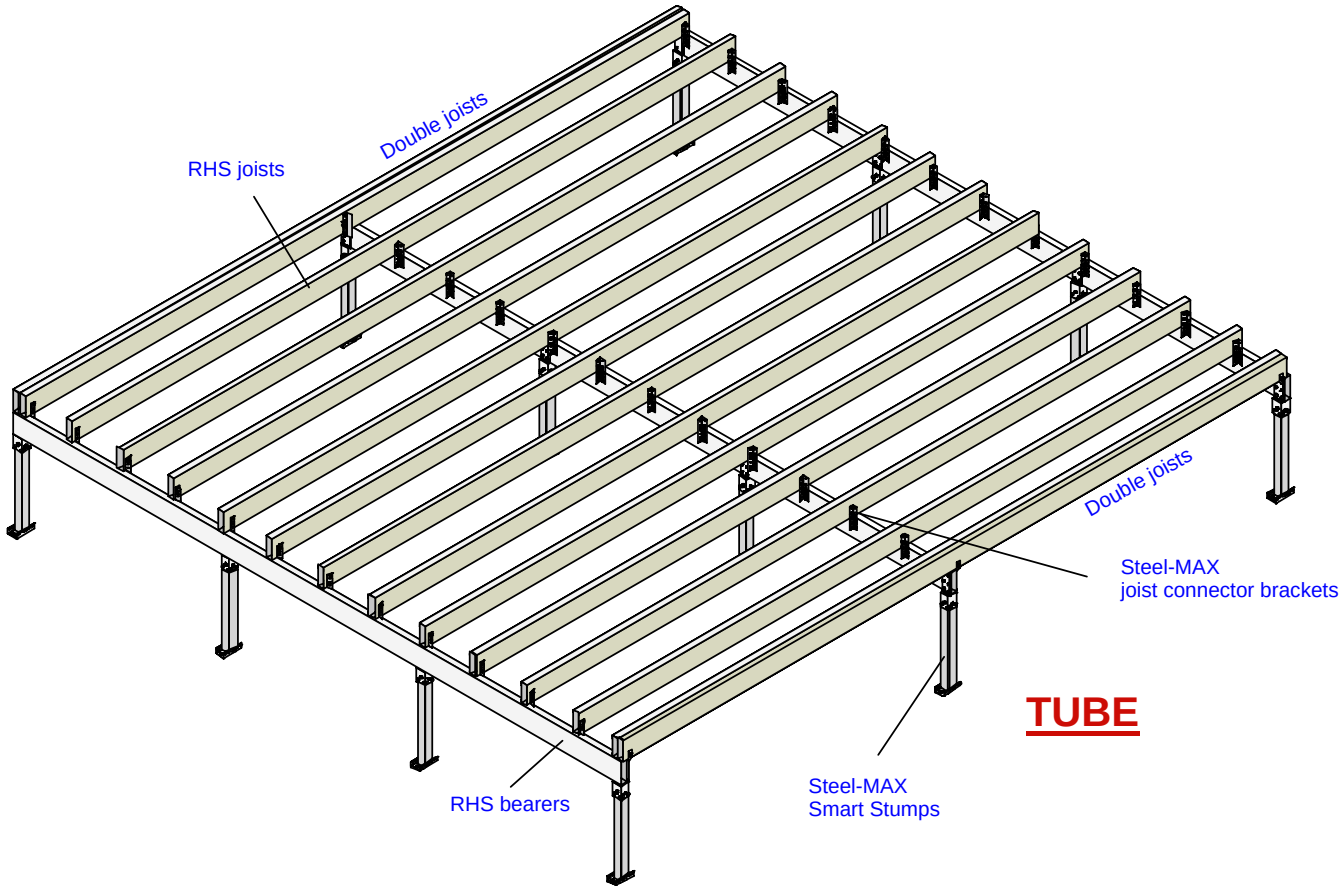
Steel - MAX
Building Systems
www.steelmax.com.au
"The right choice"

Steel-MAX companion products to suit RHS tubular steel sections.



TUBE

Contents :-

Steel - MAX

Distribution enquiries Ph: (07) 3831 5444
Contact: Greg Yorkston. Mob: 0438 748 381
distribution@steelmax.com.au

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

Steel -MAX

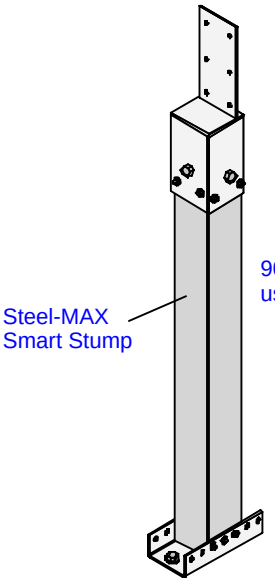
Building Systems
www.steelmax.com.au
"The right choice"

Steel-MAX companion products to suit RHS tubular steel sections.

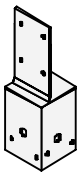
System components

Designed for RHS bearers & joists.

SMART stumps

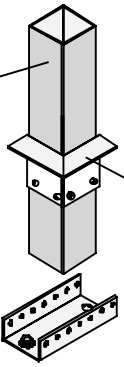


Steel-MAX
Smart Stump

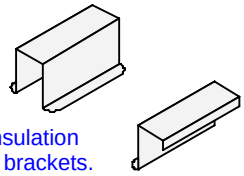


Top fitting

90x90 or 89x89 SHS Stump tube:-
use 2.0mm up to 3.0m high
3.5mm up to 4.0m high
5.0mm up to 4.8m high
6.0mm up tp 5.5m high

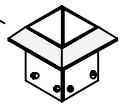


Stump base fitting

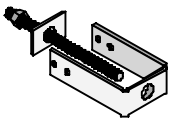


Floor insulation
hanger brackets.

Tophats



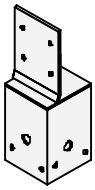
Post sleeve



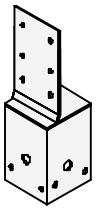
50, 75 & 90mm

Bracing bracket

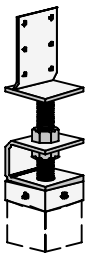
STUMP TOPS



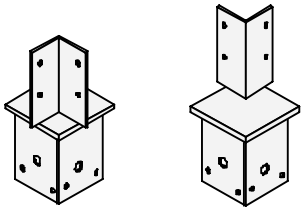
T-90



T-150

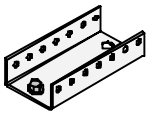


Screw tops

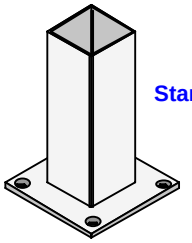


Mult-tops

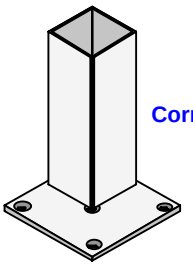
STUMP BASES



B-90 Stump base fitting

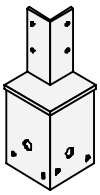


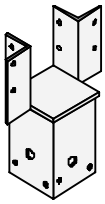
Standard



Corner

Moment base plates

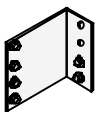




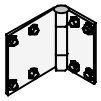
Special 50mm set-back Mult-tops

Mult-fit, to allow for flush bearers

CONNECTOR BRACKETS

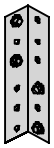


"L' bracket



"H' hinge bracket

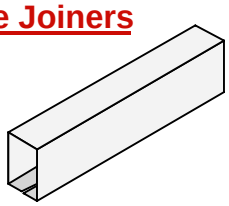
Joist connector
40x40x200



Joist connector
50x50x295

B-50
Heavy duty bracket

Tube Joiners



Internal joiners to suit 100x50
& 150x50 RHS tubular
beares & joists.

1. SMART STUMPS

Steel-MAX has designed a special range of stumps specifically to suit steel RHS tubular bearers.

- 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 100mm & 150mm RHS 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.

Flush fitting tops are used to keep 50mm bearers flush with face of stumps and are great for verandah decks.

- 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 your tube manufacturer's 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 steel supplier.

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 RHS tubular steel, in a floor framing system.
A copy of the standard letter of certification is available from the Steel-MAX web site.
Steel-MAX does 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:-

Refer to your tube steel supplier to determine the most suitable RHS member sizes for your project, or ask your supplier 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 14, (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 brackets 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 this Tubular Floor Framing System are available from your participating steel 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

10. APPLICATION DETAILS:-

The following diagrams are suggested methods of using Steel-MAX “Companion products” in relation to RHS 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 your tube supplier’s official documentation, relating to the any proprietary floor framing system.

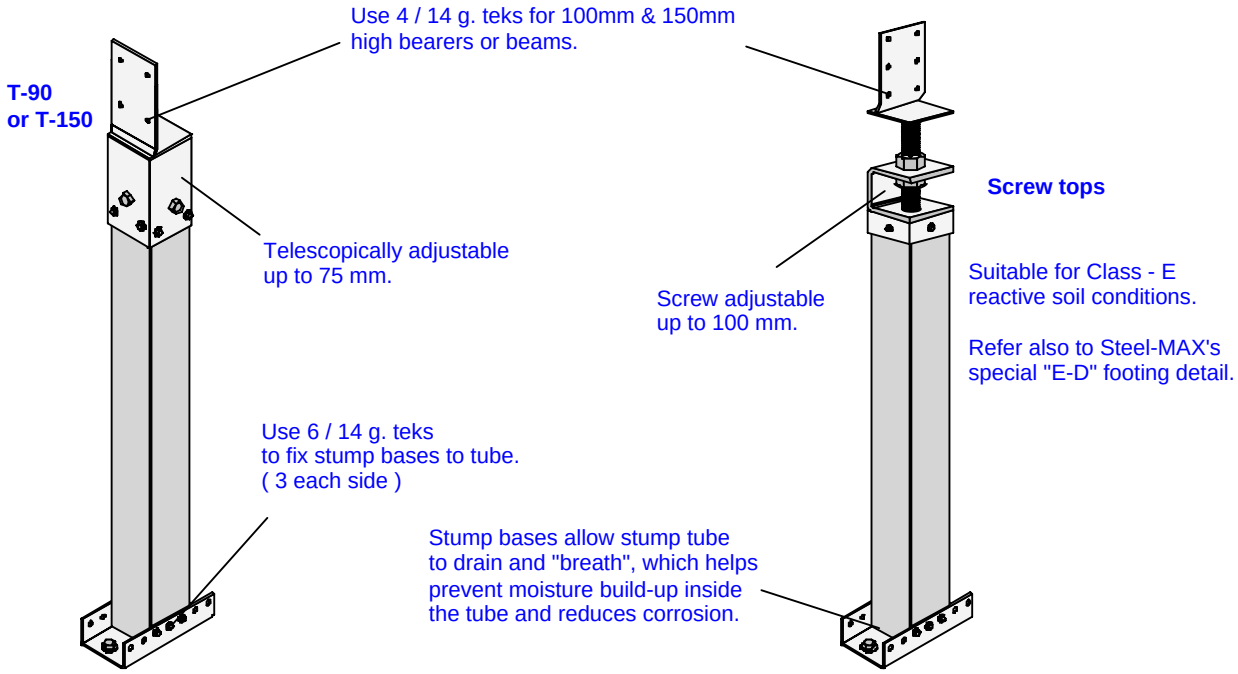
All information shown, enclosed and contained within this and associated documents represents suggested methods of using Steel-MAX components in conjunction with RHS sections and may not suit your particular job requirements and application.

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..

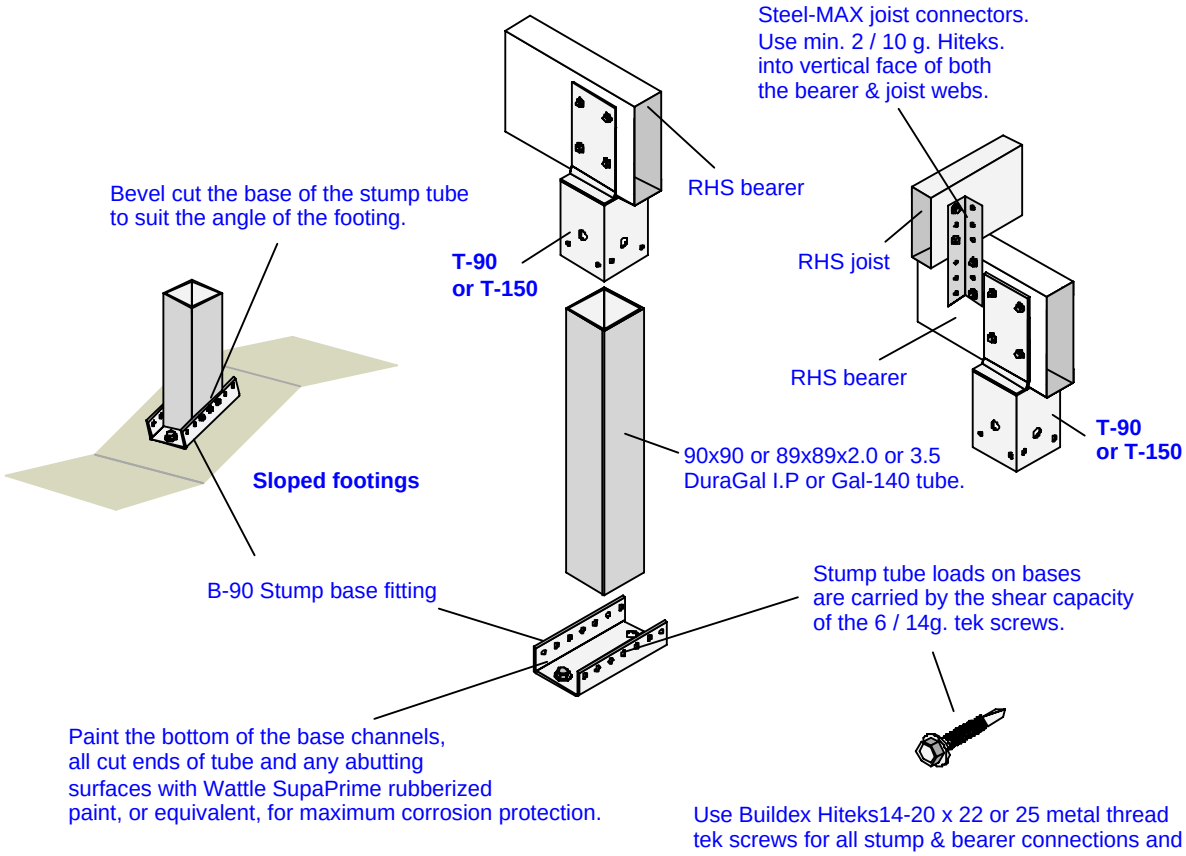
Steel -MAX
Building Systems
www.steelmax.com.au
"The right choice"

Steel-MAX companion products to suit RHS tubular steel sections.

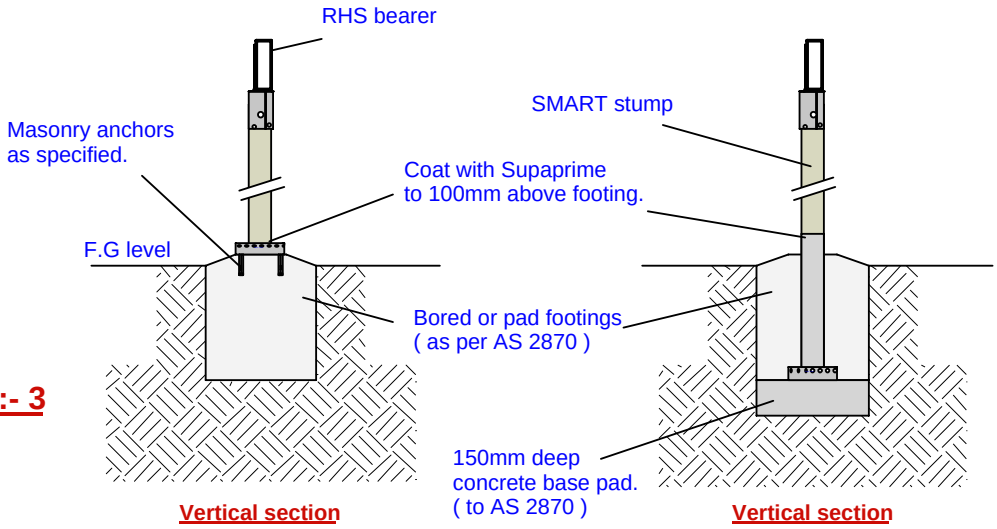


Detail:- 1

S-90 "Smart Stumps"

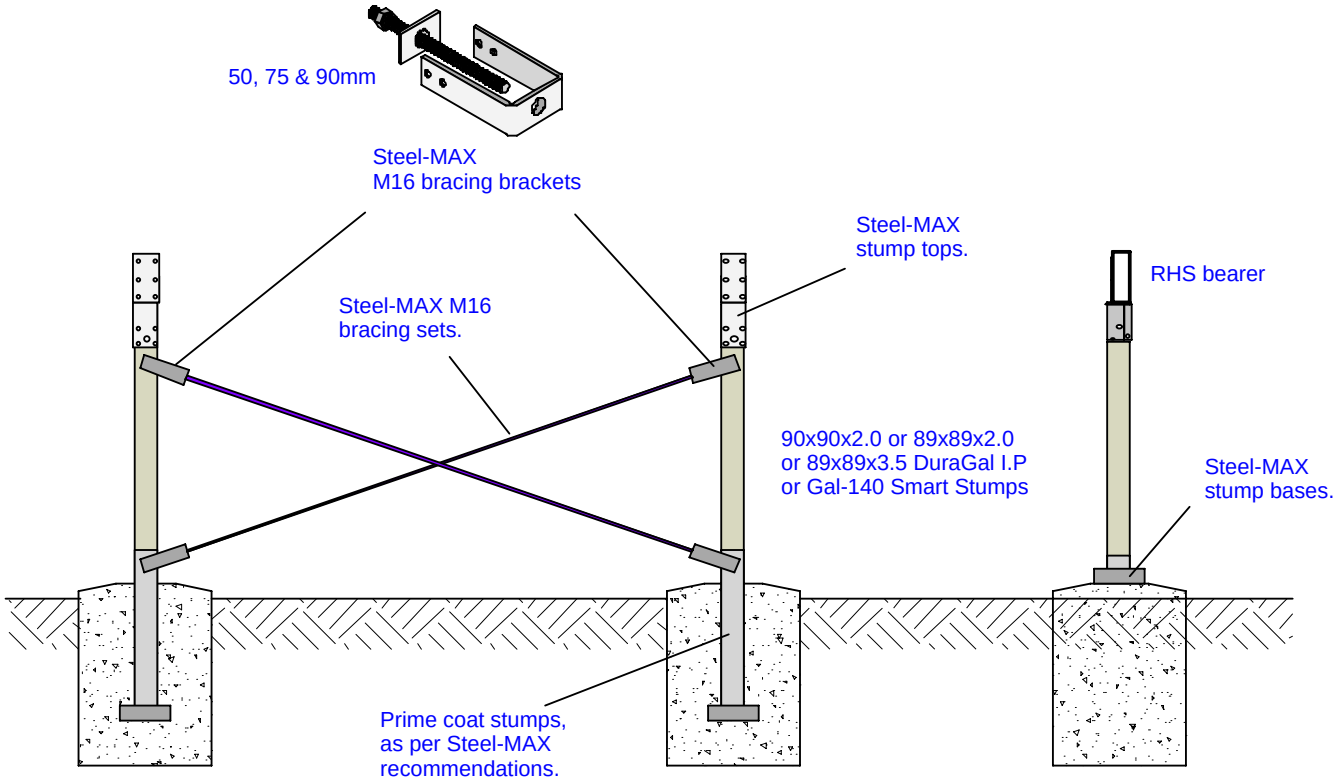


Detail:- 2



Detail:- 3

FOOTINGS

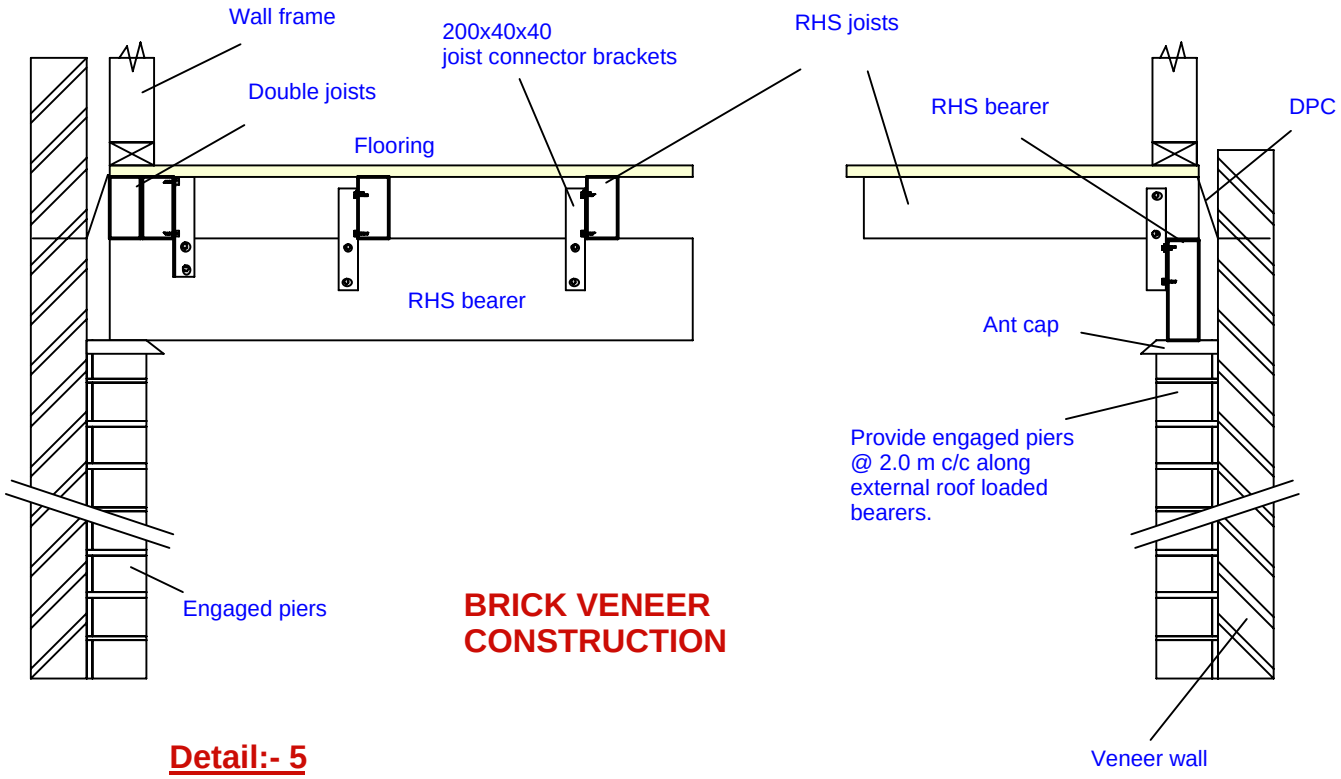


BRACING

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

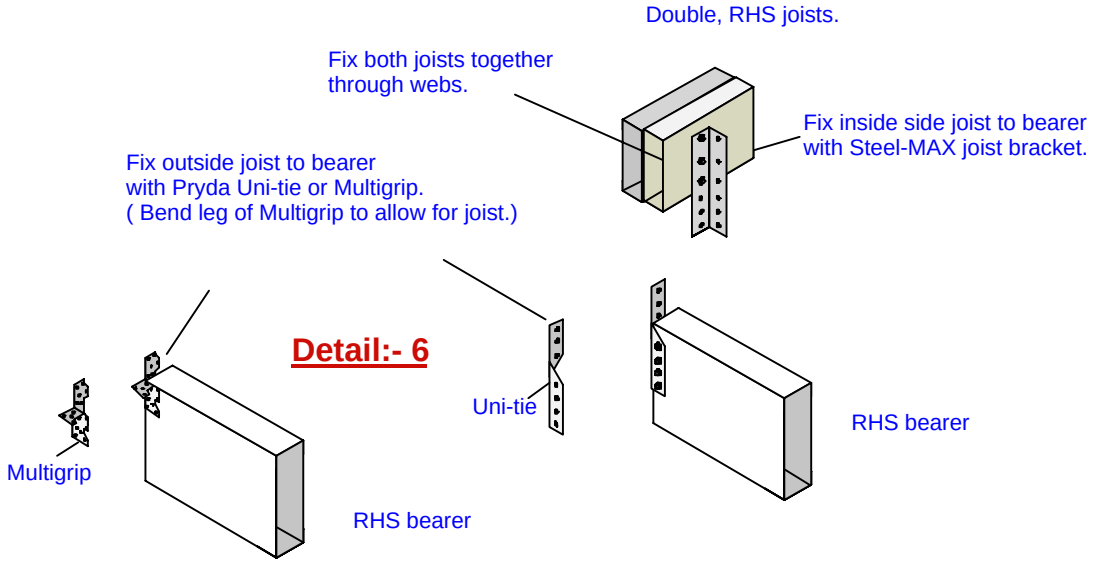
Detail:- 4

Steel-MAX companion products to suit RHS tubular steel sections.



BRICK VENEER CONSTRUCTION

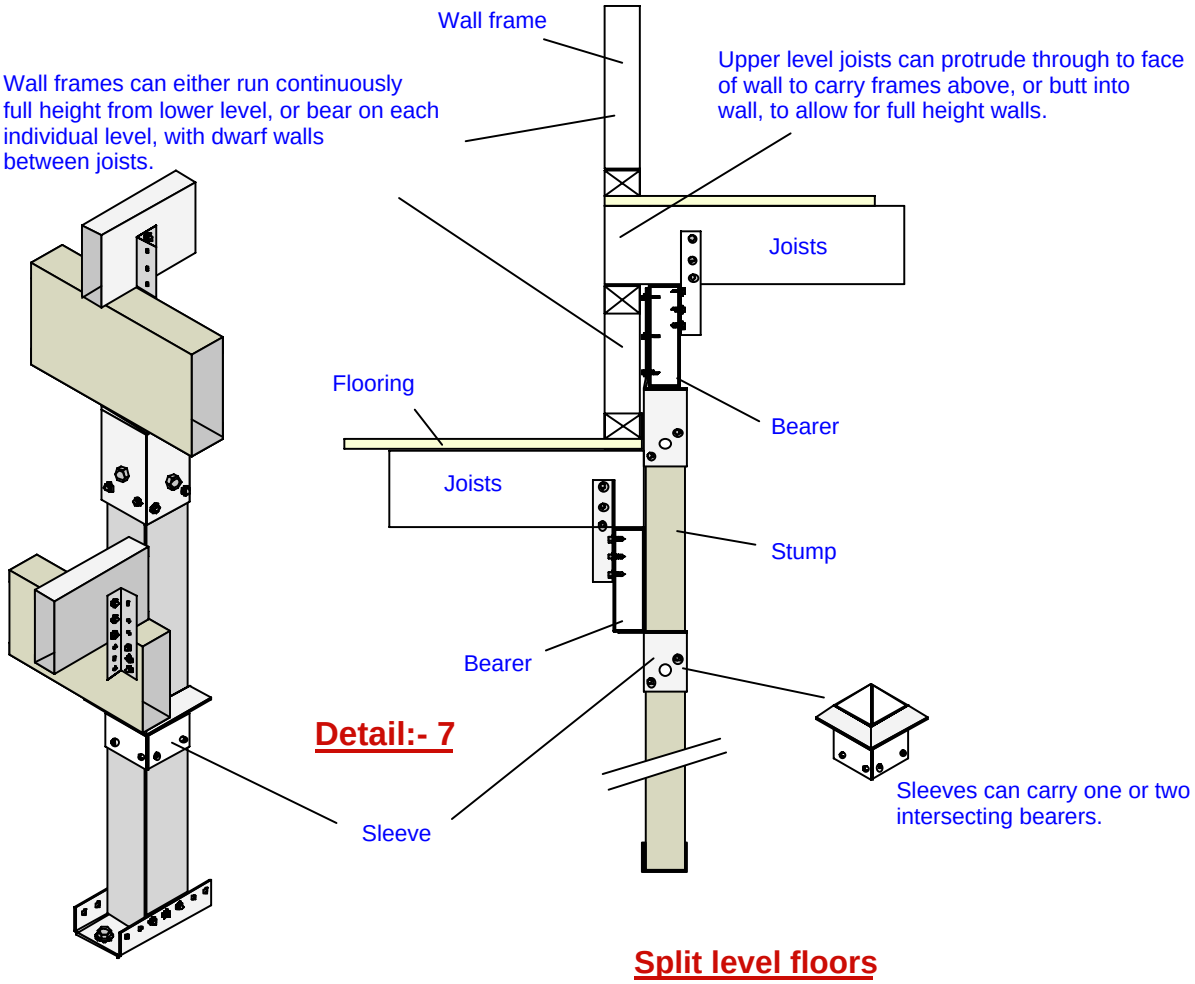
Detail:- 5



Detail:- 6

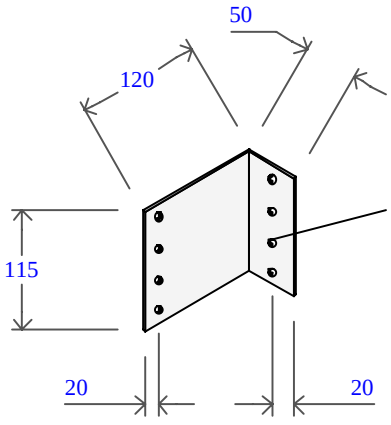
Double joists under roof loaded ext. walls.

Termite protection.
Smart stumps comply with AS 3660.1 (termite code) Clause 4.2.2 and must remain exposed for ongoing inspection.



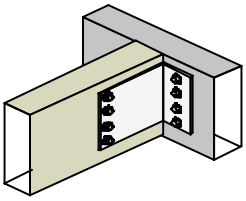
Detail:- 7

Split level floors

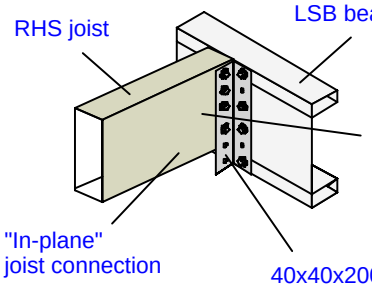


Detail:- 8

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



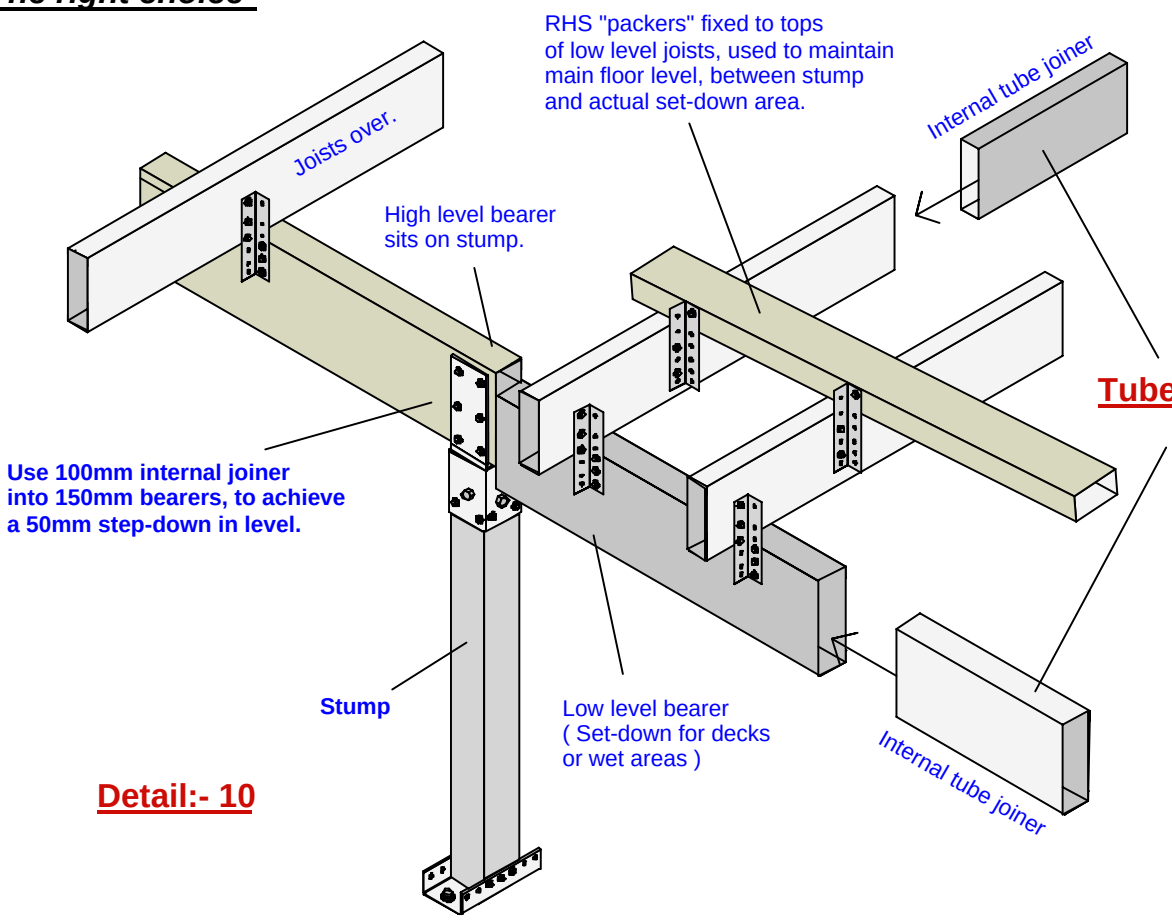
Steel-MAX "L" connector brackets.



Detail:- 9

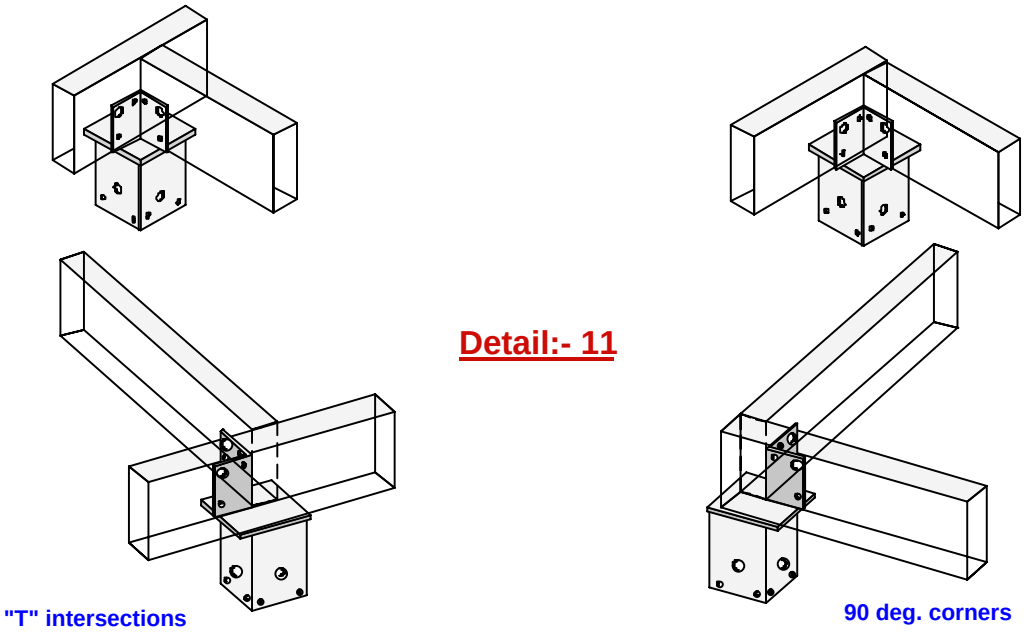
In-plane joist connections

Steel-MAX companion products to suit RHS tubular steel sections.



Detail:- 10

RHS BEARER STEP-DOWN DETAIL



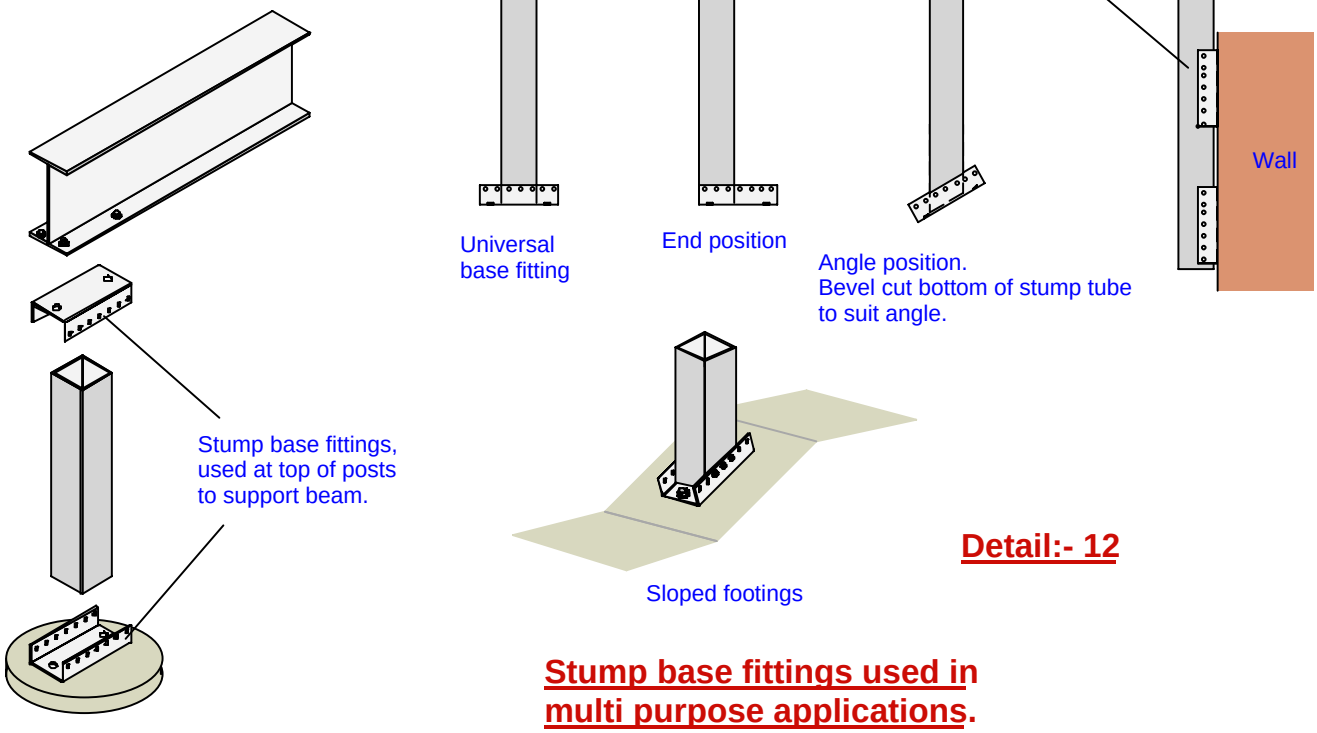
Detail:- 11

"T" intersections

90 deg. corners

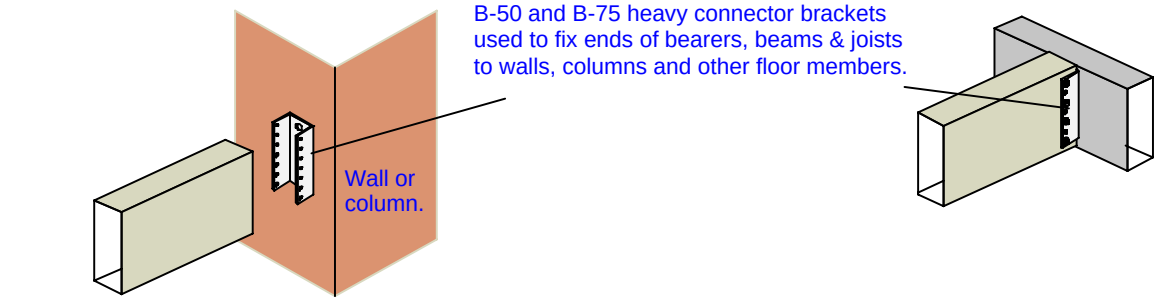
"Multi-top" stump tops (also available in screw tops)

Steel-MAX companion products to suit RHS tubular steel sections.

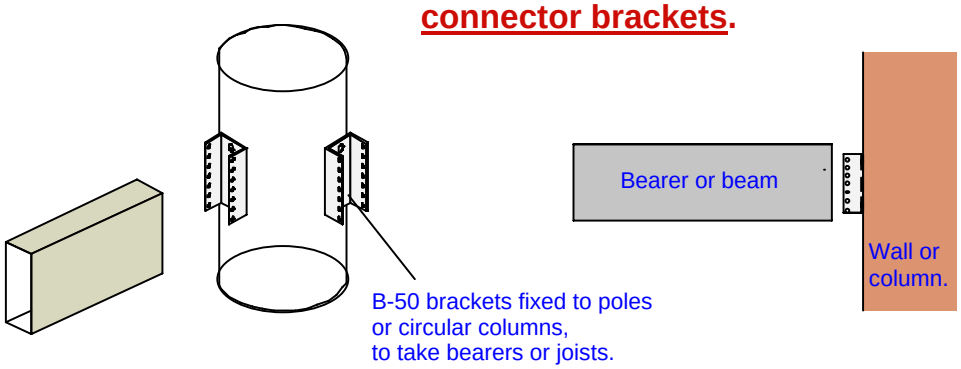


Detail:- 12

Stump base fittings used in multi purpose applications.

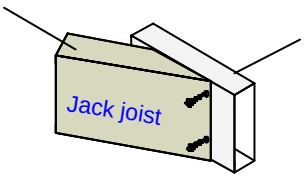


B-50 heavy duty connector brackets.



Detail:- 13

"Jack" joists can be splayed or mitre cut.
Fix to hip joists with 2 /14 g or Series 500 teks.
(pre-drill first, to guide screws at angle)

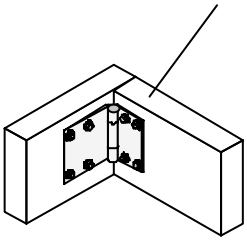


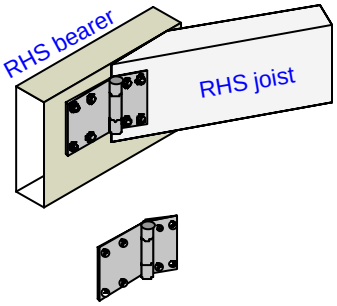
Angled, in-plane RHS members,
joined at verandah hips
or similar connections.

Detail:- 14

Angled verandah "Hip" and similar connections

RHS bearers, beams or joists



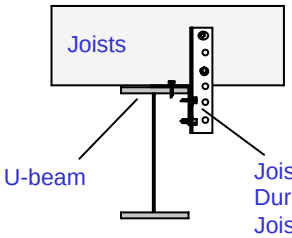


Detail:- 15

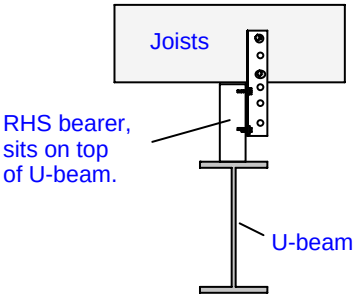
RHS in-plane at angled intersections,
joined with hinged "H" hip brackets.

Hinged connector bracket.

Hinged "H' (hip) brackets.



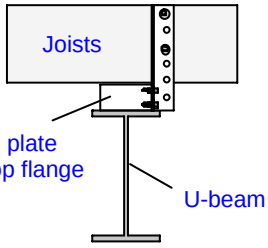
Joists are fixed to 75x75x4.0
DuraGal angle, with 40x40x200
Joist connector bkts.
The angle is fixed to top flange
of U-beam with Series 500 teks.
(or bolted, as specified.)



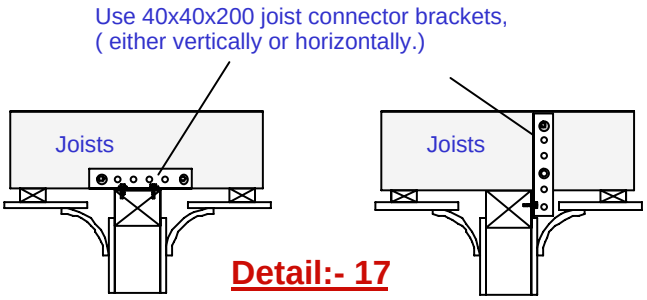
U-beam used as a stiffener beam
below continuous RHS bearer.

Bearers can also run at 90 deg. to beams.

Detail:- 16

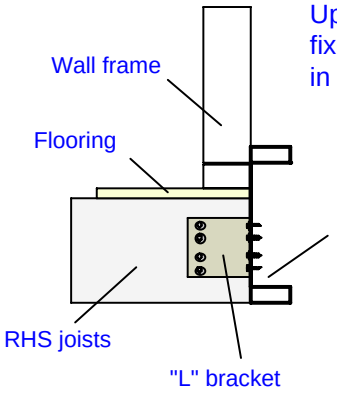


U-beam connections



Detail:- 17

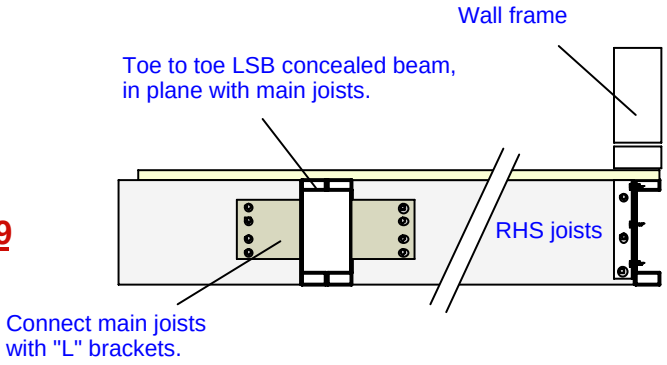
Connections to load bearing walls



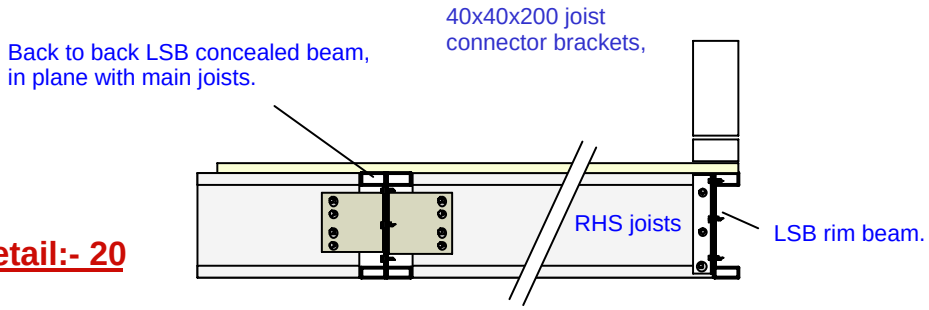
Detail:- 18

Connection to concealed beam.

Detail:- 19



Detail:- 20

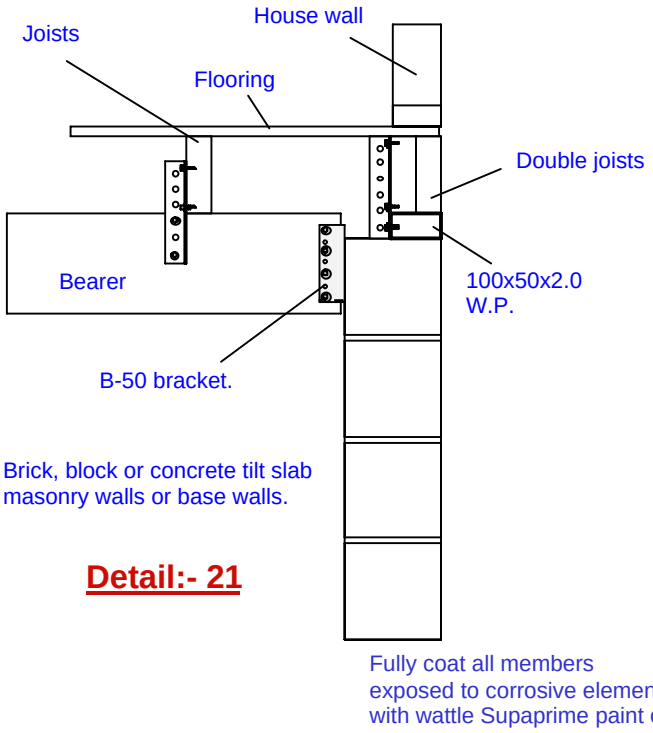


Connection of in-plane joists with concealed LSB beams.

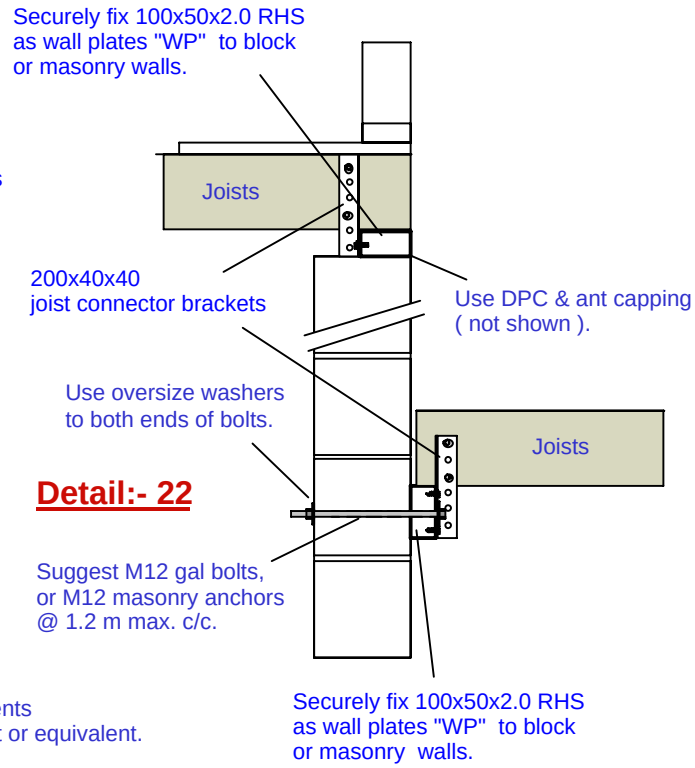
Upper floor details

Steel - MAX
Building Systems
www.steelmax.com.au
"The right choice"

Steel-MAX companion products to suit RHS tubular steel sections.

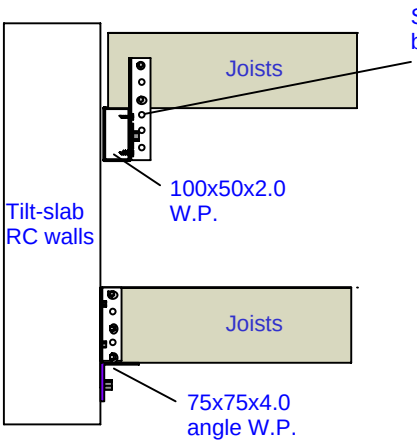


Detail:- 21

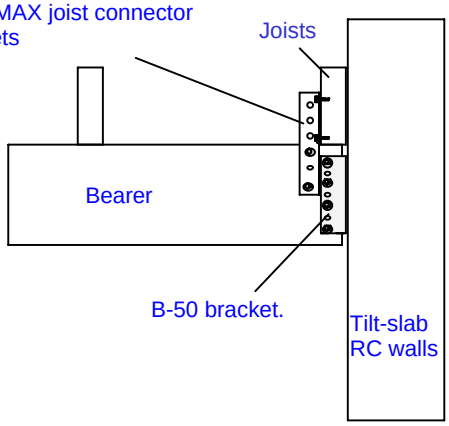


Detail:- 22

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



Detail:- 23



Detail:- 24

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 topand post Yield Stress fy = 300 MPa; Minimum bolt Yield Stress fy = 400MPa)

Connection	Shear capacity Vu
2x14-20 Teks	14.7kN
4x14-20 Teks	29.4kN
8x14-20 Teks	58.8kN
16x14-20 Teks	117.6kN
20x14-20 Teks	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 RHS bearer connection

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

B-50 wall brackets to RHS bearer connection

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

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

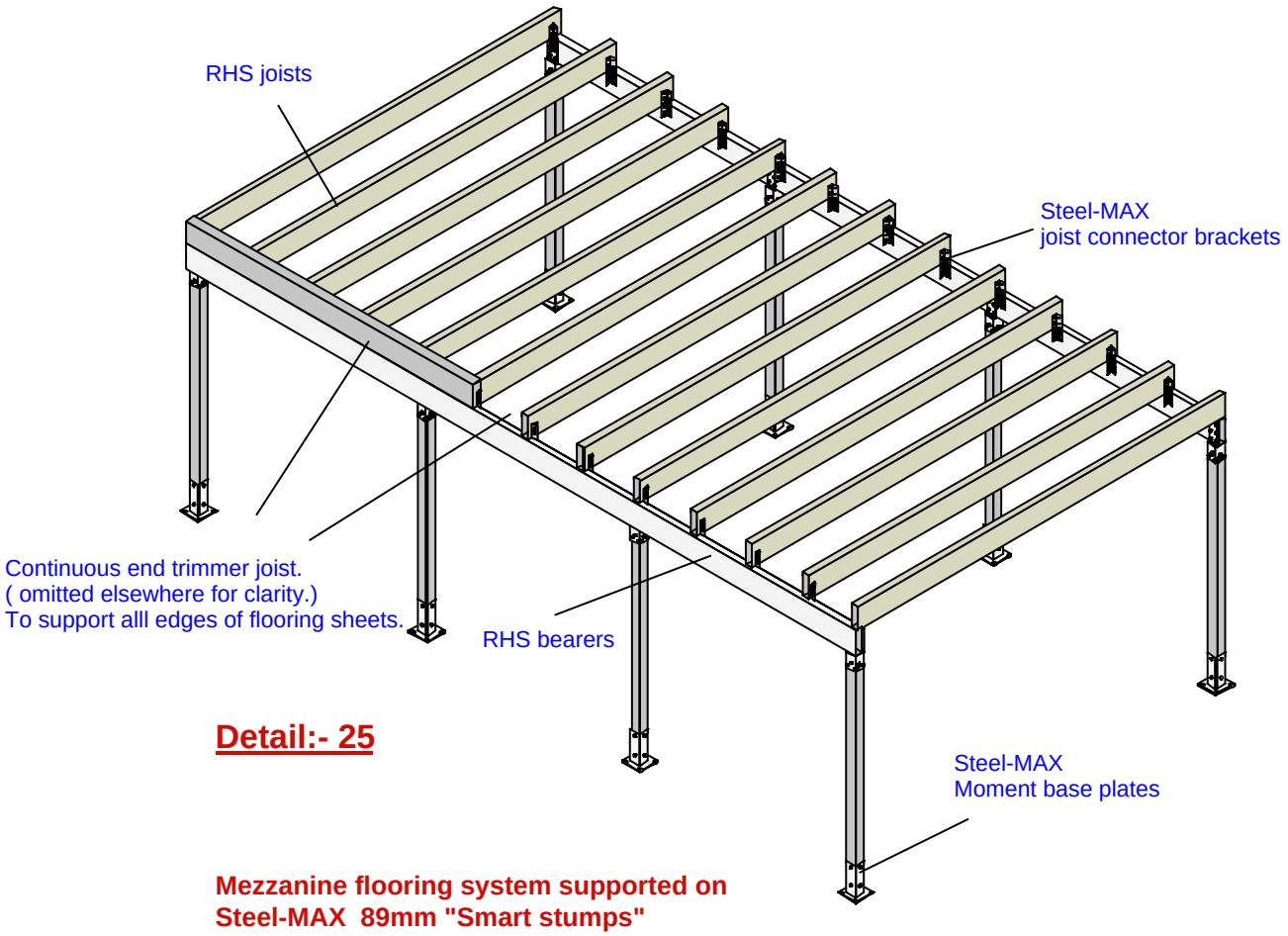
Notes:-
1. All shear capacities are governed by the hole capacity of the RHS's web and not the screw/bolt shear capacity.
2. Calculations based on a minimum web thickness of 1.5mm, minimum Tensile Strength (fu) = 490MPa and minimum Yield Stress (fy) = 380MPa.
3. Tek screws to be installed in accordance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

Bracing brackets

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

Moment base plates

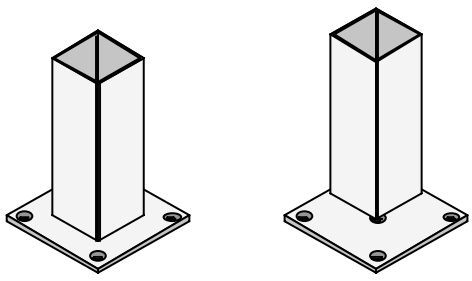
Notes:-
100x100x4.0 Moment Base Plates have an ultimate bending moment capacity of 5.2kNm, subject to the following:-
1. Must be fixed to a footing or slab with a minumum compressive strength of 25MPa with 4 / M12 chemset anchors, fixed with a minimun distance between the centre of the bolt and the edge 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:- 25

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

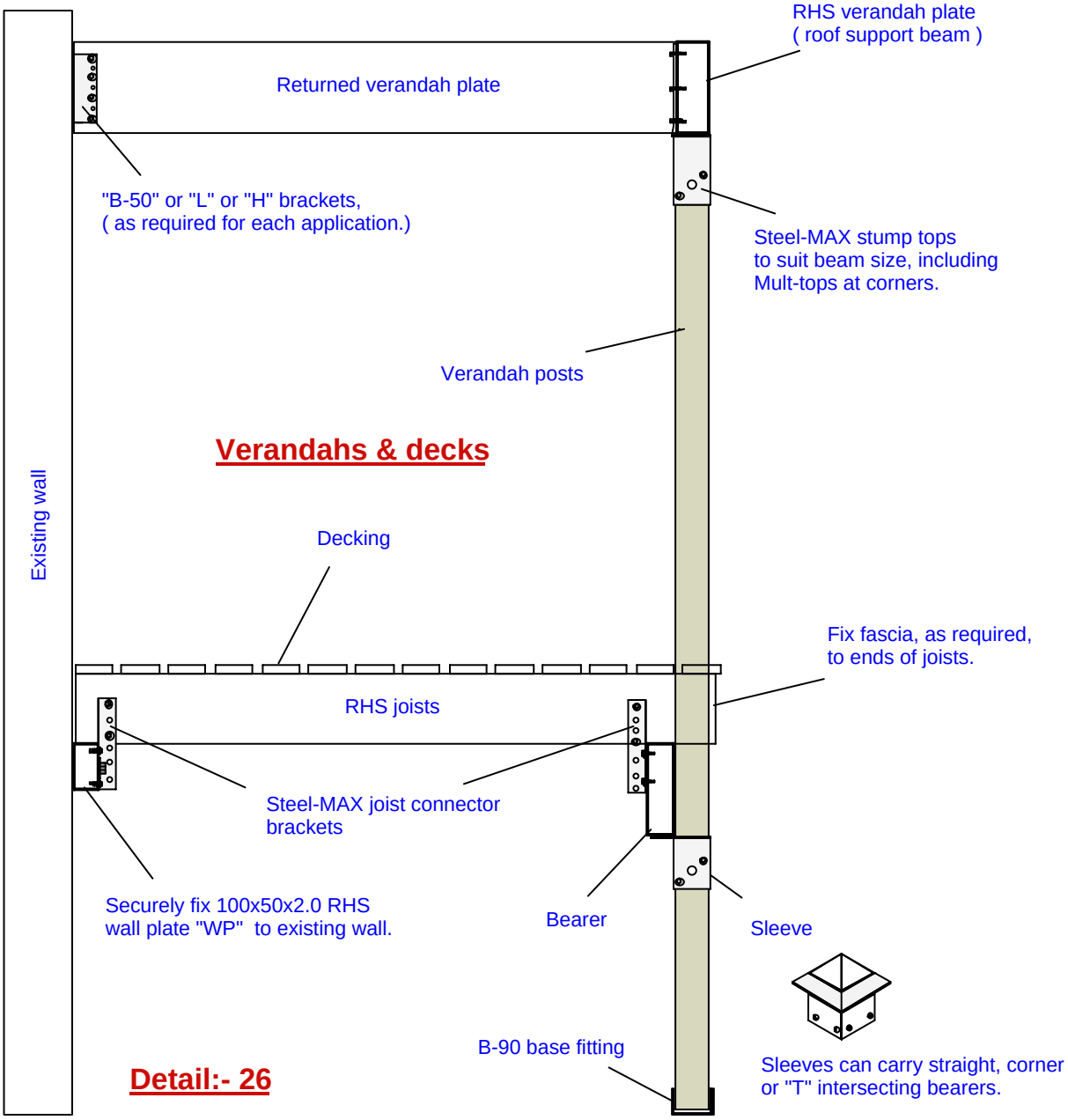
Mezzanine floors



Moment base plates

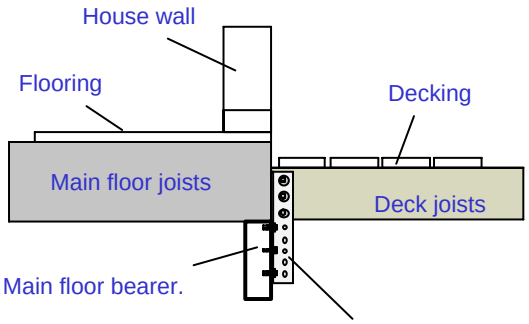
Steel - MAX
Building Systems
www.steelmax.com.au
"The right choice"

Steel-MAX companion products to suit RHS tubular steel sections.



Verandahs & decks

Detail:- 26



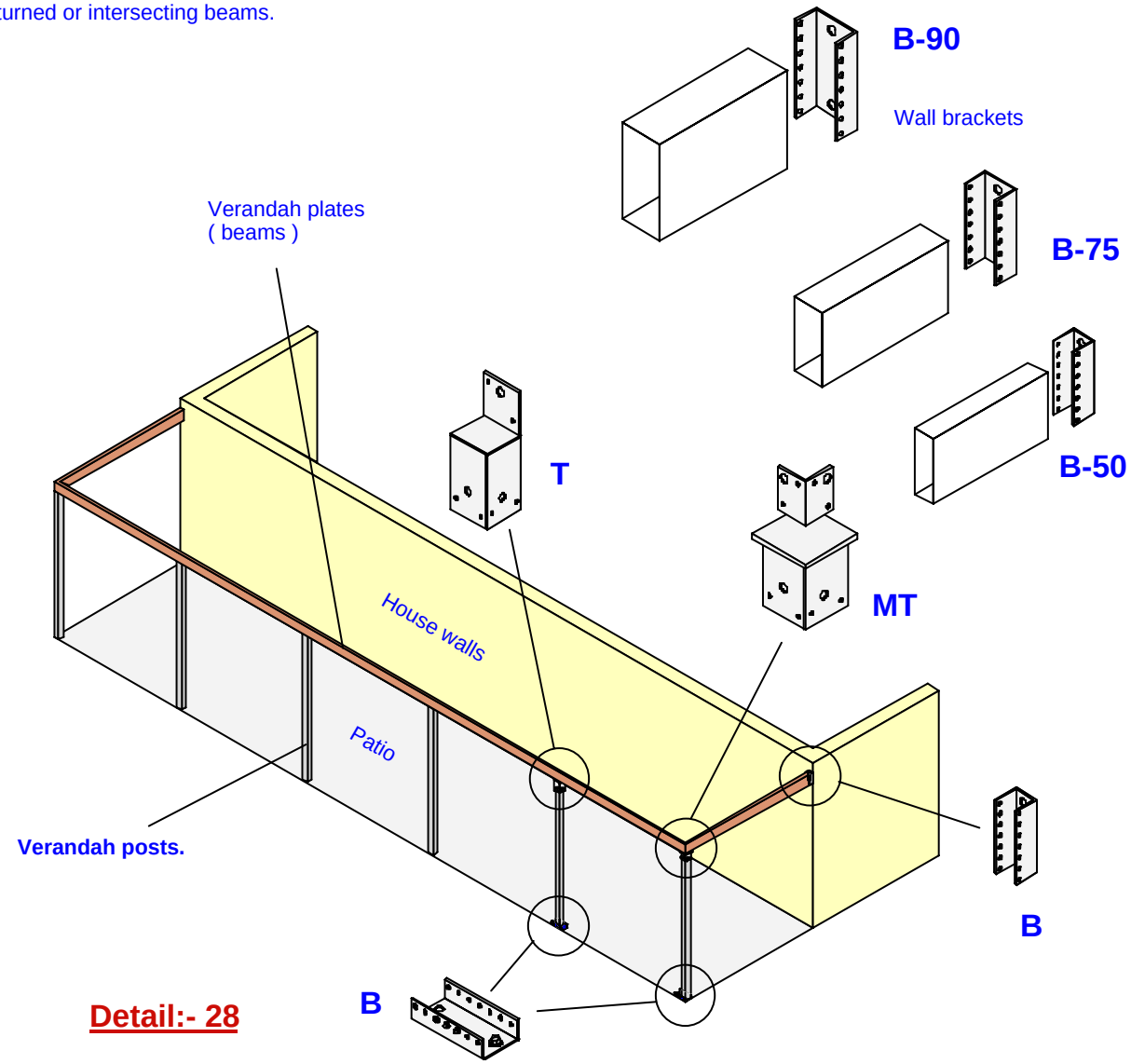
Detail:- 27

40x40x200 connector brackets
fixed with 3 / 14 g teks
into both bearer & joists.

Connection of deck joists to main floor.

Stump tops can also be used on top of verandah posts to carry steel or timber verandah plates (beams).

As with stump applications, Multi-tops can be used at corners to take returned or intersecting beams.

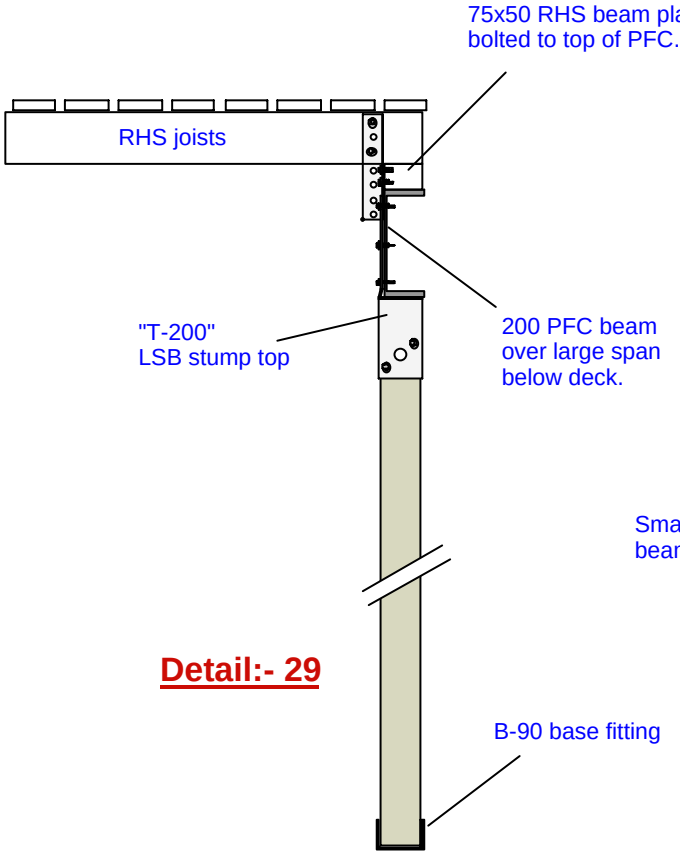


Detail:- 28

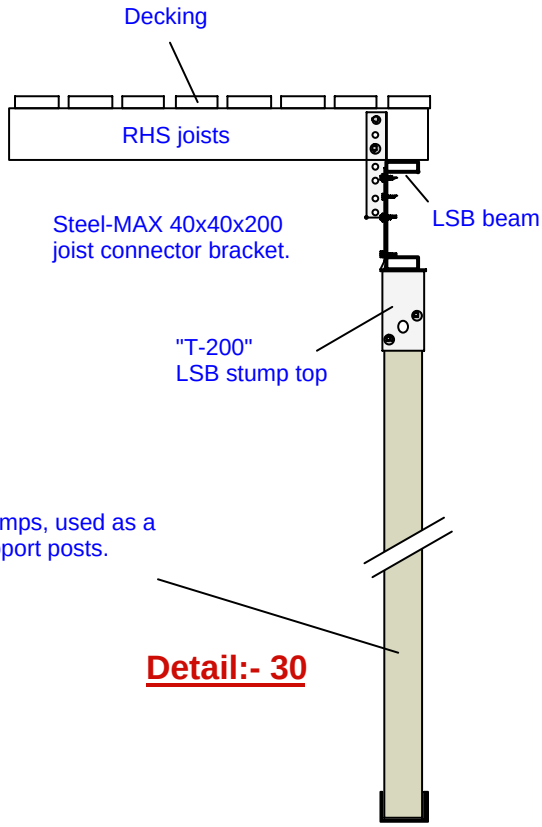
Verandahs & decks

Steel - MAX
Building Systems
www.steelmax.com.au
"The right choice"

Steel-MAX companion products to suit RHS tubular steel sections.

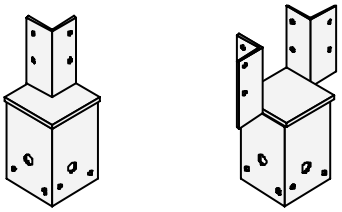


Detail:- 29



Detail:- 30

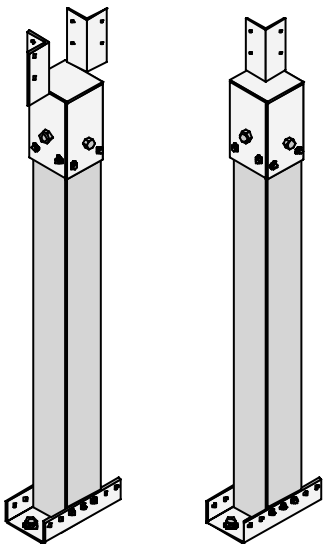
Verandahs & decks



Special 50mm set-back Mult-tops

Mult-fit, to allow for flush 50mm wide bearers

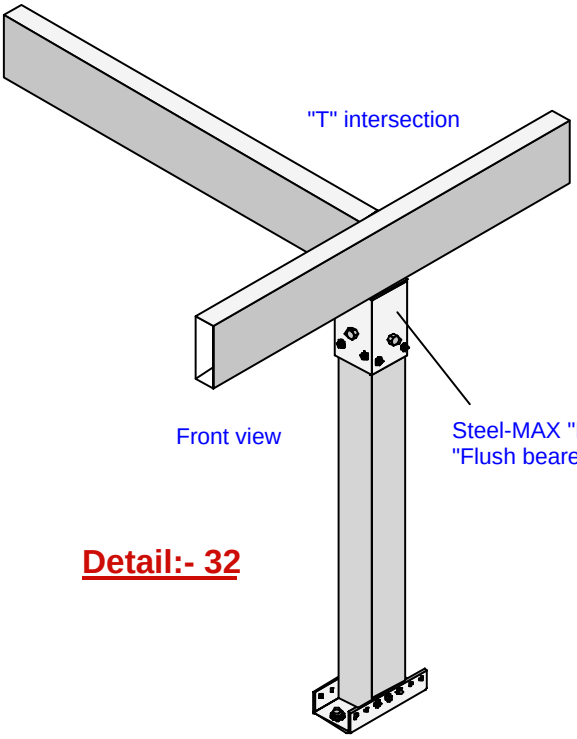
Detail:- 31



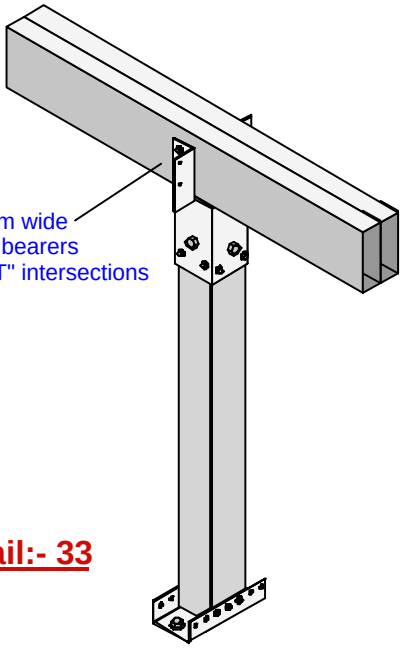
Special "Flush fitting" Multi-tops.

Steel - **MAX**
Building Systems
www.steelmax.com.au
"The right choice"

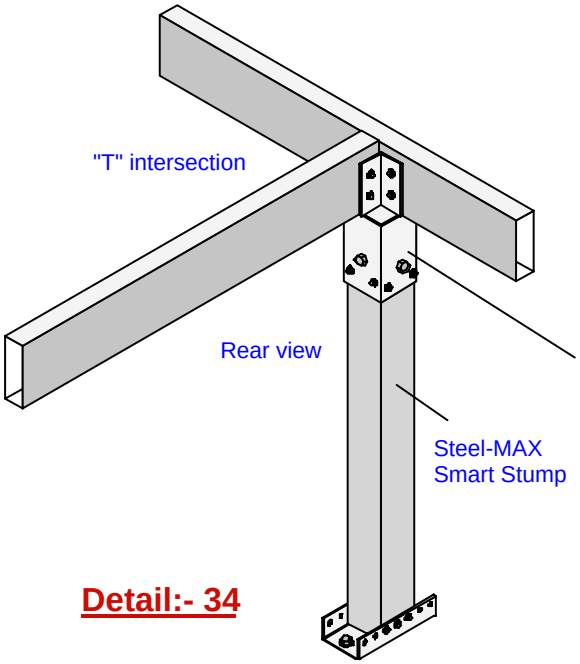
Steel-MAX companion products to suit RHS tubular steel sections.



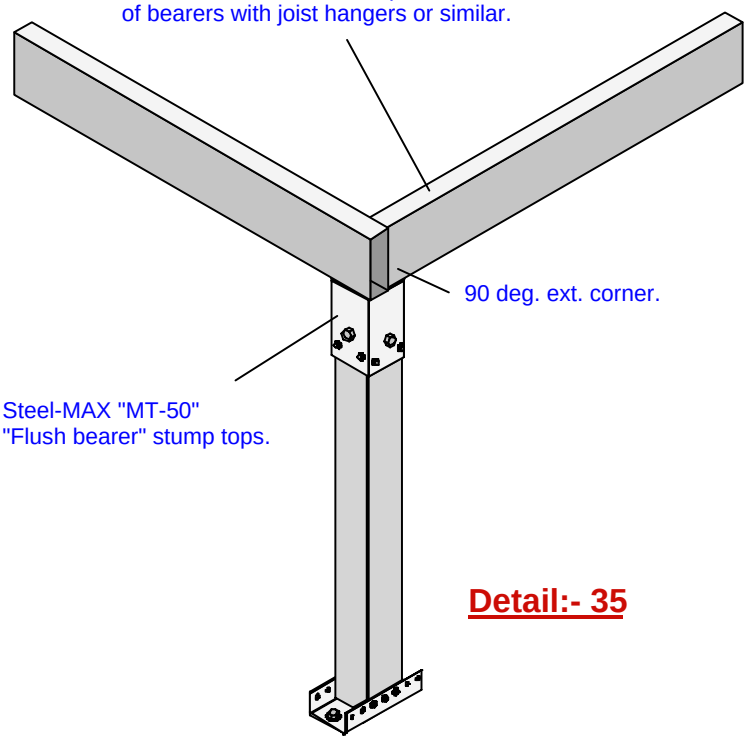
Detail:- 32



Detail:- 33



Detail:- 34



Detail:- 35

Special "Flush fitting" Multi-tops.