

Part 2

Instructions

**(Hints And Tips To Help Your Project
Run Smoothly)**

**Secrets of shed building.com
8x10 Gable Shed Plans**

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1.0 Introduction to How to Build a Shed

Building a shed from scratch is not a ‘plug and play’ activity. We are so used to buying electronic gizmos nowadays plugging them in and they just work! Building a shed is not like that.

One benefit of shed building being not ‘plug and play’ is that I hope the instructions in this document are a bit more interesting and engaging than those in your average mp3 player!

For your shed project to run smoothly you will need to read and understand all of the material in this document and the shed plans section. This section is the wordier of the two, and in it I try to share as much knowledge on shed building as I can in an ordered and logical sequence. I also try to give you a few of the pitfalls and things to avoid along the way.

One of the first things that you will need to consider is the tools that you need to undertake your project.

What tools do I need to build a shed?

I have added a list of tools that you will want to consider at the end of this document. The tools fall into four main categories;

- Safety equipment
- Measuring
- Cutting
- Fixing

You will probably find that you have many of the tools required already. However to speed things up and to save your aching arms you might want to invest in some basic power tools.

Most folks who have done some basic DIY will have an electric drill. This can also double up as a power screwdriver with the right fittings so no big outlay there. However if your drill is mains powered and you are working outdoors with an extension cable make sure there is an RCD (Residual Current Device) fitted in the line to protect you from short circuits.

There is an awful lot of cutting, both sheet material and construction lumber, so you may want to consider a power saw to save you time and effort. There are two types of saw in the list, the circular saw is more adapted to cutting sheet material. The chop saw is for cutting timber to length and is great for cutting angles. If I had to make a choice between the two on a limited budget I would say that the handheld circular saw would win out.

The final power tool that you might not already possess is a nail gun. Many people build a shed quite happily without one of these, while others swear that they are necessary. If you are on a budget you can easily give this one a miss.

Though one money saving suggestion from a reader to the site was to buy a nail gun outright for use on the project. When the shed was finished he resold the used nail gun on Ebay for 70% of the new value, this represented quite a saving over hiring the tool from a hire shop.

Before you can start using these tools though you will need to order your construction materials.

Where is the best place to buy my building materials?

To get the best prices on your timber, siding and hardware you will need to shop around. To make this easy I have prepared a material summary at the end of the shed plans section. You can take this along to your local builders merchant (or email it, or fax it) to get an itemised price list for all the components. Once you have a quotations from 3 different suppliers you can compare item rates, delivery costs. It may be best to get everything from one source or you may get a better overall price by getting the timber from one source and the siding from another.

It is often worth looking online for hardware. There are a number of specialised shed component suppliers that sell hardware that is difficult to get from mainstream stores.

Once you have your tool and materials you are almost ready to start.

Before you start though you should have a mental picture of the build in your head

These instructions will take you through the process of building the shed step by step. In words and pictures.

It would be great if I could give you an idea of how long each different stage takes however everyone comes at this project from a different angle and skill level. It might take a carpenter an hour or so to do some elements of the work that would take a raw beginner a day.

I have therefore stayed away from giving time estimates. The best approach is to understand each step thoroughly and do it to the best of your ability. After you have started you will quickly get a feel for how long each process is going to take. From this you will be able to put together a time schedule for how long it is going to take you to finish the project.

Hopefully you will have a bit of fun along the way

Having a helper or shed building assistant is a great way to increase enjoyment. Although it is possible to complete the majority of tasks by your self you will need help at some stages of the build. In particular these stages are when you are lifting and manoeuvring the wall panels in to position. And also when you are lifting the roof trusses and roof sheeting to form the roof.

Having a helper is also great for discussing site problems and finding solutions that otherwise might take much longer.

A final reason for working with someone else is safety

Building a shed has many possibilities to hurt and injure yourself if you do not take the right precautions. Understanding the risks and taking appropriate measures to minimise them are your responsibility.

I would recommend that you invest in protective equipment such as steel toe capped boots, leather work gloves and eye protection for when you are working with power tools.

When it comes to repetitive lifting and carrying of construction components follow the recommendations for the lifting method here. Limiting the maximum amount that you lift to a maximum of 25kg (55lbs) is important too. To keep within this limit I have highlighted when you will need assistance. The main occasion here is when you are lifting the wall panels from the horizontal to the vertical. It is essential that you have help to protect your body.

When working with power tools it goes without saying that you read the specific warnings and follow the instructions.

The last main area to highlight is working at height. When you are building the roof you will be at heights of 6'++ falling from this height can cause serious injury or death. When you are planning the work you need to consider how you will access the roof and what measures you have to ensure your safety and that of your helpers.

Building a shed is fun and rewarding

Most people get through the shed build with nothing more than a black fingernail from a stray hammer blow.

I hope that you read and take on board these shed instructions. They should be a lot more fun and informative than those included with your average mp3 player. I also think that you will get a lot more pleasure and satisfaction from building a shed than just plugging a piece of electronic kit and playing away!

2.0 How to build your shed on a secure foundation

“The wise man built his house upon a rock, his house upon a rock, his house upon a rock”

This extract from a song my daughter was taught at Sunday school, probably summarizes the majority of knowledge that most of us have on the topic of foundations.

So when it comes to building a foundation for our shed, should it be as solid as a house foundation?

Should shed foundations be as solid as a house foundation?

There are two main reasons why the foundations to your shed don't need to be as solid as house foundations.

Firstly, houses are much larger structures than the typical shed. If the foundations in one part of the house move relative to another it can cause problems with cracking in the walls, doors not opening and worse. Given the smaller dimensions of a shed the possibility of one corner moving a large amount relative to the opposite one is much smaller.

Another reason why house foundations need to be particularly stable is that they tie in to a large number of other services. If the house was to move in relation to the pipe carrying sewage from the house or gas into the house you can imagine the problems that would occur.

So how strong should my shed foundations be?

Shed foundations are not so much about strength as stability. In engineering terms the pressure put on the ground by a shed is almost negligible. The weight of a fully loaded 8x10 shed might be 2,000lbs which on typical shed foundation would give a ground bearing pressure of 360lbs/foot². Even the poorest subsoil generally has an allowable bearing pressure of 1,000lbs/ft².

The main thing is to provide a platform that will not vary too much with the seasons. Depending on where you are in the world some local building control regulations may have specific rules on what the foundations of your shed should be. Typical reasons for these rules could be frost and high winds.

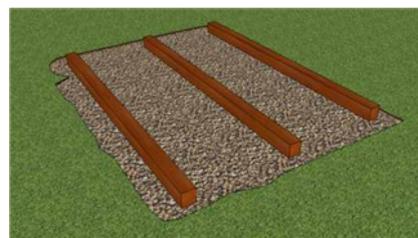
Why does frost affect my foundations?

In areas where there is significant cold weather the ground freezes in the winter and as it freezes it swells and causes the ground to lift. In areas subject to this 'frost heave' foundations will be required to be dug to a level below which the ground does not freeze. Also the sides of the foundations should be smooth so that the ground does not get a hold of them as it swells. The depth and details of this type of foundation will be specified by the local authority.

So what are the different types of shed foundation?

There are three popular types of shed foundation. These are the timber skid foundation, the pier foundation and the concrete shed foundation.

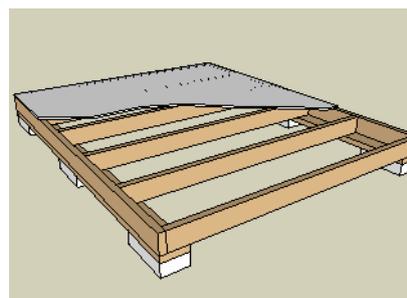
The timber skid foundation is probably the cheapest shed foundation to build. The foundation comprises mainly of a strip of compacted rubble and two 4x4 or 6x6 treated timbers bedded on them so that they are level with each other and horizontal. This type of foundation, though quick to build, is probably the least durable. However, many outbuildings will last for a surprisingly long time on this type of base.



The construction of a timber skid foundation is described fully here:

<http://www.secrets-of-shed-building.com/storage-shed-foundation.html>

The pier foundation is formed from a series of discrete concrete blocks that form individual points of support to the base of the shed. The depth of foundation to these blocks can vary depending on local requirements. For some sheds it will be as simple as locally removing the topsoil and compacting some crushed stone to form a base for the concrete blocks. In areas with poor ground or with frost heave problems the hole may need to be a lot deeper. In some cases a motorized post hole borer can be used to create the hole and a purpose made cardboard tube filled with concrete to form the support.



http://www.secrets-of-shed-building.com/shed_pier_foundation.html

Concrete shed bases are hard work. There is a lot of work excavating the base and possibly disposing of the spoil. Then you need to set up the edge forms and place any reinforcement. This is all before you mix, place and finish the concrete. A concrete floor is a lot more work than other types of shed foundation, however it can double up as a hardwearing durable floor and so if this is what you need for the storage of vehicles etc it might be what you want.

<http://www.secrets-of-shed-building.com/concrete-shed-base.html>

All of the above assumes that you have a lovely level site on which to build your shed.

What if I have a sloping site?

If you have a sloping site the pier foundation will most likely be the best solution for you. Each of the piers can be constructed at the level of the existing ground and then built up to a common level on which your timber bears will be supported. There is quite a full discussion of sheds and sloping sites on this page.

<http://www.secrets-of-shed-building.com/concrete-shed-base.html>

As we have seen there is a wide range of foundation option on which to build your shed

A shed does not need to be built on a 'rock solid' foundation. By following the principles and instructions in this article and also any specific requirements from your local building control department you will quickly choose a foundation that is suitable for your requirements.

Building a shed foundation is hard work, but spending the time to make sure that it is built accurately and to a common level will pay dividends as you move on to the next stage of your project which is to construct the shed floor.

3.0 Two ways to quickly and accurately build a shed floor

You have probably heard the rather gory saying ‘There is more than one way to skin a cat’.

I can’t really comment on the truth or otherwise of that saying. However, I can tell you that there is more than one way to build a shed floor.

Even though you may only ever use one of the two methods that I am going to describe in this article. Understanding both of these methods will help your project to go a lot more smoothly and turn out a better quality result.

The shed floor is a critical part of your shed project. If it is built out of level or square it will affect the accuracy of construction of the rest of the shed above that is supported on it.

Before we start on the construction of the floor however we need to find out what the main components of the floor are.

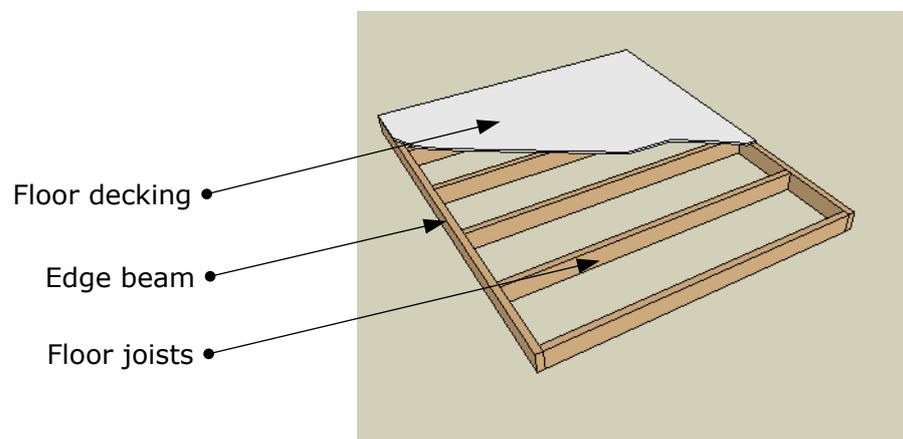
What are the main components of a shed floor?

The shed floor is built up off the top of a pair of timber skids or concrete pads dependent on your choice of foundation.

Above the foundation the three main components of the floor are:

- i) The floor joists
- ii) The Edge beam
- iii) The floor decking

The floor joists and the edge beam should both be made from pressure treated timber as in this part of the shed they are very susceptible to absorbing moisture from the ground. There are varying levels of pressure treatment consequently for this part of the structure check with your supplier to ensure that the timber has sufficient treatment for long term contact with the ground.



i) The floor joists

The floor joists are made from 6"x2" timbers. These are supported on the timber skid foundations and can span the full 8' from side to side of the shed if necessary. Setting the timber skids in from the walls by 1' on each sides means that the floor joist cantilever slightly and they are also better protected from the weather.

The floor joists themselves are spaced at 12" centres. Using 3/4" ply this should give a floor with a very solid feel to it.

ii) The second component is the edge beam

The edge beams are made from the same pressure treated 6x2 timber as the floor joists. The joists are connected to the edge beam using 3 x 3.5" galvanised nails. The edge beam serves to keep the floor joists together and in a straight line.

It is worth carefully selecting these timbers for straightness from the bundle that you have had delivered. To check for straightness stretch a string line from one end to the other beam and look along the length for any warp or deviation from the string line. Once you have checked a few select the straightest.

iii) The structural floor

The structural floor is made from 3/4" inch ASX ply wood. The abbreviations of this are important. The A and S stand for the quality of finish of the surface of the plywood. The A is minimum knots, which will be for the upper surface of the floor. The S is for the utility grade of plywood which will be the underside of the floor (no one will ever see this).

The X stands for exterior grade. This means that the plywood is made using waterproof glue. This is essential for a shed floor that may absorb moisture from the ground and also water dripping on to it from above.

Regular construction plywood has square edges. If this is what you buy, you will need to ensure that these are supported by a joist in the side to side direction of the shed and install a short length of timber (known in the trade as a noggin) to support the edge of the ply in the other direction.

If you are lucky enough to find, or afford, flooring grade ply then this may have tongue and grooved edges which will remove the need to be so assiduous with the edge support.

Now we know about the materials that the shed floor is to be built from lets move on the first method of floor construction.

The first method of floor construction applies to sheds built on skids

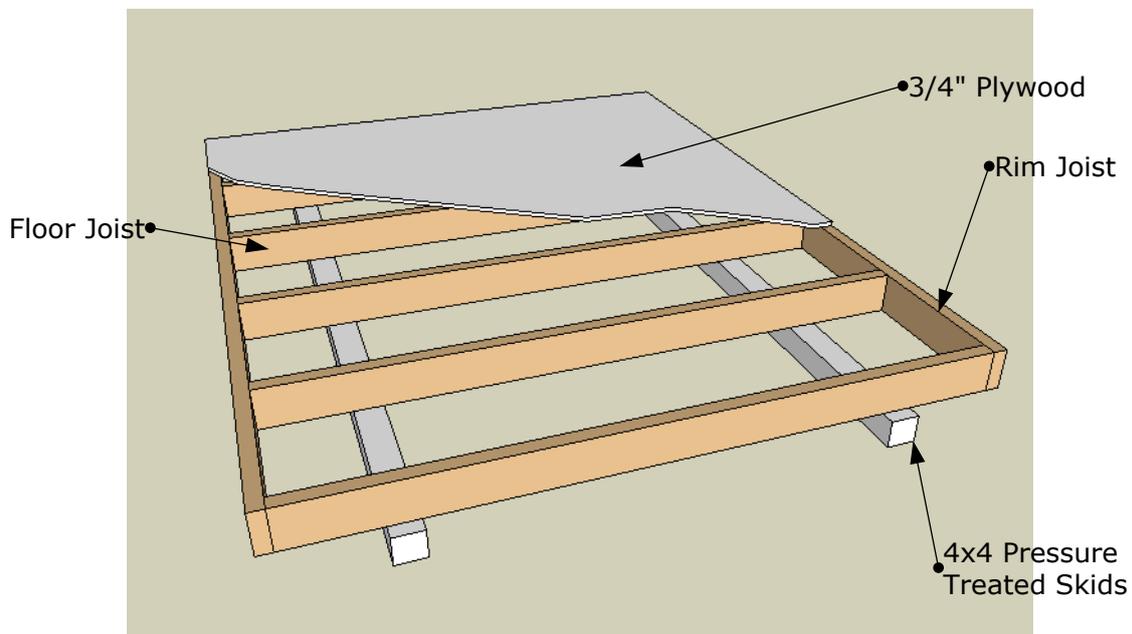
For this method the joists and edge beam are cut to the length shown in the plans. The end joists are installed spanning across perpendicular to the skids. The edge beams are then connected to the end joists using two 3" decking screws at each connection. The two joists and the edge beams now form a shape that is quite close to a rectangle. To make the joist/edge beam frame a true rectangle measure the diagonal distance from one corner to the other in both directions and adjust the frame until the two measurements are equal.

Installation of the remaining floor joists can now take place at 12" centres along the length of the edge beam. Taking care as mentioned above to ensure that a floor joist occurs at all locations where there will be junctions in the plywood sheeting.

Finally installation of the ply wood sheeting (after a final check that the floor is still a true rectangle). The plywood sheeting is fixed to the flooring using 2" decking screws at no greater than 12" centres.

The skids and the edge beam form a key part of this method in ensuring that each of the floor joists are installed at the same level to form a flat surface to support the ply flooring.

The second method of floor construction does not have the benefit of skids to help ensure vertical alignment of the floor joists.



Shed Floor Supported On Skid Foundations

The second method of floor construction applies to sheds built on concrete piers

Sheds built on concrete piers do not have the continuous line of support offered to those built on skids. To overcome this an additional component known as a mud sill is used.

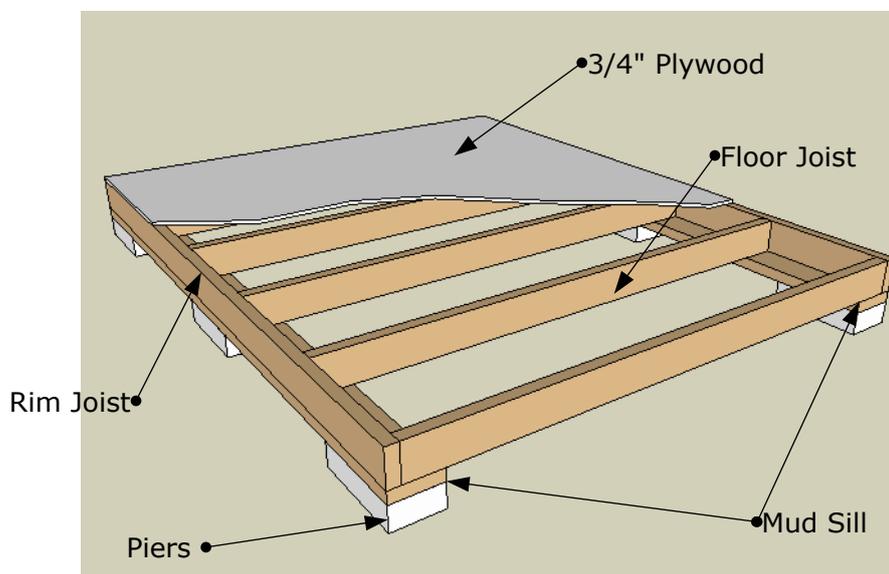
The mud sill, made of pressure treated timber of the same size and length as the edge beam, is screwed to the underside of the edge beam to form an 'L' shape. The concrete piers are located along the line of the wall of the shed and support this L shaped beam.

The end beams are installed and the rectangle squared up in the same way as for floor construction using the first method. When it comes to infilling the floor with joists, the joists are supported on the horizontal section of the 'L' before the final structural connection is made using 3 x 3.5" galvanised nails.

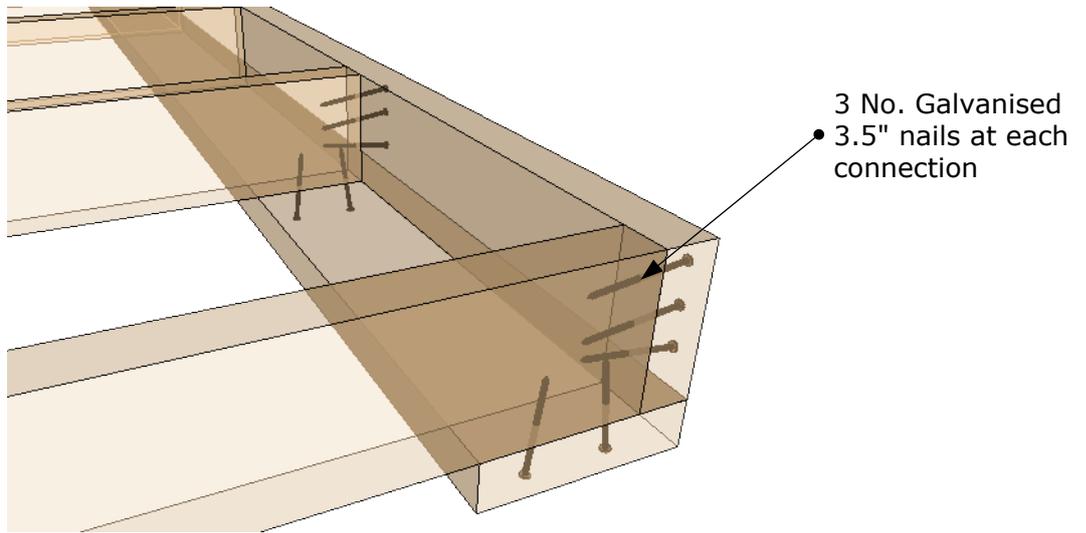
Knowing more than one way to build a shed floor helps to overcome problems on site

Next time someone asks you a question to which there is more than one answer you will be able to tell them 'there is more than one way to build a shed floor'

You will be glad that you took the time to get this floor level and square as now we move on to the next stage of the build. In this stage we use the nice flat, square floor that you have just built as part of the template to prefabricate the roof trusses and walls for the shed.

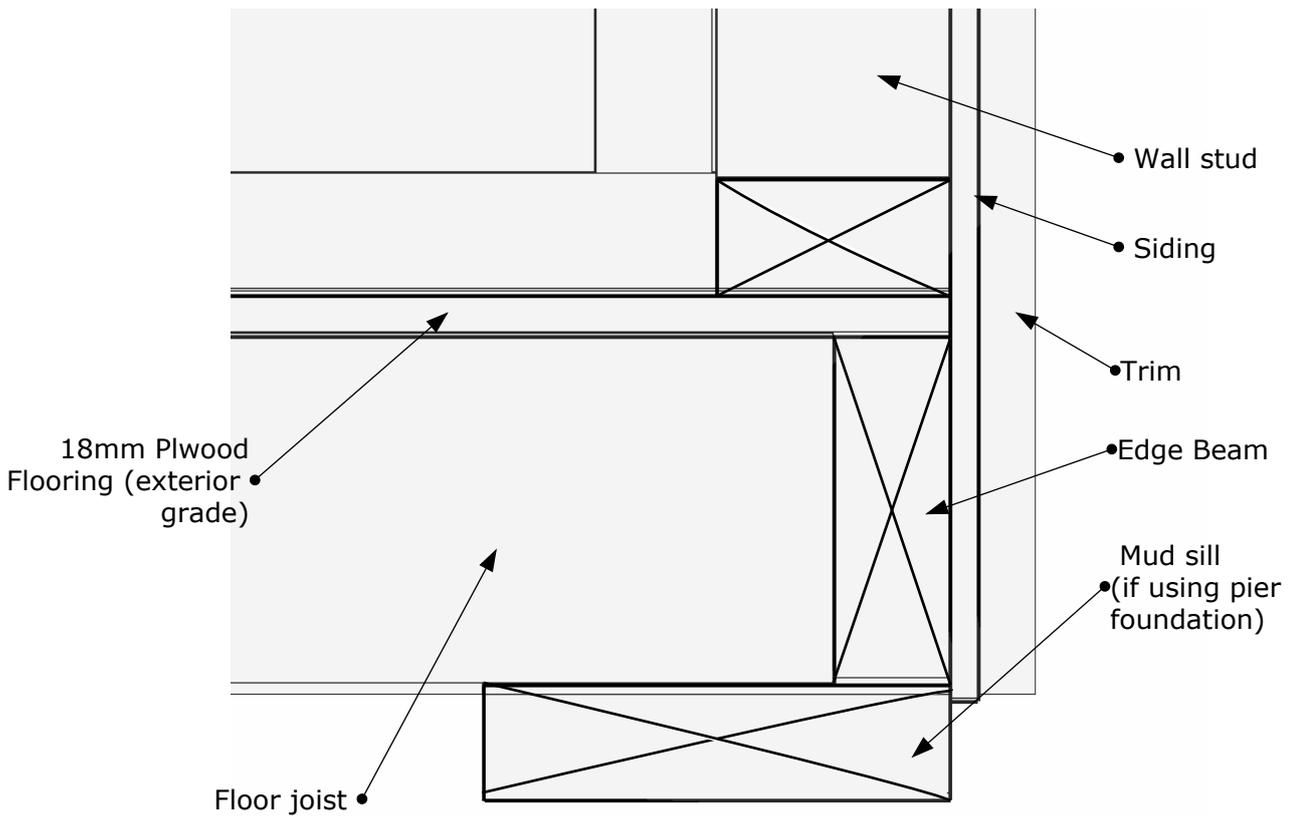


Shed Floor Supported On Pier Foundations



Structural Nailing Detail

Showing nails driven in at a skew angle to each other for additional strength



Section Through Base Of Shed

4.0 How to build shed roof trusses using the cookie cutter technique

We are in the kitchen with my 5 year old son and 3 year old daughter. There is flour everywhere we have biscuit mixture all over our hands. Every one is having a great time.

And the results, a set of 10 ginger bread men, are surprisingly professional.

How do you get such good looking biscuits with such low levels of skill?

You know the answer, we did not shape each biscuit individually, we used a cookie cutter to cut each of the biscuits from the rolled out dough. The result is that each biscuit is identical with sharply defined edges ready to be decorated.

Using a similar technique to build your shed roof trusses will give you professional looking results too.

Why use the cookie cutter technique for making shed roof trusses?

Firstly, it is not really called a cookie cutter but a jig or template. Using a jig will give you three main benefits when building your shed roof trusses.

1. Savings in time
2. Precise control over dimensions
3. Predictable strength

Building a jig saves time as all of the components slot together

The jig is built on the floor of the shed and is made out of timber 'stops' that define the shape of the truss that you are building. It is important to spend time setting up the jig for the first time so that it is perfectly accurate. The time saving comes when you build your second and subsequent trusses. After the jig is set up there is no set up time, the timber members are just dropped into place. The cover plates put in to position and the nails hammered home

It is very important to check the result of the first truss construction closely for accuracy as all the following trusses will be identical.

Precise control of dimensions comes from setting up the first truss perfectly

Checking the dimensions of the first truss is critical. Having the jig ensures that all the following trusses will be the same. The benefit of having all the trusses identical is that when the trusses are in place sitting on the wall plate the rooflines will follow through perfectly and the roof sheathing will be easier and quicker to install. You will spend less time making small adjustments.

The final benefit is the predictable strength

You have a system for building the trusses that comprises cutting the individual components to size, building the jig, placing the components in the jig to an accurate shape and then finally nailing the pieces together. The final result is made to a plan and strength that is reliable. Because you had everything ready up front, you can spend time focussing on the important strength related details such as getting the nailing pattern right on the connection plates.

OK building a jig sounds a good idea.

How do I build a jig for my shed roof trusses?

The starting point is to have already built your shed floor so that you have a flat clear surface on which to build your shed roof trusses. Using the plans cut the components for your first truss and then mark out the shape of the truss on the shed floor at full scale. Use a carpenters' pencil for the marking out and a long straight length of 4x2 as your ruler.

For the purposes of example I will use a gable roof truss

But the same principles would apply if you were building gambrel or saltbox shed roof trusses.

As you can see from the plans there are three principal components of the truss; two rafters and the bottom chord. The components are joined together by $\frac{1}{2}$ inch thick plywood gusset plate at each connection, one plate is needed on each side of the connection, making six plates are required in total.

Take time to set out the shape of the truss and position the rafters and bottom chord precisely in position. When you are satisfied that they are correct, after checking at least twice, screw them to the shed floor. This is the sample and is the shape that all your future shed roof trusses will follow. Spend a few minutes now screwing 8 plywood stop blocks to the template in the positions shown on the diagram. The stop blocks project up above the rafters by 2 inches and mean that when you place your next rafter on top of this one it will be in exactly the same position relative to the other rafter and bottom chord.

The roof truss is built on this template

The two rafters are slotted in to position and the bottom chord. You will easily see if you have cut them right as there will be gaps between the ends. Assuming all is correct, place the plywood cover plates over the connections and nail them into position using the nailing pattern shown on the plans.

The partly made truss is then removed from the jig, flipped over and placed back in the jig so that the plywood plates can be nailed to the other side. The finished truss is then removed from the jig and placed to one side. Construction of the next roof truss can begin.

Mass production of your shed roof trusses has started!

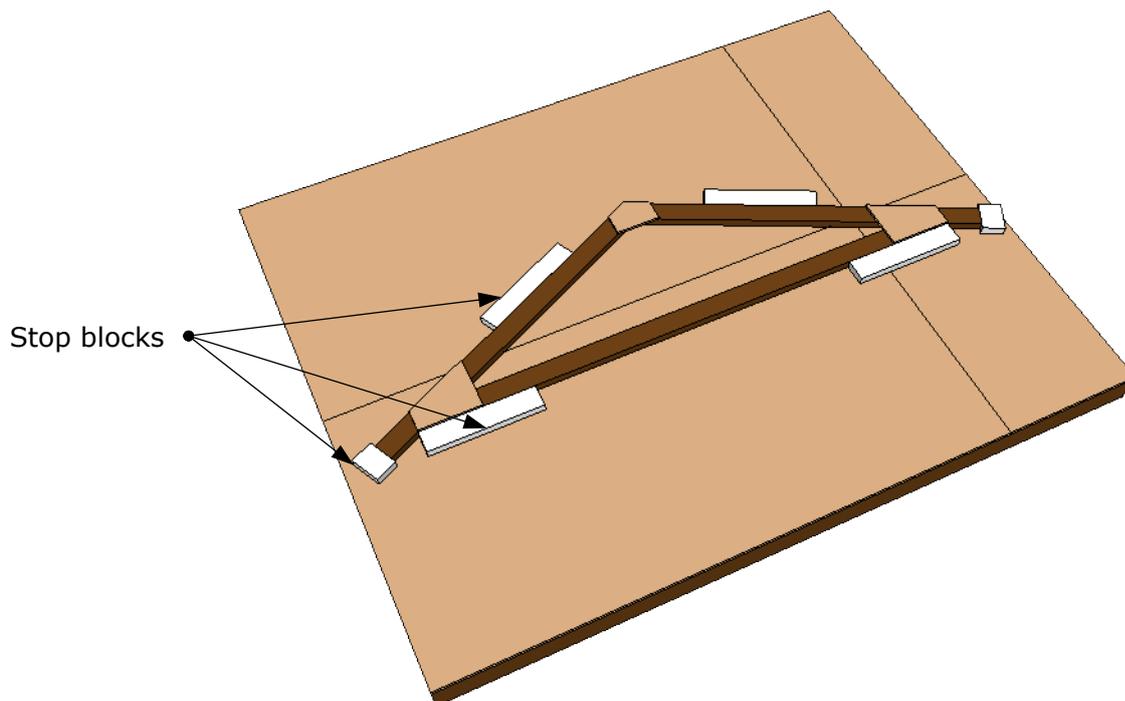
Building your shed roof will be an enjoyable experience

By spending time setting up your jig you will save time in building the shed roof trusses. Final assembly of the roof of the shed will go more quickly too as there will be no small, time consuming dimensional errors to compensate for.

The dimensional accuracy of the roof trusses will be great as you will have checked them several times and they will all be identical.

The strength of your trusses will be good as you will have time to concentrate on the important details.

Who knows you may even save enough time on building your shed roof so that you have time left over to bake some cookies with your kids, and really apply your cookie cutter skills.



5.0 Building your shed walls

Don't you love it when a good plan comes together! ;-)

So far you have been toiling away building foundations, floor and roof trusses. And all you have to show for it is the flat level surface of the shed floor, 15" or so above the surrounding ground level.

Bit disappointing huh! All the work you have been doing so far has been absolutely necessary, it's just been below ground level and low profile.

With the construction of the shed walls all this is about to change. By the time you have completed the work in this section you will have four walls 6' high enclosing the space to be occupied by your shed.

What is the big picture for building the walls?

The sequence for building the walls is to construct each wall on the flat surface of the shed floor including installing the siding. When the wall is complete you will need the assistance from a friend to help lift the wall from the horizontal to the vertical.

The first wall will need some temporary bracing to hold it upright. As you move on to the second and third wall, the walls start to support each other. With the installation of the fourth wall the structure is stable and you are ready to start the roof construction.

So what is the first step of wall construction?

The first step is to select the timber that you will be using and to cut it to the lengths shown in the plans. I recommend that you start with one of the end walls as they are smaller, lighter and easier to handle.

As you lay out the timbers ensure that the bottom of the panel that you are building is adjacent to the edge of the floor where it will be when tilted upright. The weight of the heaviest panel will be about 140 lbs. The maximum recommended lift for one person is about 100lbs and so with one edge supported you will have a max weight of 70lbs per person.

Tilting the panel is well within the physical capacity of the average person, but lifting it and moving it with just two people would be a strain.

The individual timbers that form the wall are connected using 2 x 3" decking screws fixed into the end of the timbers as shown in the sketch. Fixing the screws in on the skew as shown gives the joint extra strength.

Keep going with the panel construction, ensuring that there is a vertical timber where you anticipate there will be a vertical joint in the siding.

When the skeleton of the panel is complete stand back briefly and admire your work

When you have finished the admiring bit. Do a check on the squareness of the panel by measuring across the diagonals and making any adjustments to bring it back so that the diagonals are equal.

It is now time to start installing the siding. The drawings show the siding extending above the top plate of the wall by 1 ½" and below the bottom plate by 7". This is to accommodate the tie plate at the top and so that the floor sheathing and the floor beams are covered at the bottom. The siding is fixed to the framework using 8d nails at 10-12 inch centres.

Its time to install the next sheet

After you have installed the first sheet of ply run a bead of caulk along the edge of the installed sheet where the next sheet will butt up to it. This really seals the joint between the two panels.

If you have a window in the panel cut the sheets as the cutting guide to leave the rough opening. Once all the sheets are installed come back to install the window and the trim around the window whilst the panel is still laying flat on the ground.

With the panel complete it is time to lift it into position

To lift the panel into position you will need at least one helper and ensure that there are no pets or young children in the area. Start lifting with one person at the two top corners and tilt the panel from horizontal to vertical. With the panel vertical, one of you will need to go around from the inside to the outside of the shed and nudge the base of the panel (with your foot or taps of a sledgehammer) in to position. So that the siding that extends below the bottom plate is in contact with the floor beams.

With the panel in place it must be secured

The panel is secured in place along the bottom edge using 2 x 3" screws between each pair of wall studs. To stabilise the panel in the vertical position install a temporary brace as shown on the sketch below. The brace is fixed to the wall edge timber with 3 inch screws at the top and to the edge beam using the same fixings at the bottom. Make sure as you make this connection that the screw is located such that it connects securely into the edge beam rather than just penetrating through the plywood flooring.

This bracing is temporary, and the panel should not be left overnight with this type of bracing. To make the panel really stable it needs to be connected to the other three wall panels.

So the next task is to continue with the wall construction. The next panel is constructed in the same way and once it has been lifted up right it is connected at the corner using 5 equally spaced 3" screws.

When you have three panels upright and connected together the temporary panel brace can be removed and the fourth wall fabricated and installed. By now you must be getting pretty good at this!

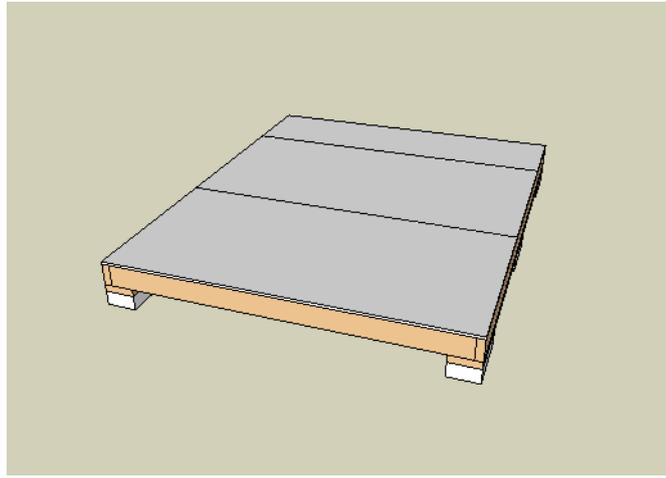
With the four walls installed you should be feeling pretty proud of your self!

After the slow progress of the ground works and the floor construction, building the walls gives a real sense of progress. However this is no time to relax, not yet.

To finish the walls completely and be ready to start roof construction you need to install the wall connector plate. This is fixed to the top of each panel and over laps the next panel to make an even bearing surface and connect each of the panels securely around the top of the walls at eaves level.

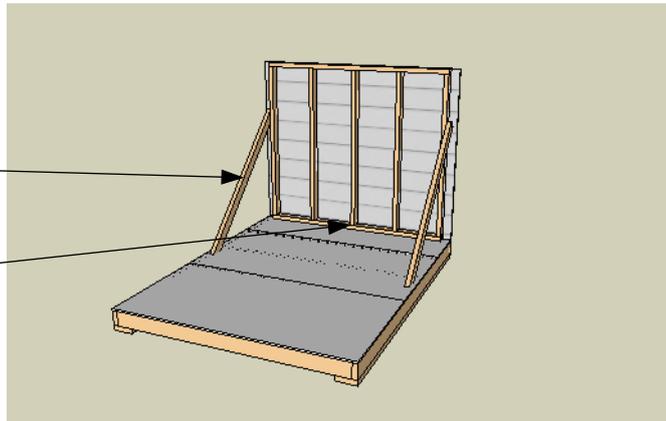
Now with the walls fully complete you can stand back and feel a sense of progress, before you move on to the construction of the roof.

1.0 Shed floor used for constructing first shed panel



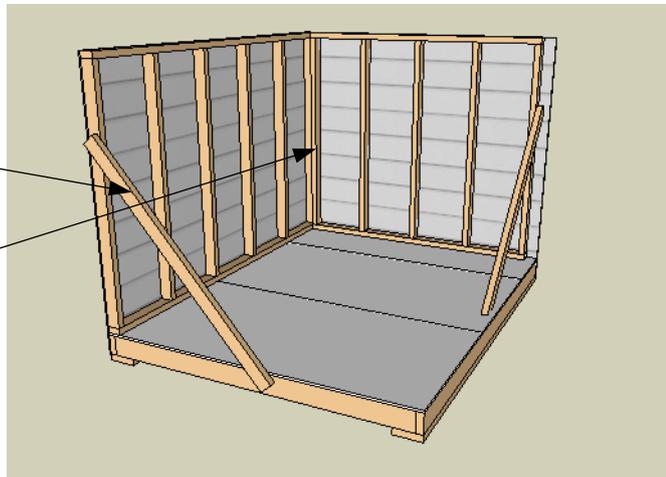
2.0 First panel in place and securely braced with 2 braces for stability to shed floor.

Temporary brace ●
Fixing panel to floor
2 No. 3" screws at each stud location ●
one either side of stud



3.0 Second panel in position and one of braces transferred to second panel

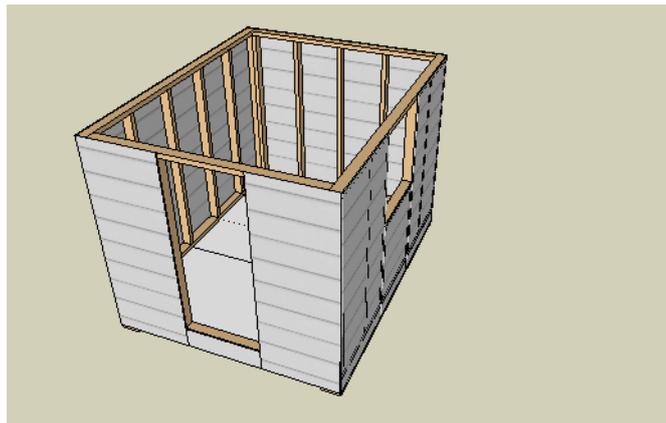
Temporary brace ●
Panel to panel fixing
5 No. equally spaced 3" screws at each
panel junction ●

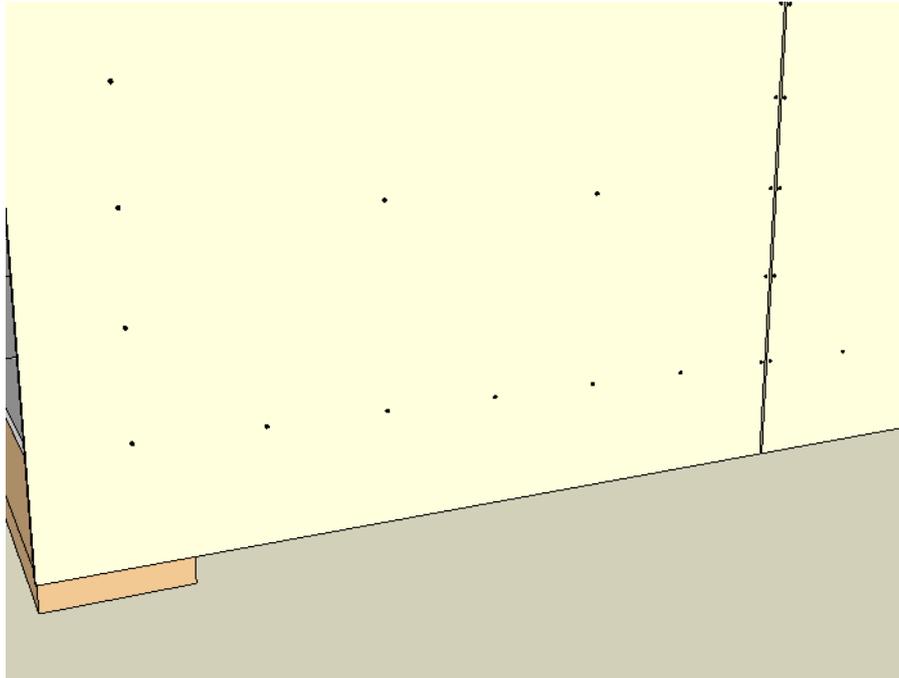


4.0 Third and fourth panels fixed in position.

All panels connected together and fixed to floor.

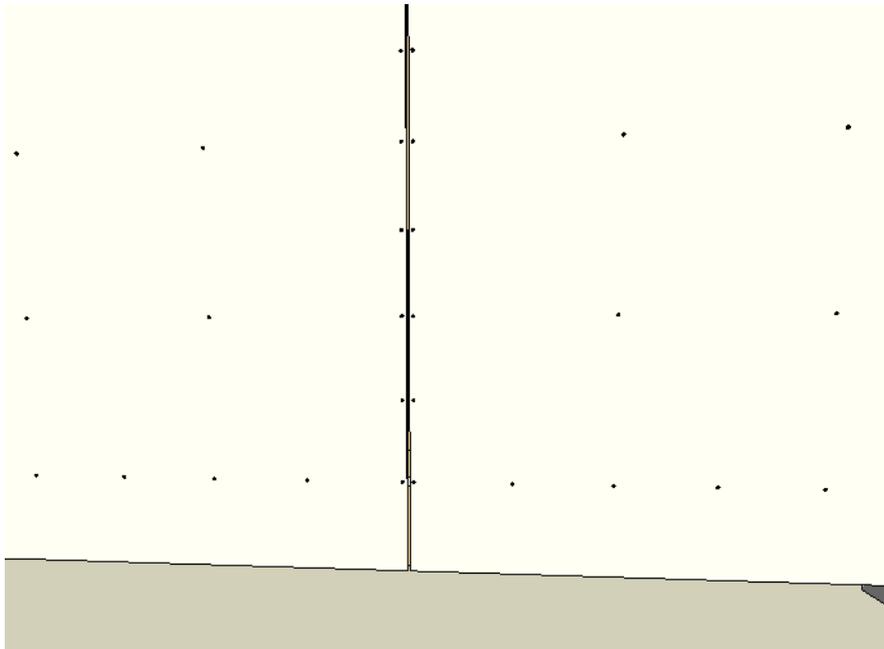
Walls ready to receive trusses and roof construction to commence.





General view of siding

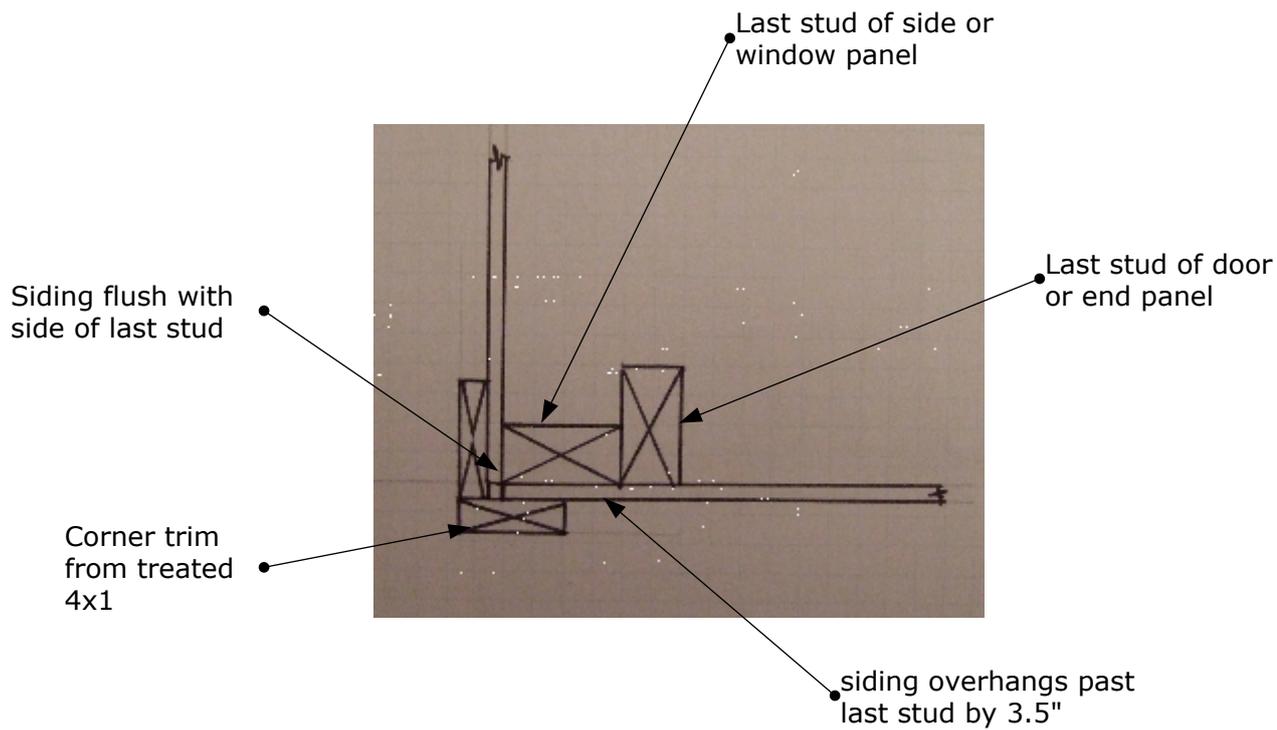
Use 8d galvanised nails spaced at 6" (150mm) around the perimeter of the cladding panel. At stud locations the nails are spaced at 12" (300mm) centres.



Close-up of panel joints

Leave a 3/16" (5mm) gap between panels, this gap allows for movement and is sealed with a silicone caulk from an applicator gun.

The nails should be no closer than 10mm to the panel edge



**Section Through Corner of Shed
Showing Connection of Two Panels**

6.0 How to construct your shed roof using the MSM technique

Do the words "Mirror Signal Manoeuvre" mean anything to you?

They are engrained in my brain as a phrase taught to me by my driving instructor when I was learning to drive. Before I changed the speed or direction of the car I had to check in my rear view mirror to make sure that it was OK to turn right, slow down or whatever I needed to do.

Only after I could see that it was OK to make the manoeuvre could I indicate. And then ONLY after the first two steps were complete would I be able to make the turn.

I did this so many times that it was part of my reflexes by the time I passed my driving test.

Mirror Signal Manoeuvre can help make your shed roof construction stress free

There are three things that need to be in place before you start your shed roof construction;

- The shed needs to be built up to wall plate level
- All the shed roof trusses should be complete and stacked nearby
- You should have arranged for at least two helpers to be with you on the day

The wall plate is the support that holds the trusses up in their final position.

A bit of preparation that you should do before you start the roof construction is to mark on the wall plate the precise location of all the roof trusses. The dimensions for this can be found on your shed plans.

The shed roof trusses should be close to the shed site

Having the roof trusses completed and ready before hand means that you are fresh for the main challenge of the day which is to build and secure a roof structure, where at the moment there is just fresh air.

Having helpers is essential

Even on the smallest shed the trusses will be 8' long and weigh over 20kg (45lbs). Trying to manhandle something this big and heavy by yourself and locate it precisely is tricky and to put it bluntly dangerous. Having help to share the load and reach where you cannot will make the job easier, safer and more fun. One helper is good, two is better.

The first step for building the roof is to lift the gable trusses into position

The gable trusses are heavier than the standard trusses as they have the gable siding and lookouts already attached. Having the siding pre-attached will save you a lot of difficult work on the top of a ladder later on. So having to lift a couple of heavy trusses into position at the start is a small price to pay.

To get the first gable truss into position carry it into the shed and turn it upside down so that its peak is pointing at the ground. Then lift it into position upside down adjacent to the end wall. Your two helpers can then set up their ladders adjacent to the truss.

The remaining person at ground level then lifts the truss horizontal and as high as he can before the two ladder people continue turning the truss to its final position with peak pointing vertically. The person on the ground can help at this point by using a length of 4x2 to lift the truss as well.

With the gable truss in position it should be secured by fixing at least one 3 inch decking screw every 300mm (12 inches) along the wall plate. To really make it rigid having a 4x2 timber running vertically and temporarily fixed to the wall and the gable truss for a bit of extra rigidity.

The next step is to lift the second gable truss into position

After lifting the two gable trusses into position you will find the standard, intermediate trusses so much lighter and easier to fix.

The intermediate trusses are lifted into position from outside the shed. One person will lift the truss and then pass it up to someone else at roof level and the truss is then moved into the positions marked on the top plate.

You need to double check that each of the trusses is correctly aligned along the length of the roof plate. The trusses should be fixed at one end only at this point using a 3 inch screw driven in at an angle from ground level inside the shed.

The remaining trusses are then lifted in to position.

With all the trusses in place the final adjusting and fixing takes place

Because of tolerances in the roof and timbers not being completely straight you may find that although one end of the rafter is fixed in the correct position the other end may overhang or be short by an inch or so. Now is the time to push and pull the shed into shape and fix the other end of the truss into position, double checking alignments and dimensions as you do so.

As the detailed dimensional work has been done at ground level most of the things should just work perfectly and it is a matter of finely adjusting truss positions so that they are parallel and the walls are straight.

What about the Mirror Signal Manoeuvre?

Ah yes. When I was learning to drive this was something that happened in my head, though my driving instructor did get me to say it out loud at the start, to get it really thoroughly engrained.

When you are working as a team you should apply these three same steps. Before you do anything, like starting to lift a truss into position for example, check around the site to make sure that it is OK to do so. Make sure the path from the stack of trusses to the shed is clear and that there are no tools or materials lying in the way.

Then once the path is clear communicate with your team mates what you are going to do. In this case who will be doing what to get the truss into the right position. Who will be doing the ground level lifting, who will be on top of the ladder to position the trusses and who will be doing the final fixing of the trusses.

Only when the path is clear and the team has clear signals as to what to do should you manoeuvre the roof truss into position.

I hope that your roof construction journey goes smoothly

The early preparation of having the shed ready to receive the roof trusses, having the roof trusses pre-prepared and having a team of willing helpers gets the job off to a good start.

Following the constructional steps by erecting the gable trusses first and then infilling with the standard trusses is the route to follow.

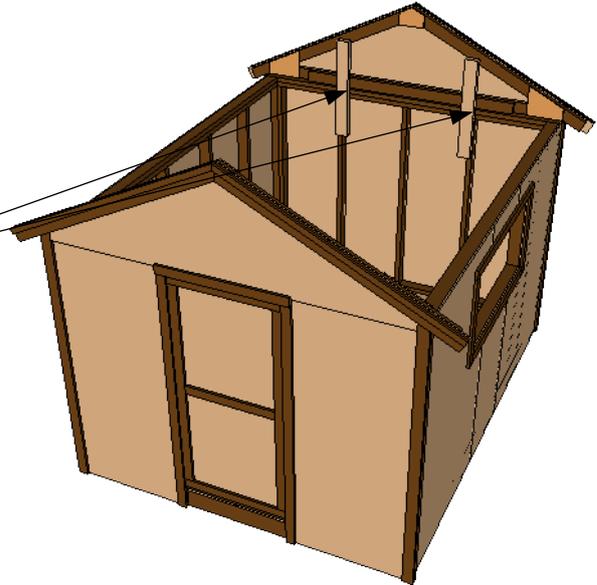
And using the MSM technique to ensure smooth communication within the team should help you to arrive safely and on time.

This journey from the bare wall plate to having all the roof trusses fixed in position should take about 2 hours at the most.

1.0

End roof panels in place and braced for stability.

Temporary brace secures panel until roof sheathing installed



2.0

Infill trusses lifted in to position and temporarily braced together.

When trusses are lifted into position they are secured on one side only with a single 3" screw.

When all trusses are in position. The distance between the walls for the centre truss is checked and the truss is secured to the opposite wall panel with the corrected wall spacing. The distance between walls is checked for each subsequent truss and corrected as necessary.

NOTE: Fix soffit boards at this stage as after the roof sheathing is in position access becomes difficult.



3.0

Roof sheathing fixed in position in preparation for fixing of roof waterproofing.

Fixing of roof sheathing acts as a method of ensuring that the roof is square. It may be necessary to 'rack' the roof slightly to ensure that all the trusses are parallel and vertical.



7.0 Installing Roof Shingles Is a Great Way To Create A Waterproof Roof For Your Shed

Installing roof shingles is popular roof covering for sheds in North America and with the advent of more substantial sheds and Home Offices in the UK is an increasingly popular option. Not only does the shed roof have a more attractive, interesting appearance but roof shingles are a more durable roofing option and not much more difficult to install than standard mineral roofing felt which is the most common roofing material for sheds in this country.

Make sure the roof structure is sound before you start

But first things first(I know you are keen to start installing roof shingles!), if you are building a shed from scratch make sure the shed frame is square and level before you begin your roof construction. Once all beams are in place, cover with 12 mm (~1/2") exterior-grade plywood sheathing. Make sure you buy exterior-grade plywood because it is moisture resistant and less likely to warp when exposed to outdoor conditions.

The plywood sheathing should be laid with the grain of the plywood perpendicular to the roof rafters. Laying the sheathing this way ensures that you create a sound structure.

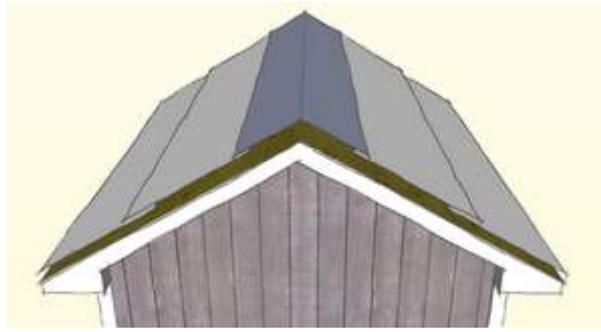
Use a chalk-line to mark each plywood sheet, snapping the line to clearly mark where the rafter beam is located. Then, in accordance with local guidelines, nail the sheathing to the rafter beam using 2" galvanized nails. Some local guidelines may suggest nailing the sheathing to the rafter beams every 4" or 6", the requirements vary based on local weather conditions such as hurricanes, tornados, and snow loads.



Installing the Roofing Underlay

Next, fix what is commonly referred to in North America as 30-pound felt paper, or tar paper and this side of the pond as Roofing Underlay. This layer will create a watertight barrier. Note: the underlay will only last approximately six months (or less) if left exposed to the elements. The underlay provides a secondary or backup waterproof layer to stop any water that makes it through the overlapping shingles above.

Begin at the bottom of one side of the roof and lay the underlay horizontally all the way across the roof. Often what is referred to as cap nails (or "red head" or "green head" nails) are used to attach the felt to the plywood because these nails have a large nail head with a small tack in the middle, making it less likely to rip or tear the felt.



Nails should be placed every 6" to 12" along the felt at the seam. Once the first row of felt is laid and attached, lay the second layer of felt (moving up toward the peak). The second layer of felt should overlap the first layer by about 6", this is usually pre-marked on the felt so that the builder has a clear guide to assist in lining up the sheets.

Continue to lay the felt and secure with cap nails. Both sides of the roof should be completed before you place the final sheet on the roof peak. This sheet should be laid last to ensure that all water drains away from the roof peak. All seams should face down toward the ground.

Selecting Roof Shingles

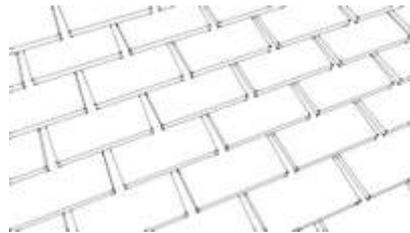
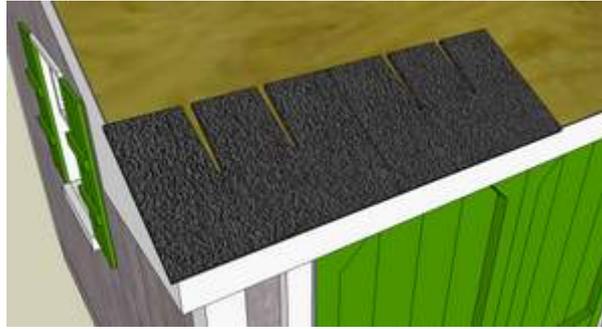
Once the roof is covered with underlay, it is time to attach an asphalt roofing shingle. Cheap builder's grade shingles are generally a 20-year shingle. This type of shingle is likely to be sufficient for most shed projects. If you would like a more durable option, consider a 25-year shingle (which is slightly thicker) or a 30-year shingle. The 30-year shingles are thick and can add a more three-dimensional look to the roof. If you want the shed to match the look of the main house, which may have a more dimensional shingle, consider one of these thicker options. Also the thicker shingles will increase the durability of the roof and resistance to high winds..

Note: The years associated with shingles, for example 25-year shingles or 30-year shingles, generally have more to do with the thickness of the shingle rather than the number of years they are expected to last. Roofing shingles come in strips that are generally about 3-feet long and 8 or 10 inches wide.

Start installing roof shingles

In order to make your roof water tight and to eliminate wind infiltration, first place tar on the bottom edge of the roof and lay a row of roofing shingles upside down all the way across the bottom of the roof.

Note: Avoid applying too much tar because it may ooze out and onto your building when you place the shingles on. It's easier to avoid tar drips than to clean them off!



Once this first row of upside down shingles is affixed to the roof with tar, begin laying the shingles. Start in one bottom corner. Lay the first shingle on top on the upside down shingle that is affixed with tar. Nail the new shingle in using roofing nails. Depending on the building codes in your area, your shingle may need 4-6 nails for each section of shingle.

As you lay subsequent rows of shingles, stagger their placement so that seams do not line up and allow water infiltration. In the second row, move the shingle sheet over one third. This way, every third row of shingles will line up. Some people also suggest moving the shingles over 6" for every new row. Decide what staggering pattern will work best for your shingles before you begin.

Remember the ridge piece

Once you have covered both sides of the roof, you will need to attach a roof ridge shingle. This important piece protects the roof peak from water penetration. Installing roof shingles, as you have just found is straight forward and if done correctly creates a durable, watertight and attractive roof for your shed!

8.0 How to hang your shed door

There are some items that are just so classic in their simplicity, they do their job really well and despite generations of use can't be improved. Things such as the screw thread, the wheel and the coat hanger.

They fit into the category of Einstein's maxim for designers that 'everything should be made as simple as possible but no simpler'.

I would say that the traditional shed door fits into this category

The traditional shed door is fairly straight forward to make

The traditional shed door is made from a series of timber planks with bracing on the back. I describe how to construct this type of door here.

http://www.secrets-of-shed-building.com/building_a_shed_door.html

A variant using 5/8" ply wood rather than the 1" battens is shown in the drawings at the end of this article.

The door is made to a size so that the door panel is 1/2" smaller than the rough opening (which means that the door panel has 1/4" clearance all around). To keep with the principle of simplicity shed doors are typically hung with face fixed strap hinges.

How to install a door using strap hinges

For robustness the strap hinge is fixed at the same location as the cross members on the door. This means that you will need three hinges per door. The hinges are fixed from the outside. To ensure security of the door you will need to make sure that at least one of the fixings you use in each hinge is a dome headed coach bolt that is fixed right the way through the door and bolted on the back.

With the hinges fixed in place the shed door is lifted in to position

To keep the door in position while you fix the other section of the hinge through the siding and into the door framework use thin timber shims. A quick tip here is to fix the door closer to the top of the opening than the bottom as most doors will drop a little over time.

The simplest method of securing the door is using a simple hasp and staple

The hasp and staple is secured with a padlock. If you use this type ensure that the padlock that you buy is rated for outdoor use. You will also need to oil the padlock from time to time using 3 in 1 oil to keep the moving parts....well.....moving.

A step up from the simple hasp and staple is the integral hasp and staple. This piece of hardware has a lock as part of the staple. It looks a lot more sophisticated and is used quite widely.

A final piece of trim that you might want to add to your doorway is the threshold guard.

A threshold guard will increase the durability of your shed floor

The threshold guard is made of an aluminium extrusion and is fixed to the leading edge of the door threshold. The metal guard protects the plywood flooring from moisture and impact when you bring heavy items in and out of the shed.

And that's it as far as the basic shed door goes..

If you want to make your shed a bit fancier, say for use as a garden office or retreat then you would need to make the door opening a bit more sophisticated. To install a house type external door you would need to line the rough opening with 4x1 timbers and make rebates for the butt hinges etc. etc. This would have the advantages of making the door opening a lot more draught proof.

However for a simple garden shed why violate Einsteins principle of simplicity?

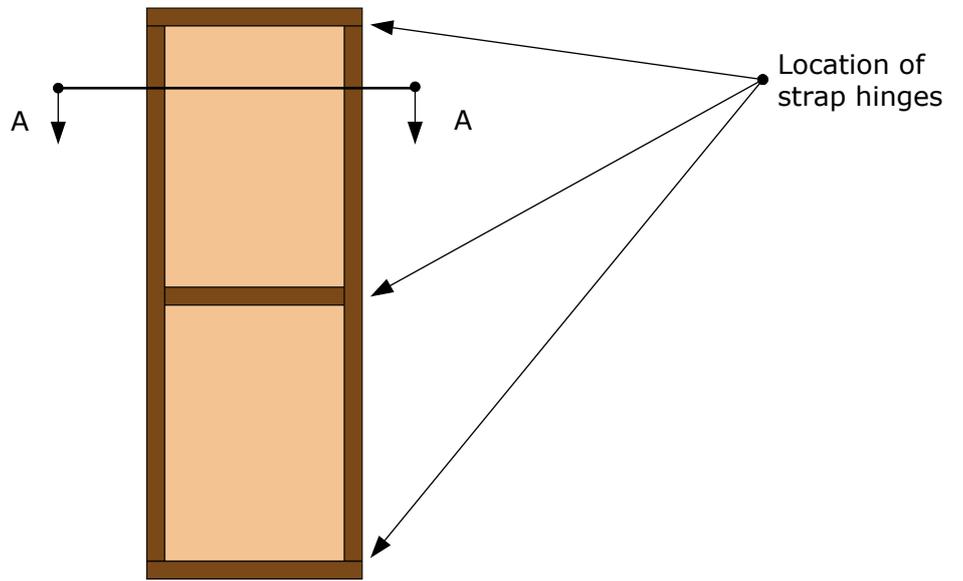
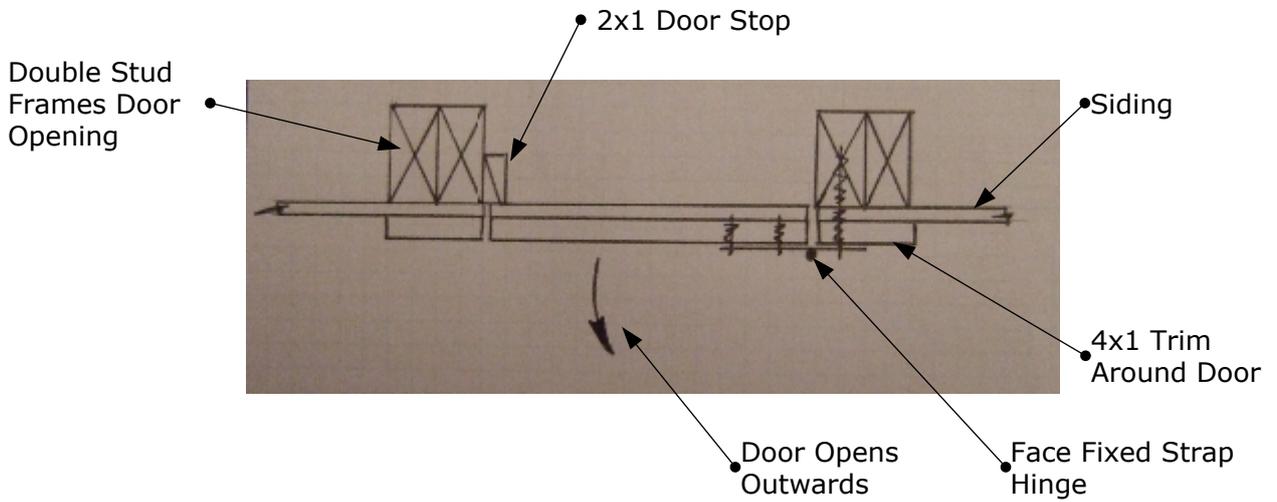


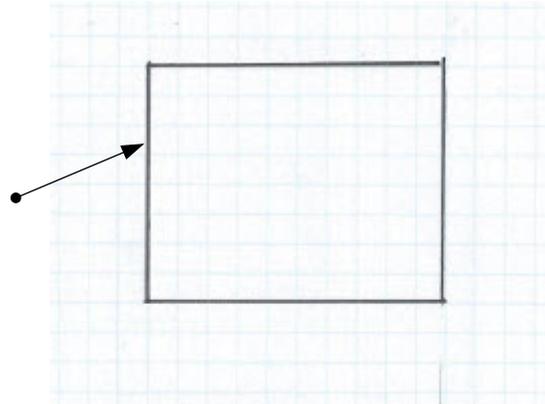
Image of door indicating positions of strap hinges



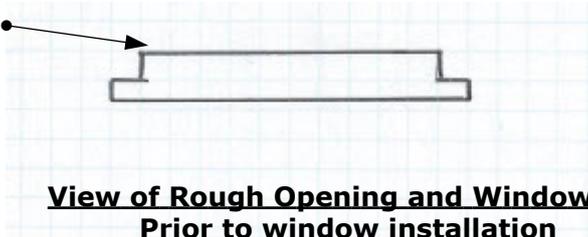
Section A-A Through Door Showing Major Components

9.0 Window installation

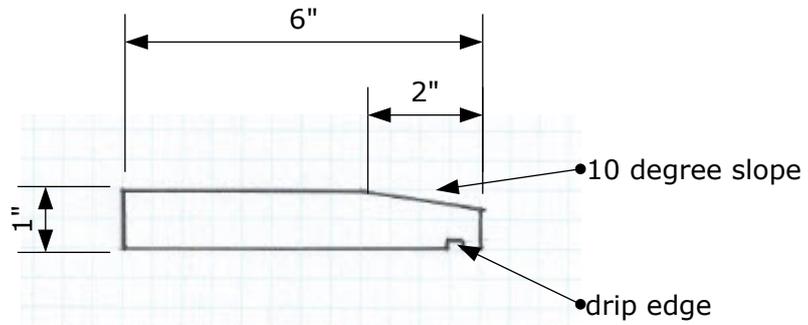
Rough opening in wall
1/2" larger overall
than actual window
size



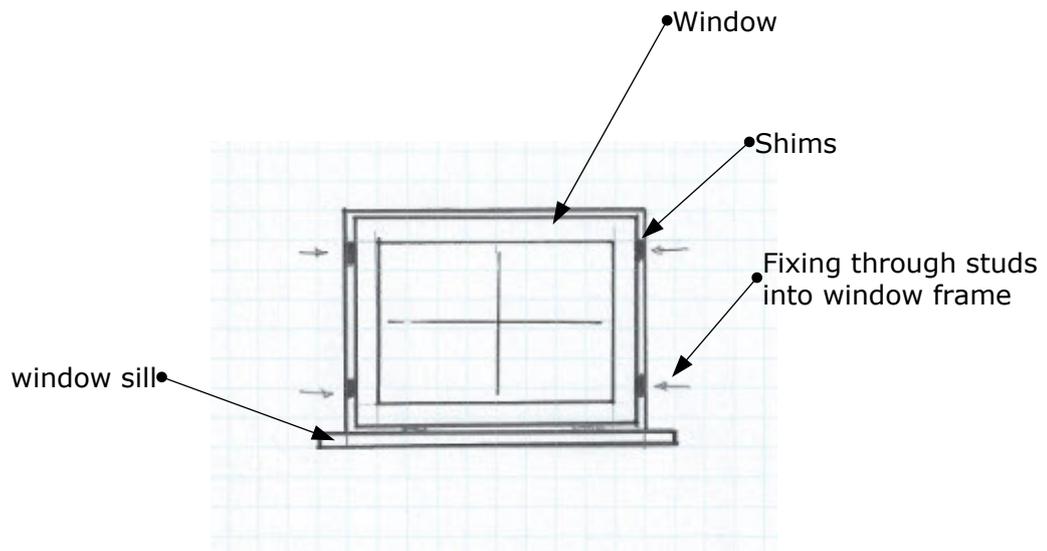
Cedar window sill
from 6x1 material
4x4" notch at each
end



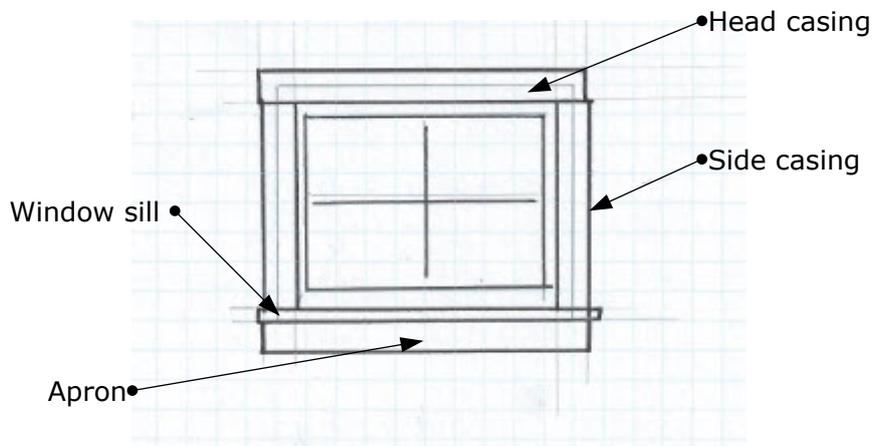
**View of Rough Opening and Window Sill
Prior to window installation**



Section Through Window Sill



Window Prior to Installation of Trim



Completed Window With Trim

All window trim from 4x1 cedar or treated softwood

10.0 Shed Trim Isn't Just Putting Lipstick On The Pig

I first read the phrase 'The gold is in the detail' in a book called IN Search of Excellence, by Tom Peters a business consultant. He used the phrase to describe how really good companies paid great attention to the little details of their operations and that this is how they helped themselves to stand out.

The same phrase about the importance of details can be applied to the final stages of shed construction.

One of the most important architectural details on a shed is the trim

The trim is one of the few architectural details that you can play with to express a little bit of extra personality. The trim can be painted in the same colour of the rest of the shed or in contrasting colours. The details that you use when fitting the trim will also help to make your shed stand out.

There are three areas where trim is mainly used. These areas are at the corners of the building, around openings such as windows and doors and finally around the roof. Particularly at the gable ends of the roof.

What is the purpose of trim?

The non-decorative purpose of trim is to mask joints in the structure and to protect them from the direct effects of the sun and rain. The trim protects the paint and the caulk in the joint from the effects of UV light and it also protects the joint from the direct effects of driving rain.

What is trim made of?

The traditional material for shed trim is 1" thick cedar. Cedar is naturally decay resistant and so can be used painted or unpainted. To achieve a 'square' corner you will need a 4x1 timber and a 6x1 timber. The 6x1 is 'ripped' so that it is 4 1/4" wide and then it is fastened to the 4x1 timber with 2.5" nails at 12 inch centres along the length. The corner unit is then fixed in position on the shed with 2.5" siding nails at 12 inch centres along both legs of the corner unit.

An alternative to timber is an artificial 1" x 4" timber substitute made by LP (The same people who make the Smartside Siding). This material comes ready primed and so is only suitable for painted finishes.

I have included a few sketches of details that you might want to choose from as you install your trim. They all perform the function of protecting the seams of the shed.

The final choice as to how you install trim is up to you

Non painted bare wood sheds are a lot easier to maintain (no painting required), though the weathering can make them look shabby. One colour sheds are simpler to paint than sheds that use contrasting trim. However contrasting trim is almost essential if you are intending to make some sort of design statement.

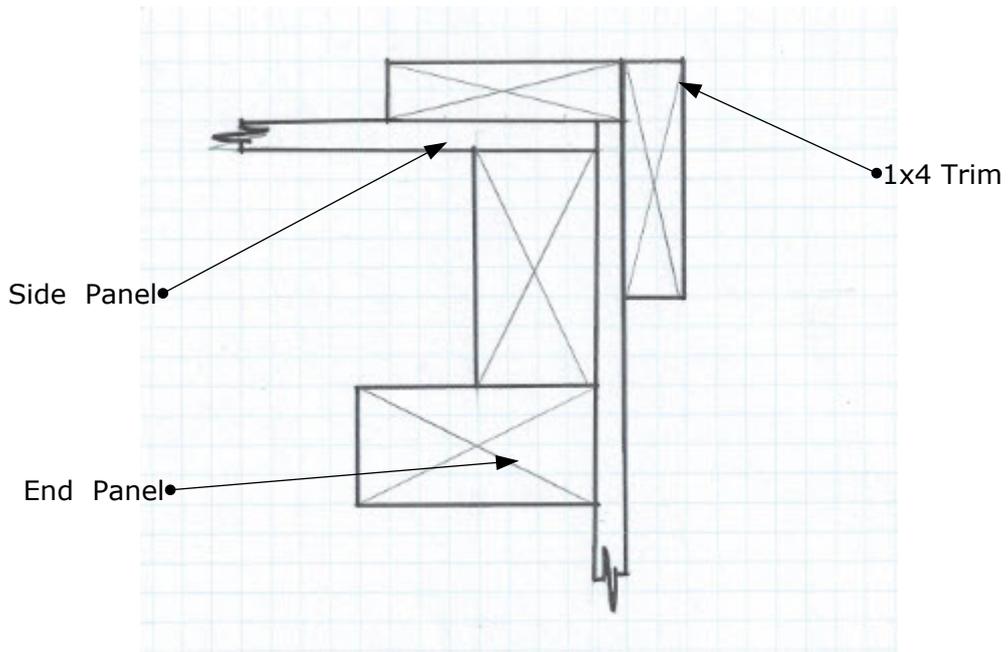
As I said at the beginning, the gold is in the detail.

And if you have got to the stage in your shed construction of trim installation then you are close to the finishing line and deserve a gold medal.

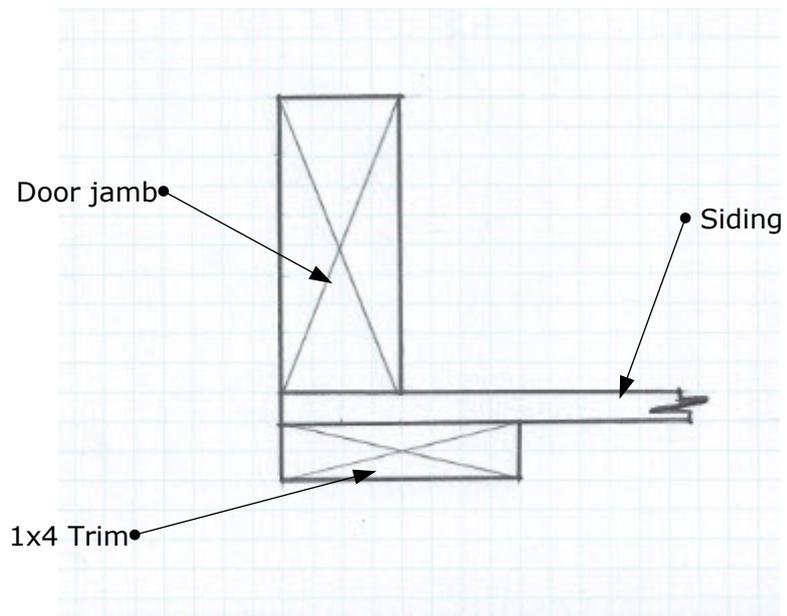
Keep in touch

When you have finished your shed project let me know how it went. Were the plans easy to use? Were there some tips that you would like others following along to have that helped you along the way?

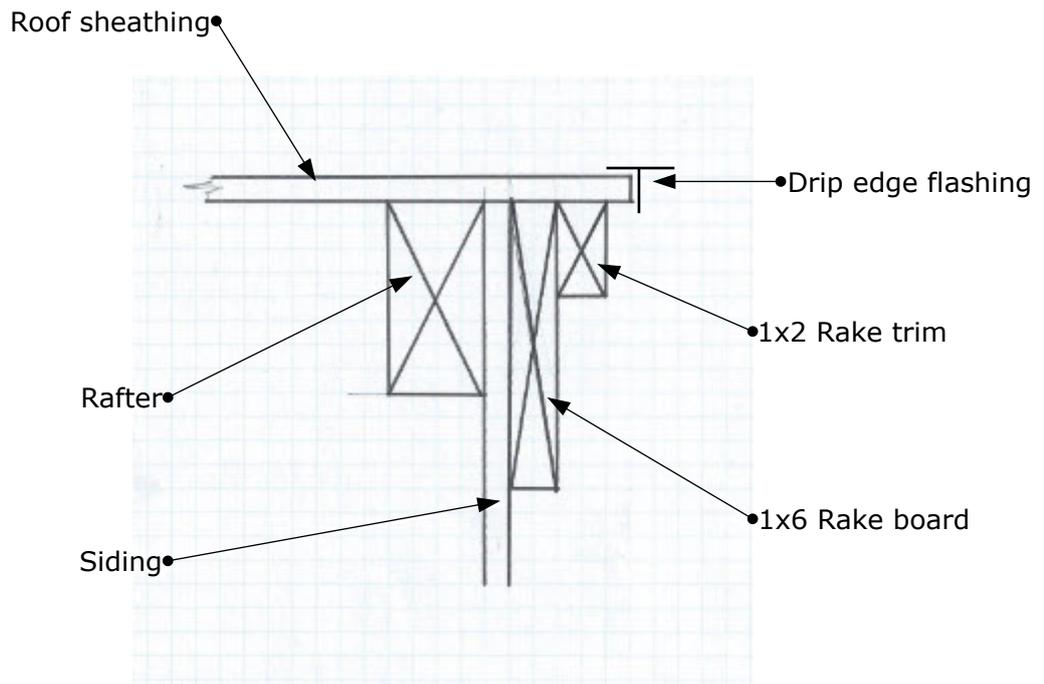
Drop me a line with a few pictures to let us know how you got on.



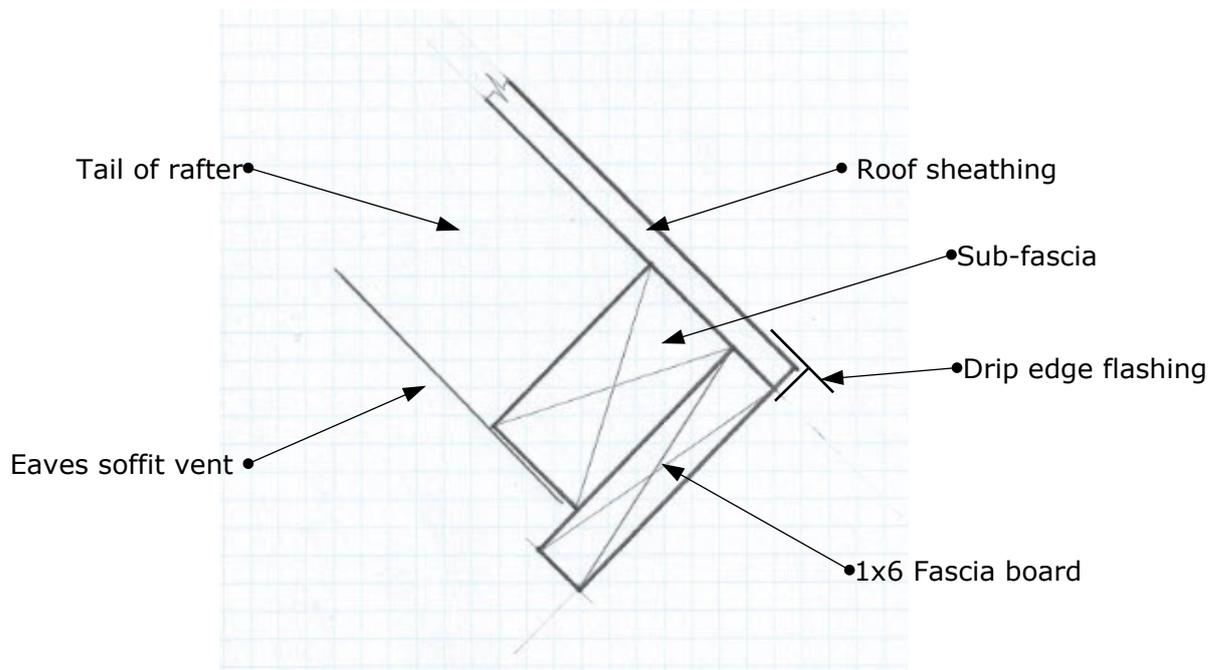
Section Through Corner of Shed



Section Through Door Jamb



Section Through Roof Verge on Gable



Section Through Eaves

Tool list

Safety

Hard hat
Gloves
Goggles
Knee pads
Dust mask
Steel toe cap boots
Ear plugs

Tool belt

Measuring

Spirit level
Framing square
Roofing square
Tape measure

Cutting

Hand saw - Cross cut handsaw 24 inch long (7-8 teeth per inch)

Power saws

Electric jigsaw

Portable circular saw (7 ¼ inch mid-price circular saw)

Power miter saw (chop saw)

Electric drill

Files and rasps

Fixing

Framing hammer (20-24 Ounce)

Screw drivers

Battery powered electric drill

Drill bits

Clamps

Air powered nail gun - handy but not cost effective for small jobs