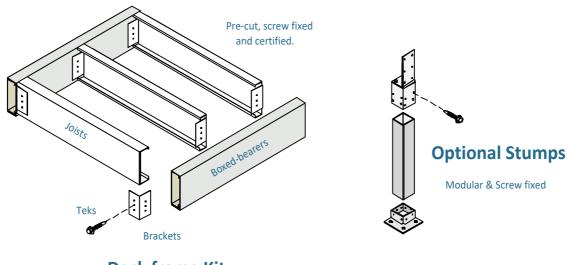




# How to build your own Steel-Deck frame.



# Deck frame Kit

( Partly exploded view )

## Standard delivery to site included

Buy your new Steel-Deck D.I.Y. kit from Bunnings for delivery directly to your site, for you to build.

www.steeldecks.com.au







# **Product and Installation Guide**

## What is Steel-Deck?

- DIY friendly, certified Steel floor framing system for domestic decks.
- Sold by **Bunnings Special Orders** and **Trade** stores.
- Designed by Steel-MAX Building Systems.
- Delivered directly to site in 10-15 working days by Stramit Building Products, in kit form.
- Frames are in-plane rectangular panels of any size up to 12m long x 5m wide.
- Optional stumps are available.
- Optional site specific certification is available.

#### How to get a price:

- Go to Bunnings Special Orders desk, or visit <u>www.steeldecks.com.au</u> to get a price online using the Price Calculator.
- Add optional **Stumps** and site specific certification, if needed.
- Or; give your custom sizes, dimensioned drawings or plans to **Bunnings** for a free design and price.
- Order your Steel-Deck frame kit from Bunnings Special Orders.
- Once ordered with **Bunnings**; allow 10-15 working days for your **Steel-Deck** frame kit to be delivered to site by **Stramit**.

#### What you get:

- Stramit long span BlueScope Z350 galvanised steel channel bearers and joists, cut to length and labelled for ease and speed of installation on site.
- Standard system certification.
- Steel-MAX joist connector brackets and optional telescopically height adjustable stumps. Optional stumps are modular and are made up of a base fitting, height adjustable top and separate post tube which is galvanised inside and out and is supplied in 8.0m stock lengths only, for cutting each individual stump to its correct length on site by the builder/installer.
- The system is entirely screw fixed with the tek screws supplied. No welding or special skills or equipment needed.
- Delivery is included to sites with easy access, within a 30 km radius of any Bunnings store. It does NOT include special, remote or difficult site locations or conditions. An extra fee may apply to some areas and sites. Supply is subject to the Delivery Terms and Conditions available on the Steel-Deck web site. Check with your local Bunnings Special Orders team for details.

#### Not included:

- Footings and Bracing design or components.
- Design, specification and supply of fixings and fixing methods to footings or existing structures.
- Corrosion protection paint. (due to delivery restrictions of flammable goods by Stramit)
- Flooring sheets, boards, decking, balustrades & handrails and fixings for these.
- Installation.
- Delivery to special, remote or difficult sites and locations.

### **Getting started:**

### Step-1.

#### Measure your Steel-Deck frame size.

- Decide on the exact location, shape and size and height of your new or replacement deck.
- Check that it complies with local Council regulations and with all other statutory authorities.
- Measure the deck Length (bearer direction) and Width (joist direction) in metres.
- E.g.: 6.265m long x 3.180m wide. Check for square by using the 3-4-5 method, or measure the diagonals.
  Measure the height for optional stumps. The tube is supplied in 8.0m stock lengths for cutting on site by the builder. Use the average height or "nest" the stump tube lengths into stock 8.0m tube lengths to determine the number of stock lengths needed. (Allow for tube lengths to be either fixed to the tops of footings, or cast-into footings.) le: Divide the heights (tube lengths) of your stumps into 8.0m stock lengths of tube to determine the number of 8.0m stock lengths needed.

You can make any adjustment to stump tube quantity needed in the online **Price Calculator** on the **Steel-Deck** web site <u>www.steeldecks.com.au</u> by adding or deducting lengths of tube to suit.

<u>Note</u>: If connecting to any existing walls, posts, columns or any other structure; be sure that they are structurally sound and capable of carrying the vertical and lateral loads as well as the connection method of the new deck.

Do NOT fix to or through non-structural cladding, surfaces or structures which are not capable of supporting the loads or connection of the new deck. Beware of "shear" connections and do not use or load the deck beyond its design limits set out in the Design Criteria section of this document. Also beware of connections which may allow the deck to pull away from a wall or damage the existing structure.

Consult a building professional or engineer if needed.

#### Step-2.

#### Get a price.

- Go to Bunnings Special Orders desk, or visit the Steel-Decks web site <u>www.steeldecks.com.au</u>.
- Use the online Price Calculator to enter the length and width of you deck panel(s) in metres, as well as the average height and number of any optional stumps needed, to get a price.
   The price shown in the online Calculator. It includes standard delivery to site and GST, as well as optional stumps and optional Engineer's site specific "Certificate of Compliance" letter of certification.
   Bunnings may only vary this price if extra costs related to delivery occur.
- The **Steel-Deck** system is certified, but some Councils, project certifiers and other interested authorities may also require this additional and optional Certificate of Compliance,
- If all suits; fill in your contact details in the **Calculator** and order your system from the **Special Orders** team at your local, or chosen **Bunnings** store. (You may use your local Bunnings store, or choose a store closest to your delivery location; even interstate).

#### Or

- Give your custom sizes, dimensioned drawings or plans to the Special Orders team at **Bunnings** for a **free quote**.
- Or; email you job details directly to <u>designs@steeldecks.com.au</u> and include your contact details.
- Include all relevant information such as sizes, height(s), if you are connecting to an existing structure etcetera.
- Allow 3 5 working days for us to do a design and get your price from **Bunnings**.
- Important:- Be sure to include your complete contact and job location details, as well as your **Bunnings** store location.



**Bunnings Store Finder** 



## Step-3.

#### Order you deck frame with Bunnings.

- Check that your contact and job information is correct, then order your **Steel-Deck** frame including any optional stumps and/or certification from the **Special Orders** desk at your local or chosen **Bunnings** Store.
- Allow 10-15 working days for delivery to site by **Stramit**, depending on local supply variances and location.

#### Step-4.

#### Please read these important notes; before you build your deck frame:

- Preparation.
- 1. Prepare the site, set out and install footings to your separate engineer's design and requirements. This may allow for stumps or posts to be cast-into the footings, or fixed to the tops of footings.
- When setting out for Steel-MAX stumps; measure in approximately 48mm from the outside of your frame to the centre
  of the 90mm stumps. This is to allow for the ~ 96 mm female housing section of the stump tops, which fits over the
  90mm tube externally.
- 3. Allow for a clear and clean appropriate area for Stramit to deliver your frame kit. Inform the driver of any hazards such as overhead power lines or soft or unstable ground etc.
- 4. Check that all delivered frame members and items match the items on Stramit's delivery docket. Stramit may deliver the frame kit in more than one delivery.
- 5. Separate the open channel bearers from the lipped channel joists and identify where they are to be used in the frame. (These are individually labelled with panel numbers, section sizes and lengths).
- 6. Do not leave large surfaces of metal members in contact with others or stacked for long periods of time where moisture can accumulate and contribute to corrosion.
- Measure and cut stump tube to correct lengths, from the supplied stock lengths.
   Be sure to "nest" varying cut lengths into the stock lengths supplied, to optimise use and minimise waste from off-cuts.
- Coat all cut ends with corrosion protection paint and remove all swarf (metal filings) from the stumps and frame members to prevent surface rust.
   Also coat the abutting areas of the Boxed-beam bearers, where their inner and outer surfaces meet and where moisture may accumulate. The paint will provide a physical barrier from corrosive elements to protect the framing.
- Cut stump tube approx. 20mm short of the stump's total height ( between the tops of footings and the underside of the bearers ) to allow for some clearance of metal fitting plates and some minor height variations. Note: All loads are carried by the shear capacity of the Tek screws. Direct bearing is not required. The bearers may be held above and clear of the stump top's caps by approx. 5mm.

#### • Precautions.

Note: you <u>will</u> need some corrosion protection primer paint such as Ormonoid *Black* or *Silvershield* or similar (available from **Bunnings**) to coat stump bases and tube all round (including the underside of bases) to a minimum of 100mm above footing level, as well as all stump parts which may be cast-into footings.

Also coat any abutting surfaces of members where they are connected to existing structures or to each other, such as the nested Boxed-beam bearers in particular.

This is to help prevent corrosion of the frame members, brackets and fixings, in areas where they are exposed to moisture, corrosive environments and elements.

This paint is <u>NOT</u> provided as part of the system due to some transport and delivery restrictions of flammable material by Stramit's delivery agents. Zinc rich paints do add more zinc, but it is best to still provide another physical barrier.

Do NOT use CCA treated decking or other timber in direct contact with galvanised steel, to prevent reaction between the copper in the timber treatment and the zinc coating of the steel.

Do NOT use any corrosive material such as brick cleaning acid in contact with steel members. If this does occur, thoroughly wash and clean away the corrosive material and apply protection to the members immediately. Leave all connections and surfaces clean and free from swarf and metal filings from installing screws and cutting. Always use protective clothing, shoes, gloves and eye wear when working on site, and maintain workplace safety at all times. Engage a building professional with correct equipment and training, if needed.

#### • Certification.

The Steel-Deck system is certified, based on the following Design Criteria.

Optional site specific "Certificate of Compliance" is also available.

This may be required by some Councils, project certifiers or other authorities. Always install your floor frame by using the correct material, brackets and fixings supplied as well as the methods described in this and other **Steel-Deck** documents, to avoid voiding manufacturer's warrantees and the certification.

#### • Design Criteria.

#### Standard allowances:

Joists centres = 450 mm c/c

Deck "in-plane" frame depths are 185mm where the panel widths (joist span direction) are up to & including 3.8m. And 235mm deep frames for panels from 3.8m to 5.0m wide.

#### Floor Loads:

Live load = 1.5 kPa and 1.8kn concentrated load for domestic decks less than 1.0m high, and 2.0 kPa and 1.8 kN concentrated load for domestic decks over 1.0 m high. Dead load = 0.5 kPa

Bearers and joists have been designed to support timber decking or equivalent weight products only. Joists must be fixed to end boxed-bearers with joist connector brackets supplied, to provide stability and stiffening to both bearer and joists.

Bearers supported on masonry piers or flat surfaces where no web support is provided, must have a minimum of 200 mm continuous even bearing along the bearer, where the bearer is continuous over that support and 100 mm minimum bearing at the end where direct bearing only occurs.

This is not a requirement where bearers are supported on **Steel-MAX** stumps, which provide sufficient web support.

Maximum stump or support spaces along bearers is shown in the **Online Price Calculator** 

#### **Corrosion protection.**

The Steel-Deck Floor Framing System is made from corrosion protected steel.

This means that it will stand up to most environments, except for the most extreme situations.

It is not suitable for applications closer than 300m to calm still coastal water or closer than 1km to rough active surf, or where exposed to corrosive elements and/or fallout from heavy industrial environments or similar; unless the whole frame, (including fixings and fittings) is specially and fully coated with a suitable corrosion protective paint, to provide a physical protective barrier coating to the whole frame.

Bitumen based or rubberised metal primers, such as Ormonoid, are available from **Bunnings**.

#### Termite protection.

The clear and clean steel framing complies with the Australian Standard Termite Code AS3660.1, because the members expose the trails of termites for inspection and treatment where necessary. There is no need for additional ant caps to expose termite trails if **Steel-MAX** stumps are used. However; use ant caps if other piers, posts, base walls or supports are used. Ant caps don't stop termites, they just expose their trails (similar to the steel stumps.)

#### Fire protection.

Your **Steel-Deck** system is totally made from high grade steel which is naturally fire resistant and non-combustible to comply with BAL (Bushfire attack level) requirements of the BCA/NCC and local regulations.

Always use deck sheeting or boards and finishes, as well as fixing methods to existing structures to comply with local authorities and fire safely requirements.

#### Fixing flooring to steel joists.

Strip and sheet flooring can be gun nailed or screw fixed to the steel joists, in conjunction with the flooring manufacturer's specified adhesives, in some cases.

Most nail gun manufacturers have twisted shank hardened and stainless steel coil nails available for fixing decking and sheeting to steel deck frames. *WingTek* and other high quality countersunk metal thread Tek screws, especially coated for outdoor decking use are available from your local Bunnings store.

When using standard metal thread Tek screws to fix sheeting or boards to the steel joists, pre-drill through the boards or sheeting with a drill bit slightly larger than the diameter or the screw's thread, so that the screw only bites into the steel joist. Use a countersink bit to finish the head of the screw in the boards or sheets used, if needed. This also allows for a small degree of lateral movement due to the expansion and contraction caused by moisture variances of some timber products, which may contribute to metal fatigue of screws over time.

#### Cutting steel framing members.

Post and stump tube is supplied in 8m stock lengths for cutting on site by the builder/installer.

All channel bearers and joists are supplied pre-cut with installation tolerances to suit your panel sizes. This keeps the need for site cutting to a minimum. Where cutting is necessary, its best to use specially designed burr-free cold cutting saws like the Makita 4131 or similar.

Drop saws and hand held circular saws with metal cutting disc blades are also suitable.

Always use protective clothing, shoes, gloves and eye wear when working on site, and maintain workplace safety at all times. Engage a building professional with correct equipment and training, if needed.

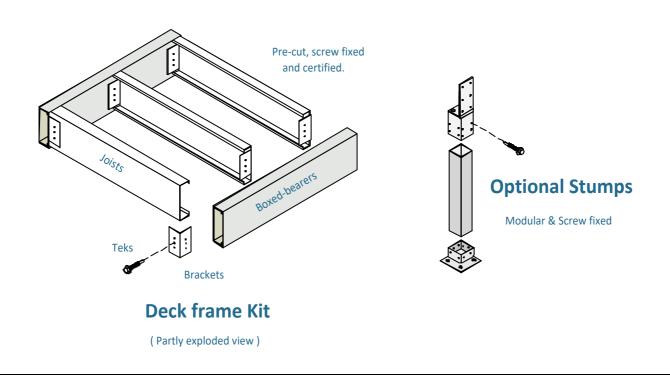
Step-5.

### Assembly and Installation.



## Build your Steel-Deck:

**Note:** All floor frame **Panels** are made from "boxed-bearers" with joists @ 450 c/c fixed in-plane between them with brackets and Tek screws supplied. Optional stumps have a base, top, post tube and Tek screws.



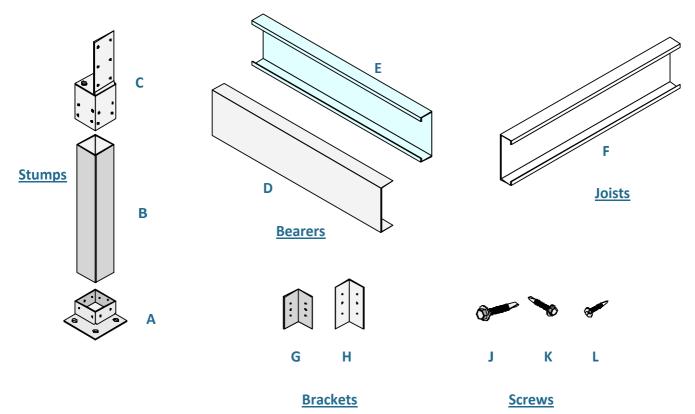


## **Assembly Notes**

This document is current as at 25<sup>th</sup> October 2016. Information may change without notice. Check the website for updates.

## System components:

Stramit will deliver your floor frame system to site. (They may do this in more than one delivery) Unpack, layout and identify frame components. Check the **Delivery Note** document and identify all items supplied against those listed on the note.



• **Optional stumps** have a base (A), tube (B) and a top (C).

Note: Stump tube is supplied in 8.0 m stock lengths for cutting to correct lengths on site by the installer.

Bases allow the tube to fit loosely into them, which provides for some tilt angle adjustment of the base connection to the footings.

Tops are telescopically height adjustable during installation, up to about 50 mm.

• <u>Bearers</u> consists of 2 parts (D & E) which are nested together ("E" into "D" on site).



- **Joists** are lipped "C" sections, which are screw fixed to the web face of the "boxed-beam" bearers with the 12 gauge Hextek screws provided.
- "G" = "FCB1A" joist connector brackets for 185mm Deck Panels.
- "H" = "FCB1B" joist connector brackets for 235mm Deck Panels, as well as for general connectors of the floor frame to existing structures. (Walls, columns, posts etc.)
- "J" = 14-20x22 Hextek screws. Used for all stump connections and to fix bearer part "D" to stumps, as well as for any connection of frame members to existing structures with "H" brackets.
- "K" = 12-14x20 Hextek screws. Used for all joist connector brackets and fixing bearer sections "D" to "E" trough "D" into the lips of "E".

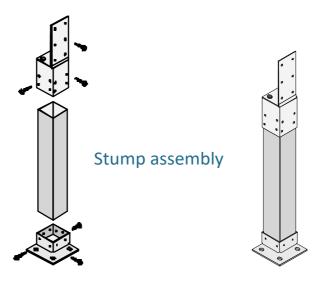
## **Stump preparation and assembly:**

- 1. Measure and cut stump tube to length from 8.0m stock lengths supplied.
- Allow for the thickness of metal plates in the tops and bases as well as about 20mm for some height adjustability.
- So cut stump tube about 30mm short of the height from the tops of footings to the underside of the bearers, (where stumps are fixed to the tops of footings). This is to allow for some telescopic height adjustment.
- Be sure to "nest" the measured cut lengths of the stump tube into the 8.0m long stock tube supplied.
   E.g.: allow for long lengths first, then cut shorter stumps from off-cuts, to ensure maximum efficiency and use of off-cuts.
- 3. Apply corrosion protection paint to every face and part of the bases (top, bottom and inside) and the inside and outer face of the tube up to at least 100mm above ground level. This paint is NOT supplied due to some transport issues with flammable goods, so you will need to supply this separately. It is available from Bunnings.
  - Refer also to Step-4 in the "Getting Started" notes of the Product and Installation Guide for more info on corrosion protection.

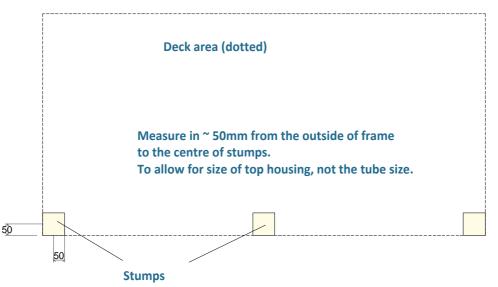


- 4. Position and fix bases to tops of footings prior to screw fixing the tube, to allow the tube to be plumbed vertically.
  - The tube will fit loosely into the bases, to allow for some minor tilt adjustment if the tops of footings are slightly out of level. It also allows the stumps to drain and "breathe".
- 5. Assemble stumps and fix the vertical fin plates to the outer "D" section bearers in the correct positions and spaces. Note: maximum spaces of stump positions are shown in the Online Calculator in the website.

- 6. Use 14g Hextek screws "J" provided, for all stump connections including stump tops to "D" bearers. I.e.:
  - Use min. of 4 teks to fix stump base to tube. (1 in each side of the base)
  - 12 teks to fix stump top to tube. (This may be on 3 sides of the top if needed)
  - 6 teks to fix stump top "fin" plates to "D" bearers.
- 7. Allow Bearers to sit on top of the 2 plastic plugs on top of the stump caps. Do NOT remove these plugs. All loads are carried by the 14g Tek screws ("J"), NOT from direct bearing of the bearers onto the stump caps. This small gap between the caps and the bearers created by the plugs, also helps prevent retention of moisture between the members.
- 8. Stump bases have drain holes in the 4 corners. Do not block or seal off these holes. They allow stumps to drain, air and breathe.



Set-out stumps and footing positions.



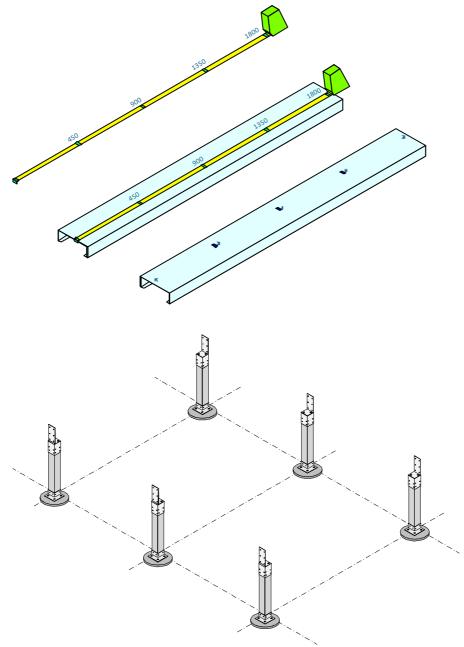
Dig and pour footings, with their tops level and approx. 50mm above finished ground height to drain surface water away from metal stumps.

## **Panel Preparation:**

- Set-up and prepare safe and clean work area and prepare tools and equipment.
- Best to clean the outer web face of the bearer sections "E" of any rolling oil residue. (Give them a light hose and dry with an old towel or similar). This is so you can easily mark out joist positions on them.

## Set-out bearers for joist connector brackets:

- 1. Mark joist positions along the outer web face of both bearer sections "E" at 450 mm spaces for each Panel (from face of one joist to the same face of the next joist) with a measuring tape from one end (same end) of each section "E", with a felt marking pen.
- Set out at positions at 450, 900, 1350, 1800mm and so on, from the end of each section "E" to keep the positions accurate and constant. This also prevents measurements form "creeping".



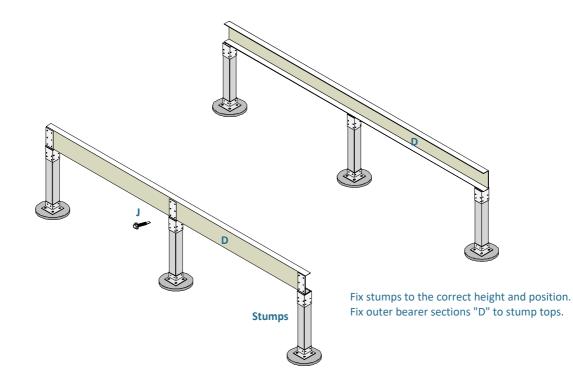
2. Set-out stump positions on level footings, with the centres of stumps ~ 50mm in from the perimeter of the deck frame size to allow for the size of the stump fittings, which are bigger than the 90mm stump tube.

 Apply corrosion protection paint to the face of any channel member connected, abutting or interlocking (nesting) to any other member or wall or surface. Also coat cut ends of all members and the tops of joists where decking or sheeting is to be fixed.



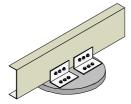
## Install "D" bearer sections to stumps.

1. Temporarily brace frame during assembly and check all dimensions. Be sure the frame is level, plumb, straight and square.



## Fixing very low deck frames.

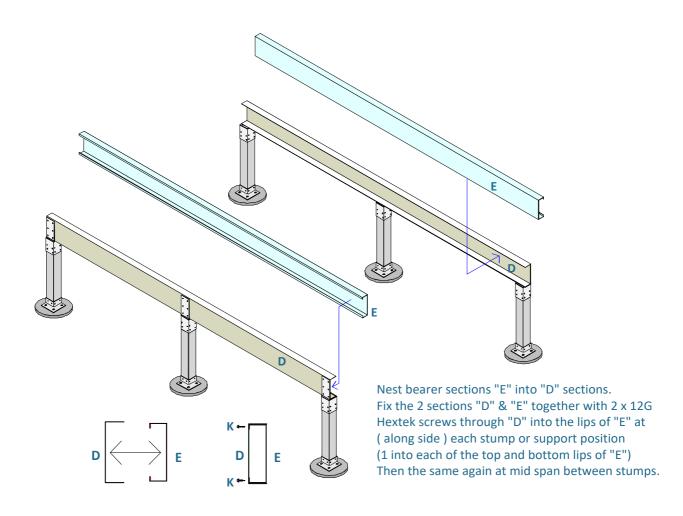
• Frames can be fixed very low to finished ground by using "H" brackets if permitted by your local Council and or certifier. Always fully coat the whole frame with a corrosion protection paint and allow the frame to air, breathe and drain. It should be able to be easily inspected and maintained regularly.



Securely fix bearers to tops of footings with 2 / "H" brackets supplied per connection. Mound tops of footings to reduce height below bearers and drain surface water.

#### Page.5

- 2. Form "boxed-beam" bearers by nesting (interlocking) sections "E" into "D" sections, so that the vertical webs sides of both members are facing out in a box form.
- Screw both sections together with "K" screws through "D" into the lips of "E" as noted below.

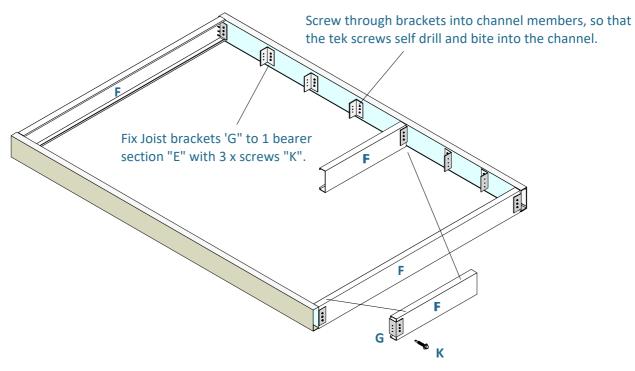


• Nested "Boxed-beam" bearers allow tops of the in-plane joists to finish flush and level with the tops of the bearers.

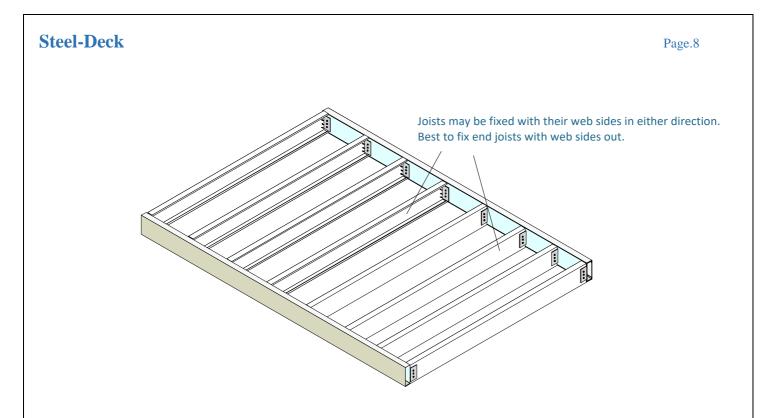
This provides a smooth platform for fixing decking or sheet flooring, with no bumps or obstructions in the floor.

• Slight falls over the width of the frame, needed for some decks, can be achieved by the tolerances allowed in the joist connector brackets, which permit the joists to be connected to the bearers at a slight angle.

- 3. Fix joist connector brackets "G" (for 185mm joists) or "H" (for 235mm joists) to <u>one</u> "E" bearer only to take joists, and also to <u>one end</u> only of the joists.
- This allows for easy manoeuvring and positioning of joists during assembly.
- It also allows for some width adjustment of the Panel, (in the joist direction) if needed, as the brackets fixed to the bearer end will allow for some degree of expansion and compression to suit variations and conditions on site. The brackets will bridge any subsequent gap between the ends of the joists and the inside face of the bearer up to about 30mm. (If more is needed, also adjust the brackets fixed to the ends of the joists)
- Fix tops of brackets approximately 25mm down from the top of the bearers. This is not a critical dimension, but it positions the brackets about mid height of the joists for easy fixing and adjustment.
- Brackets can be fixed to the bearer either side of the joist's web. However; consider fixing them so they are concealed within the joist's profile for aesthetics, especially on high decks, where the frame is seen from below.



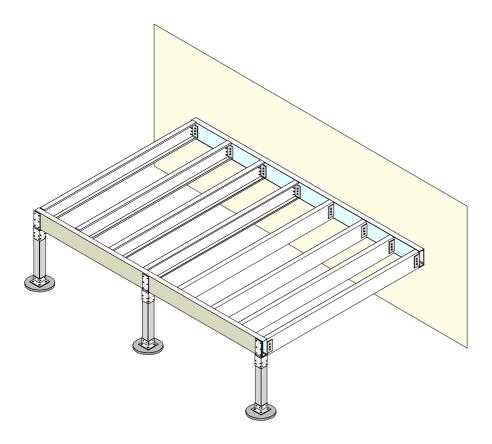
Fix Joist brackets 'G" to 1 end of joists "F" with 3 x screws "K".



*Steel-Deck* Panels can be supported on the optional steel stumps, or by new or existing posts or piers, as well as connected to other structurally sound buildings, walls or framing.

*Steel-Deck* standard deck Panels may also be used as light commercial mezzanines, up to 3.0 kPa live loads for offices and light storage.

• We also offer a free design service for mezzanines up to 5.0 kPa and heavier storage loads.



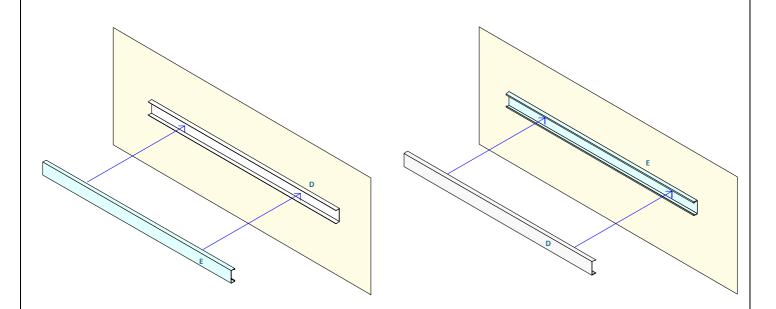
• Example above, of a *Steel-Deck* frame fixed to a wall one side and stumps supporting the outside bearer.

Bearers may be fixed to new or existing structural walls or frames, as ledgers. (See diagram below) This can be done by:

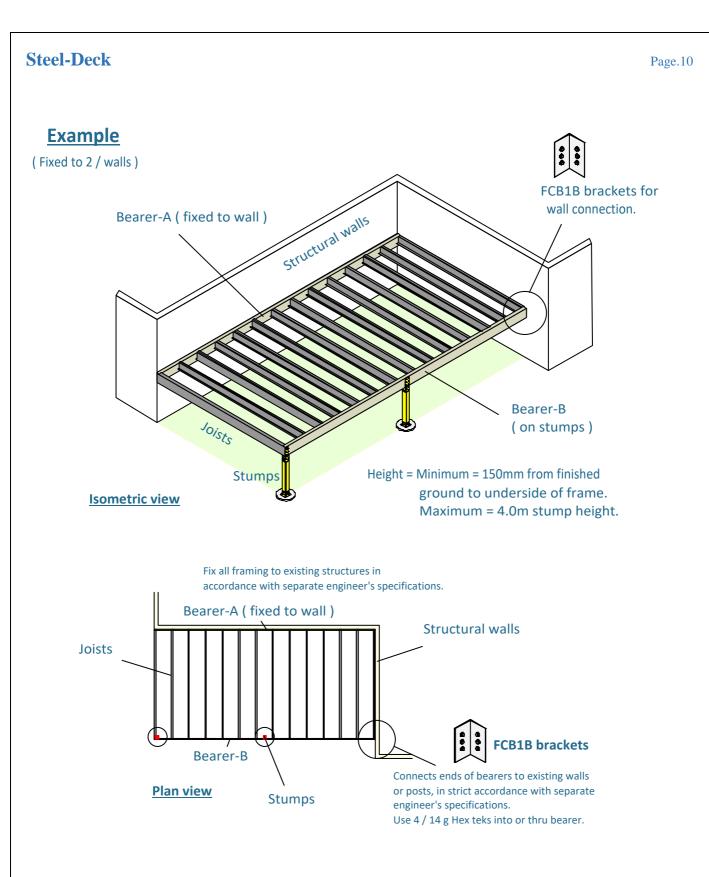
1. Fixing the "D" section to the wall first, and nesting the "E" section into it.

Or:

- 2. Fix the "E" section to the wall as the ledger, then use the "D" section as a cover.
- This is preferable as it allows the 2 members to be screw fixed together through the face of the "D" section into the lips of the "E" section, rather than through the top and bottom flanges of the sections.

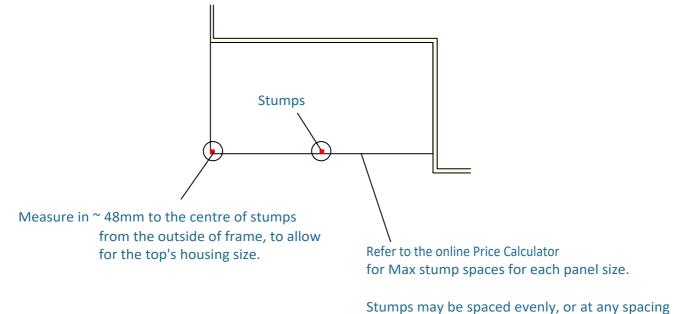


<u>For technical support</u>: Call or text 0457 821 952 Monday to Friday 8.0 am to 4.30 pm. (Eastern Standard Time only). Email: <u>designs@steeldecks.com.au</u> any time. Or check the website <u>www.steeldecks.com.au</u> for info.

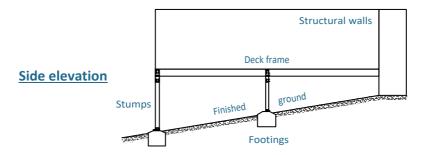


up to the Maximum shown in the Calculator.





1. Install footings as per your separate engineer's or qualified building professional's design specification. Create a flat and level bearing pad on top of the footings to fix the stump bases to.



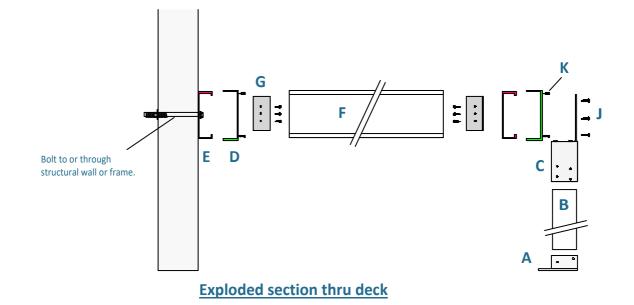
Finish tops of footings approx. 50mm above finished ground level to drain surface water away from the stumps and to prevent ponding.

2. Set out stump positions and fix stump bases to, or into, footings as per the method specified by your footing designer.

## Sections through a deck fixed to a structural wall.

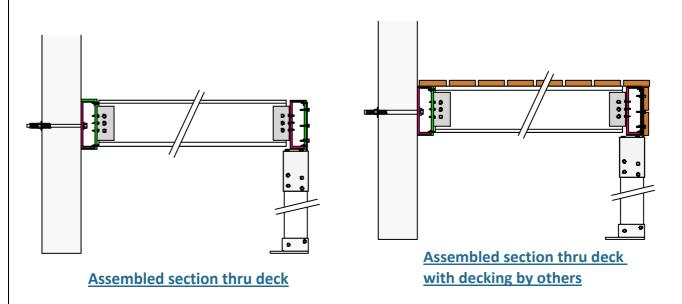
Sections below show stumps supporting outer boxed-beam bearers and joists connected to the face of bearers with angle brackets, so that the tops of bearers and joists finish smooth, level and flush.

The inner side deck bearer is fixed to a wall by using the "E" section as a ledger, with the "D" section covering it, allowing the joists to be connected to the web of the "D" section.





Picture showing "E" section fixed to structural wall as a ledger plate, ready for "D" to be fixed to it with "K" Teks through "D" into the T & B lips of "E". This forms a boxed-beam, to fix joists "F" to with "G" brackets, using "k" Teks.



## **Gallery**



Stump base



Base painted with Ormonoid Silvershield.



Stump base, tube & top.



Stump "Pack". Base, Top & screws



Stump tube. Cut from 8.0m stock lengths supplied.



Ormonoide Silvershield protection paint



Standard "edge-top" and "centre-top", used where Panels join.



12 & 14 G Teks



8mm & 10mm Tek driver sockets



Tek driver example available from Bunnings.



"G" & "H" brackets, with "K" screws.



"D" & "E" bearer sections, ready to form a "boxed-bearer".



Set-out "E" for joist brackets @ 450 c/c. Place a cross "X" on the side the joist will go.



Fix brackets about mid height of bearer.



"D" bearer section ready to be fixed to "C" with "J" Teks.



HINT.

Use a joist bracket, as a square (held against the bearer's edge) to draw a vertical line.



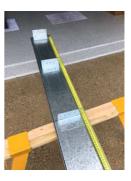
"G" bracket ready to be fixed to "E" with "K" Teks.



"G" brackets fixed to "E" bearer section. Can be done prior to assembly on stumps, or after.



"D" bearer section sits on top of plastic plugs. All loads are carried by "J" Teks; NOT by direct bearing onto "C" top plate.



"G" or "H" brackets fixed @ 450 c/c to "E".



"D" bearer section ready to be fixed to "C" with "J" Teks.



"D" is fixed to "E" with "K" Teks thru "D" into the top & bot. lips of "E".



"D" & "E" ready to be nested (interlocked) together, ("E" into "D") to form a "boxed-bearer"



"Boxed-bearer" sitting on stump top "C".



"Boxed-bearer"





Back-to-back "boxed-bearers" on "Centre-top" stump cap.



Joist "F" fixed to bearer section "E" with "G" bracket.



Tops of joists finish smooth, flush & level with tops of bearers.



Joists fixed to "boxed-bearer".

