

Midalia Steel is your partner in DIY and that's why we've come up with this series of handy reference guides to provide you with some information about the basics of building with steel. We hope that they're useful, but please remember, if in doubt get the expert advice of a tradesman or building engineer, and always ensure that you've got the relevant local Council approvals before you start work.



*STEEL THE ONE*

## How To Do It Yourself Manual



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## DISCLAIMER

### **IMPORTANT LEGAL NOTICE & SAFETY INFORMATION. READ THIS BEFORE YOU DO ANYTHING ELSE!**

**This booklet is intended as general information only and is not intended to be a complete or definitive guide. The information is to assist you in selecting the most appropriate product for your needs.**

**It is not a substitute for professional building and engineering advice and should not be relied on as such. Before application in a particular situation, Midalia Steel recommends that you obtain qualified expert advice confirming the suitability of any product for the proposed application.**

**To the extent permitted by law, Midalia Steel excludes any liability (including liability in tort or contract) for all loss and damage arising from the use of, or reliance upon, the information contained in this booklet.**

Span charts, product descriptions and specifications are provided by the manufacturer of the product and are provided based on the manufacturer's specifications.

Please note that the product specifications and descriptions may change without notice and you should speak to your local authorised Midalia Steel outlet for up to date information.

#### **Safe Working**

Before doing any work, check that you have the right tools, which are in good working order and appropriate for the job. Your local tool supplier should be able to give you the right advice.

Also ensure that you have the right personal protective equipment, such as protective clothing, gloves, eye protection and ear protection.

If the job is too big for one person to do it – get help! Be careful when you are lifting any building materials, they can have sharp edges, be heavy, unusually shaped or bulky.

#### **Council or Local Government Approval**

In addition to ensuring that you have obtained the right professional advice, before proceeding with any form of building work you will need to consult with your local council or local government authority to ensure that what is being proposed is approved in line with legal requirements.

#### **Check the Site**

Always check the site conditions where you are proposing to build your structure.

Are there any buried power cables, communication cables, gas or water pipes? Check with your local authorities and telecommunication, energy and water suppliers.

Is the ground stable and capable of holding the structure? If you are in any doubt, seek the expert opinion and advice of a qualified engineer.

What are the prevailing conditions on the proposed site? Is it subject to high winds, exposure to environmental conditions (e.g. sea air or industrial fallout), which might affect the choice of materials and building methods?

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## PREPARATION

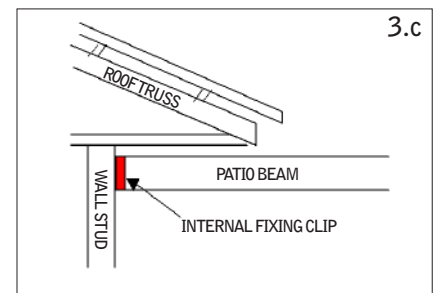
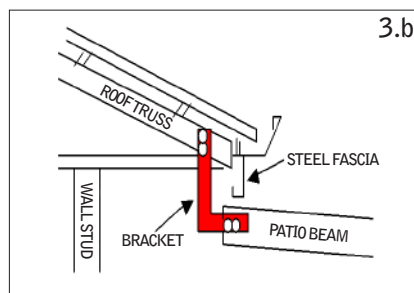
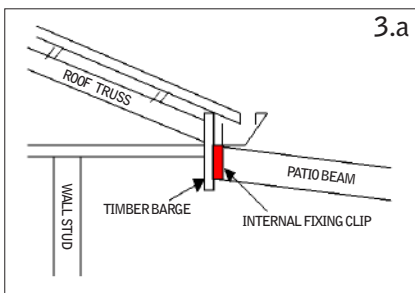
Regardless of what you intend to build or where you intend to build it, it is absolutely critical that all necessary building approvals are first obtained from your local Council or Shire. This applies just as much to the smallest shed, as it does to the largest building.

The first step on the road to doing this is to present the local building authority with a site plan of your block, showing the distance between existing buildings and the boundary fences and pinpointing where you wish to build your new carport, patio or shed.

The primary reason for doing this is to allow the Council or Shire to ascertain whether you will be building over power, sewerage or phone services and to ensure that the building will not be breaching any local Government planning limits or by-laws.

The building application paperwork may request a list of materials you intend to use and will almost certainly require a sketch or drawing of the structure detailing the relevant spans or spacings if a roof is going to be erected.

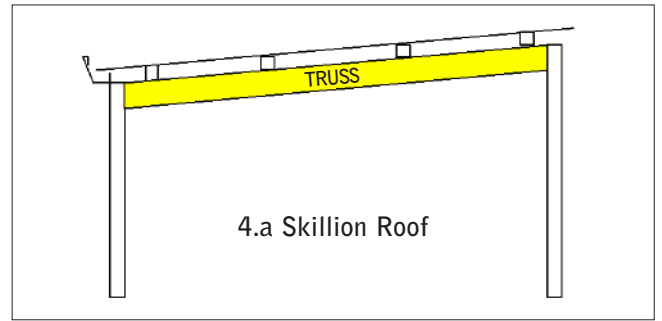
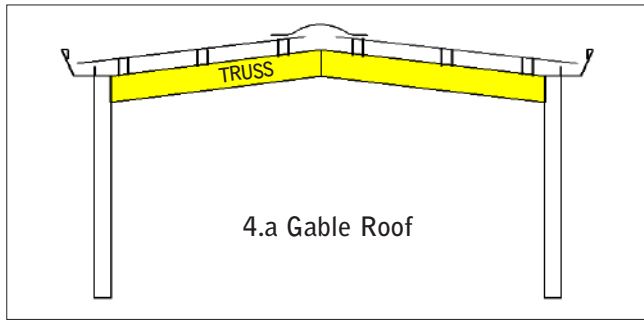
If you intend to hook a truss to an existing building, it is common sense to make sure that the material you are fixing onto is sound and has sufficient strength to carry the load. For instance, if you are fixing a patio beam onto the timber barge-boards of an old house (diagram 3.a), the beam may be weathered and rotting. If the house has a pressed metal fascia, it may not have sufficient strength and could fail. You may need to have a bracket made to fix the beam to a roof truss or wall stud (diagrams 3.b & 3.c) or it could be that you will need a separate beam fixed to the house to carry the trusses, or the entire structure may have to be made free standing. If you are unsure, discuss it with your architect or building engineer.



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## PREPARATION

There are two basic types of structure, Skillion and Gable (diagrams 4.a & 4.b). Both are simple to erect although the gable does involve a bit more work. All you need to do is decide which style is going to best suit your needs, both from a visual and a functional point of view.



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## TOOLS OF THE TRADE

Having decided which method best suits your situation (see PREPARATION), you can choose the materials. To keep things as simple as possible, we have selected a few tried and tested products and shown their relevant suggested spans.

Truss Span	Non Wind Loaded	Potential Wind Loaded
Up to 3000mm	64x38x1.6mm Patio Tube	"Same"
Up to 4000mm	76x38x1.6mm Patio Tube	100x50x1.6mm Duragal RHS
Up to 5000mm	100x50x1.6mm Duragal RHS (or) 150mm Hopleys Truss	100x50x2.0mm Duragal RHS (or) 200mm Hopleys Truss
Up to 6000mm	150x50x2.0mm Duragal RHS (or) 250 Hopleys Truss	"Same" (or) 300mm Hopleys Truss
Over 6000mm to 7620mm	300mm Hopleys Truss	"Same but include knee bracing"

\* Suggested truss materials for given spans (Skillion Roof, Simply Supported)

Midalia Steel staff will be more than happy to run you through the choice of accessories and fixing products available for all the truss materials listed above, and we can assist you with working out the required quantities of materials for your structure (although we do recommend using a professional Quantity Surveyor for taking off roof sheeting quantities for larger projects).

Looking at the tools that will be needed. If you are using Hopleys Trusses, Patio Tube or RHS in conjunction with Topspan or Handy C purlins (diagrams 6.a to 8.b), the following tools will be required.

- Tape Measure
- Stringline
- Spirit Level
- Drill (a good quality cordless is ideal)
- Shovel and Wheelbarrow
- Sash Clamps (about six)
- Tinsnips
- Dropsaw or right angle Grinder  
(Even a 4" will do the job)
- Ladder

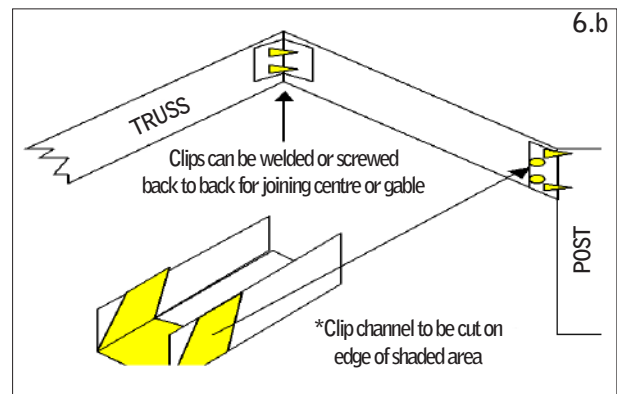
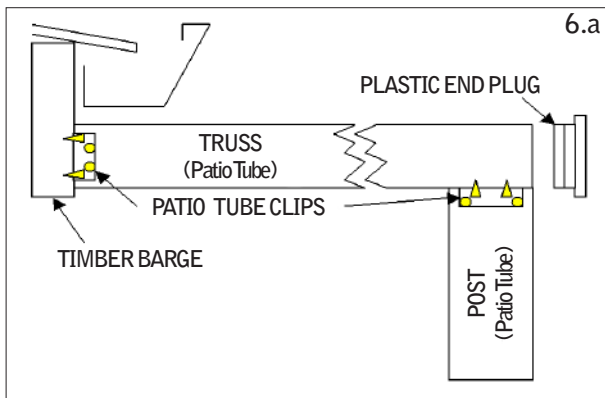
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## PRODUCT SELECTION

It's worth looking at some of the most commonly used products and their methods of fixing.

### TRUSSES

*Patio Tube* is an excellent choice for patios and smaller sheds - virtually anything in fact with a span requirement of around 3.5 metres. It is light, strong and extremely versatile. It can be welded, but screw fixing is the most common method, used in conjunction with internal fixing clips (diagram 6.a).

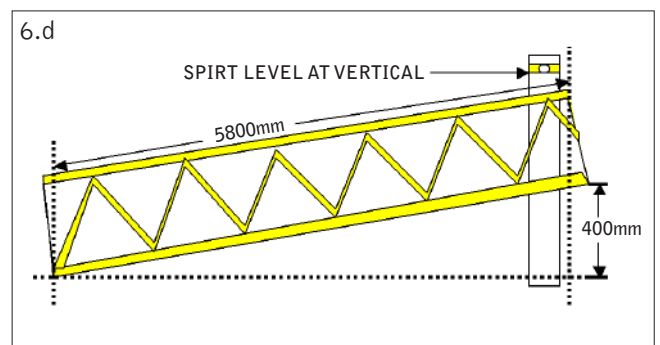
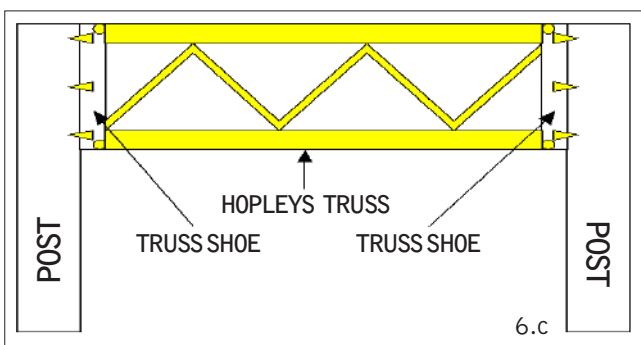


These clips provide a strong and neat join. They are available in 1.2 metre lengths, as well as single units. The longer lengths are used when mitred clips are required for constructing gables or where the roof pitch is steep (diagram 6.b).

For longer spans and in areas of high wind load, the patio tube can be replaced with a larger size RHS. (i.e. 100x50mm or 150x50mm) Clips can be supplied to suit these sizes as well.

*\*Note that the length of clip channel is cut at the same angle as the Patio Tube truss to make a perfect join at the post and gable centre.*

*Hopleys Trusses* are a very popular product and are generally used in the construction of sheds and carports, although they can be used for patios as well. They are available in a range of sizes to suit various applications and when used in conjunction with the truss shoe, are very easy to install (diagram 6.c).





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## PRODUCT SELECTION

These trusses can be gabled if desired, or mitred to suit any roof slope (diagram 6.d). Hopleys Trusses are also used for flooring systems and raised patio decks and make a strong, lightweight alternative to timber bearers. Installation is far easier, they need no maintenance and cost considerably less than timber.

In virtually all cases, the shoe can be screwed to the posts before the posts are installed. This makes fitting the trusses simple, quick and safe. In most cases the trusses will have to be cut on an angle to allow for fall (roof pitch). (see diagram 6.d where the truss length between posts is 5800mm and the fall is 400mm).

The truss should be elevated to the required fall height and propped (clamped to a post for instance). Measure 5800mm from the elevated end and mark. Using a spirit level; mark top and bottom chord at the vertical points and simply cut along the marks.

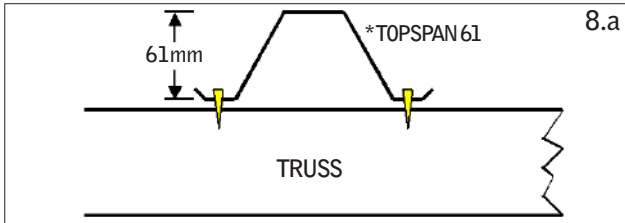
Provided the posts are perfectly vertical, the truss will slide into the shoes, which should be screwed on prior to standing the post in place.



## PRODUCT SELECTION

### PURLINS

Purlins are available in a variety of shapes and sizes, but in the interests of keeping things simple we will concentrate on three of the most common types. All three have advantages in certain situations and all can be screw fixed.

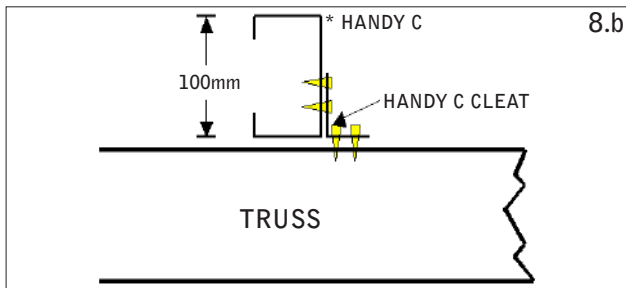


*Topspans* are the simplest purlins to use. They are screwed directly to the truss and their shape makes them very strong for their size. They're resistant to twisting (the most common cause of purlin failure) and are available in a range of sizes to accommodate different spans between trusses (diagram 8.a).

Simple to fix, excellent spanability, cost effective.

Suit Hopleys Trusses, Patio Tube and RHS up to 4mm wall thickness.

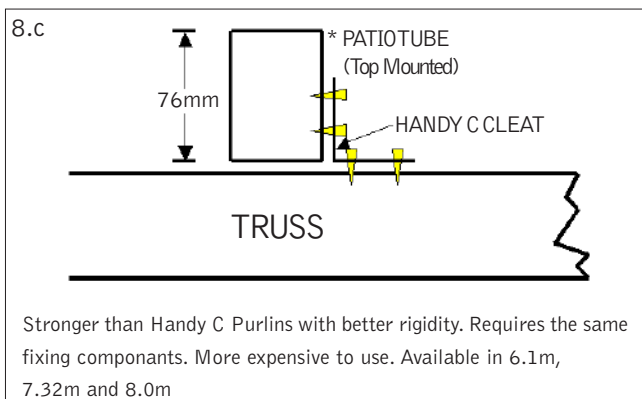
Available in 6.1m and 7.6m lengths.



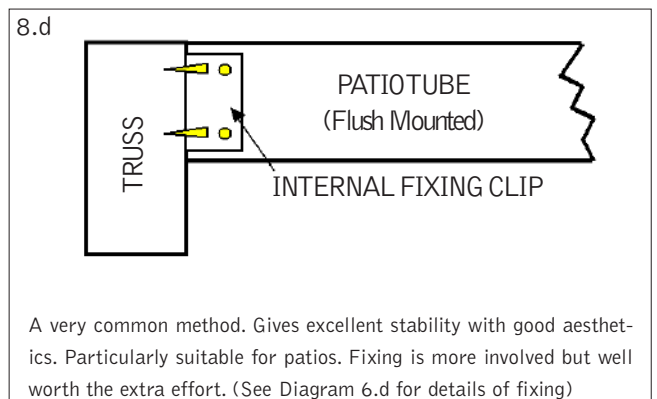
*Handy C purlins* are popular for shed and carport applications. They too are screw fixed but a cleat is required to attach them to the truss. The Handy C purlin has similar span capabilities to the Topspan 61. The cost per metre is around the same but the Handy C can be rolled to specific lengths if a standard length does not suit your requirements (diagram 8.b).

Requires more components to fix, but has similar spanability to Topspan. Can be rolled to desired length.

The third option is *Patio Tube*. It can span up to 4 metres and is more rigid than the other two types of purlin. It is relatively easy to install and has the added advantage of being flush-fitted to the truss (if you're using Patio Tube or RHS trusses). Patio Tube can be top mounted (diagram 8.c) with no more effort than it takes to fix a Handy C but most people prefer to take the extra time to flush mount them (diagram 8.d). They look very tidy and work extremely well in situations where there is not a lot of height to spare.



Stronger than Handy C Purlins with better rigidity. Requires the same fixing components. More expensive to use. Available in 6.1m, 7.32m and 8.0m



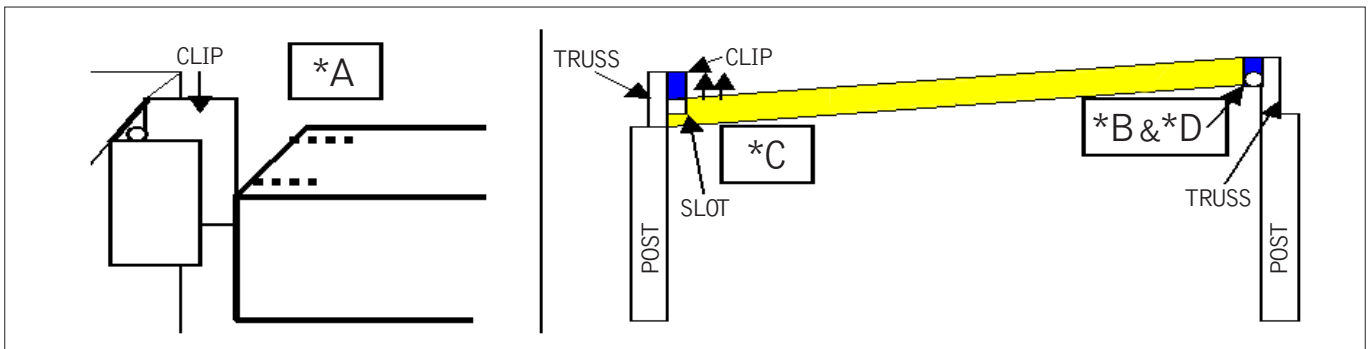
A very common method. Gives excellent stability with good aesthetics. Particularly suitable for patios. Fixing is more involved but well worth the extra effort. (See Diagram 6.d for details of fixing)

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## PRODUCT SELECTION

### INSTRUCTIONS FOR FLUSH-FITTING PATIO TUBE PURLINS

- \*a) Cut a slot on each side of the Patio Tube (top side and one end only) to allow it to slide up between the legs of the clip.
- \*b) Attach the other end to the clip with one self drilling screw allowing it to pivot up and down.
- \*c) Slide the slotted end up over the clip so that your Patio Tube is level with the top of the truss. Fasten in place with self drilling screws.
- \*d) Fasten off the other end securely and you're done.



### USEFUL TIP

Purlins spacings will vary depending on the type of purlin being used, the size of the structure, the type of roof being used and the possible wind loading factors involved. A general rule of thumb however is a spacing of around 1200mm centres. It's worthwhile checking with your relevant local Council on this figure.

All three products can be used for wall girts as well and the attachment methods are the same.

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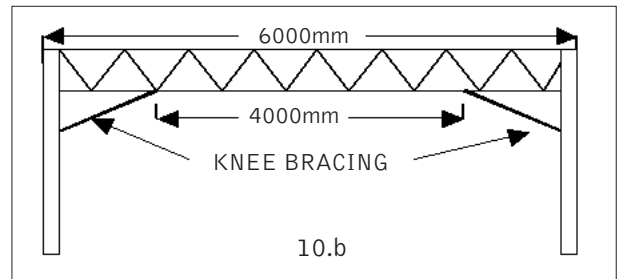
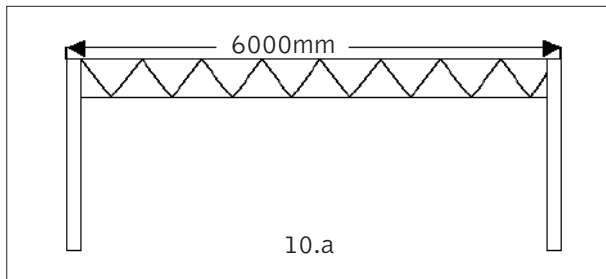
## GOING THE DISTANCE

HOPLEYS TRUSS SPAN CHART	
SPAN(m)	SPACINGS 150mm Truss
3.5	3600
4.0	2760
4.5	2180
5.0	1760
6.0	1230
7.0	900
8.0	690

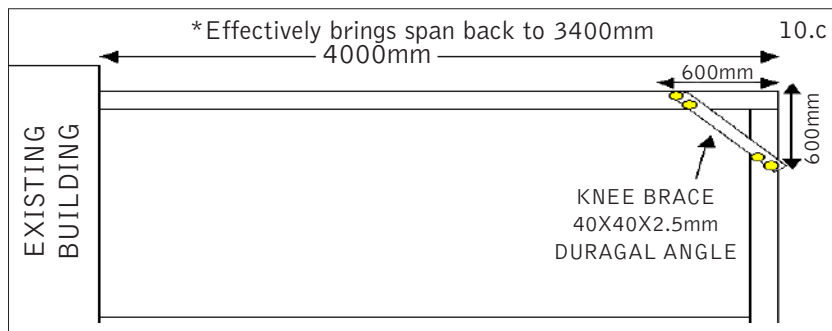
As the table to the left reveals, the wider the span required for your trusses, the closer together the trusses must be placed. For example, the distance between 150mm trusses when spanning 6 metres is 1230mm. This increases to 2760mm when spanning 4 metres.

The general desired application is to span the full 6 metres at 3 metre spacings. To achieve this without technically over-spanning the truss, a knee brace is used (the difference is evident when comparing diagram 10.a and 10.b below).

The knee braces bring the effective span back to 4 metres while retaining the 6 metre length of the truss. This means that the trusses can also be spaced at 2760mm center according to the span chart.



If for instance the desired spacing of the trusses was 3 metres the knee braces would be placed at just over 1 metre in from each end of the truss (say 1.1 metres for simplicity). The knee braces can generally be made from 40x40x2.5mm Duragal angle, but this is subject to local authority approval. This concept applies to all trusses in the Hopleys range.



The span chart provided above should only be used as a reference; Midalia Steel strongly suggests that you consult your architect, building engineer or local authority building regulations for exact details.

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## THE RIGHT SCREW FOR THE JOB

Self-drilling screws are the backbone of any DIY steel construction project. They are cheap to buy, easy to use and virtually negate the need for welding or bolting.

Welding is difficult to master for the inexperienced, the gear is expensive, the end result may look unsightly and the join may not be sound and will consequently fail. That's where the self drilling screw comes in

Self drilling screws provide a high strength join with minimal cost and a lot less effort. When buying self drilling screws bear a couple of hard and fast rules in mind; we recommend as a minimum you should use at least a class 3 coated product. If you're building in a more severe environment, such as on the coast, regulations may stipulate a requirement for class 4 coating grade screws. It is always wise to check with your local authority for this information. Never use a YZP (Yellow Zinc Plated) screw for any exterior use. They will eventually fail due to corrosion and so will the product it is fastened into.

Midalia Steel's staff are more than happy to assist you with your choice of self drilling screws, we carry a full range and most sizes are available in the full Colorbond range and will complement a Colorbond roof or wall.

### USEFUL TIP

When using self drilling screws, don't have your drill running at high speed. All this does is cause the screw to overheat and become blunt. In our experience the bulk of customers who have complained about blunt screws have admitted to running their drills at high speed and have no further problems after slowing down.

A good quality cordless drill is ideal, firstly because it does not turn at the same speed as a 240 volt drill and secondly, there is no power cord to tangle and rub against sharp bits of metal. Cordless drills tend to be safer since they are not connected to the mains - if you do have to use a 240v drill then ensure that it is used in conjunction with an R.C.D. (Residual Current Device) - better safe than sorry, mmMate!

The table below details some typical applications for screw types.

TYPE & SIZE	APPLICATIONS
Metal - 10gx16mm	Light-weight stitching screw. i.e. Gutter clips etc
Metal - 12gx20mm	Standard stitching screw, i.e. Fixing wall sheets, fixing cleats, top-span, purlins to truss/rafter, patio tube clips
Metal - 14gx22mm	Heavy duty stitching screw, i.e. Truss shoes to columns etc
Metal - 12gx35mm	Fixing custom orb roof sheets to metal purlins
Metal - 12gx45mm	Fixing Trimdek roof sheets to metal purlins
Timber - 12gx25mm	Fixing Patio Tube clips/cleats to timber barge board
Timber - 12gx50mm	Fixing cladding to timber purlins

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## THE PLOT

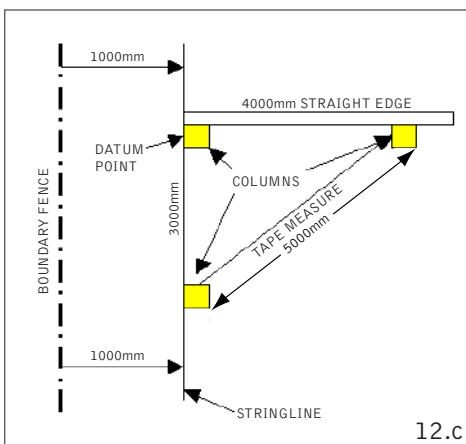
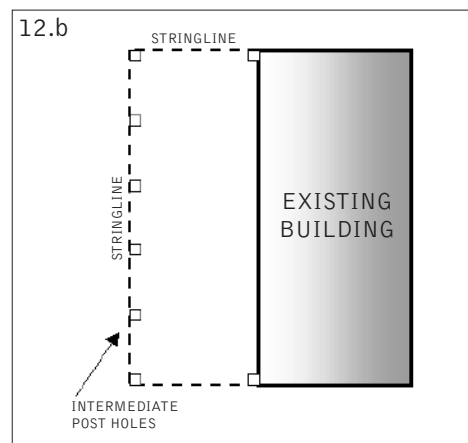
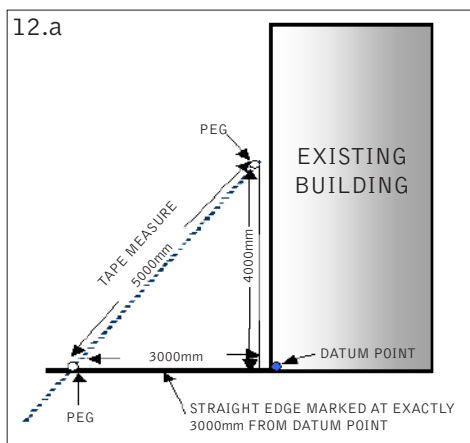
You've decided what you want to build, you've decided where you want to build it. You know what products you're going to need and how you're going to fix them together. You've had a look at the area you want to build in and you've got the relevant local authority permissions.

You're ready to start, mmMate!

First up, measure and mark where the postholes need to go. To do this, you'll need to sort out a datum point. This is where all the other measurements are referenced from. If you are attaching to an existing building, you should start at a corner and using the 3-4-5 method, peg the first hole at the required distance from the building (diagram 12.a).

This method will ensure that your first post is square with the existing building. Peg the point of intersection of the 5 metre mark on the tape measure and the 3 metre mark on the straight edge and stringline from that peg to the datum point.

Repeat the process for the other end of the structure and then stringline the area (diagram 12.b). Now the two outer posts will be square with the existing building. The post holes are measured from the existing building along the stringline to the desired distance.



### USEFUL TIP

If the structure is to be free standing, (a shed for example) use the same method but find your datum point by measuring from your boundary fences to where one corner of the building will be (diagram 12c). Again use the 3-4-5 method to find the position of your post holes.

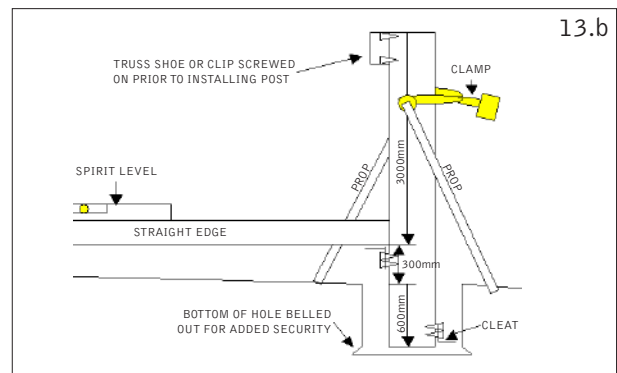
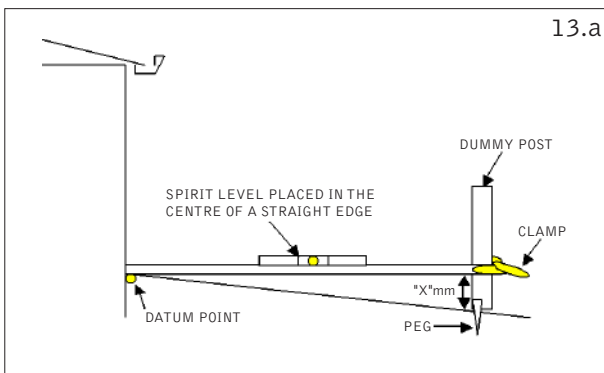
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## ON THE STRAIGHT AND LEVEL

Once you have pegged and stringlined where your posts will go, it's time to get some levels. You will need a spirit level and a straight edge that is at least as long as the spacings between your posts (a length of Patio Tube is ideal for this).

Find yourself a 'dummy post' (that is something that you can use to screw a clamp on to hold one end of the straight edge). Set up the straight edge from the datum point to the dummy post. Find the point of level and clamp the straight edge to the dummy post at this mark (diagram 13.a).

From there, you can determine the amount of fall or rise from the datum point and adjust the length of the post accordingly (diagram 13.b). It is good practice to repeat this process on every post, using the level on the first one you install as a reference point (diagram 13.c).



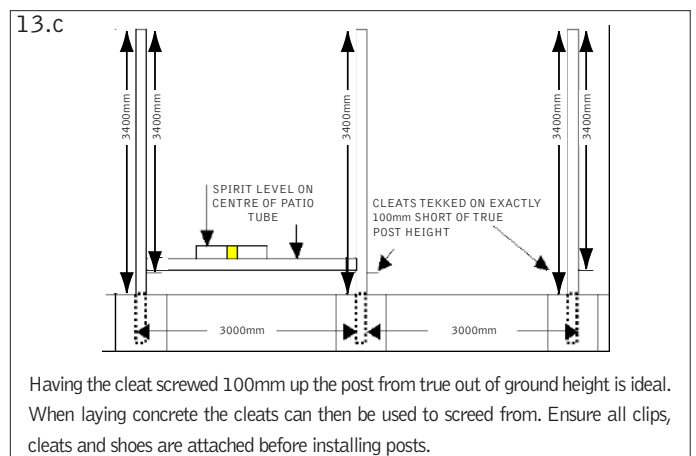
Although it's tempting, don't try and cut corners here. Be prepared to spend plenty of time setting up, squaring and leveling your structure. A bit of extra time spent here will be more than saved when the rest of it starts to be put together.

When digging your postholes, ensure that the bottoms are belled out. This will give a stronger adhesion to the ground and prevent any rocking motion from loosening the concrete, especially in more sandy areas. Also, while you are setting up each post, screw some material onto the section of the post that will be going into the concrete. (see diagram 13.b).

A few Handy C cleats will do the job or you can use some off-cuts of Patio Tube or angle. This will effectively bind the post to the concrete. If you decide to use rapid set concrete in the holes, make doubly sure that all of your lines and levels are correct before pouring it in. You don't get to make adjustments with that stuff, mmMate!

### USEFUL TIP

It will be a lot easier if the posts are propped on four sides and clamped into the correct position of line, level and vertical before concreting.



Having the cleat screwed 100mm up the post from true out of ground height is ideal. When laying concrete the cleats can then be used to screed from. Ensure all clips, cleats and shoes are attached before installing posts.

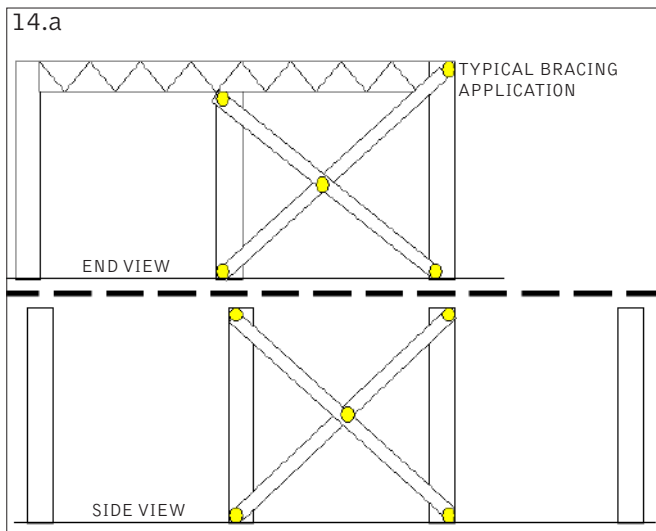
## BRACE YOURSELF

Once all the posts have been installed, it's advisable to leave the job alone until the concrete has set properly. Even rapid set concrete should be left for at least a couple of hours to set properly. During this time you can prepare the trusses (see diagram 7.b in PRODUCT SELECTION - TRUSSES for directions). The method previously described can be used for mitering any truss whether it is Hopleys, Patio Tube or RHS. Be careful to ensure that all measurements are accurate and that the spirit level shows exactly vertical when marking the cut lines.

### USEFUL TIP

Always ensure that you are working on a level surface when measuring and marking.

Once your trusses are ready to install and the concrete has set properly, the next stage is to put in the bracing. Most structures will require some sort of bracing. Bracing serves to prevent lateral movement (swaying) in strong winds and also helps to stiffen the structure, allowing the use of ladders against the structure or work on the roof at a later date.



There are many types of bracing, however, the widely accepted practice is to use a Duragal angle (30x30x2.5mm or 40x40x2.5mm). Duragal angle is made from high tensile galvanised steel which, because of its relatively thin wall section, is ideal for fixing using self drilling screws.

### USEFUL TIP

Using angles removes the requirement to tension your structure with turnbuckles or threaded rod.

Typically, bracing will run from the very top of one post to the very bottom of the other, or as close as is practical. It is always a good idea to join the braces where they intersect (diagram 14.a). If the bracing has been done correctly, the

frame will be rigid enough for you to comfortably work on or around the structure once the trusses and the first row of purlins have been installed. Installing the trusses should be simple as long as you have taken enough care when setting the posts up! Simply slide them into place and screw them to the post (diagram 6.a or 6.c).

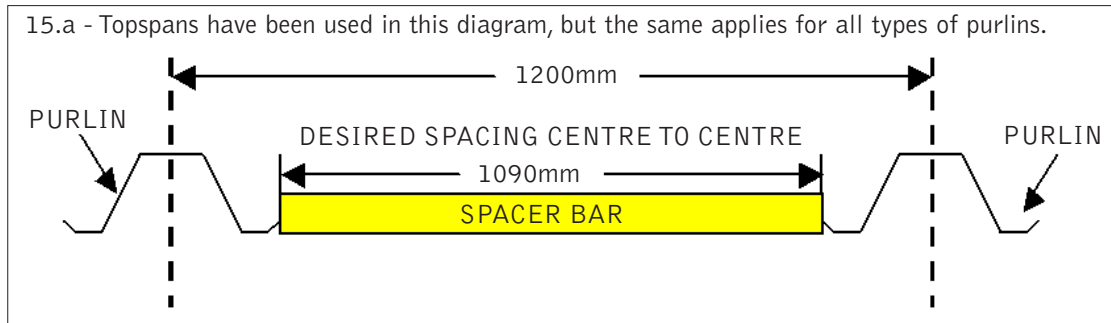
You can now fit the purlins. The easiest way to accurately place the purlins at the specified spacings is to make yourself a spacer bar. This can be done with any off-cut piece of angle, Patio Tube, RHS or timber that's laying around.



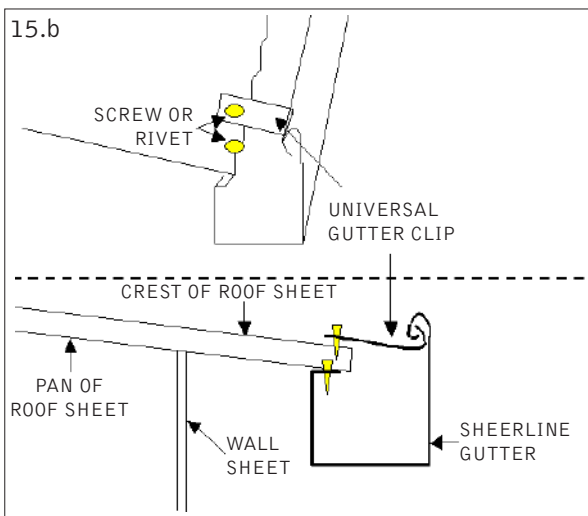
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## PURLINS & GUTTERING

Lay two purlins on the ground and place them at the exact distance you require (don't forget to measure from centre to centre). Having done this, measure the distance between the inside edges of the two purlins and cut your spacer bar to exactly that distance. Once the first row of purlins has been installed, you then use the spacer bar to install the rest. As long as the first row are placed accurately, the rest will be spaced perfectly. This method will save you a lot of time and ensure neat, straight rows of purlins. (diagram 15.a)



Now for the good news - at this stage you've done the bulk of the hard yakka, mmMate! If the frame has been constructed accurately, then the cladding of your project will be easy. However, before we get on to the cladding, you need to sort the guttering.



If you intend to fit gutters to your structure, (and some Councils insist on it) Midalia Steel recommends the Lysaght Sheerline. This product is a high capacity gutter which offers the flexibility of direct fixing to the roof sheets rather than going to the trouble and extra cost of fitting a gutter fascia to carry it.

Installing your Sheerline guttering is simple, and because it is fixed to the roof sheets the sheets can be made slightly longer, therefore overhanging the end of the building a bit more and providing improved protection from the weather (diagram 15.b).

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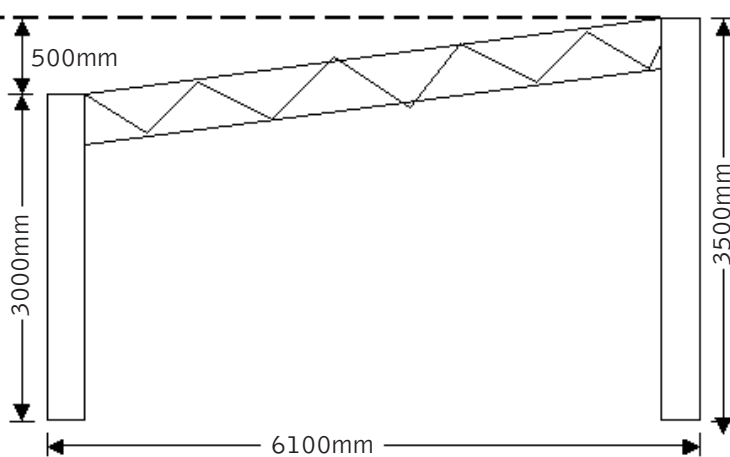
## CLADDING

The cladding is the thing that will really bring your steel structure to life.

Because Midalia Steel is able to offer you cladding rolled to the exact length you need, the general practice is to construct the framework and then measure and order the roof and wall cladding. This will ensure that the sheet lengths are exactly right for what you have built even if the structure is slightly different to what you had planned.

If for whatever reason the roof, walls, etc. need to be ordered at the time of obtaining the structural materials, there are several methods to work out the required quantities (see diagrams 16.a, 16.b, 17.a & 17.b).

### 16.a - Finding Sheet Lengths on a Skillion Roof

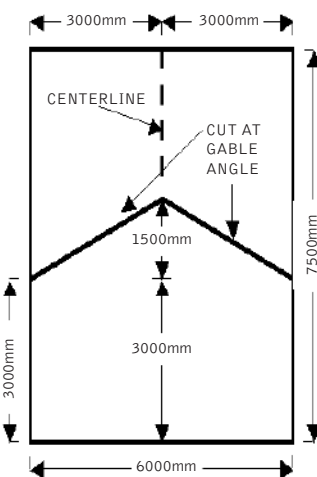


- Span = 6.1m
- Fall = 0.5m

$$\begin{aligned} \text{So: } & 0.5\text{m} \times 0.5\text{m} = .25\text{m} \\ & \underline{6.1\text{m} \times 6.1\text{m} = 37.21\text{m}} \\ & \text{Sum} = 37.46\text{m} \end{aligned}$$

Square root of 37.46m = 6.12m  
 Therefore: Sheet length will be  
 6120mm + 50mm fall into the gutter.  
 Total sheet length = 6170mm

### 16.b - Sheeting a Gable Wall: Both ends

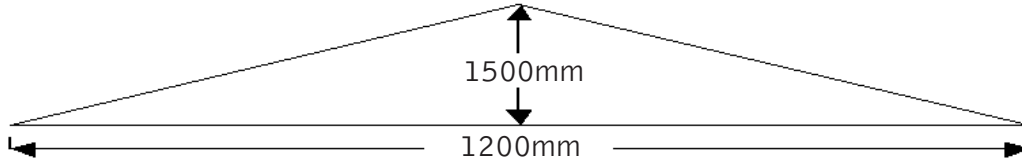


Coverage is 6m so 8 sheets is required (6 divided by 0.762 & round up). Height to the top of the gable is 4.5m. To alleviate waste and reduce cutting, you would need 8 sheets at 7.5m. i.e. The height to the gable peak plus the height of the side wall. Sheets are laid on the ground to achieve a 6m coverage (Double lapping where required). Mark exactly 3m in from each side to ascertain centre. Measure and mark 4.5m up from the centre line and 3m up on both sides. Cut sheets using hand sheers or a nibblers (never a friction cutter).

The off-cuts are then crossed over and will fit perfectly to the other Gable Wall.

## CLADDING

### 17.a - Finding the sheet length of a Gable Roof



This is basically the same principal as used for a Skillion Roof (diagram 14.a). Total span is 12m, so 6m is the length of one side of the truss. Height of rise is 1.5m.

So:

$$6\text{m} \times 6\text{m} = 36\text{m}$$

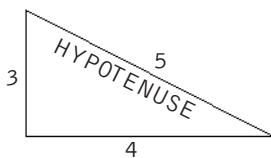
$$1.5\text{m} \times 1.5\text{m} = 2.25\text{m}$$

$$\text{Sum} = 38.25\text{m}$$


---

Square root of 38.25m = 6.185m Sheet lengths

### 17.b - To find the length of the hip rafter on a Patio/Verandah

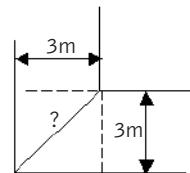


$$3 \times 3 = 9$$

$$4 \times 4 = 16$$

$$\text{Sum of the squares} = 25$$

$$\text{Hypotenuse Squared: } 5 \times 5 = 25$$

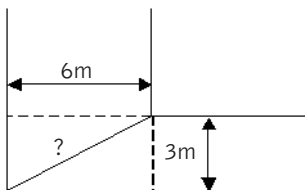


$$3 \times 3 = 9$$

$$3 \times 3 = 9$$

$$\text{Square root of } 18 = 4.243$$

$$\text{Length of hip rafter} = 4243\text{mm}$$



The same formula applies in this situation

$$3\text{m} \times 3\text{m} = 9\text{m}$$

$$6\text{m} \times 6\text{m} = 36\text{m}$$

$$\text{Sum} = 45\text{m}$$

$$\text{Square root of } 45 = 6.708\text{m}$$

$$\text{Hip rafter would then be } 6708\text{mm}$$

If you're not comfortable working out your own quantities (and a small error can be expensive on a large project) Midalia Steel strongly recommends that you seek the advise of a Quantity Surveyor. Years of experience tells us that the savings made when ordering large quantities of cladding and roofing can far outweigh the fees for a couple of hours of a good QS' time.

While there are a wide range of roofing profiles to choose from, the two most popular are Custom Orb (corrugated) and Trimdek. Both are suitable for roofing and walling, both cost the same and it simply comes down to choosing which style best suits your particular application. Both products are available in zincalume and Colorbond (colour brochures and samples are available at any Midalia Steel branch).

In addition, both profiles can be supplied 'reverse rolled'. That is, the colour is under the sheet rather than on top. This is mainly supplied for patio application where the colour is chosen to complement the surroundings or to brighten the area being roofed. After all, unless you intend socialising on the roof of your patio or you happen to own a helicopter, you won't be getting the full benefit of your colour choice! Reverse rolling costs no extra and should be considered if you think it could enhance the aesthetics of your project.

Having measured and obtained the cladding in the profile and colour of your choice, the time has come to fit it.

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## CLADDING

### USEFUL TIP

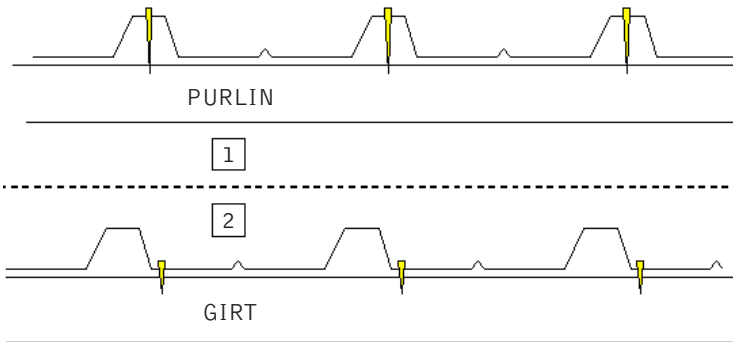
Don't forget your Colorbond screws for a great matching finish. Generally the wall sheets are fitted first, with sheets fitted by screwing through the pan of the sheet (the valley or bottom of the sheet) (roof sheets are fixed through the top or crest).

When fitting the roof sheets always start downwind from the prevailing weather so that if for example, the majority of wind and rain in your area comes from the south, you should start roofing from the north end of the structure. This allows wind driven rain to flow over the overlapped joints rather than into them, providing better weather protection.

## BATTEN DOWN THE HATCHES

Like many aspects of DIY projects, spending a little extra time at the start of the job will reap huge rewards later. When fixing your cladding, accurately fitting the first sheet is absolutely critical.

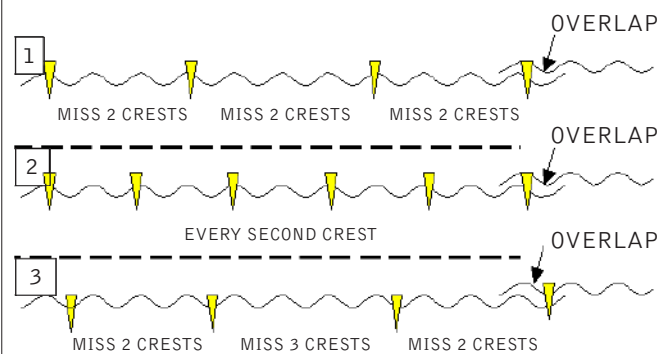
19.a



- Trimdek roof is fixed through every crest using 12x45 tek screws with a neoprene seal.

- Trimdek walls are pan fixed as shown using a 12x20 tek screw with a neoprene seal.

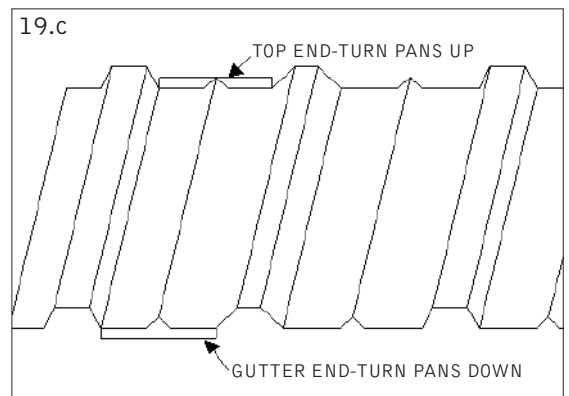
19.b



- Custom Orb is fixed using a 12x32 tek screw with a neoprene seal. the roof is crest fixed as per No. 1 & 2.

- Custom Orb walls are fixed using 12x20 tek screws with a neoprene seal as per No. 3.

Make sure the first sheet is in line with the truss and square to the purlins. The pans of each roof sheet should be turned down at the lower or gutter end, and turned up at the top or high end. This will prevent wind driven rain being blown up and over the top end and on the gutter end. It will also stop capillary action from allowing water to travel back up the underside of the sheet and possibly causing dripping inside the building. This is especially critical on low-pitched roofs. A pair of pliers or an adjustable wrench will do this task. (diagram 19.c).



### USEFUL TIP

When driving the screws in to secure your cladding be careful not to over-tighten them. They only have to be tightened enough to slightly distort the neoprene seal. Over-tightening will cause the neoprene seal to tear or the roof sheet to distort (or both). Apart from the job not ending up as neat-looking as it could, this will be the primary cause of water leaks.

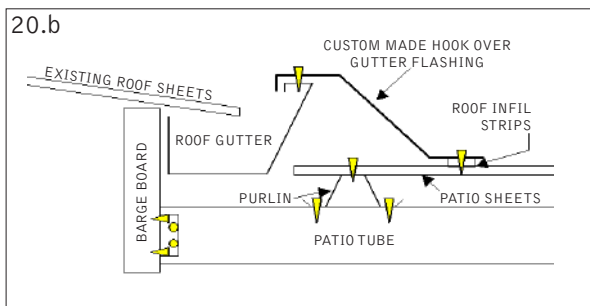
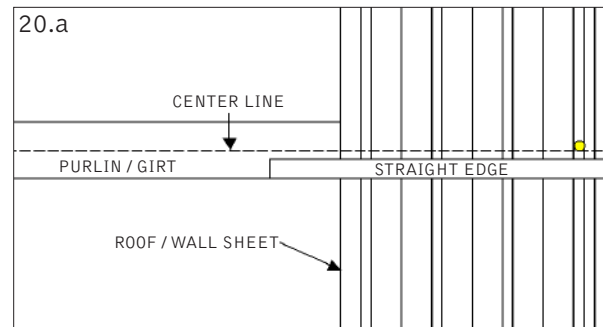
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## FINISHING TOUCHES

When screwing down your roof or wall sheets, it is good idea to use a straight edge and a piece of chalk to mark the centre of the purlin or girt across the sheet so as to keep all of your screws perfectly in line. (diagram 20.a) Ensure that you have fixed all the self drilling screws on each sheet before starting on another one. Also, always ensure that the next sheet overlaps perfectly before putting any screws in.

It may sound like common sense, but we strongly advise that you don't attempt to install your roof or walling when it's windy.

Once the roof, guttering, and walls have been put on, all that's left to do is fit the flashings. There's a huge range of flashings on the market and unless you're absolutely fixed on a certain type we recommend that you don't order any until your project is virtually finished.



If you need some help with your flashings just drop in to any Midalia Steel branch with some sketches and measurements and then we'll either point you in the direction of an off-the-shelf product, or work with you to have a custom pressed flashing made up for you in a length that will suit the job.

A good example of a custom flashing is what is known as a hook over gutter flashing. These are generally used to seal the patio roof against the gutter of the existing building (diagram 20.b).

As you can see from the diagram, this type of flashing is used in conjunction with a roof infill strip to completely waterproof the connection between the house and the patio. The problem is that no two patios are built identical and therefore this flashing will always have to be custom made. The roof infill strip is simply a piece of high density foam that is shaped in the same profile as the roof sheet to sit sandwiched between the flashing and the sheet to effectively seal any gaps.