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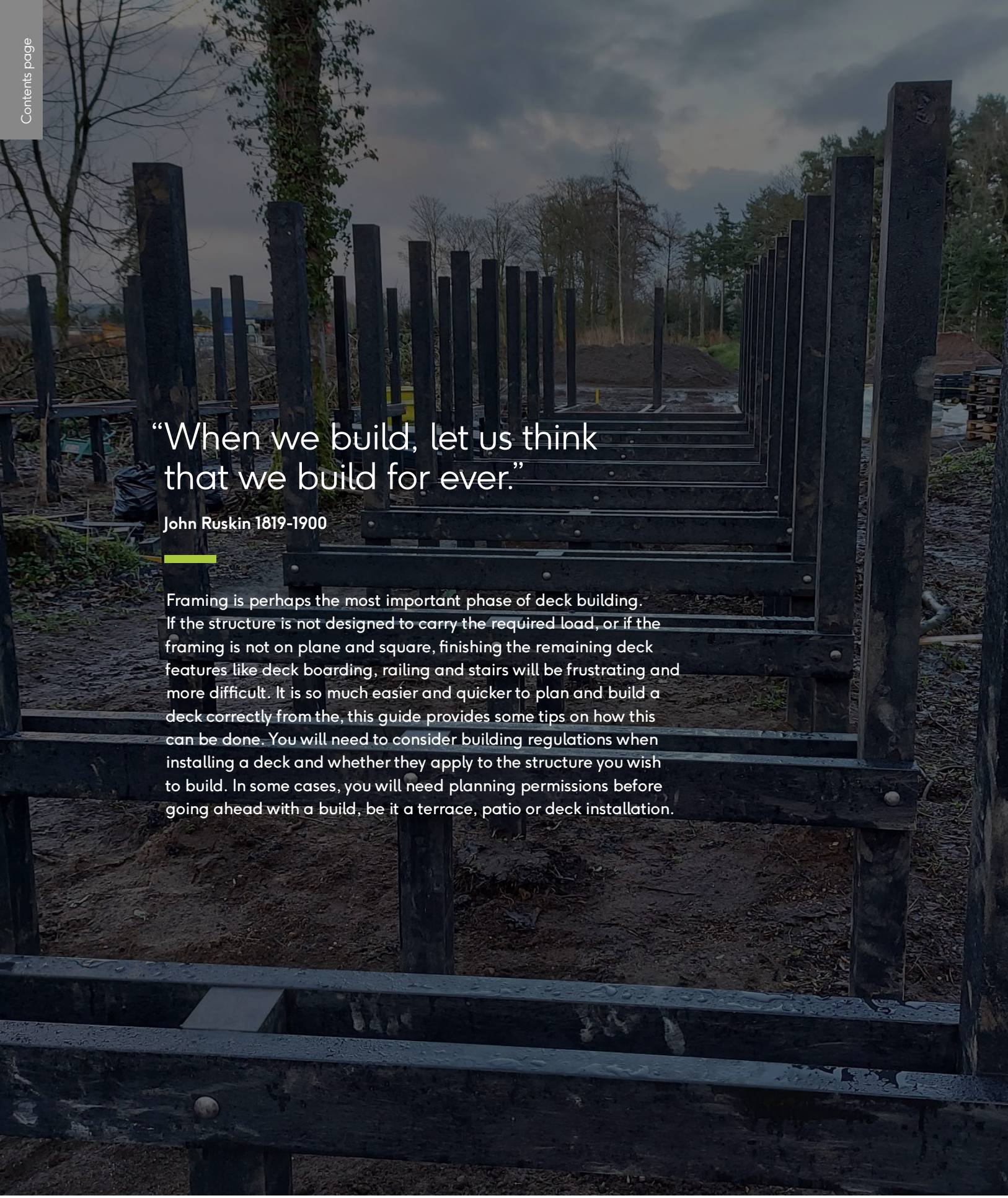
Installation guide for **Plas-Pro recycled plastic deck subframe**

Condensed version

EN - UK



"When we build, let us think that we build for ever."

John Ruskin 1819-1900

Framing is perhaps the most important phase of deck building. If the structure is not designed to carry the required load, or if the framing is not on plane and square, finishing the remaining deck features like deck boarding, railing and stairs will be frustrating and more difficult. It is so much easier and quicker to plan and build a deck correctly from the, this guide provides some tips on how this can be done. You will need to consider building regulations when installing a deck and whether they apply to the structure you wish to build. In some cases, you will need planning permissions before going ahead with a build, be it a terrace, patio or deck installation.

Contents page

Easily find your way around the Plas-Pro recycled plastic deck subframe installation guide

Plas-Pro properties and uses

What is Plas-Pro?

Plas-Pro is made from 100% recycled plastic. Using selected graded materials and cleverly engineered processes

Why Plas-Pro?

Plas-Pro not only brings key environmental benefits, but the assurance of **superior quality performance**. Being **impervious to water ingress** Plas-Pro will not rot, swell or split like wood, making it particularly suitable around water and damp environments such as jetty's, fishing platforms, roof terraces and boardwalks - ensuring a maintenance-free solution.

Are there any maintenance requirements?

No

Is Plas-Pro easy to construct with?

Yes, it is. Using the same principals you would use when constructing a timber subframe, but with some specific product characteristics to bear in mind. By following the instructions in this installation manual, you will have all the information you will require to build a correct long-lasting deck subframe.

Can Plas-Pro be used in water or by the sea?

Yes, Plas-Pro can be installed directly in both fresh and salt water without any detrimental long-term effects to the product.

What is the maximum height deck I can support using the Plas-Pro posts?

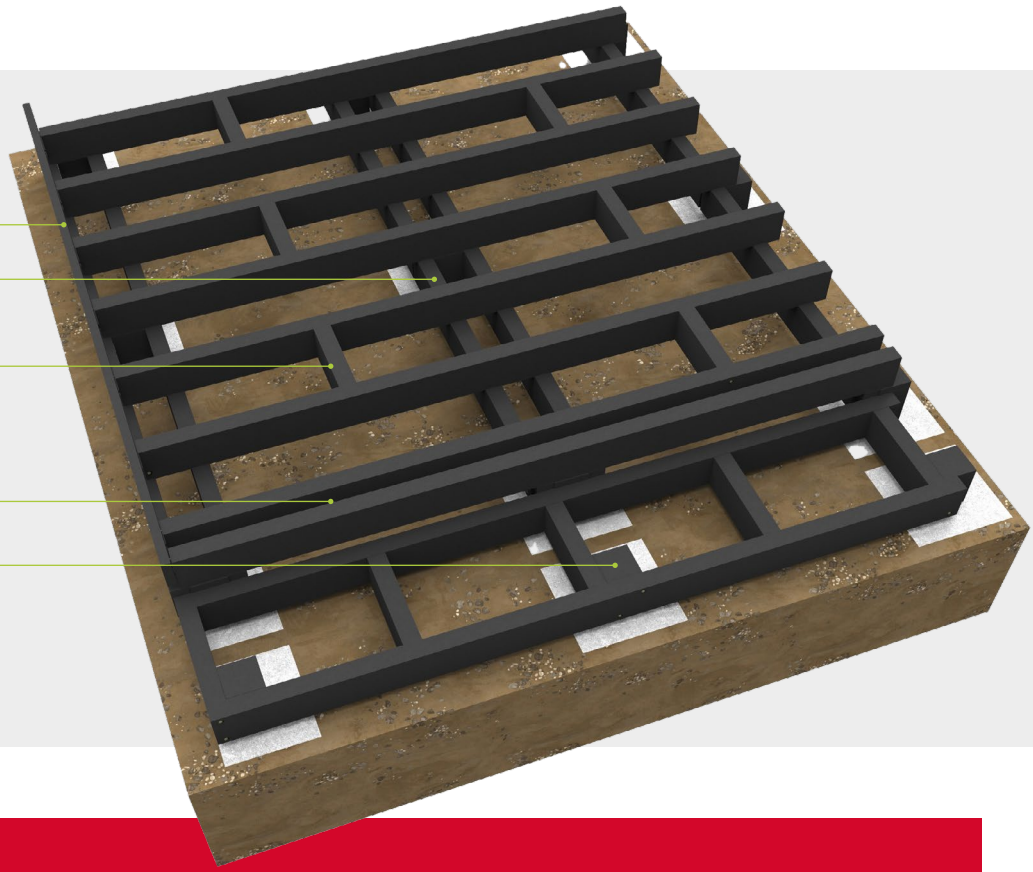
The Plas-Pro 100x100mm posts can be safely support an elevated deck up to 2000mm out of the ground with 1000mm deep concrete footing.

Note:

The techniques shown in this guide should be used to achieve the best results. Results may vary because expansion and contraction will occur and will have to be taken into consideration. Millboard have taken every endeavour to make installers and end users aware of the characteristics of Plas-Pro and its use and claims no liability or responsibility for the improper installation of this product. Since all installations are unique, it is the sole responsibility of the installer to determine the specific requirements regarding each decking application. Millboard recommends that all designs be reviewed by a licensed architect, engineer or local building official before installation. Please contact Millboard Customer Service prior to installing if you have any question or concerns.

Recommended construction method (over soil/dirt substrates)

Millboard endorse the general method of construction that the TDCA (Timber Decking & Cladding association) recommend. This is usually a Joist on Beam/Bearer type of construction fixed to posts concreted into the ground, this is the most sturdy and accurate way of building a deck frame. Millboards Plas-Pro systems are based on and tested to this method.



Warning

This guide has been formulated for the design and construction of Millboard's specially formulated Plas-Pro recycled plastic subframe system, material and profile sizes only. Millboard take no responsibility for the results of installers/distributors applying or recommending these construction methods on profiles, sizes and material other than what is described in this installation guide.

Millboard does not provide direction on making all types of connections. Specific details for critical connections not shown should be designed by a professional engineer under the consultation of Millboard.

Site conditions may not always make it possible to build in the 'normal' recommended way, this manual provides the base principals and solutions for most common situations. There are also short videos available on the Millboard website and the technical team are available on 02476 43 99 43

Load bearing assumptions

Fascia Support
(100 x 25 x 3000mm)

Joist/Beam
(125 x 50 x 3000mm)

The guidance in this document provides for a uniformly distributed load of 1.5 kN/m² and concentrated load of 0.9 kN for the main deck platform and its support. The Timber Decking & Cladding Association recommends that this is the **minimum** standard that should be used for a raised timber deck on an individual residential property.

Minimal commercial Loading

Shared access decks

When decks or boardwalks provide shared access to a number of properties, commercial load bearing capabilities shall be applied to the design i.e. the uniformly distributed load assumption is a **maximum of 4.0kN/m²** with a single concentrated load of 1.4kN.

Column/post spacing

The correct spacing of support columns is determined by a combination of:

a. the area of the deck to be supported
b. beam position and frequency
c. the dimension of the beam
d. the nature of the ground and the 1.5 kN/ m² or 4kN/ m² loading of the deck.

Roof terrace loading

The same load requirements apply for roof terraces, but with a warm roof construction the surface usually has a certain amount of compressive flex and therefore a roof terrace will experience more movement underfoot than a ground level deck. When decks are constructed on a roof, consideration has to be given to the location of large or heavy planter, furniture or artworks/sculptures. Extra support should be incorporated to carry these items. **It is important to understand that warm roof insulation loading calculations are calculated at around 10% compression which is a considerably noticeable amount of movement. Failure to understand and account for this in the design and construction could lead to permanent damage and deformation of the deck and subframe for which Millboard will not be held responsible for.**

Batten
(60 x 30 x 2800mm)

Small Joist
(50 x 50 x 2400mm)

Post
(100 x 100 x 3000mm)

Easy to install
Can be cut and installed easily when following product guides.

Recycled materials
Plas-Pro is Millboard's premium 100% recycled subframe material and can be used alone or as part of our DuoSpan aluminium subframe system.

Ideal for damp areas
Due to Plas-Pro's composition, it is perfectly suited to spaces exposed to damp, such as jetties, pools, roof terraces and boardwalks.

Does not rot
This all-weather, durable and flexible material is a non-rotting alternative to timber.

Profiles and accessories

Product	Dimensions (HxWxL)	Weight	Colour	Product Code
Post	100 x 100 x 3000mm	27.9kg	Black	P1010B300
Joist/Beam	125 x 50 x 3000mm	20.9kg	Black	P1205B300
Small Joist	50 x 50 x 2400mm	5.6kg	Black	P0505B240
Batten	30 x 60 x 2800mm	4.7kg	Grey	P0603H280
Fascia Support	100 x 25 x 3000mm	8kg	Black	P0210B300

P1010B300: 100 x 100 x 3000mm, Plas-Pro, Post

P1205B300: 125 x 50 x 3000mm, Plas-Pro, Joist/Beam

P0505B240: 50 x 50 x 2400mm, Plas-Pro, Small Joist

P0603H280: 60 x 30 x 2800mm, Plas-Pro, Batten

P0210B300: 100 x 25 x 3000mm, Plas-Pro, Fascia Support

Framework fixings

FH90P050: 6.3 x 90mm Hex head Framing Screws
Box of 50: inc free 8mm Hex Drive.

FD25P100: 5.0 x 25mm PZ2 Stainless steel Pan head Plas-Pro screw. Box of 100. For attaching DuoLift locking tabs to joists.

Other accessories occasionally required but not supplied by Millboard

M10 galvanised coach bolts
Various length requirements.
For bolting beams to posts.

M10 Stainless-steel coach bolts
Various length requirements.
For bolting beams to posts in saltwater applications.

Safety

When working on any construction project, you should wear the appropriate protective clothing and safety equipment. We recommend that you wear gloves when handling Plas-Pro and wear safety glasses and hearing protection whilst cutting/ drilling the profiles.

Plas-Pro is made from 100% recycled plastic and can produce dust particles when it is cut with a mitre saw, attach a dust extractor to your saw to collect as much debris as possible. The shavings don't rot over time and can be difficult to collect over landscaping areas (mud, grass) therefore it's advisable to put a sheet down to collect any waste.

Plas-Pro can be heavy so care should be taken when lifting.

Clamps are advisable for holding pieces together while working with them.

Safety glasses

Safety gloves

Ear defenders

Tools

1. Mitre saw and extendable supports
2. Plunge saw with track
3. Tape measure
4. Cordless drill
5. Hand saw
6. Spade
7. Spirit level
8. Plastic line level
9. String line
10. Hammer
11. Speed square or combination square
12. Speed clamps
13. Edding 780 paint marker pen (Extra fine white)
14. Long drill bit (6mm)
15. Spade bit (16/20mm)
16. HSS drill bit (8mm)

Material characteristics

1. Slight differences in relation to colour, texture, temperature, and dimensional variations are possible within +/- 3%

2. Profiles may exhibit length variations of +/- 1.5% due to temperature fluctuations. *As a rough calculation an unfixed profile moves at around 0.19mm per meter, per 1°c. Eg: temperature range of 1°c - 20°c (19°c) variance) 1x 3m length = up to 10.8mm expansion.*

When considering the construction of a Plas-Pro subframe, always bear in mind the linear thermal movement of the profiles (shown in fig.1)

Consider how this thermal movement could influence the decking fixed on top. This point should be especially factored in when building a curved frame or incorporating a border deck board.

Top Tip:

Use shorter lengths of Plas-Pro for the outer rim joists.

Half the length = Half the movement = Half the strain on fixings and deck board joints

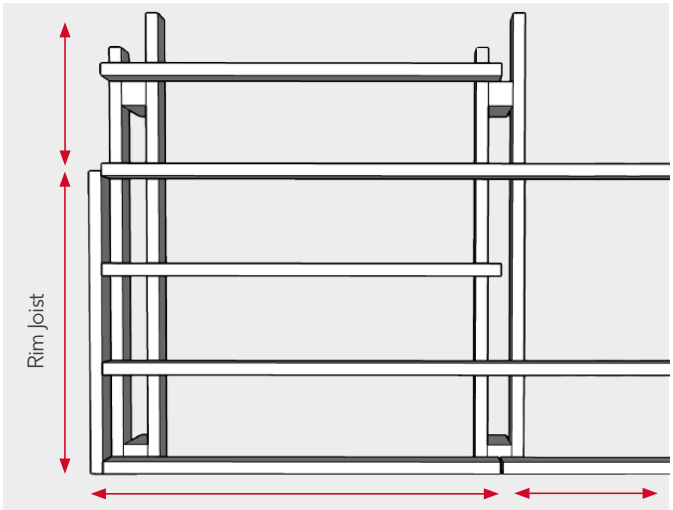


Fig. 1 - Linear thermal movement

3. The point at which the Plas-Pro is most susceptible to movement is when it is being constructed and exposed to the sun's rays.

4. To help avoid material deformation, do not store in the sun or on uneven ground. Direct sunlight can cause the lengths to bow. If a profile does become deformed, turn it over in the sun to heat the opposite side and it will straighten.

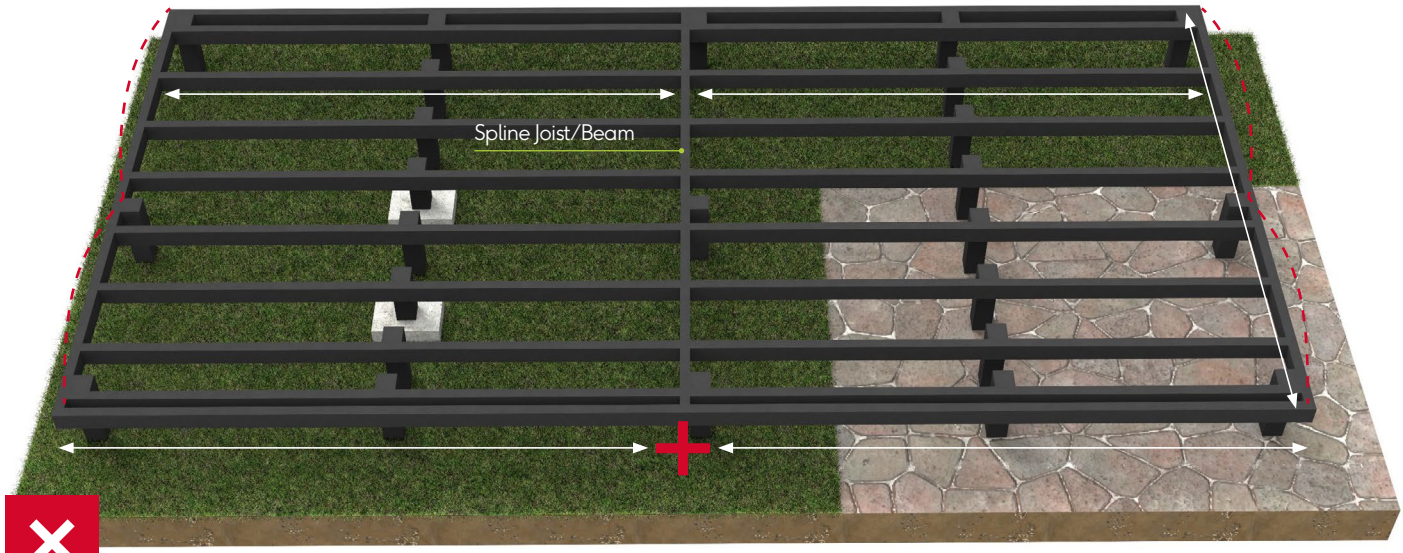
5. Plas-Pro has a closed cell surface. The core may have a honeycomb structure, which becomes visible during machining. The main strength in the product is in 10-15mm of the outer shell. **(see page 20)**

6. Plas-Pro is best cut using a chop saw with carbide-tipped, multi-purpose ripping blades with fewer teeth. **(See tooling details on page 15)**

7. When fixing deck boards onto Plas-Pro, due to it being a denser material being fixed, this may cause the deck board to jack up. It may be necessary to drive the fixing in ¾ of the way, undo it to ½ of the way then fully fix to 5/6mm below the surface of the deck board, while always pressing the board down firmly.

8. If Plas-Pro is being used in cold weather, it will become harder and more brittle. When fixing two profiles together, in addition to drilling the 8mm relief hole in the first profile, a 5mm pilot hole may have to be bored in the secondary profile. **(see page 21)**

Understanding and incorporating material characteristics in design



Incorrect installation

Fig. 2 - Typical deck design often utilised in timber deck framing

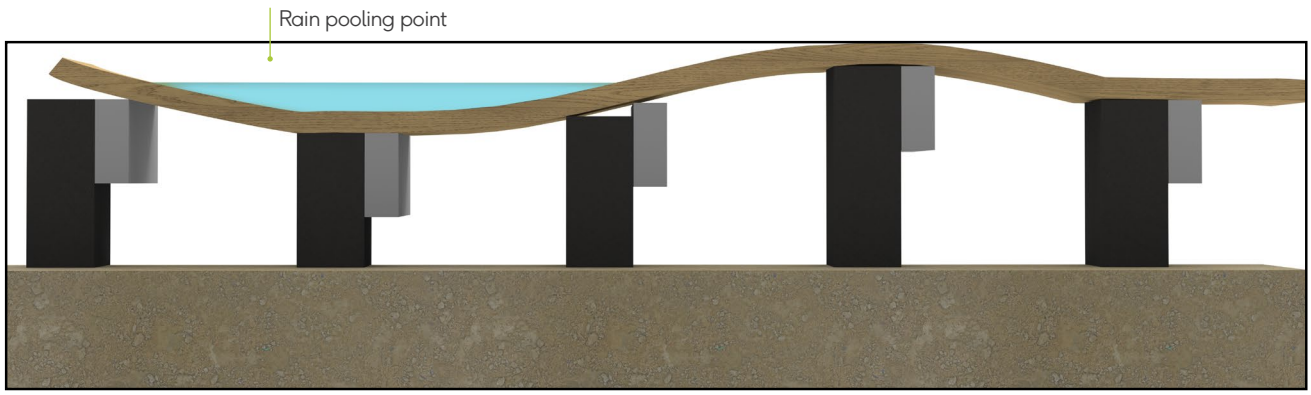


Fig. 3 - Uneven deck surface

Fig.2 shows a typical deck frame design often utilised in timber deck framing, with joists fixed to spline joists/ flush beams. This type of construction used with Plas-Pro recycled plastic can result in exponential expansion and contraction. The connection joints all finish fixed to the central spine with no gaps to allow for expansion.

With joist expansion, the outer rim joist (on left & right) will become distorted and tend to bulge outwards (red dashed lines) between the posts in the warmer months.

The front double joists with a border board fixed to them will expand in summer putting pressure on the deck board mitre joints, potentially resulting in mitre joints pulling apart and deck board butt joints along the front and back edge opening and closing seasonally.

The other main issue here is the use of individual posts on each joist. This often results in uneven, variable joist heights and local ground movement often results in an uneven deck surface resulting in rain pooling on the decking (fig:3) This can occur even if the difference is only a few millimetres.

Required Decking falls

A deck should be laid to falls to aid water drainage. Generally a fall would run along a deck board and should be roughly 1:200 (1.5mm fall for every 300mm. This works out to a 3.6m deck dropping 18mm from the house to the edge of the deck.

The main concern is that in a wet environment with little evaporation, water sitting on the decking attracts dust and dirt, this sitting water and dirt mix will encourage algae growth.

For most decks, the little water that does not drain off the boards through the gaps will quickly evaporate.

There will be times when a fall may become undesirable from an aesthetics point of view. This is usually where there is a very long run of decking against brickwork which becomes noticeable or running along the front of Bifold doors where the deck level has been requested to match the internal floor level (fig 4).

Extreme care should be taken to make sure the subframe doesn't undulate in flat areas at all as even a 1-2mm dip will tend to result in surface puddling. The use of breaker boards or changing board direction can help and can be a good way of introducing a fall as shown below.

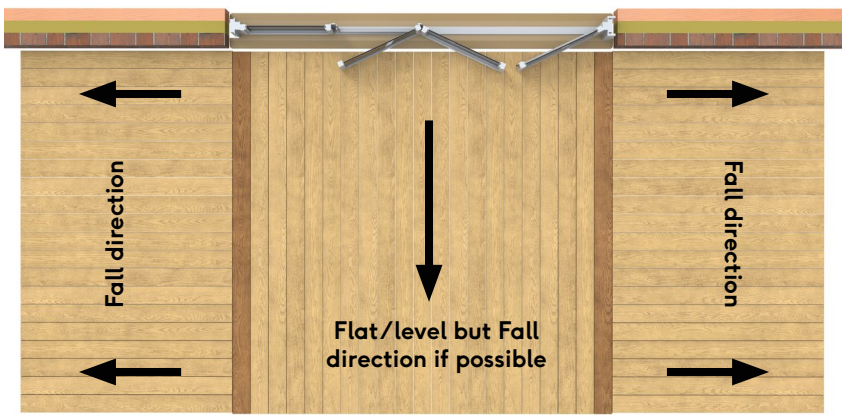


Fig. 4 - Fall direction for decking

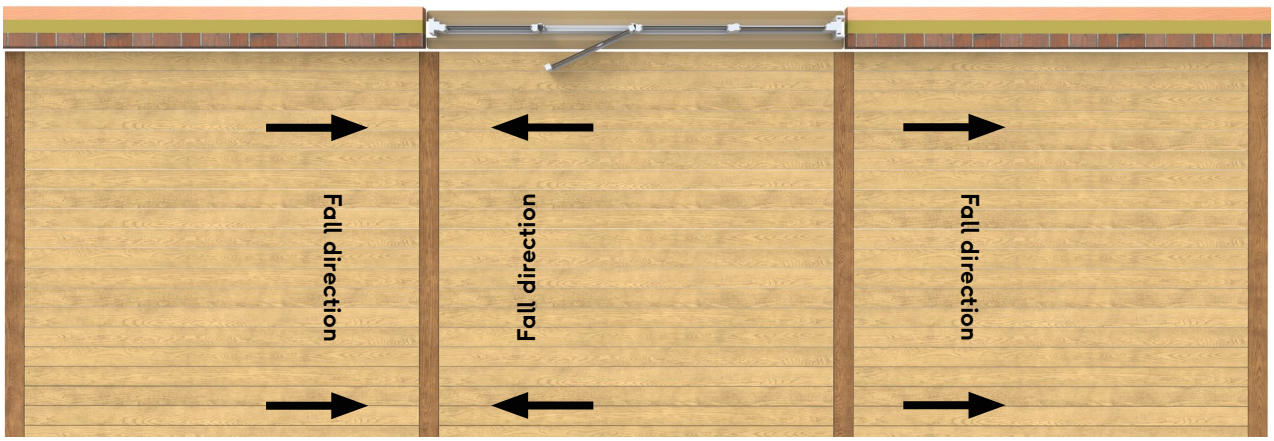


Fig. 5 - Fall direction for decking

Profile Spans and Spacings

Product	Usage type	Joist centres	Subframe install type			
			Joists, Beams and Posts over soil		DuoLift cradles over solid base	
			Joist span (mm)	Joist cantilever (mm)	Joist span (mm)	Joist cantilever (mm)
Plas-Pro 125x50mm Joists	Residential	400	1500	200	1000	150
	Commercial	300	1000	150	750	100
Plas-Pro 125x50mm Beams	Residential	400	1500	200		
	Commercial	300	1000	150		
Plas-Pro 50x50mm Joists	Residential	400			480	70
	Commercial	300			400	50

Fig. 6 - Plas-Pro with DuoLift over solid base

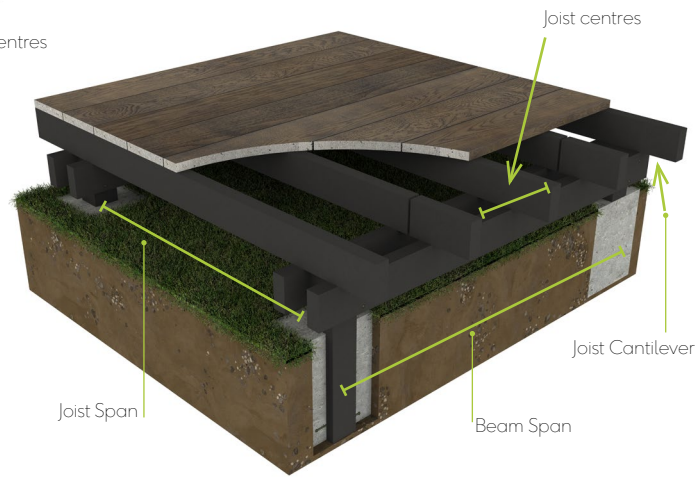


Fig. 7 - Joists, Beams and Posts over soil

Tooling details

In principle Plas-Pro can be treated like wood. All machining possible for wood are possible for Plas-Pro, such as drilling, sawing, milling and planing. The general rule is not to choose too high cutting speeds to prevent the material from heating, clogging and melting, a good extractor may help with chip removal and reduce waste build up around the blade.

In cold weather conditions Plas-Pro will be slightly stiffer and more brittle. Due to the chosen combination of materials however, the material will show a tough breaking behaviour up to at least 20 degrees below zero. In warm weather conditions the material tends to become slightly tougher and more flexible.

Drilling:
Use metal or wood bits, (HSS or HssCo type) spiral or speed bits both work well. Use a low cutting speed.

Sawing:
This can be done with a handsaw, circular saw or Mitre saw. Makita EFFICUT Composite saw blades cut Plas-Pro very well with a quick cut and less strain on machines. Saw Blade size range from 165–260mm Dia. Suitable for cordless machines.

Makita part numbers:

E-12142: 165mm Dia 24 tooth

E-12164: 185mm Dia. 24 tooth

E-12186: 190mm Dia. 50 tooth

E-12192: 216mm Dia. 60 tooth

E-12201: 260mm Dia. 75 tooth

Drilling slit holes:
Slit holes can be made by drilling a few 8mm holes next to each other and by removing the walls in between by moving the drilling bit and machine sideways (fig.8). Milling is faster using an 8mm drill rasp in soft materials like Plas-Pro.

8mm drill rasp bit

Fig 8: Drilling 8mm Slit holes

Recessing screw heads:
When Fascia boards are used to trim a deck or as risers on a step, the heads of the framing screws will need to be recessed into the Plas-Pro.
A 16-20mm flat/spade bit is most effective drill bit for this operation. See fig 9 below.

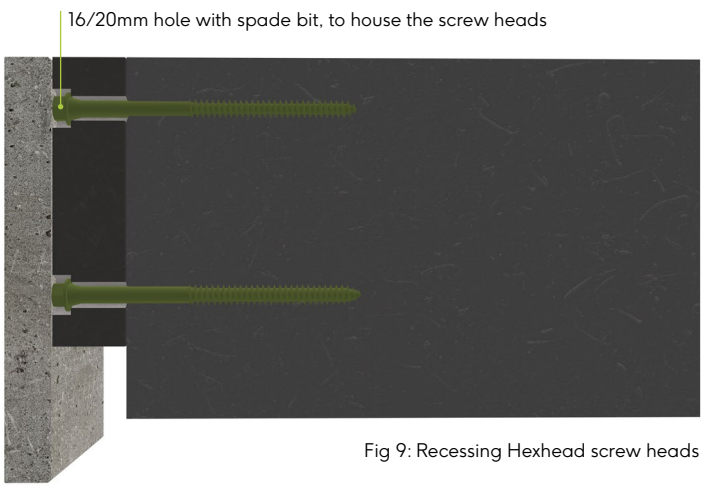
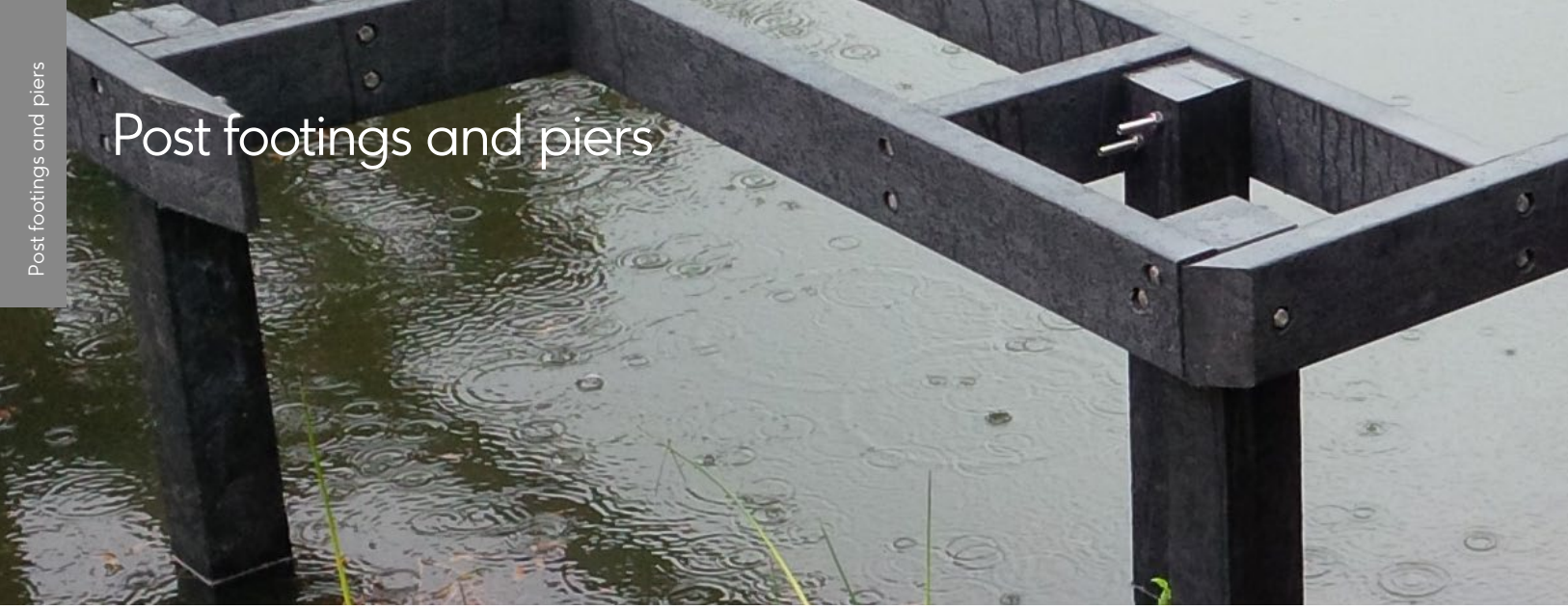


Fig 9: Recessing Hexhead screw heads

Post footings and piers



Building codes may stipulate the type or size of footings that are required for the specific project. Footings must reach below the frost line to prevent them from heaving when the ground freezes and wide or deep enough to carry the designed load. This may mean a footing has to be wider if the ground is soft to achieve the right load requirement.

Fig. 10 - Sway / Diagonal bracing

In-Ground posts

Plas-Pro posts can be set directly into a concrete footing, this creates a very stable post with good lateral stability making this the best option if creating curved or elevated decking. Plas-Pro posts can support a deck structure up to 2000m above ground level. It is strongly recommended that posts are diagonally braced when over 1000mm out of the ground (fig 10).

Set the post into the ground 1/3rd of the length protruding above ground (fig.11) or minimum of 400mm until undisturbed ground is reached. The posts' smooth surface resists concrete adhesion and can become loose in the set concrete. It is advisable to screw several 6.3x90mm HexHead screws into the bottom of the post (fig.12) before setting it into concrete to create a good hold. Sometimes on elevated decks it is advisable to temporarily brace the posts to/against each other as the frame is being built to resist the posts warping in the sun (fig13).

Post footings and piers (continued)

Hole size

Hole size depends on the load bearing capacity of the ground but normally a hole 300x300x400mm would be adequate for a ground level deck.It is the sole responsibility of the installer to excavate as required to achieve a sound footing. If in any doubt seek a structural engineers advice.

Mechanically rammed posts

Plas-Pro posts can be mechanically driven into the ground with the right equipment. Millboard recommend the depth a minimum of 1/3 - 1/2 the post height above ground but this depth will depend entirely on ground conditions and the professional judgment of the installer.

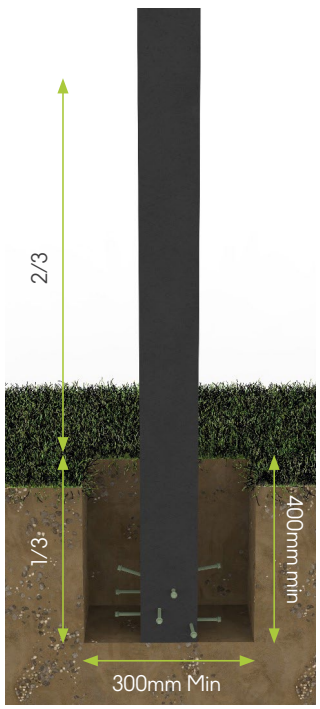


Fig. 11 - Post hole size

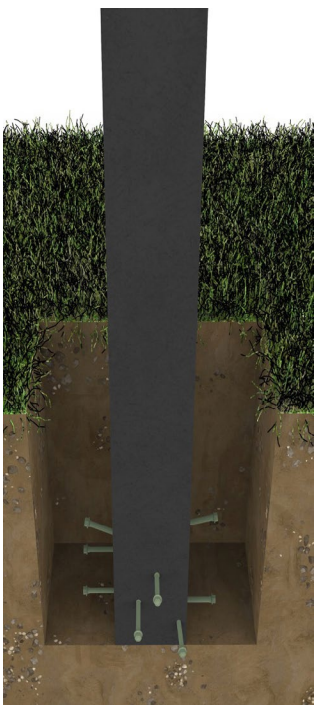


Fig. 12 - Plas-Pro frame screws in post

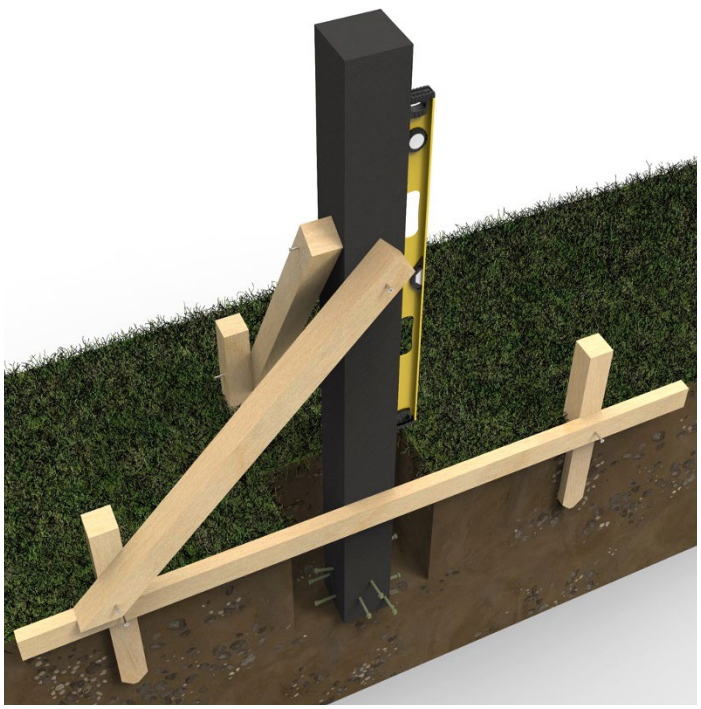


Fig. 13 - Temporary bracing

Post footings and piers (continued)

Piers

In some cases, a ground level deck subframe can be built on piers rather than posts. Piers can be built on site or purchased ready-made but still require a good concrete footing dug down to undisturbed soil, it is not a suitable option to bed the piers on grass/soil.

A simple pier could be a concrete block laid on a wet concrete footing set at the required height (fig.14) or purchase precast concrete piers (fig.15) bedded down into wet concrete or compacted crushed stone. Both designs will accept the beam sat on them directly or if elevation is required a post can be sat on them. Please bear in mind elevated decks built like this will require sway/diagonal bracing over 600mm high.

Fig. 15a - Pre-cast concrete pier

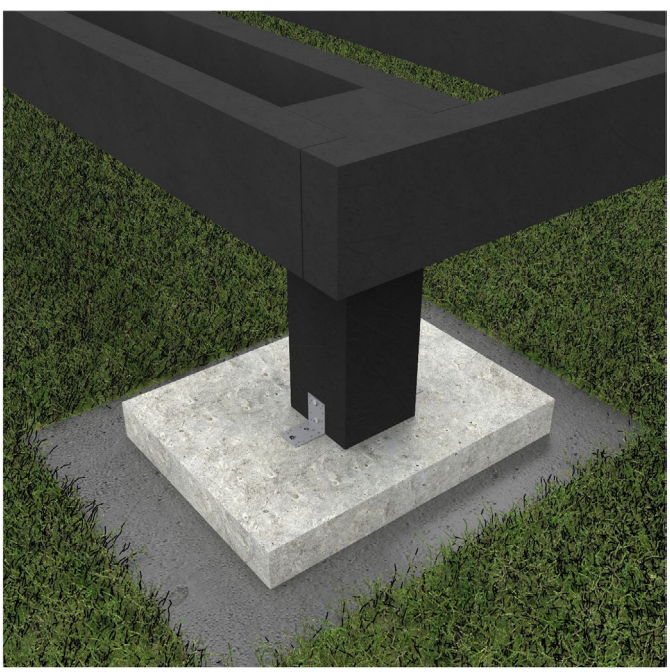


Fig. 14 - Simple pier concrete block

Fig. 15b - Pre-cast concrete pier

Deck board and subframe laying patterns

Standard Joist work

Unlimited designs can be incorporated into the deck finish, but consideration of the design of the deck should be made prior to starting the subframe installation.

Joists should be installed in a random pattern making sure the ends don't all meet and start on the same beam to create a more even movement pattern.

Noggins if needed should be installed in a broken line, on alternate joist spacings (fig: 16)

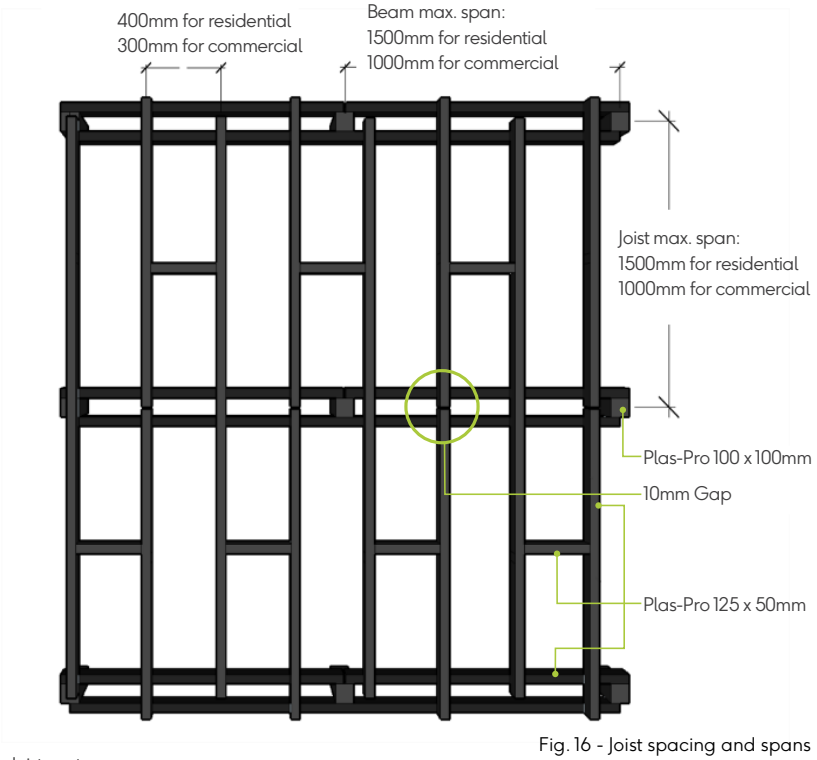


Fig. 16 - Joist spacing and spans

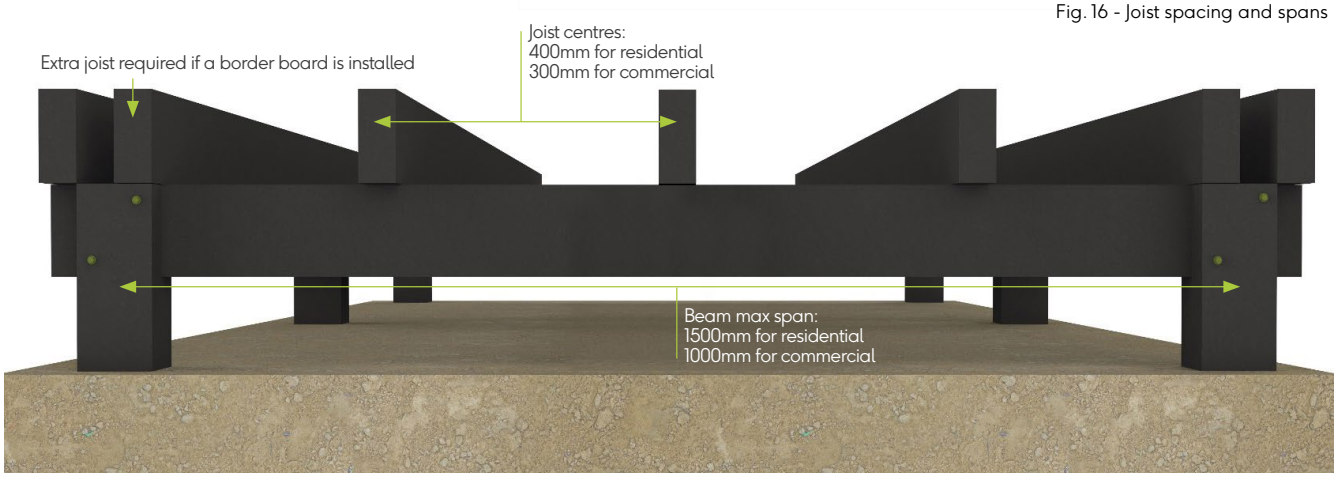


Fig. 17 - Joist spacing and spans

Fig. 17a - Joist spacing and spans

Beam to post connection options

Option 1

Fix the beams to a post by rebating the post so that the deck load is transferred directly down onto the post (fig 20/21) fix with 2x 6.3x90mm HexHead screws in pre-drilled 8mm holes.

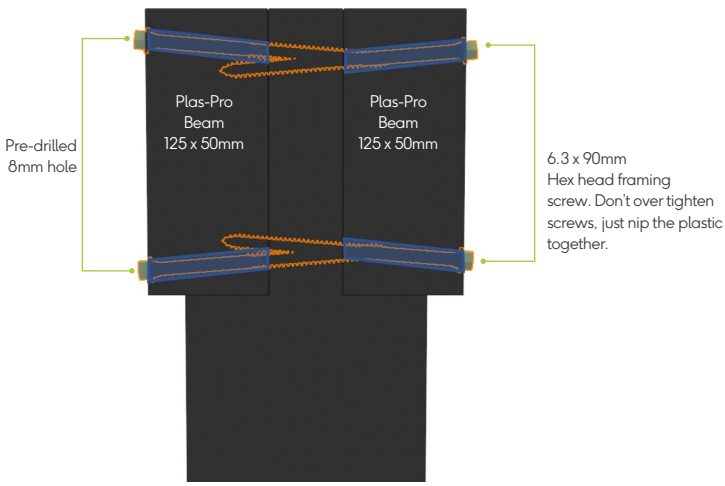


Fig 20: Fixing beams to a post by rebating.

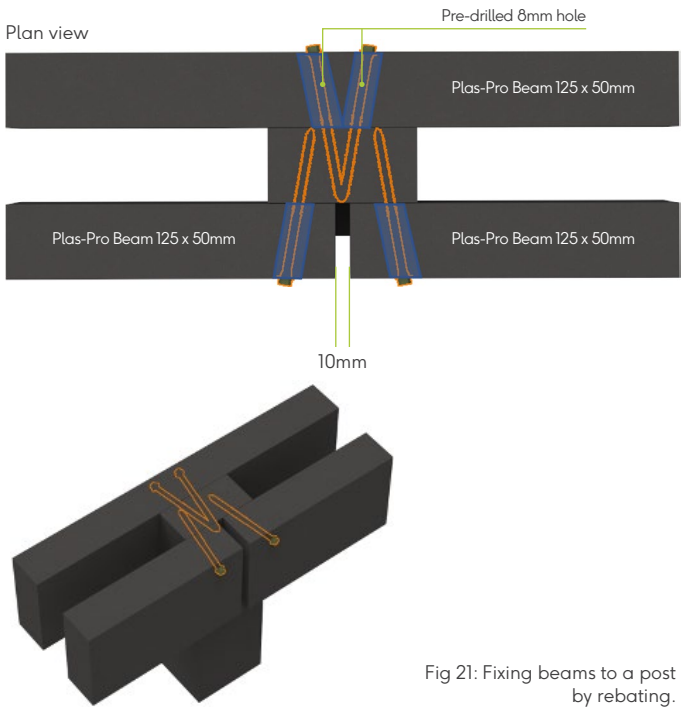


Fig 21: Fixing beams to a post by rebating.

Option 2

Fix the beams to the side of the post with 2x 6.3x90mm Hex head screws into pre-drilled 8mm slotted holes fig: 22/23. **see page 15** for slotting holes.

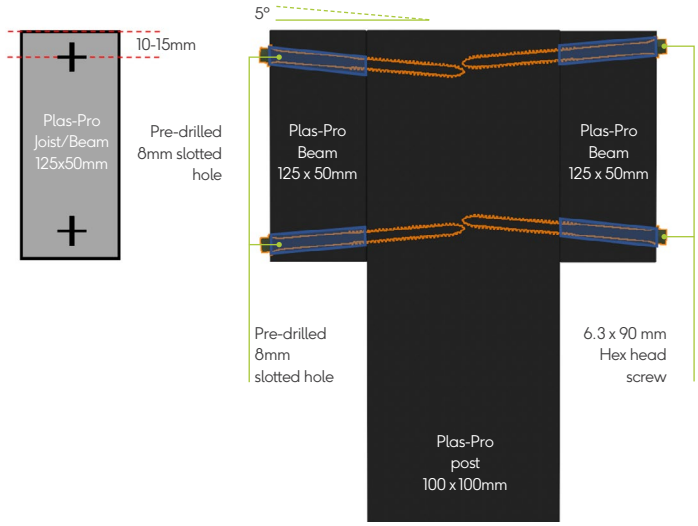


Fig 22: Fixing beams to the side of a post

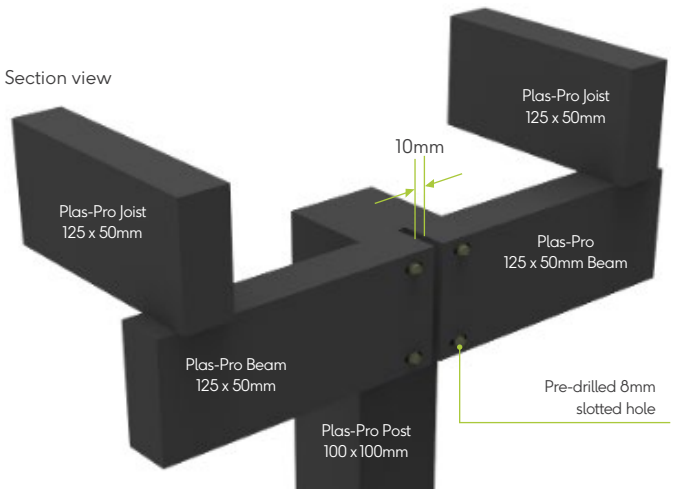


Fig 23: Fixing beams to the side of a post (8mm holes)

Note:

Beams must be joined on a post or support, they should not be joined mid-span between posts.

Bolts may be required for attaching the beams to posts in higher load applications.

Joist to beam connection

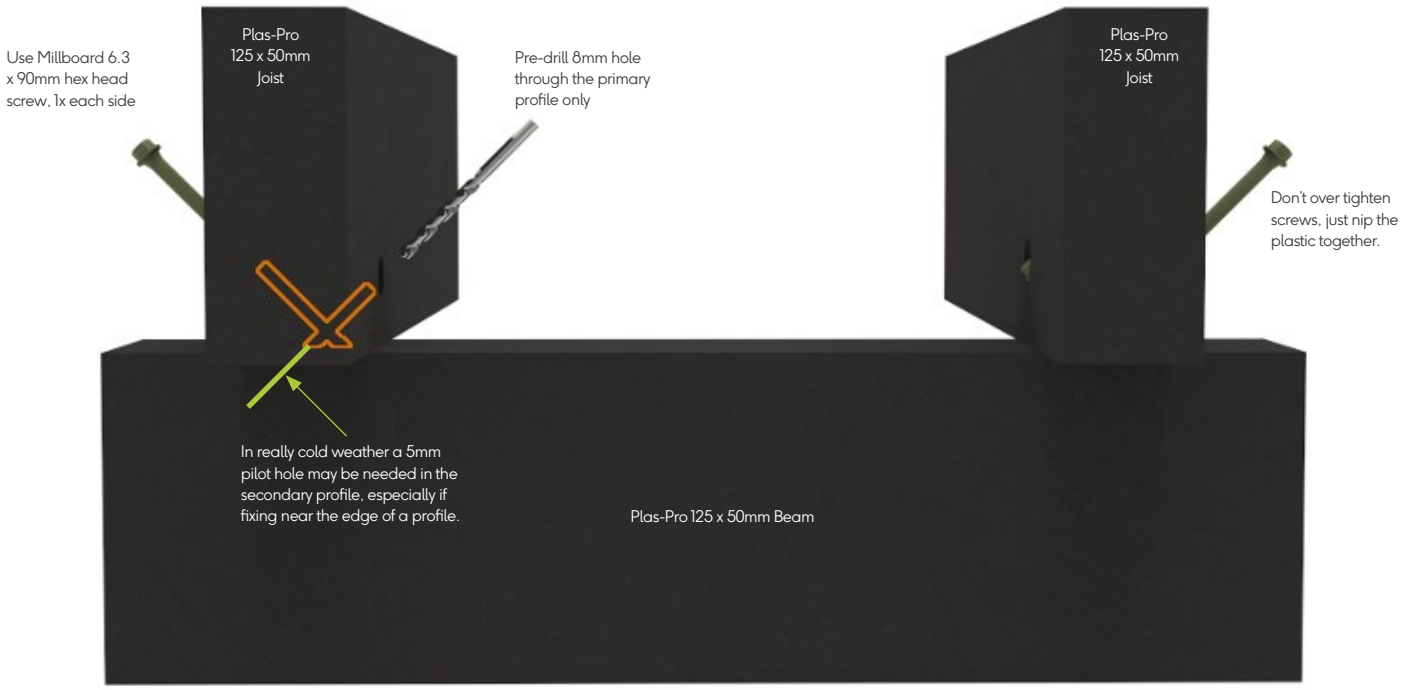


Fig 24: Joist to beam connection

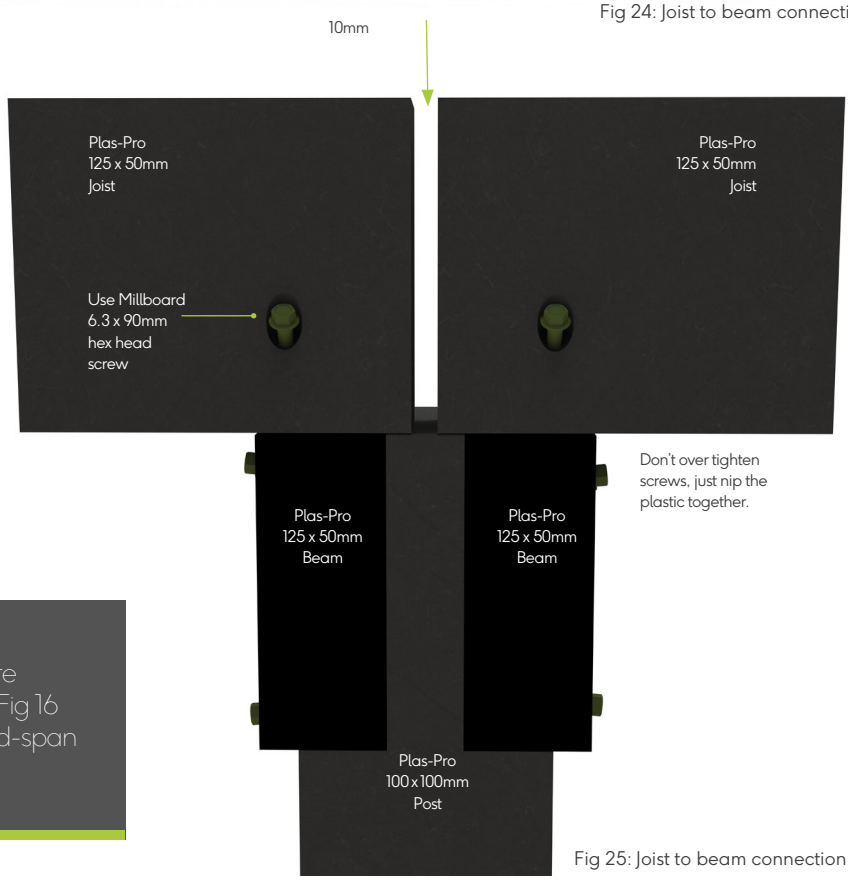


Fig 25: Joist to beam connection

Note:
Joists must be joined where they are supported by Beams as shown in Fig 16 & 25, they should not be joined mid-span between Beams or supports.

Noggins/blocking spacing and fixing

Noggin/ blocking pattern:

Install in a broken line, never run a continuous row of noggins as this can result in exponential thermal expansion/contraction causing frame deformation. Build blocking/noggins into the deck at mid span on alternate joist spacings. Fix each noggin with 2 x 6.3x90mm hex head screws per side. Pre-drilled holes don't need to be slotted.

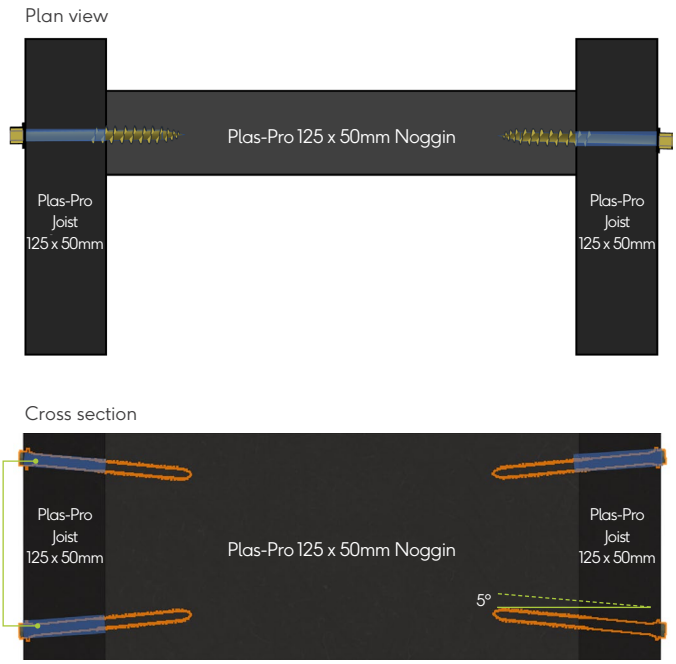


Fig 26

Fig 27

Elevated subframes

Construction process

a. Determine the levels of the area and the final finished deck level.

b. Set a laser level to the height of the finished beam level.

c. Mark out and dig post holes at the required spacing.

d. Check post length requirement in relation to ground levels also check plans for any extra heavy planters or machinery positions.

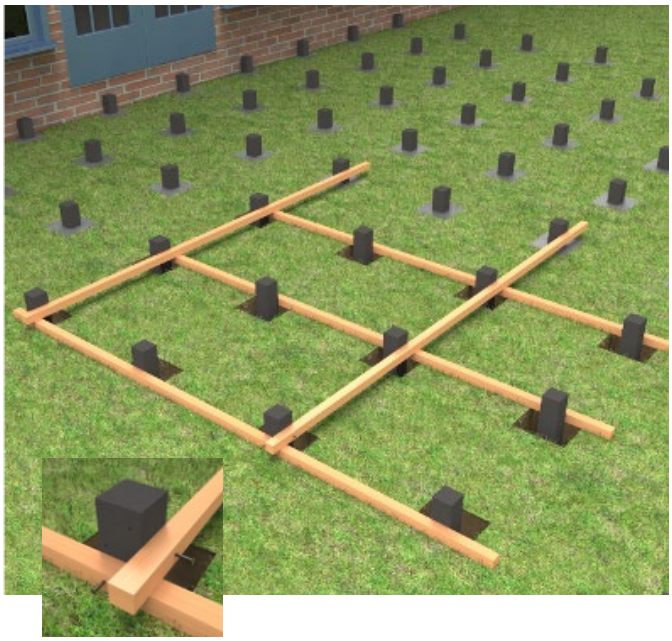
e. Cut posts to required lengths, screw in several frame screws into the base of each post to provide a key. **(see page 17)**

f. Working with 9-12 posts at a time use temporary battens to set the posts in line and at the right level.

g. Pour fast set concrete/postfix and wait while curing.

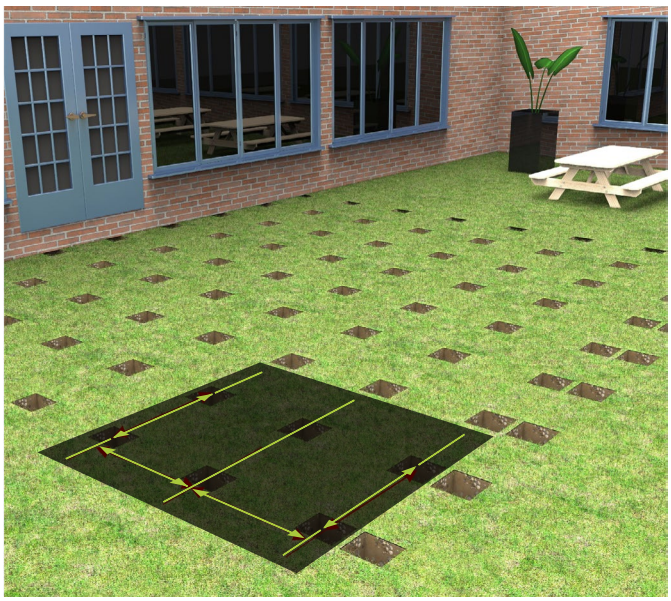
h. Pin weed barrier down to the ground if over areas of soil.

i. Optional: Add gravel over the weed barrier to hold it in place.

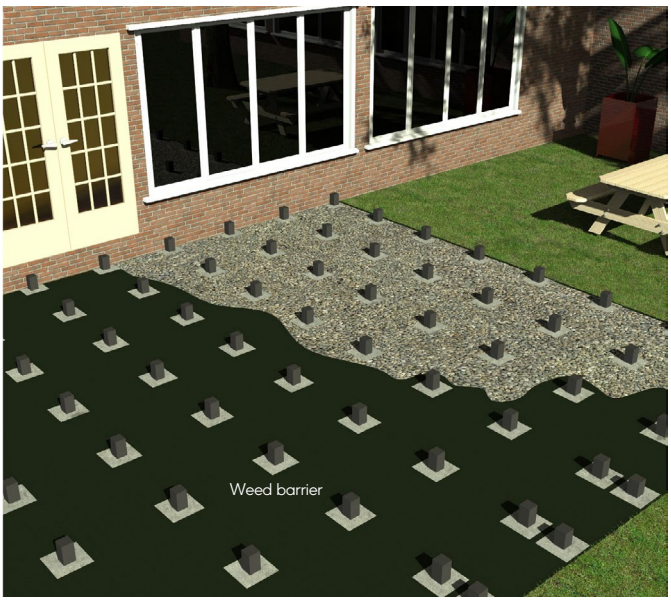


Note:

To keep posts in position and aligned while concrete sets, use temporary timbers to hold the posts in the correct alignment.



Max post spacing:
1500mm for residential applications
1000mm for commercial applications



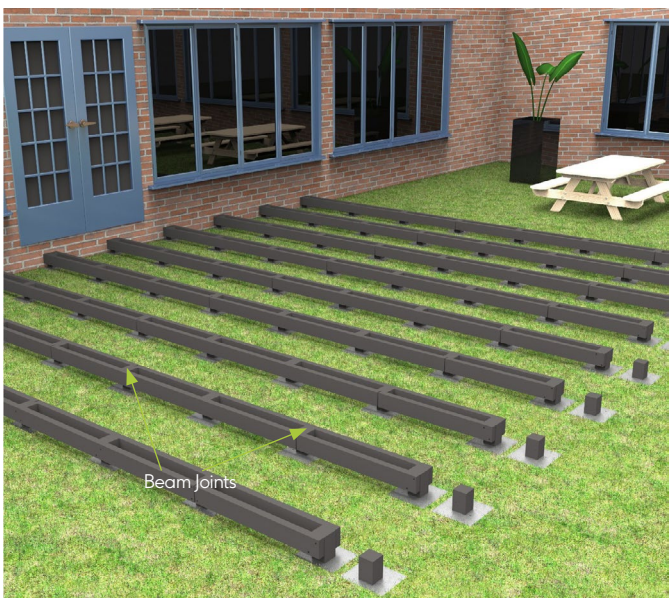
Elevated subframes (continued)

Construction process (continued)

j. At this point determine the falls of the deck if required

k. If required set up string lines guides **(see deck falls on page 13)**

l. Fix 125x50mm Beams to either side of the posts in a staggered pattern so that both sides don't start and finish on the same post.



m. Fix the 125x50mm joists in place at 300mm centres or 400mm centres adding any extra joist work according to detail. **(see page 20 for fixing method)**

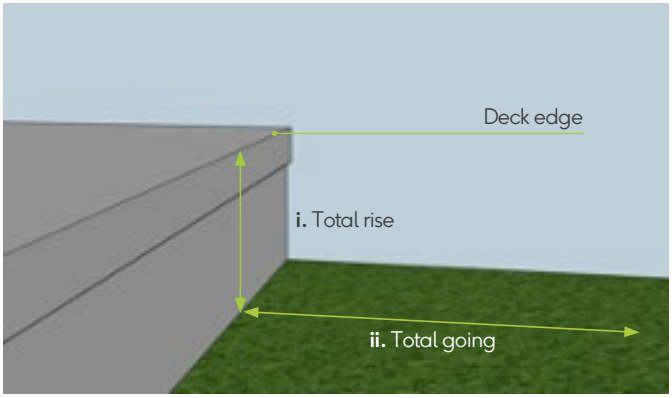
n. Add noggins to alternate joist spacing at mid span between beams or 1500mm spacings.

o. build up the box frame step sections and fix in place as required.

p. The frame is now ready for deck boards and edging boards.

Steps and stairs - regulation and design

Building and installing ladder box stairs and steps.



a. Measure total rise height (i). measurement **(i)** ÷ by the number of steps required. The result must be **220mm or less.** If it's more, add another step, This figure will be your step rise height. E.g. (i) 580mm (total rise) ÷ 4 steps = 145mm, each step will be 145mm high.

Note:

The deck edge itself is a step so always include this in the total number of steps when working out height)

b. Measure length of(ii) total going. Measurement (ii) must be larger than measurement (i). Take measurement (ii) ÷ number of steps (don't include deck edge) Eg: 1032mm ÷ 3 = 344mm. 344mm is the length of the going or tread.

Check against formula: *(Rise x 2 + Going = Should be between 550 - 700mm). Eg: 145 x 2 = 290 + 344 = 634.*

At this point decide on the deck board design of the stairs:

Will the 150mm Bullnose Board or 50mm flexible edge be used as a nosing?

Holes for post supports dug as required. Min 400mm deep.

Drawing the steps out first is always a good idea, this will show up potential points of issue and it helps in working out dimensions of components and actual quantities of material.

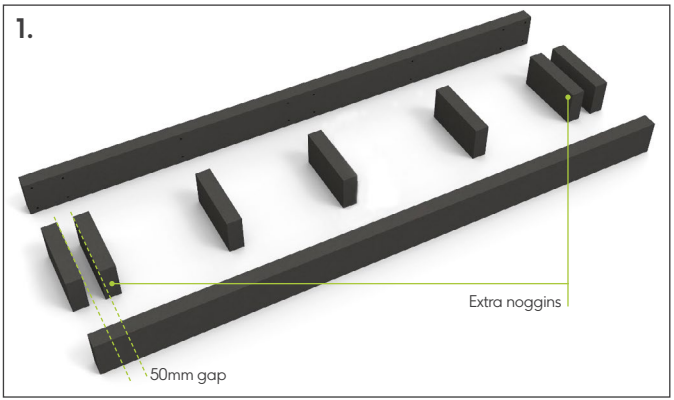
c. Mark up and dig holes for the support posts , 400mm deep by 300 x 300mm wide is usually more than adequate. Sometimes it easier to cast pad stones for the posts to sit on fixed with brackets, all depends on how big the step structure is going to be.

Steps and stairs - regulation and design (continued)

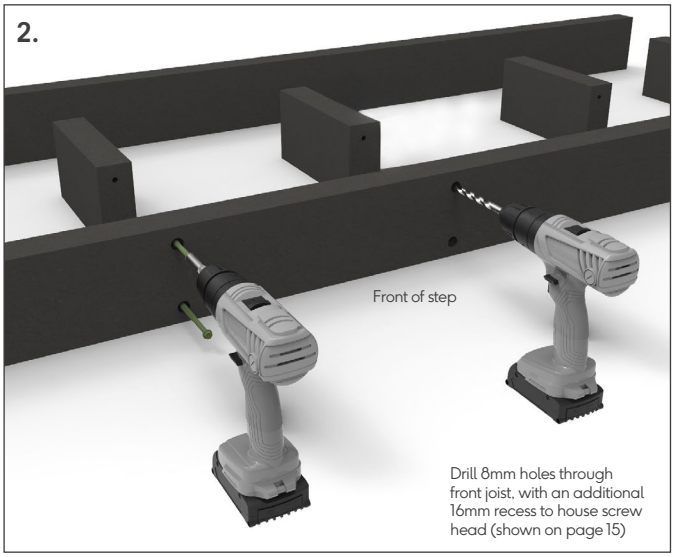
Building and installing ladder box stairs and steps. (continued)

d. Having worked out the dimensions of the steps, build simple diminishing size box frames to the dimensions that have previously worked out. If the step edge board is returning back on the end of each step add an extra noggin to carry the ends of the deck boards. These should be positioned with a 50mm gap (step 4 below).

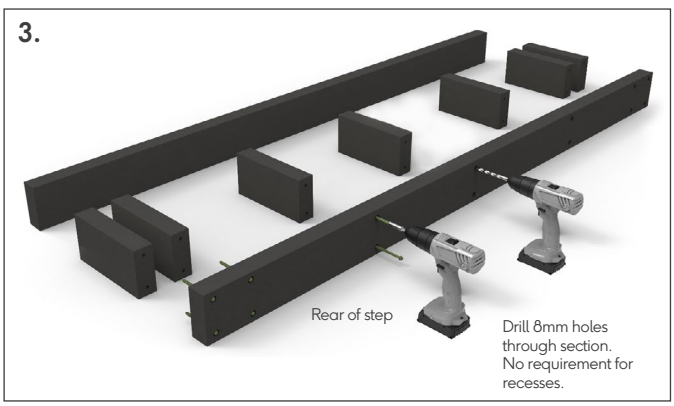
1.



2.

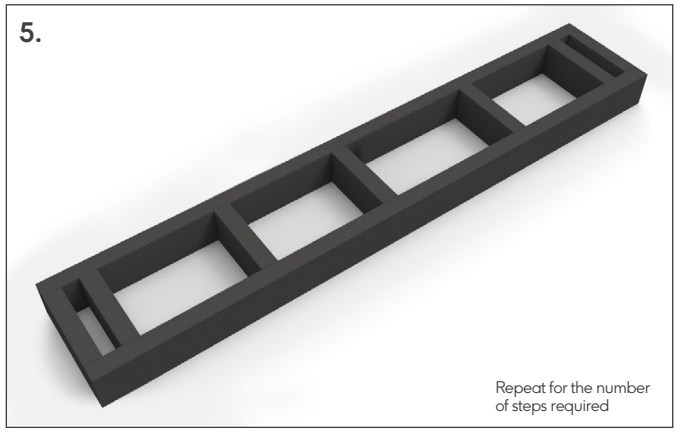


3.



4.

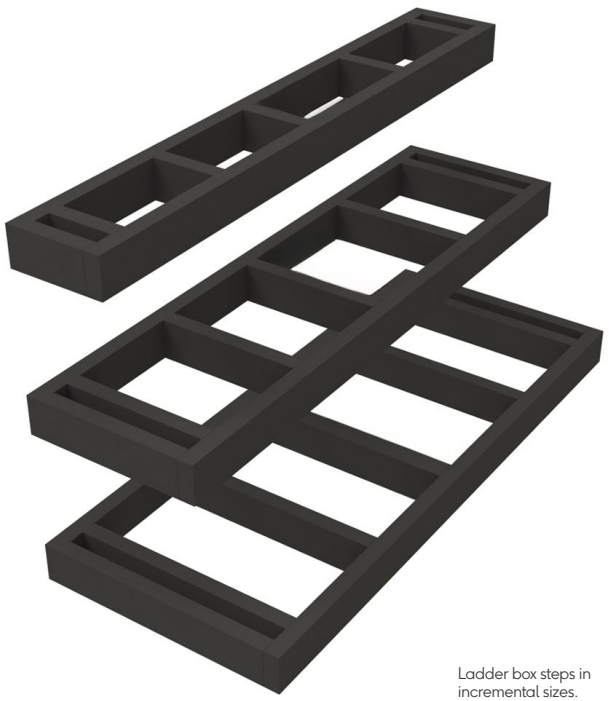
5.



Steps and stairs - regulation and design (continued)

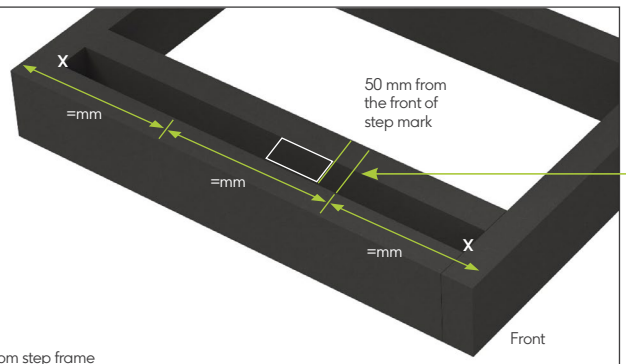
Building and installing ladder box stairs and steps. (continued)

6.



Ladder box steps in incremental sizes.

7.

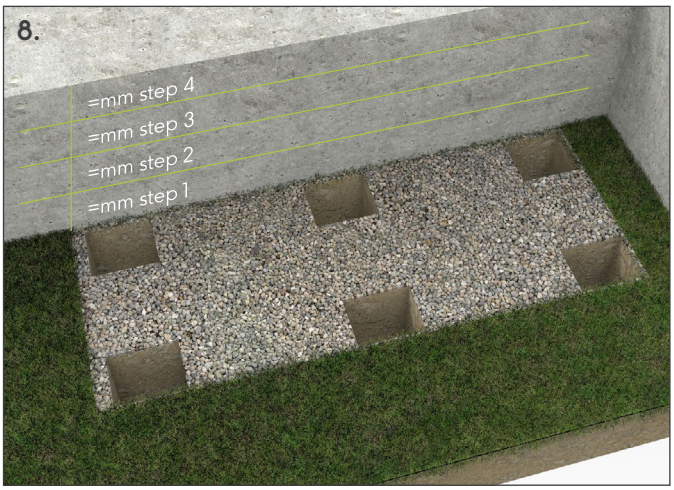


Bottom step frame

e. Once the base step is built, mark up the step front positions (see stages 7) along the sides, in this case 3 steps = 1/3 positions. Positions of the steps can be marked up on the deck or wall front (see stages 8)

The main support post positions are in the corners (white cross) and spaced as required along the frame to meet the maximum span requirements. **Mark up the intermediate step support post positions onto the base frame.**

8.



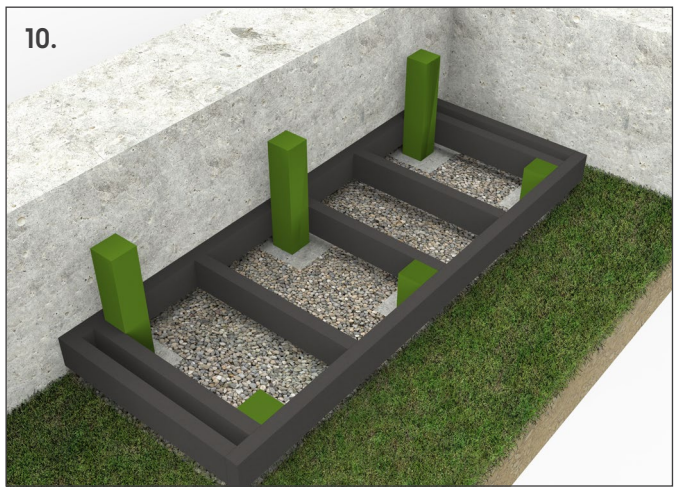
f. 100 x 100mm Posts can be cut to length and fixed in position on the base frame. The 1st row of posts 1 will sit flush with the top of the base frame, the second 2 will sit flush with the top of the 2nd step (in this case 145mm higher), the third 3 will sit flush with the top of the 3nd step (in this case 290mm higher)The front and back rows of posts will protrude 400mm down into pre-prepared post hole positions.

9.

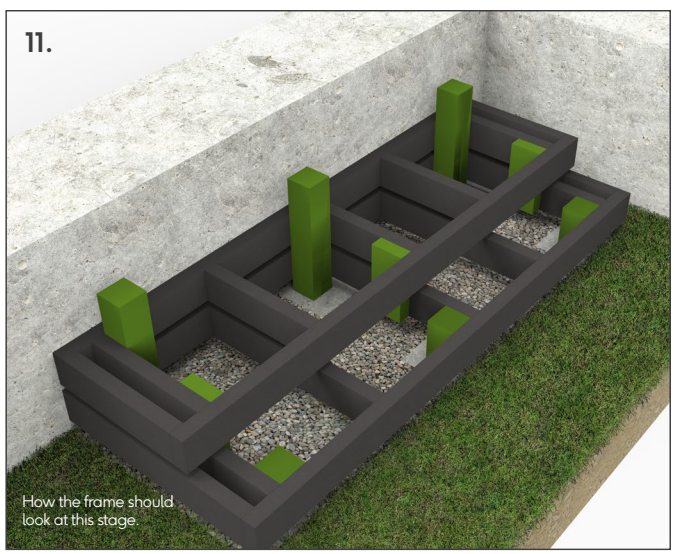
Steps and stairs - regulation and design (continued)

Building and installing ladder box stairs and steps. (continued)

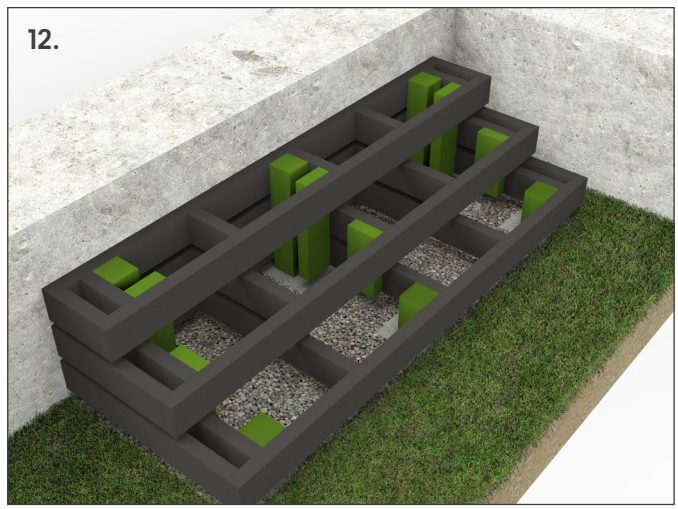
g. Attached the 1st frame to the posts and set in the right place, level on temporary supports while the posts are concreted in place.



h. The 2nd step is now positioned at the correct height, set level and attached to the posts or supports from the 1st step. 50x50mm or 125x50mm offcuts can be used as these intermediate supports..



i. The 3rd step is now positioned at the correct height and level, this step can be attached to supports from the 2nd step. Ensure all fastener heads are recessed into the front or sides of the steps, to ensure the fascia sits flat to the step.



DuoLift Pedestal Overview

DuoLift Pedestals

Features

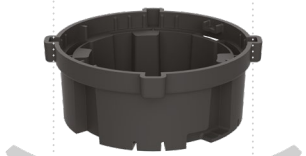
- Simple quick one click component connection
- DuoLift System based around a unique time saving spacer approach to give maximum flexibility on bringing cradles up to exactly the required height.
- Joist cradle has a 114mm diameter base compared to the industry standard of 90mm, more effective load spread when used on its own.
- 5mm measurement markings on the sides of the cradle system
- ¼ of a turn results in 1mm of height adjustment
- Clear to identify when the system is locked together - saves time, gives confidence and assurance
- Increased cradle range of 15-60mm and 45mm riser means almost any height can be achieved up to 350mm
- 3mm Acoustic Separation pad to protect roof membranes, as well as helping to reducing noise transfer

Clicks into place

Joist cradle 15-60mm

Twist-lock

Self-levelling Joint 20mm

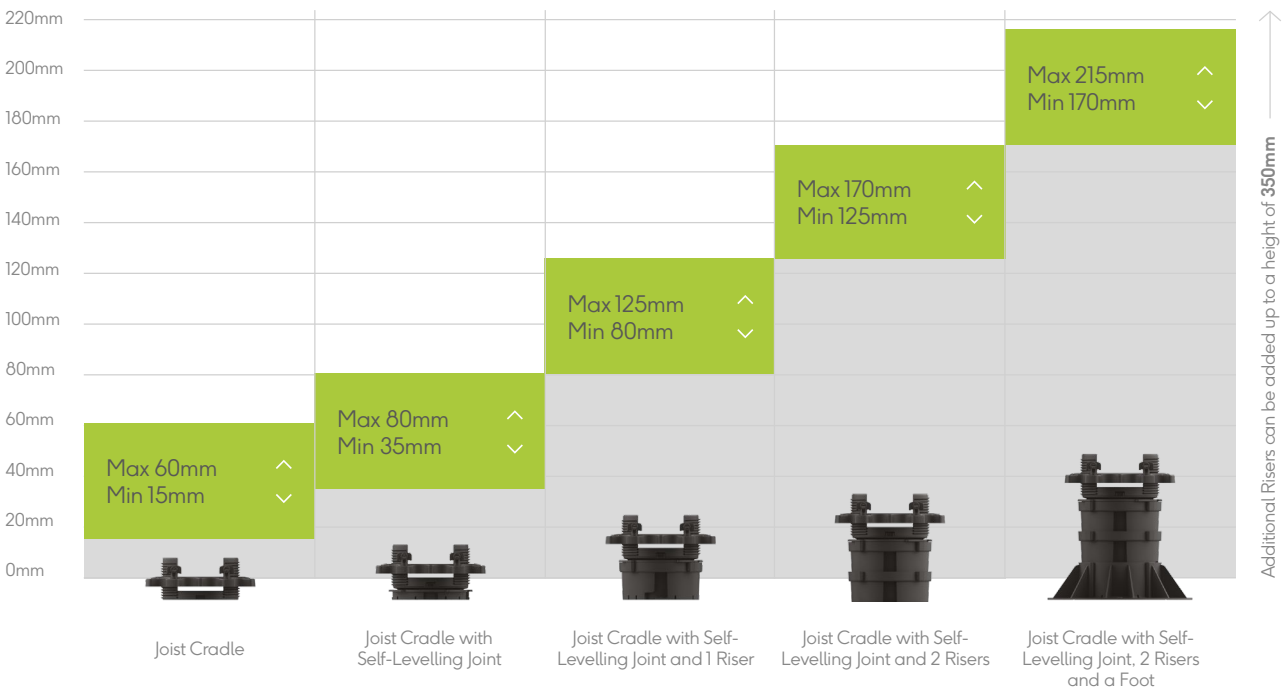


Twist-lock

45mm riser

45mm high foot

Acoustic pad



Installation - Pedestals

Pedestal laying patterns

Using DuoLift pedestals, you can quickly achieve a level support system that won't rot, split or host algae. DuoLift's range of feet, pedestals, risers and cradles are even suitable for use over existing hard surfacing, flat roofing and in permanently damp environments.

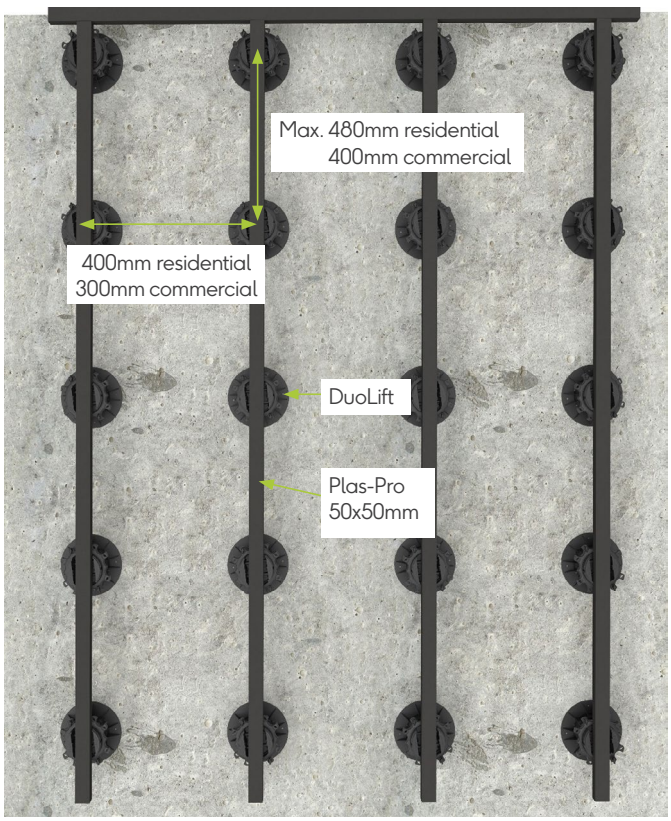


Fig. 28 - Standard laying pattern with Plas-Pro 50x50mm

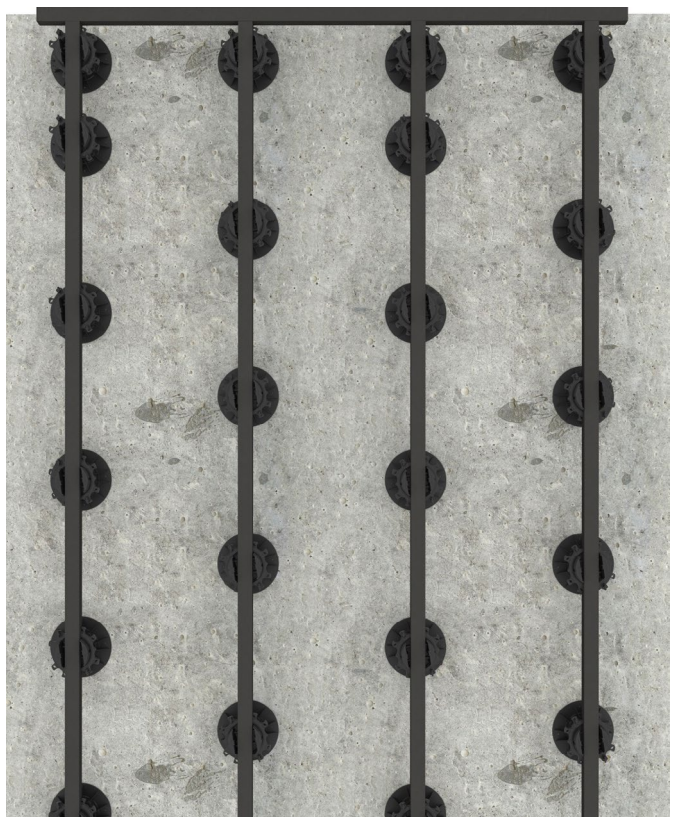


Fig. 29 - staggered laying pattern which gives a slightly more rigid feel underfoot

Installation - Pedestals (continued)

Pedestal quantities per m² and subframe construction variants

Single layer Plas-Pro 50x50mm (Fig.30)
Joist framework at 300 or 400mm centres

Residential build: Max span: 480mm
Joists at 400mm centres
= 6.5 pedestals per m²

Commercial build: Max span: 400mm
Joists at 300mm centres
= 9 pedestals per m²

Noggins required: **See page 33**

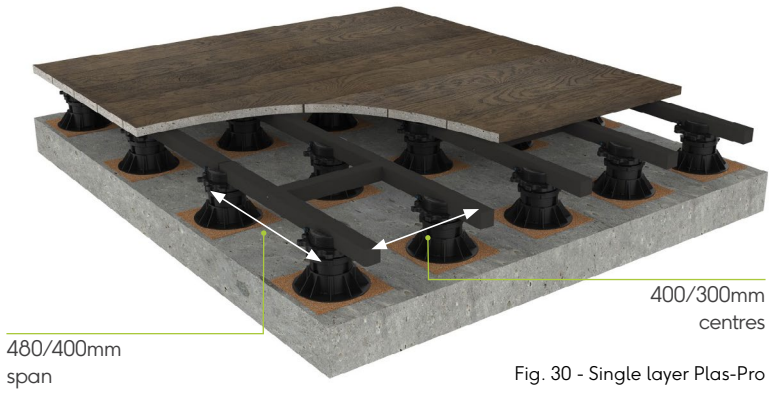


Fig. 30 - Single layer Plas-Pro

Lattice frame build: (Fig.31)
Double layer Plas-Pro 50x50mm joists fixed at 300 or 400mm centres onto 50x50mm beams at:

Residential build: Max span: 480mm
Joists at 400mm centres
= 4.5 pedestals per m²

Commercial build: Max span: 400mm
Joists at 300mm centres
= 7 pedestals per m²

Noggins required: None

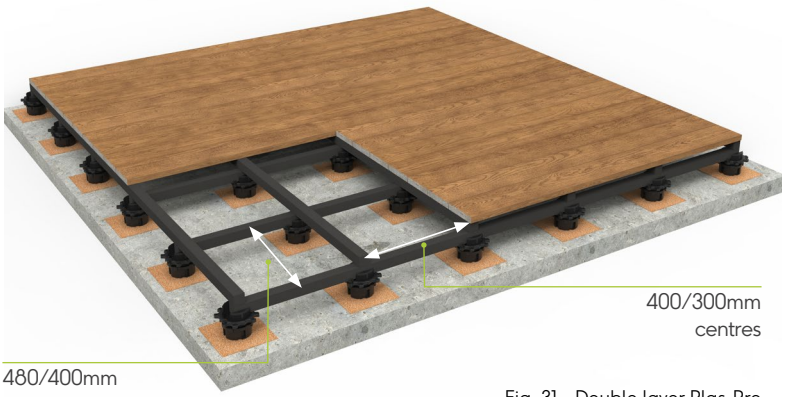


Fig. 31 - Double layer Plas-Pro

Standard build: (Fig. 32)
Single layer Plas-Pro 125x50mm joist framework at 400 and 300mm centres

Residential build: Max span: 1000mm
Joists at 400mm centres
= 3 pedestals per m²

Commercial build: Max span: 750mm
Joists at 300mm centres
= 5.5 pedestals per m²

Noggins required: **See page 22**

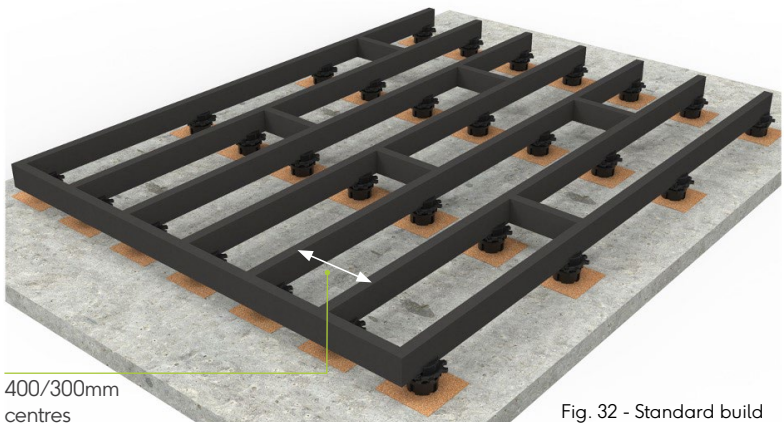


Fig. 32 - Standard build

Installation - Pedestals (continued)

Subframes on pedestals - Plas-Pro joists 50x50mm & 125x50mm

a. Noggins should be set to a brick bond pattern at 1200mm centres ± 100mm. **(see page 33)** fig. 33

b. Joist butt joints should connect on a pedestal with a 10mm gap between the ends of the joist, locking tabs inserted into the cradle and screwed to the Plas-Pro with 25mm pan head screws (fig. 35).

> Note:
>
> Always stagger the positions of butt joints, so that all butt joints are not in one line across the framework area. Always have a butt joint support by the DuoLift and ensure to leave a 10mm gap between the butt joint.

c. Curved frames will require extra noggins: see fig. 33

d. Connecting the Plas-Pro fascia support ends to the 50x50mm rim joist should be done with an expansion half lap joint (fig. 34)

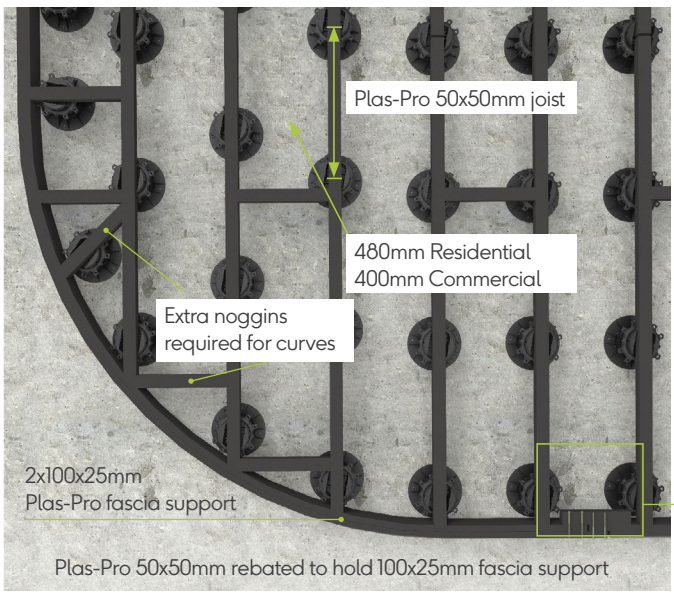


Fig. 33 - Brick bond noggins

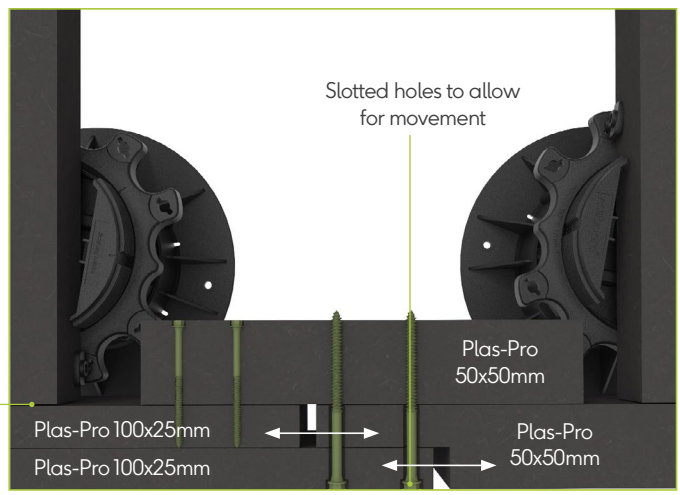
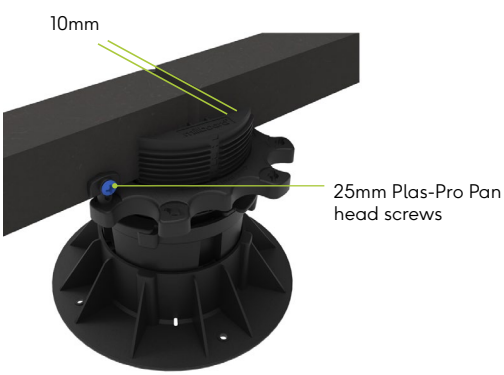
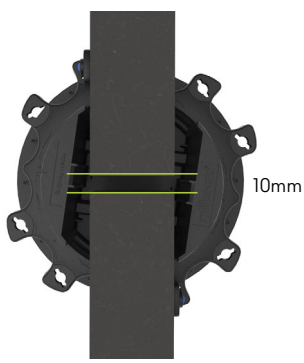


Fig. 34 - Plas-Pro fascia support to rim joist connection





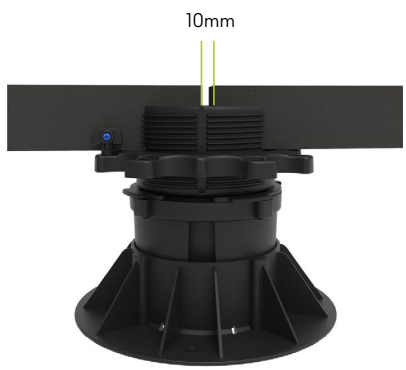


Fig. 35 - gapping of joist butt joints

50x50mm
Noggins/blocking spacing and fixing

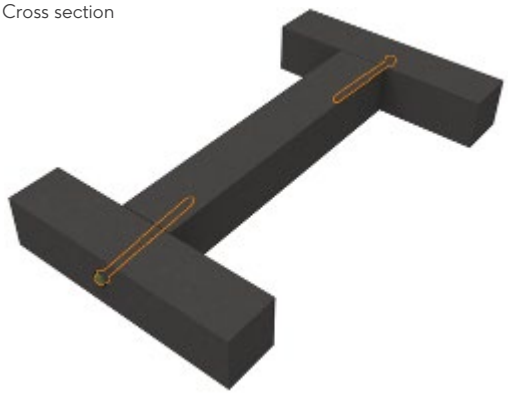
Noggin/ blocking pattern:

Never run a continuous row of noggins as this can result in exponential thermal expansion / contraction. Build blocking/noggins into the deck in a brick bond pattern in alternate joist spacings. Fix with 1x 6.3x90mm Hex head screw on each side.

Top tip:

An alternative solution to noggins on large areas, is to brace the pedestal supported framework as it's built with temporary battens, and remove them as the deck boards are fixed down. This should only ever be done with the 50x50mm Plas-Pro on pedestals (see fig 38).

Cross section



Plan view

Fig 36: Plas-Pro 50x50mm Noggins

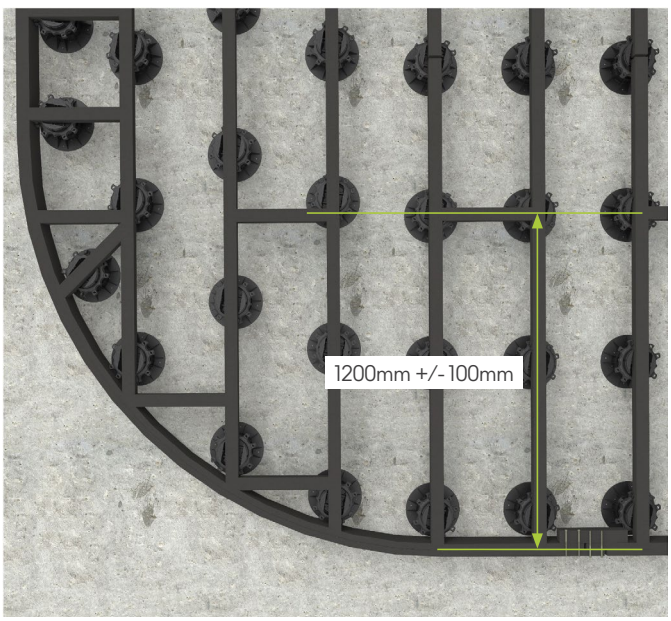


Fig 37

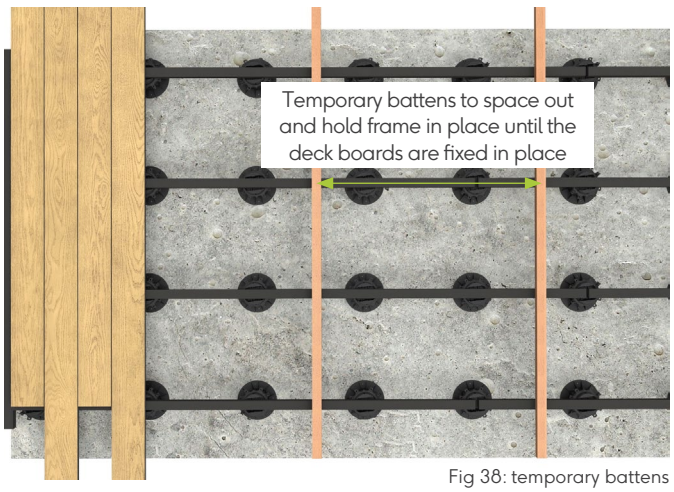


Fig 38: temporary battens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