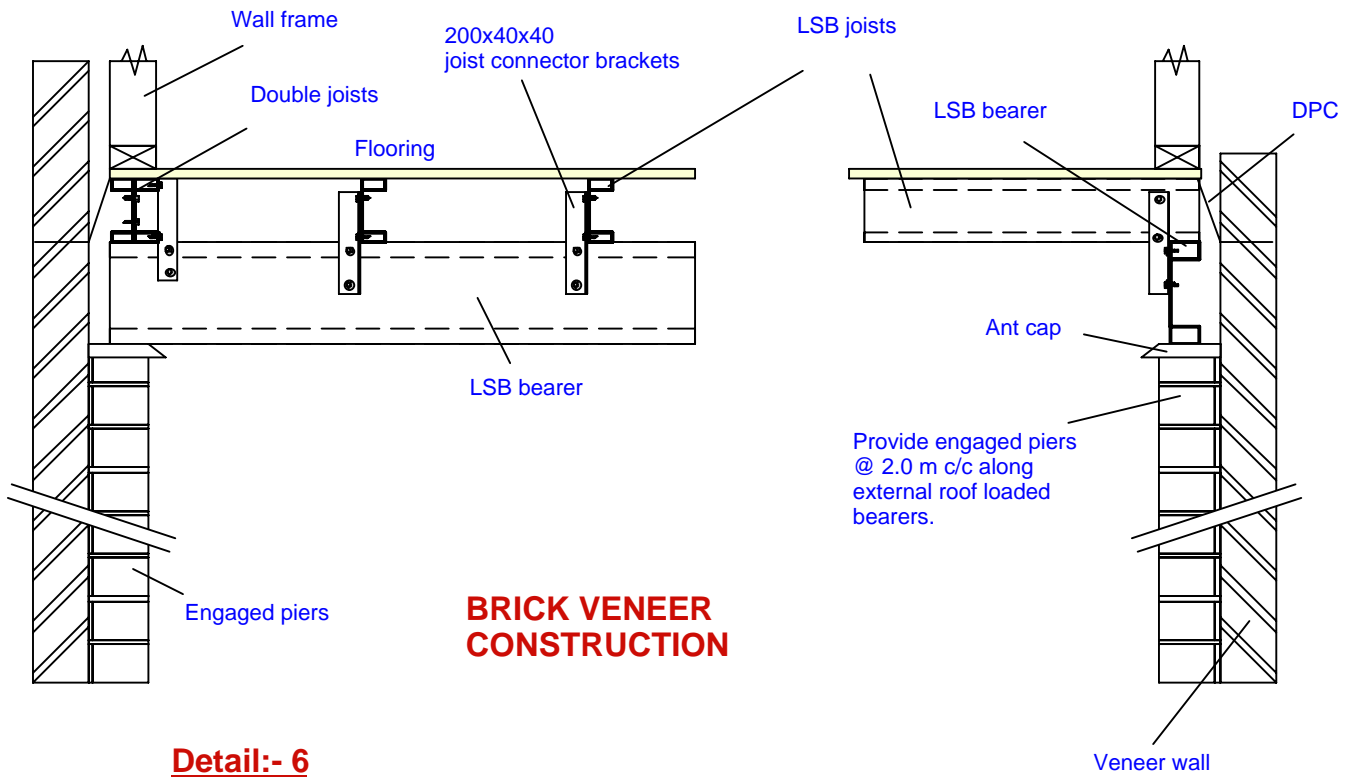


200mm - LSB bearer joiner

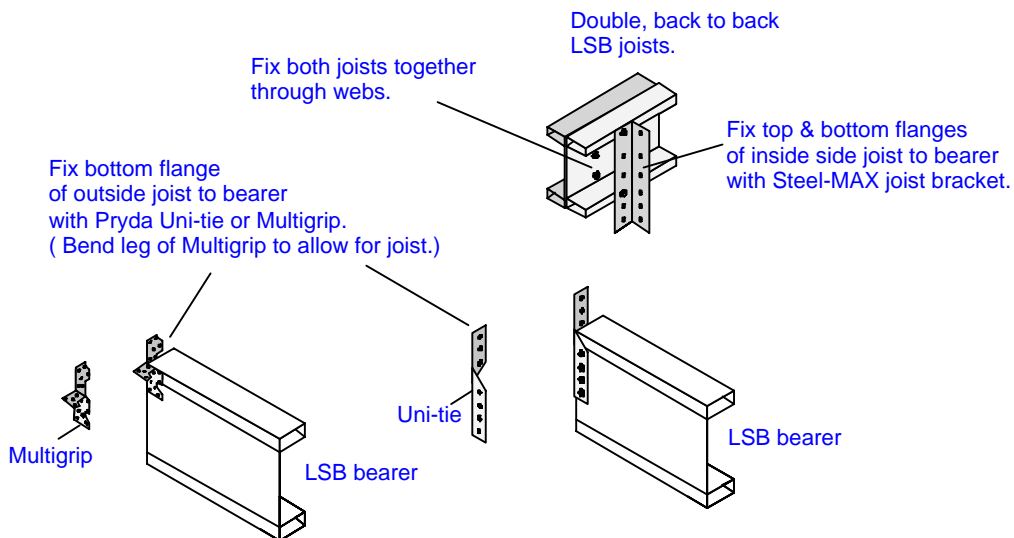


**Detail:- 5**

### **LSB Joiners**

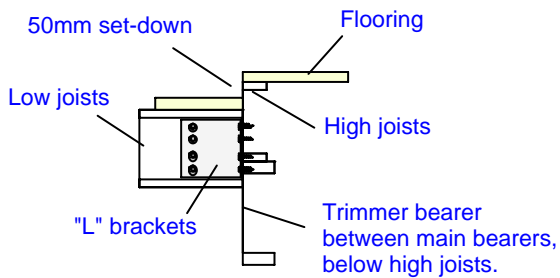
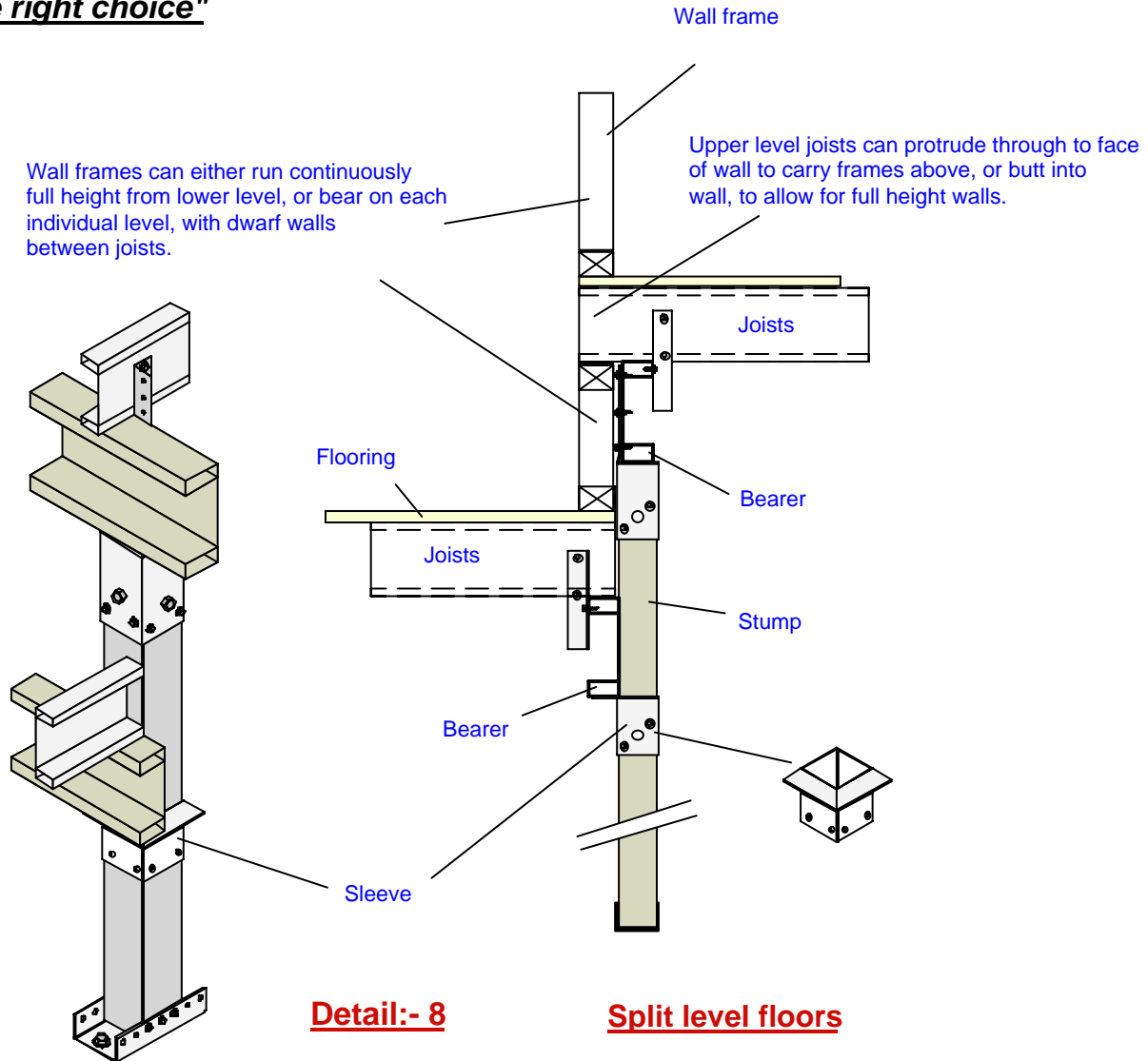


**Detail:- 6**

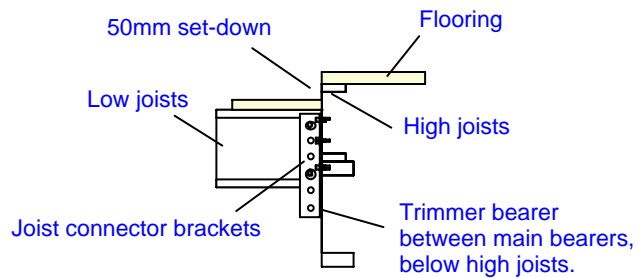


**Double joists under roof loaded ext. walls.**

**Detail:- 7**



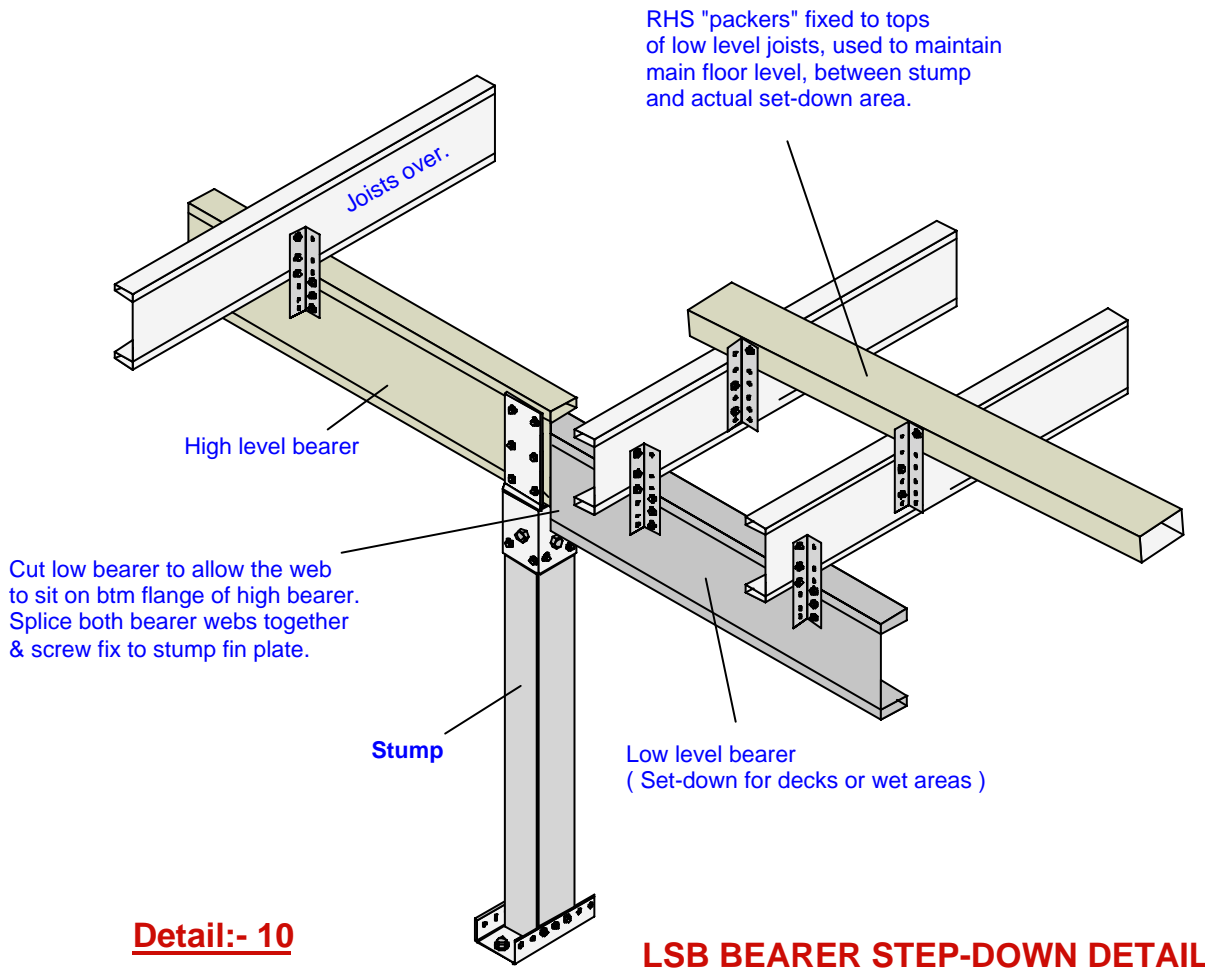
**Heavily loaded set-down joists, supported with "L" brackets.**



**Lightly loaded set-down joists, supported with joist brackets.**

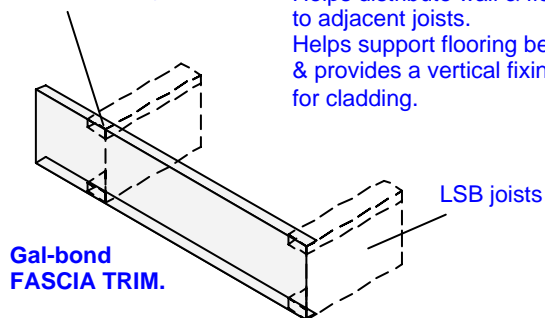
**Detail:- 9**

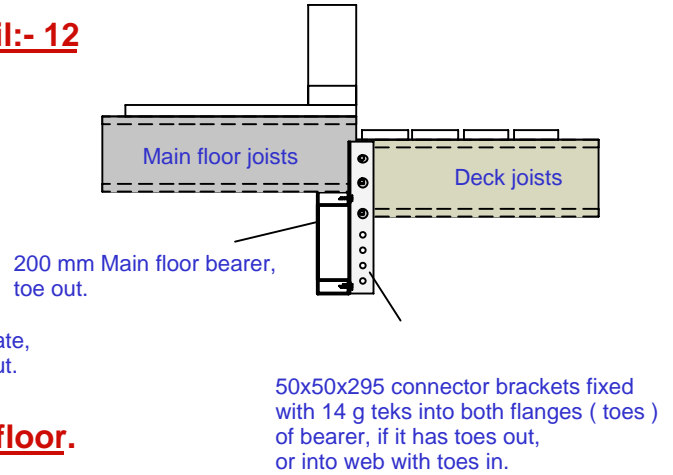
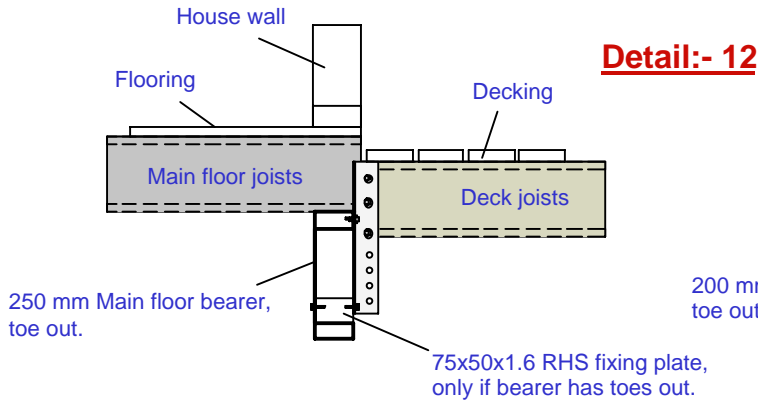
**Set-downs, such as in wet areas.**



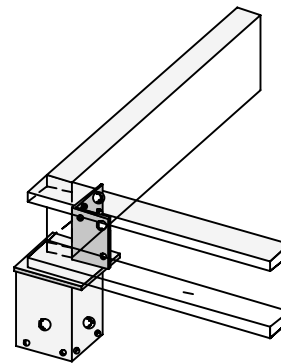
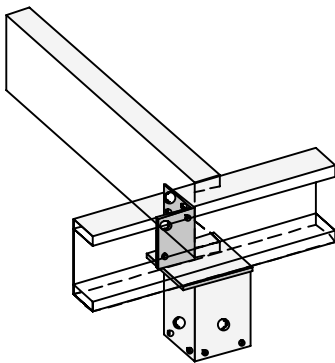
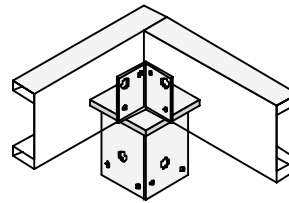
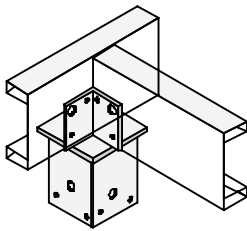
20 mm returns ( flanges ), top & bottom, to fix to LSB flanges.  
Flanges may be fixed with 10 g. teks, or top flange can be sandwiched below flooring sheet and fixed with the sheet fixing.

Laterally stabilizes ends of joists, particularly on cantilevers.  
Helps distribute wall & floor loads to adjacent joists.  
Helps support flooring between joists & provides a vertical fixing member for cladding.





### **Connection of deck joists to main floor.**



"T" intersections

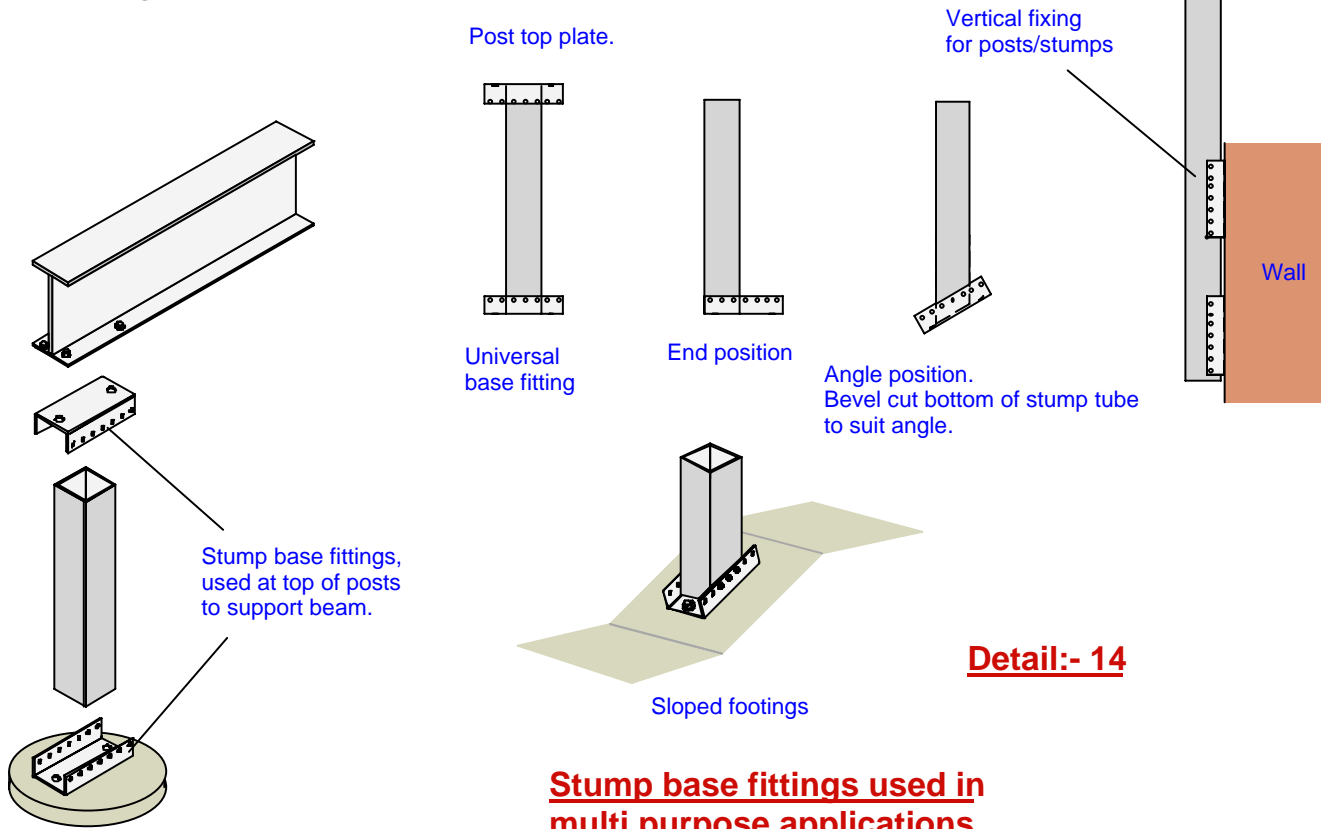
90 deg. corners

### **Detail:- 13**

### **"Multi-top" stump tops (also available in screw tops)**

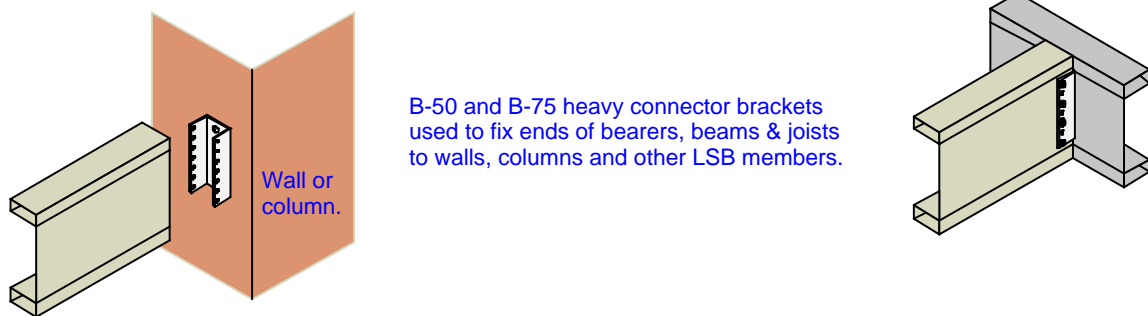
**LSB** 

LiteSteelbeam

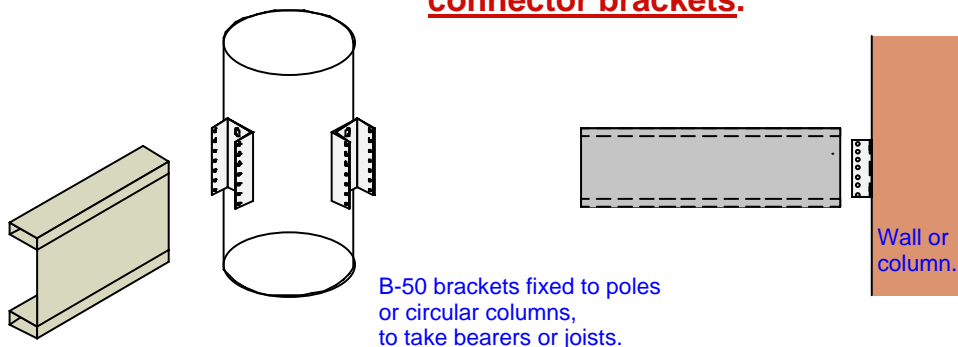


**Detail:- 14**

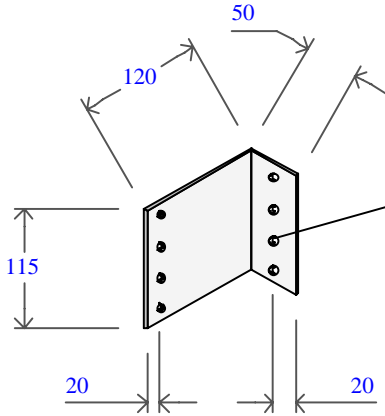
**Stump base fittings used in multi purpose applications.**



**B-50 heavy duty connector brackets.**

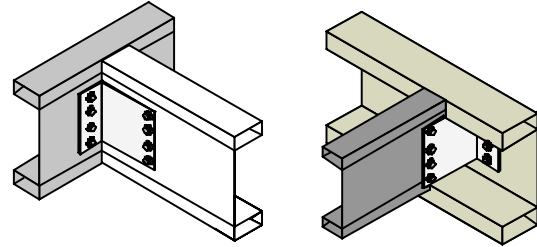


**Detail:- 15**



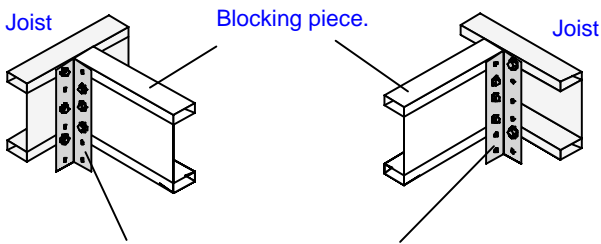
**Detail:- 16**

4 / 6 mm screw holes in each leg, to take 14-20x22 Hex teks.



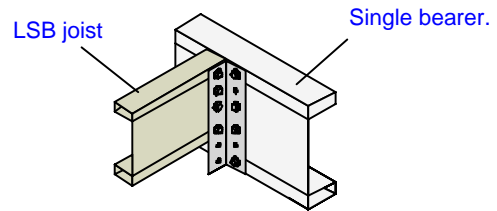
**Web to web connections**

**Steel-MAX "L" connector brackets.**

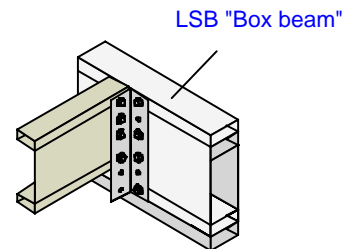


40x40x200 joist connector bracket. Use 2 / 14 g teks in toes of joists & 3 / 10 g teks into webs.

**Nogging or solid blocking between joists.**



"In-plane" web to web joist connection

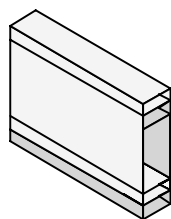
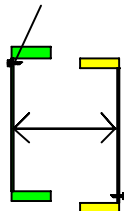


LSB "Box beam"

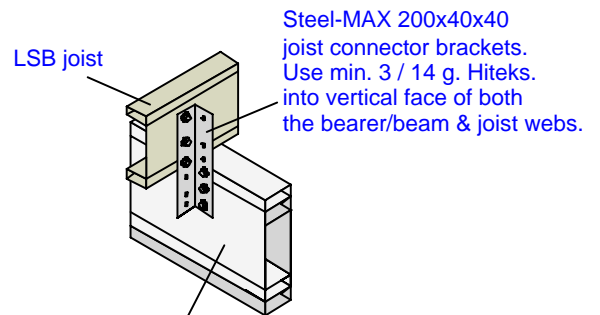
**In-plane joist connections**

**Detail:- 17**

Screw fix together through webs, with 14 g. teks @ 900 c/c. Top & bottom.



LSB "Box beam"



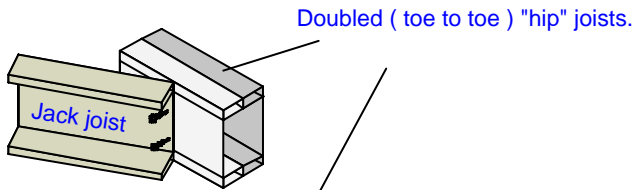
Steel-MAX 200x40x40 joist connector brackets. Use min. 3 / 14 g. Hiteks. into vertical face of both the bearer/beam & joist webs.

LSB "Box beam"

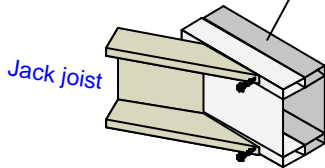
"Box" beams are formed by connecting 2 / opposing LSB's "flange to web", by offsetting the LSB's in height, so that they interconnect, to form one unit; thus.

**Box beams**

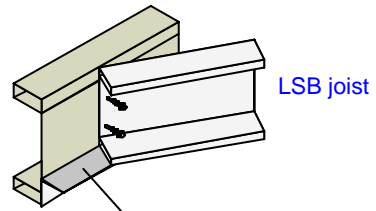
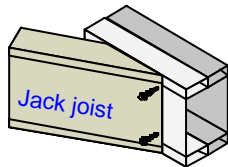
**Detail:- 18**



"Jack" joists can be square or mitre cut.  
Fix to hip joists with 2 /14 g teks.  
( pre-drill first, to guide screws at angle )



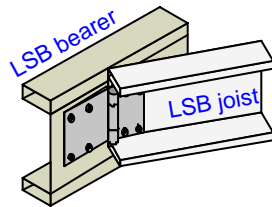
**Detail:- 19**



LSB bearers, in-plane with joists  
at angled intersection.

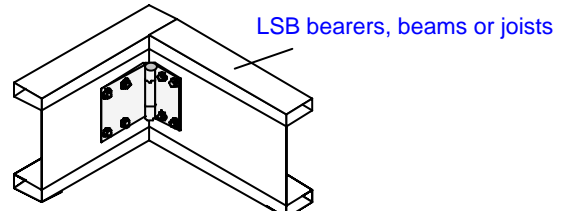
**Detail:- 20**

**Angled verandah "Hip"  
and similar connections**



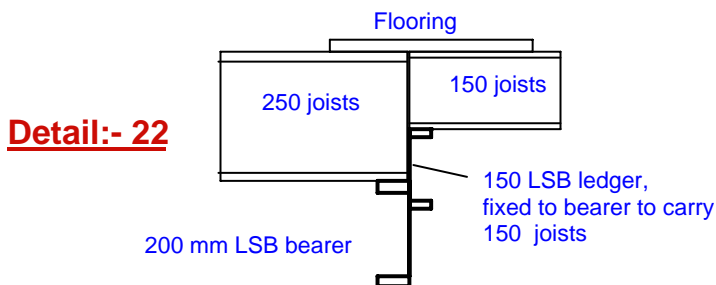
**Detail:- 21**

LSB's, in-plane at angled intersections,  
joined with hinged "H" hip brackets.



Hinged connector bracket.

**Hinged "H" ( hip ) brackets.**



**Detail:- 22**

**Transition between dissimilar  
joist sections, over bearer.**

# Steel - MAX

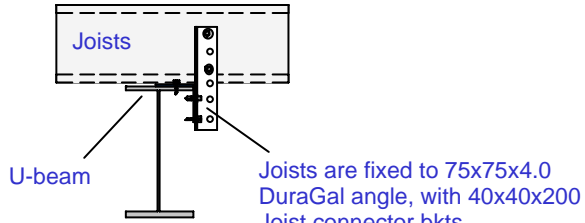
Building Systems  
www.steelmax.com.au

**"The right choice"**

## LiteSteel Flooring System

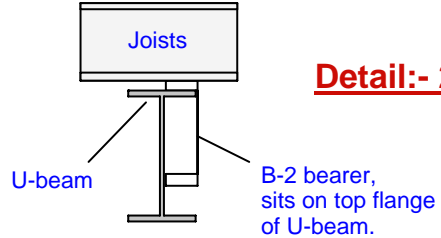
LSB 

LiteSteelbeam



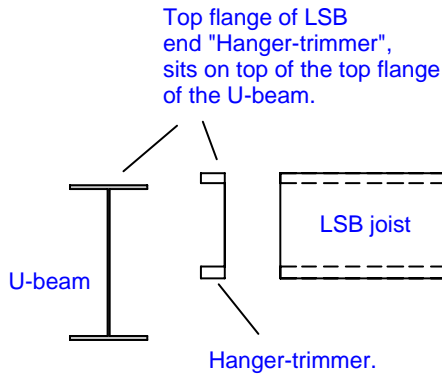
**Detail:- 23**

Joists are fixed to 75x75x4.0 DuraGal angle, with 40x40x200 Joist connector bkts. The angle is fixed to top flange of U-beam with Series 500 teks. ( or bolted, as specified.)

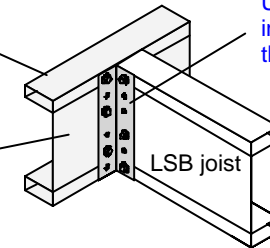


**Detail:- 24**

U-beam used as a stiffener beam to continuous LSB bearer.

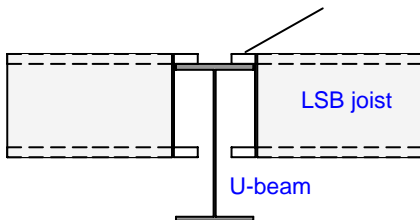


"In-plain" web to web joist connection  
Hanger-trimmer.



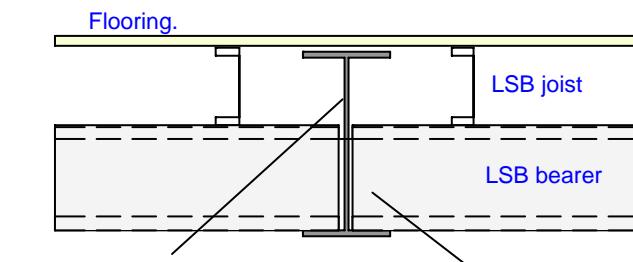
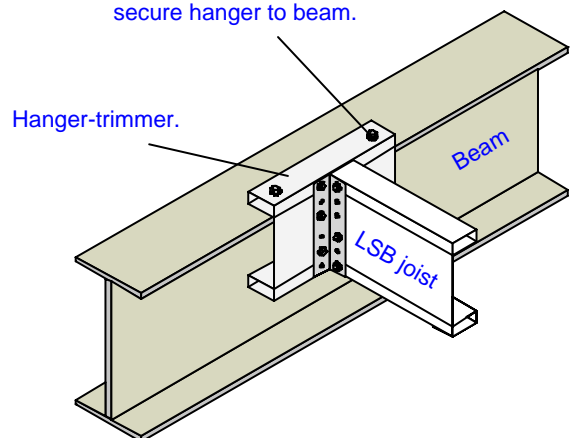
Steel-MAX 200x40x40 joist connector brackets. Use min. 3 / 14 g. Hiteks. into vertical face of both the bearer/beam & joist webs.

**Hanger-trimmers.**



**Detail:- 25**

Series 500 Tekes can be used to secure hanger to beam.

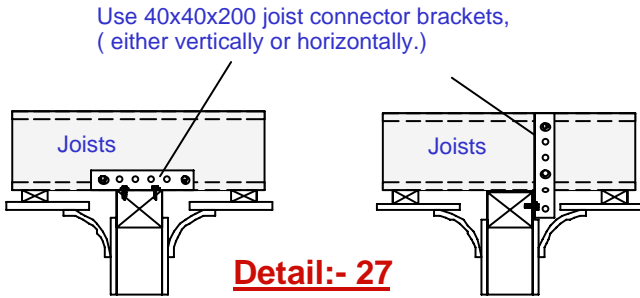


360 UB 44.7 shown.

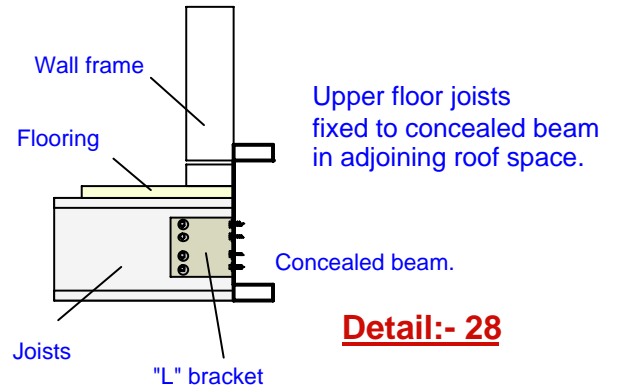
**Detail:- 26**

Connection of LSB bearers into web of U-beam. LSB bearers sit on bottom flange of U-beam.

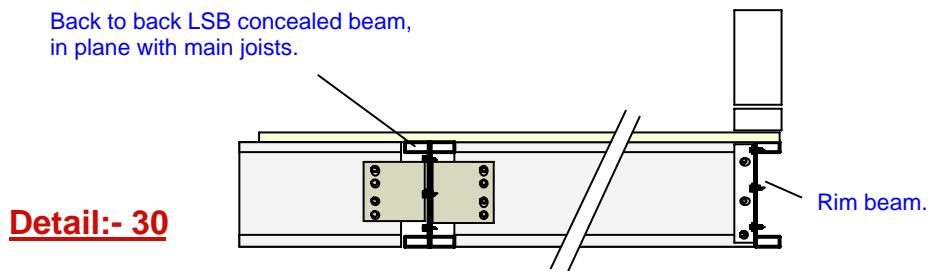
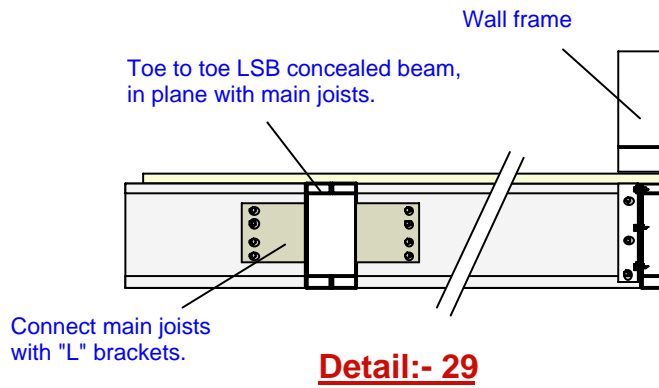
### U-beam connections



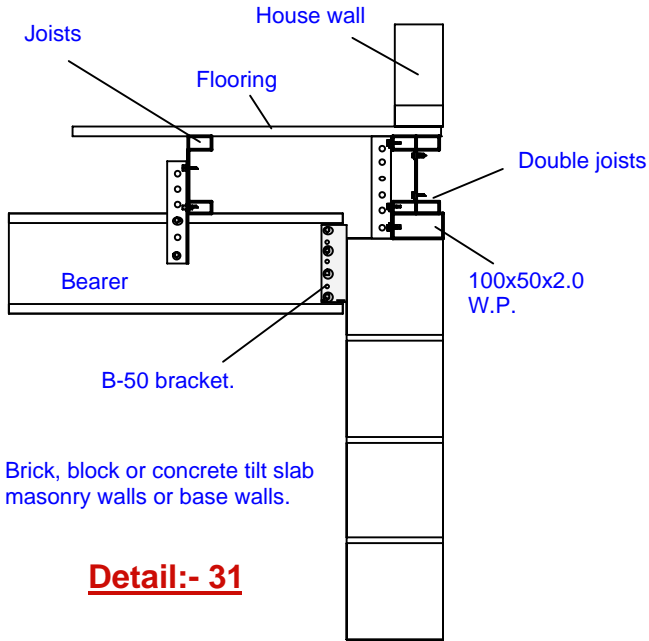
**Connections to load bearing walls**



**Connection to concealed beam.**



**Connection of in-plane joists with concealed beams.**

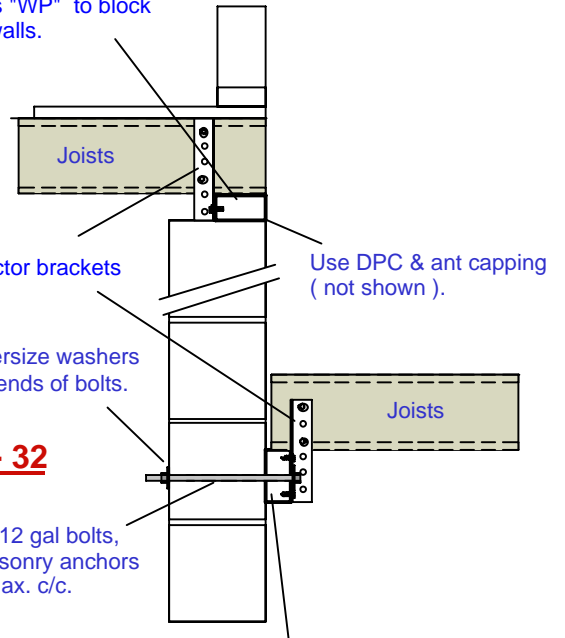


Brick, block or concrete tilt slab masonry walls or base walls.

**Detail:- 31**

Fully coat all members exposed to corrosive elements with wattle Supaprime paint or equivalent.

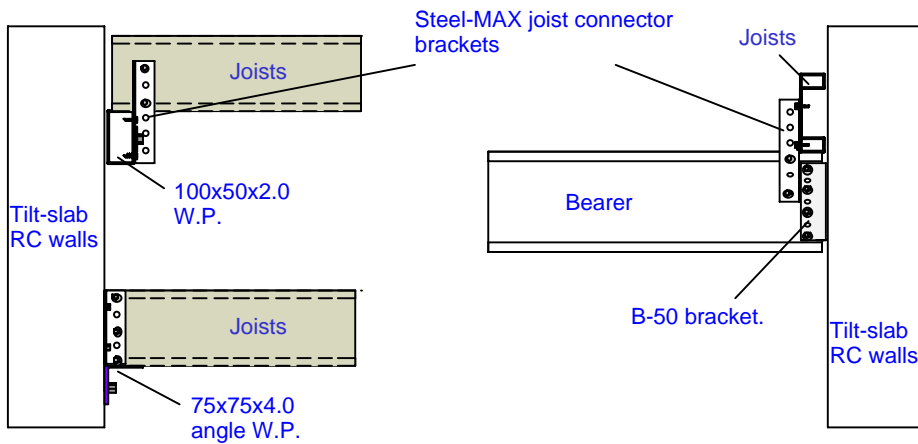
Securely fix 100x50x2.0 RHS as wall plates "WP" to block or masonry walls.



**Detail:- 32**

Suggest M12 gal bolts, or M12 masonry anchors @ 1.2 m max. c/c.

Securely fix 100x50x2.0 RHS as wall plates "WP" to block or masonry walls.



**Detail:- 33**

**Detail:- 34**

### **Connections to masonry walls**

## **Structural Load capacities for "Smart stumps" and connections.**

### **Steel stump tube:**

( Minimum grade C350 )

SHS	Max. height
89x2.0	= 3.0m
89x3.5	= 4.0m
89x5.0	= 4.8m
89x6.0	= 5.5m

### **Stump tops to steel stump tube:**

( Minimum stump top and post Yield Stress  $f_y = 300$  MPa; Minimum bolt Yield Stress  $f_y = 400$ MPa )

Connection	Shear capacity $V_u$
2x14-20 Tekes	14.7kN
4x14-20 Tekes	29.4kN
8x14-20 Tekes	58.8kN
16x14-20 Tekes	117.6kN
20x14-20 Tekes	147.0kN
1 / M12 bolt	24.2kN
2 / M12 bolts	48.4kN

Notes:-

1. All shear capacities are governed by the screw/bolt shear capacity.
2. Calculations based on a minimum post wall thickness of 2.0mm.
3. Tek screws to be installed in accordance with the manufacturer's specifications
4. Screws and bolts may be combined to achieve reduced shear capacities, using the appropriate reduction factors for each connection type.

### **Stump top to LSB bearer connection**

( Minimum stump top, fin plate Yield Stress  $f_y = 300$  MPa; Minimum bolt Yield Stress  $f_y = 400$ MPa )

### **Wall brackets to LSB bearer connection**

( Design based on 2 / M12 chemset injection anchor fixing of bracket to core-filled masonry wall of 15MPa )

Connection	Shear capacity $V_u$
2x14-20 Tekes	9.2kN
4x14-20 Tekes	18.4kN
6x14-20 Tekes	27.6kN
1 / M12 bolt	10.2kN
2 / M12 bolts	20.4kN

Notes:-

1. All shear capacities are governed by the hole capacity of the LSB's web and not the screw/bolt shear capacity.
2. Calculations based on a minimum web thickness of 1.5mm, minimum Tensile Strength ( $f_u$ ) = 490MPa and minimum Yield Stress ( $f_y$ ) = 380MPa.
3. Tek screws to be installed in accordance with the manufacturer's specifications
4. LSB members to be fully restrained against lateral displacement of both flanges and twisting about the longitudinal axis.

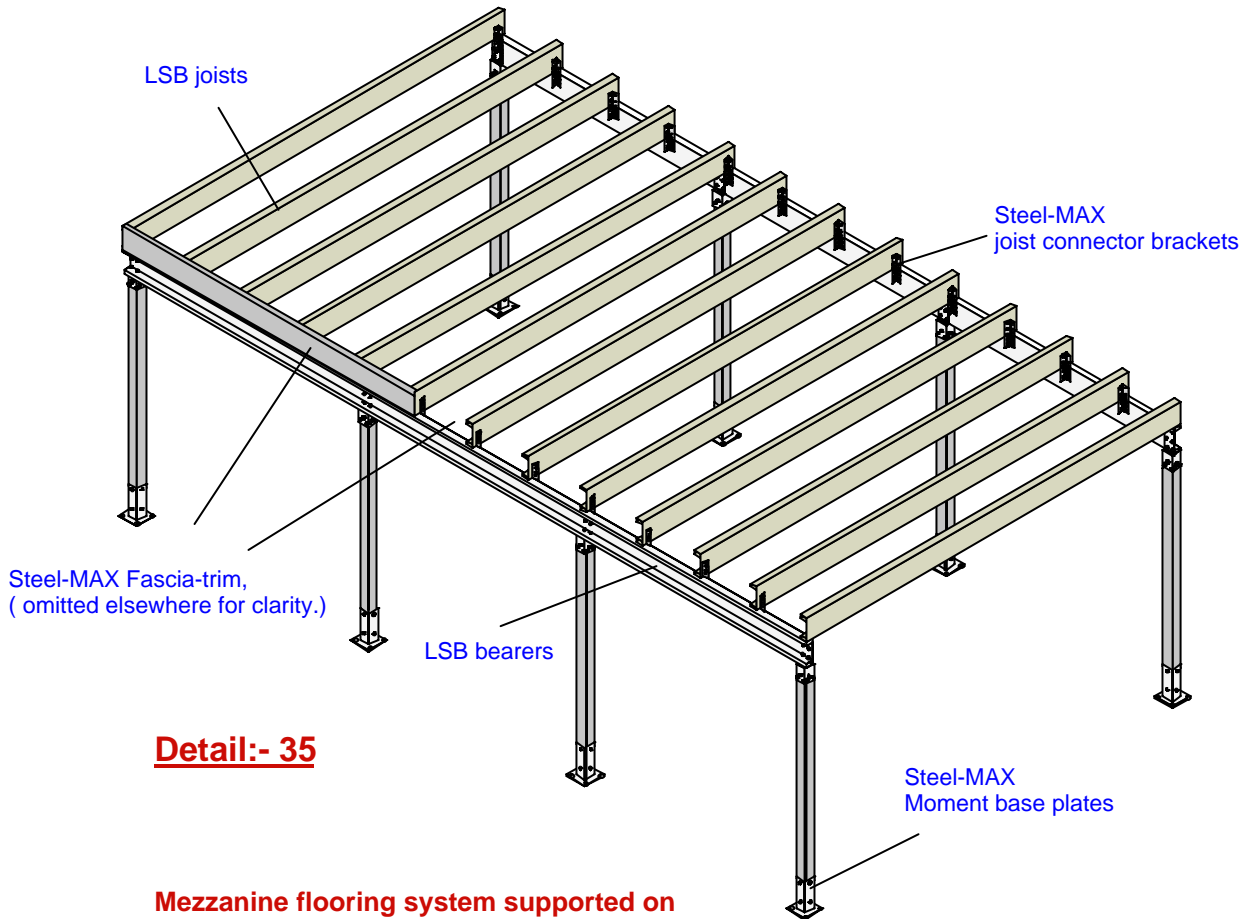
### **Bracing brackets**

Connection	Bracing capacity
4x14-20 Tekes	15kN ( 12mm rod )
M16 bolt	22kN ( 16mm rod )

### **Moment base plates**

Notes:-

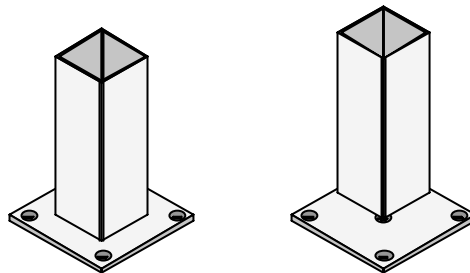
- 100x100x4.0 Moment Base Plates have an ultimate bending moment capacity of 5.2kNm, subject to the following:-
1. Must be fixed to a footing or slab with a minimum compressive strength of 25MPa with 4 / M12 chemset anchors, fixed with a minimum distance between the centre of the bolt and the edge of slab of 50mm.
  2. The supporting structure should be assessed by the project engineer to ensure that it is structurally capable of withstanding both the moment and vertical loads expected.
  3. The Moment sleeve must be fixed to the supported post with a No.10 Tek screw in each of the four faces of the sleeve.
  4. The gap between the sleeve and the supported post must be adequately sealed to prevent moisture ingress between the two members.



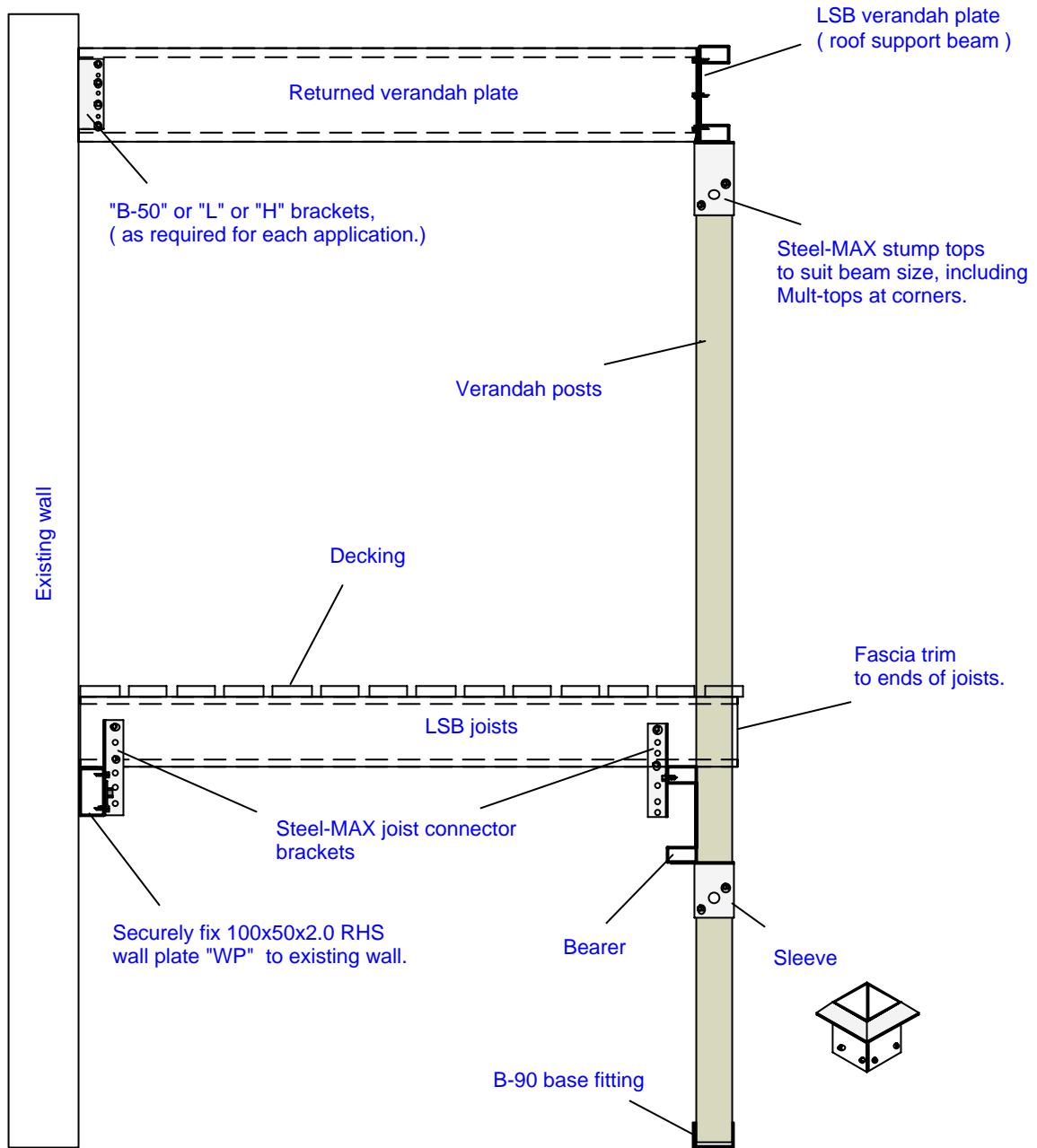
### **Detail:- 35**

**Mezzanine flooring system supported on Steel-MAX 89mm "Smart stumps" with Moment Base plates.**

### **Mezzanine floors**

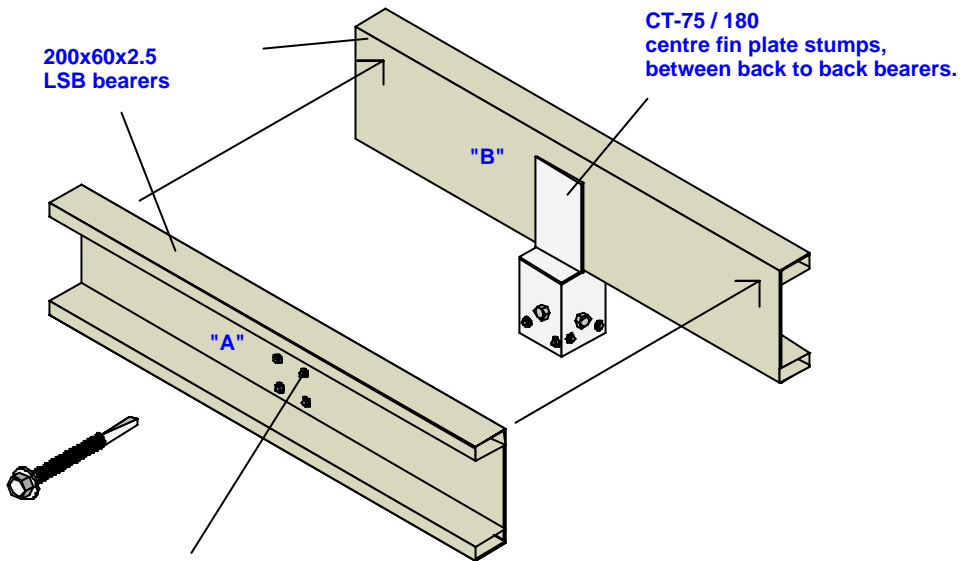


Moment base plates



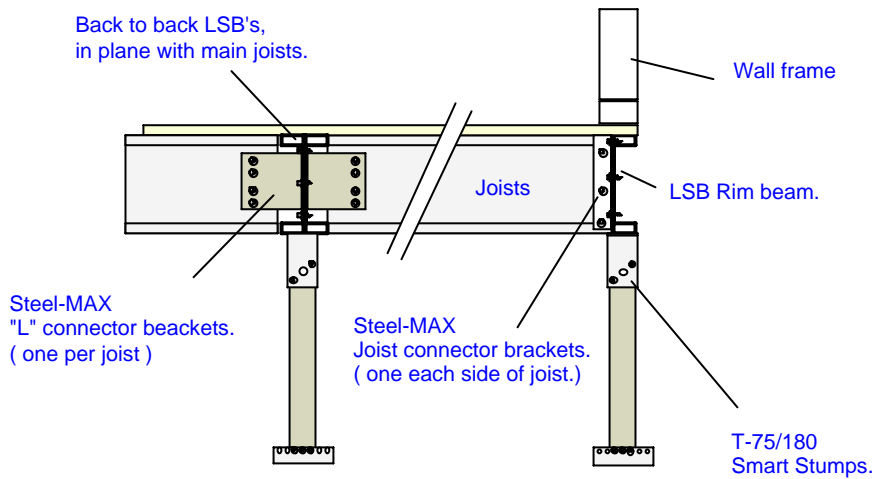
**Detail:- 36**

### **Verandahs & decks**

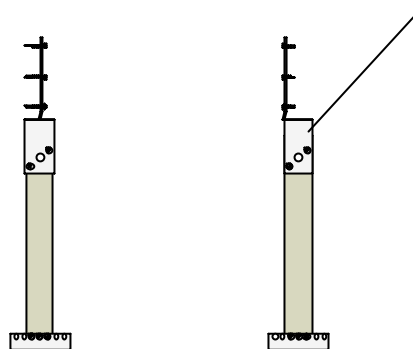


Use Buildex Series 500  
12-24x32 or 50 metal thread  
tek screws for all back to back  
bearer connections.  
Fix through web of bearer "A", the stump fin plate  
& through bearer "B".

**Centre-fin stump tops.**  
**( for back to back bearers.)**



**Detail:- 37**



**Special stumps used for "in-plane" floor panels**