Shedking's
12x16 Barn with Porch
Building Guide

Illustrated and Detailed Step by Step Guide

Here's a list of the sections in this guide.

Barn Foundation.
Framing Your Barn floor.
Building Your Barn Walls.
Framing for Doors .
Building Your Doors.
Framing your Barn Roof
The finishing touches. Shingles, trim, paint.
Extras – adding Ramps, and Window Framing.

Are you Ready? Lets get started.
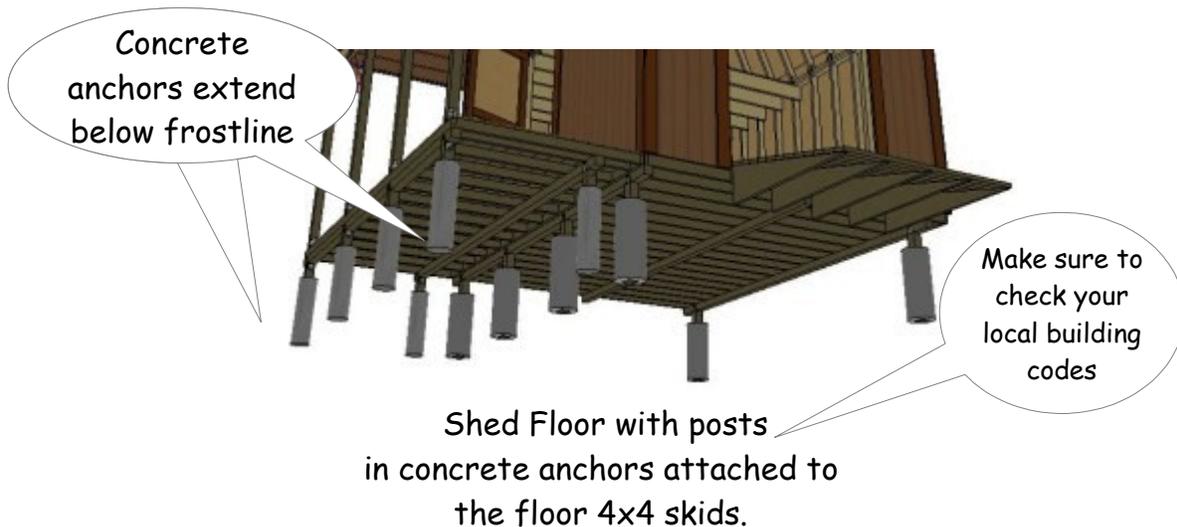
Your Barn Foundation

Having a sturdy foundation that's built right is so important for the life of your shed or barn. Your shed foundation will usually be one of the following:

•Concrete Slab
•Block footer with dirt or gravel base floor
•Block footer with wooden floor
•Wood floor resting on gravel base
•Wood floor anchored with wooden posts/piers in concrete filled hole
•Wood floor on concrete block piers

These plans are done with a foundation that is built with a wooden floor resting on 4x4 skids that can either be placed directly on a gravel base or attached to posts anchored in concrete.

Building a shed floor on concrete anchored posts is my favorite of all shed foundations. I have built hundreds of sheds this way, and although not the easiest of all foundations to do, it was the most widely accepted for county permits. You will want to check with your county to make sure you adhere to their regulations.

Your shed floor is going to be built off of 4x4 skids (runners) which in turn are attached to posts which are in turn sitting in a hole filled with concrete, usually down below the frost line. Typically 30" or more in the colder climates.

Concrete anchors extend below frostline

Make sure to check your local building codes

Shed Floor with posts
in concrete anchors attached to
the floor 4x4 skids.

Main Floor Framing

Your main floor consists of the following:

4x4 skids or runners
Joists
Rim joists
Band boards
Decking or floor sheeting

(If you are unsure of the above descriptions they are listed on the floor layout.)

Ok, here are the steps for building a really good and sturdy floor for this barn..

1.Cut all skids to proper length shown on the plans and place them on the ground according to plan specifications. The easiest way to do this is to lay joist ends on the outside skid, then..

2.Cut your floor joists and 2 rim joists to proper length and position on top of the skids you just laid down on the ground. Lay them out according to plan specs. Either 12" o.c. Or 16" o.c.

3.Cut the band boards to proper length. Make marks at the on center locations for nailing your floor joists in the right spots. You'll use 16d galvanized or coated nails here.

4.Nail the band boards onto the floor joists, 2 nails per end.

5.Now pull the floor joists over until other ends are above the other skid and nail the bandboard in place.

6.Level the floor with 2x4 blocking or whatever you have handy.

7.Square up your floor by taking diagonal measurements. As an example, if your shed floor is 10x12, the diagonal measurements would be 15' 7-4/8". Measure diagonally across the floor to square it up, then measure diagonally across the other two corners. Shift the frame until both measurements are the same.

Double check to make sure that the 4x4 skids are in the proper position and then toe nail your floor joists to them. The front face of your skids should be flush with the rim joists outside face.

8.If you are building on gravel base, and you want to anchor your shed down, do it now. Typically you would use anchor tie down cables for this.

9.If you are going to use the post/pier anchoring method, you'll want to slide your shed floor over about 1 foot and mark the location for the holes you are going to dig. Drop your 4x4 posts into the holes and plumb them up vertically. Mark from the bottom of the 4x4 skids adjacent to the posts. This is where you will cut the post(s), then slide your shed floor back over on top of the posts.

*Important note:
    Please understand that the guidelines I show on the plans for the floor anchors are just that and may not necessarily apply for your particular counties building codes. Please please get a permit so that 'all your construction and floor anchoring' is done in accordance with your local building codes. They may tell you to do an anchor layout that is more appropriate for your location.
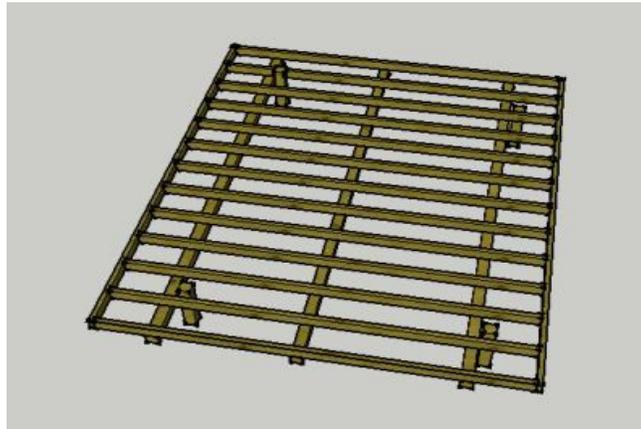
10.Make sure everything is lined up properly and your floor is still square. Attach your skids to the posts using mending plates or post caps and then add concrete down into the holes.
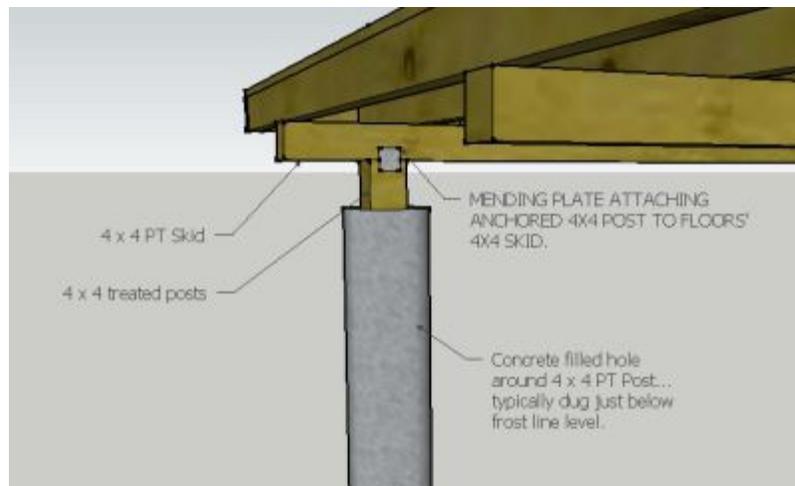
Porch Floor Construction

Now that we have the main floor constructed, we need to frame our porch floor next, and this is done before adding floor sheeting to the main floor. You will want to make sure your concrete anchors for the main floor are cured first before adding the porch floor.

Our porch floor is connected to the main floor as shown in the diagram for the floor layout.

Your porch floor also consists of the following parts and pieces, as was listed for the main floor:

4x4 skids or runners
Joists
Rim joists
Band boards
Decking or floor sheeting

Frame your porch floor just as you did for the main floor. What you need to make sure you do here is even up the bottoms of the porch floor with the bottoms of the main floor.

This will give you a drop off of 2" from the main floor to the porch floor.

After you have the porch floor framed up and leveled, mark the locations of your anchors as shown in the plans.

*Important note:
    Again, please understand that the guidelines I show on the plans for the floor anchors are just that and may not necessarily apply for your particular counties building codes. Please please get a permit so that all your construction and floor anchoring is done in accordance with your local building codes. The may tell you to do a anchor layout that is more appropriate for your location.

With your anchor locations marked, slide your porch floor over so you can dig for your anchor holes just as you did for the main floor.

Once you have your holes dug, posts measured and cut, do the same as you did for the main floor. Slide your framing back over adjacent to the main floor, bolt the inside band boards together as called for in the plans.

Now make sure your porch framing is squared up and level, attach the skids to your anchor piers with mending plates or post caps, then add concrete to your holes.

Wait for your anchors to cure, then you can continue by adding floor sheeting to your main floor, and decking to your porch floor.

Add Flooring

Next step is to nail down flooring over the main floor joists. Stagger your sheets for strength.
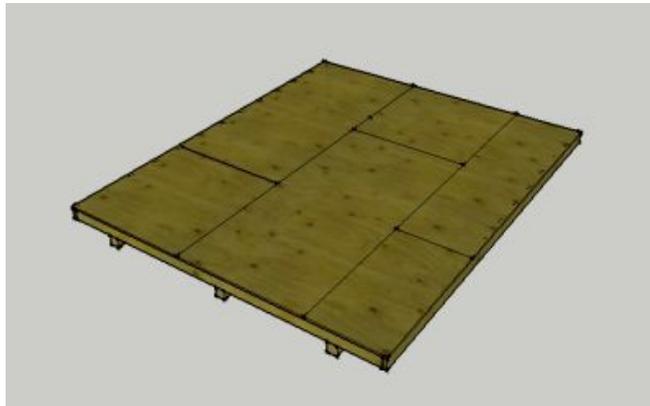
Wooden shed floor sample

Nail the sheeting down with #8d nails every 6" along the perimeter and every 12" inside on the joists.

With the main floor sheeted, do the flooring for the porch floor with the recommended 5/4" treated deck boards, or whatever you have chosen.

Now that your floor construction is complete, check to make sure that all your main floor sheeting is flush all around the outside edges. If it protrudes out anywhere, you will want to trim it flush. This will insure that you will be able to nail the bottom of your siding pieces to the rim joists and band boards.

Building Your Walls

Follow these steps for building the shed walls, and we will start with the side walls first.

1.Shed walls can be laid out and built right on your shed floor. With this shed, build your 2 side walls first, then the front, then the back. If you are going to use smartside siding or t-111 siding, you can add to your side walls before standing up. The siding for the front and back walls are done after they are up and nailed in place.

*note: Make sure when adding siding to the wall with the side entry door that you have a full panel over the opening so that the cut out panel can be used for the door construction.

2.Cut bottom wall plates and top wall plates to length. Remember that the bottom wall plate should be pressure treated lumber. Pair your top and bottom plate together, and mark off locations of wall studs on both plates. This way your on center wall stud locations will be exactly the same for both plates.

Bottom Plate

Mark stud locations
at 2' on center from
either edge of the plates

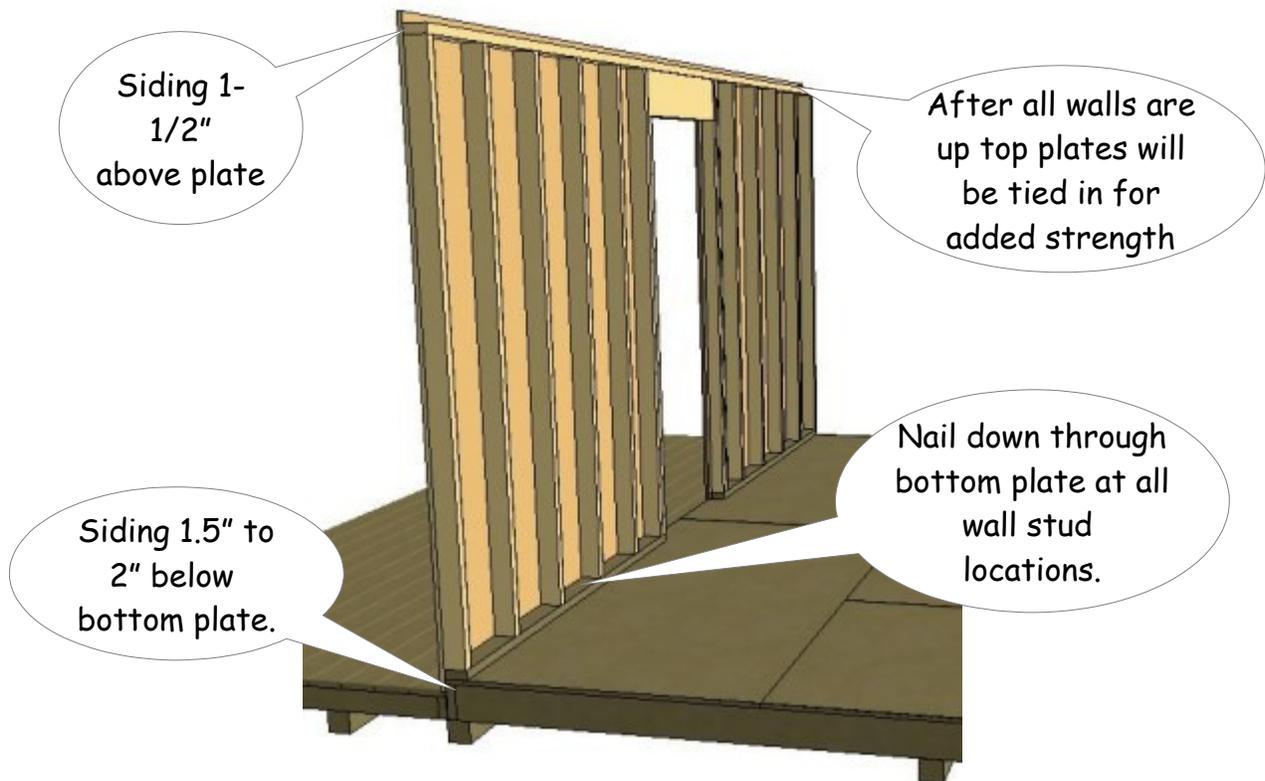Top Plate
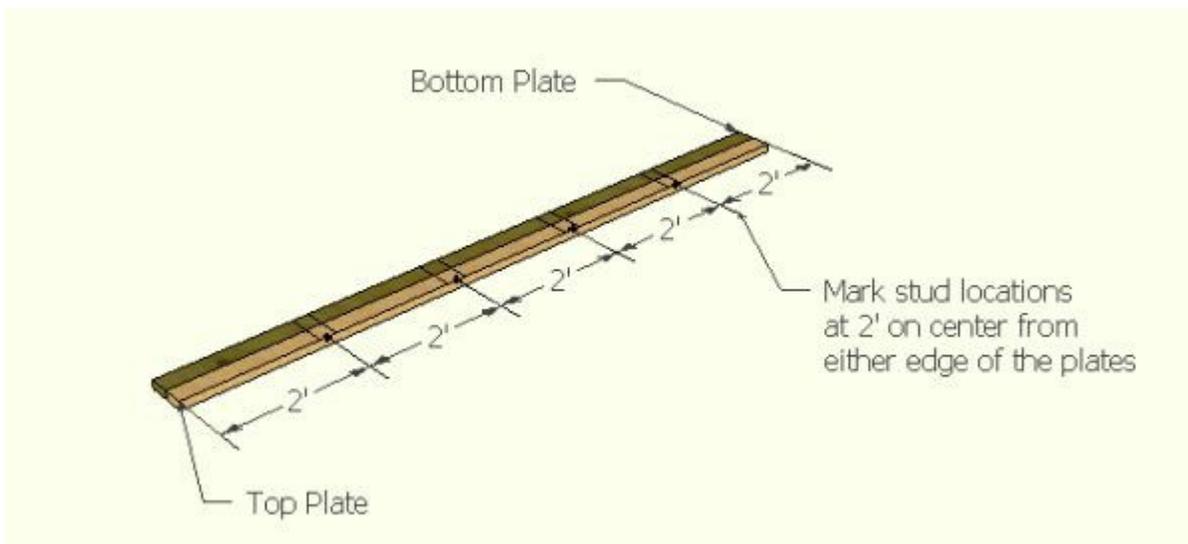
Example of 2' on center marks

If you are going to add a window on this wall, or another door, make sure you indicate this with your wall stud markings. There's nothing worse with framing then to get your wall erected on the floor just to discover that you forgot to frame in for a door or window. You have to cut out several wall studs and re-do some of the framing.

3.Cut the wall studs to length, place between your top and bottom plates along with any door and window framing studs, and nail into place through the plates into the studs using 2 - 16d nails per end.

2" siding overlap for nailing into shed floor. Nail with **6d** galvanized nails.

You have the option of adding siding to your walls before standing them up. The framing cuts for these walls will allow you to have a 2" overlap from the bottom plate that will allow you to nail this to your band boards or rim joists if you are using 4'x'8' panels of siding like t-111 or LP smartside siding.   If you do side before standing your walls up, be sure to leave 1-1/2" extending above the top plate. This will allow you to have your siding flush with the very top of the wall after you add your second top plate. This is done after all 4 walls are built and in place.

4.If using full siding panels, start by lining up your top left corner and left edge, (don't forget to leave 1-1/2" above the top plate) then nail down the siding along that edge. Next, square your wall

Siding 1-1/2" above plate

After all walls are up top plates will be tied in for added strength

Nail down through bottom plate at all wall stud locations.

Siding 1.5" to 2" below bottom plate.

up by making sure the extension above the top plate is exactly 1-1/2" all along the top plate.   Now you can finish nailing your siding into place along all other studs and the bottom plate.

Stand your wall up Nail down through the bottom plate into the floor using 16d galvanized nails. I always try to nail into the floor joists if I can.

5.At this point, nail on a brace temporarily to secure your wall in place while you build the opposite wall.
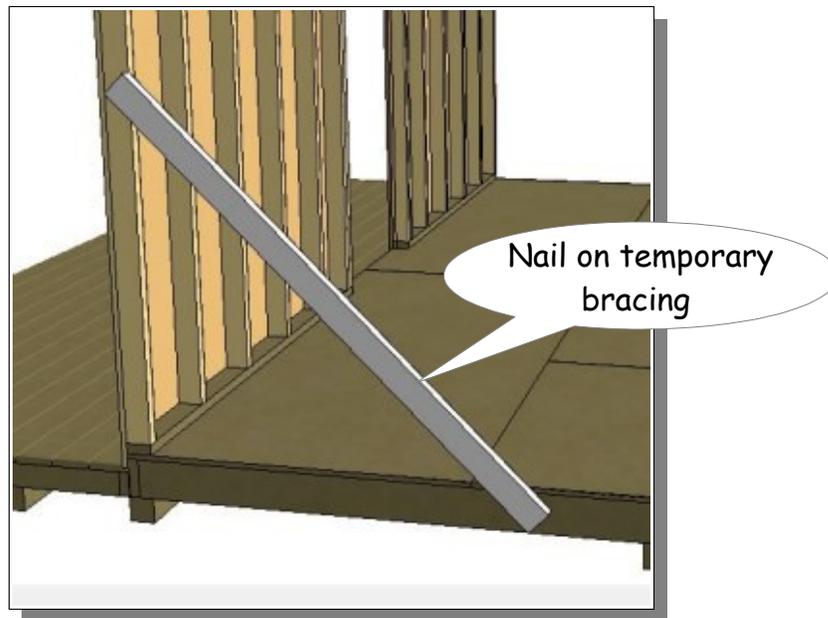
6.Build the opposite side wall in the same manner and stand in place,

7.At this point, let's build the wall containing the door.

Front Wall Framing W/Roll-up Door

Following the front wall framing diagram, you'll want to lay out your top and bottom wall plates and mark off locations of your wall studs and jack studs (these are the wall studs supporting the header which are on either side of your door opening).

You should have the necessary rough-in framing dimensions for the roll-up door you are planning to use and frame your front wall accordingly. The front wall layout for this plan is a guide only as all doors require different framing dimensions.

1.Next, build your header cutting your header material shown in the plans.

2.Place all full wall studs and jack studs into place and also place your header in the appropriate spot and nail all studs to plates and nail header to jack studs and wall studs.

*Note: If you are not using the roll-up garage door, the following instructions are for adding 5' double swinging doors.

*Note: siding can be added before standing this wall up, or after the wall is framed and in place. The following directions are for siding the wall prior to standing up in place.

3.Now you'll want to mark the exact middle of the wall directly located above the middle of your header. This is important here, even if you have plans that call for your door to be located on either side of center. You'll want to be able to cut your siding panels out along the outside edges of your jack studs and header bottom so you can use these siding panels to build your doors with. Both panels should be roughly exactly the same dimensions for building your doors coming up in a later phase.

4.The first panel you'll want to place on your wall is the panel that has the under lap on it, and line up the edges with your marks that indicate the middle. Nail into place keeping your top edge of the siding even with the top edge of the wall plate. Also, you should have a 2 inch overlap from the bottom plate.

5.Next, lay the panel that overlaps on the opposite side, keeping your spacing correct for the panels groves, and nail into place.

6.Finish placing any remaining panels on this wall, remembering that on your outside edges to leave 3-1/2 inches overlap to cover the end wall studs of the side walls.

7.This wall can be stood up and nailed into place now.

8.The next step is to cut your door opening out, being careful to follow the outside edges of your framed door opening. If you have a reciprocating saw, this is the easiest way to get these panels cut, and I usually do this from the inside of the shed before building the back wall. Set these panels aside for use in building your shed doors.

Back Wall Framing

Our next phase of this shed building project is to build the back wall.

1.Following the plans again, cut the top and bottom plates, and wall studs.

2.Assemble and nail this wall, attach the siding, then stand this wall up and nail into place.

3.You'll want to make sure to nail the vertical corner studs together but first make sure the outside edges are flush. Nail about every 12".

Building Your Storage Shed Doors
### (follow these directions if you
are not using a roll-up door.)

Building doors for your barn will probably be the most complicated part of the whole building process, but if you take it slow and easy and follow the instructions you'll find it's not that hard to do.

1.First, verify that all measurements of the door pieces on will work for your shed door opening and adjust if necessary.

2. Cut all door pieces.

Important Note: If you plan on building a ramp that is flush with your shed floor, you will want to shorten the lengths of the door jamb and uprights by 2", and trim 2" off the 2 siding panels you set aside from when you cut out the door opening. If this step isn't done, and you want to build a ramp later on, you will have a 2" drop from the floor down to your ramp!

3.The first step is to assemble the door upright and jamb together with the hinges called for in

Lentil 69"
23" stile
jamb 77"
upright 77"
23" stile
3 x 5 Zinc Plated Hinge
2 x 6 Base Stile 23"
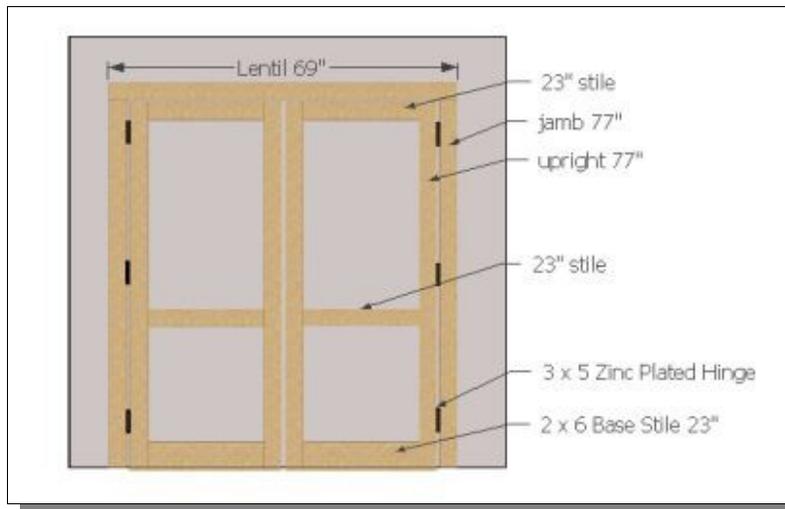
your plans, making sure there is a 1/4" offset from the top of the jamb to the top of the upright. In otherwords, when you mount your doors, the jamb should be 1/4" higher than the upright. This allows for your doors to swing freely, and also lets you nail your lintel into place without interfering with the operation of the doors swinging open and shut.

4.Next, take your assembled upright and jamb and lay them on a flat surface. Cut your remaining door pieces shown in the plans and lay them out appropriately with the jamb and upright pieces.

5.Using corrugated metal fasteners, fasten the stiles and base to the door inside upright and hinge upright.

6.This is a temporary method for holding the door pieces together for a short period of time. The strength will come when the siding is nailed to these door pieces.

7.Now take the appropriate piece of door siding and lay it over the top of your door frame. Flush the bottom of the siding with the bottom of the door. Flush the edge of the door with the edge of the siding. This is where you will square up the door if it should be out of square. Nail through the siding into the door frame and into the jamb.

8.What you have now is your door framed up, hinges mounted to the jamb, and all these pieces actually nailed onto a piece of siding.

9.Now go ahead and assemble your other door in the same manner.

10. To make it easy on yourself to mount your shed doors into place, take a 2x4 and temporarily nail it into place along the front of the end of your floor holding it even with the bottom of the siding on each side. This will give you a ledge to rest your door panel on so you can nail it into place. You'll first want to install the panel that closes first. With this door located properly and resting on the 2x4 you just nailed into place, nail your door jamb to the siding being careful to nail into the inside wall stud.

11. Now, take your other door panel and place into position making sure that the inside panel edges are lined up properly. Next nail the door jamb for this door just as you did the first door.

12. Check the operation of the doors to make sure they open and close properly and make any adjustments if necessary.

Ok, congratulations! All walls are built, doors are in place, and we can start building the roof!

Shed Roof Construction

Our shed roof construction will consist of the following steps:

a. Building trusses.
b. Placing and nailing the shed roof trusses onto the walls top plates.
c. Cutting and the installing the support studs from top plate to truss on the end walls.
d. Sheeting the trusses with 1/2" osb or plywood.
e. Installing felt paper, and drip edge.
f. Shingle installation will come after putting on the front and rear fly rafters.

Building Shed Roof Trusses

The construction of the roof trusses is fairly easy to accomplish.

Here are the steps:

1. Cut your truss pieces using the lengths and angles shown in the shed plans.

2. Assemble your first truss by laying the pieces out on a large work surface or floor in the proper order then connect them together by nailing on wooden gusset plates. Ideally they should be 8" wide and 18" - 20" long for sheds 6', 8' and 10' wide. On sheds 12' wide make the gussets about 12" wide and about 2' long.
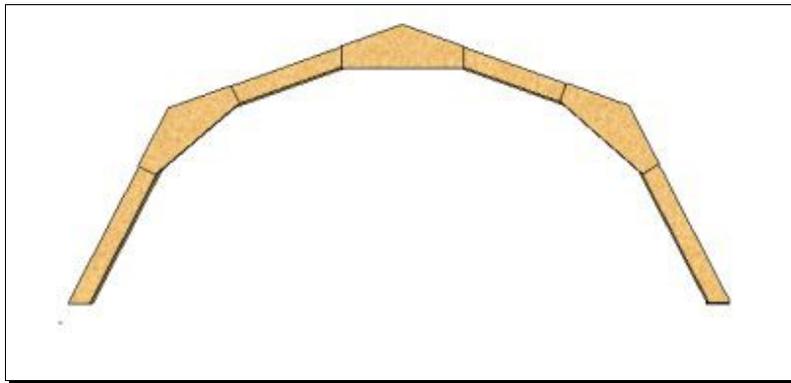
*Gambrel roof truss with wooden gusset plates*

The most important thing to remember here is that the distance at the bottom of the truss is exactly the width of the building. If you don't use a little care here, your trusses could vary when you go to place them on top of your shed walls and you'll be fighting with them to make them line up correctly.

1.
    Assemble the remaining trusses in the same manner as the first. Set the trusses on top of your shed walls and nail them in place according to the plans.

Add the upper studs to your end walls

Now that we have gotten the trusses in place, we need to finish building the end walls from on top of the top plate up to the bottoms of the end trusses. Mark off the locations for your studs on the top plate. They should line up with the studs below. Now, measure and cut the lengths needed up to the bottom of the truss, then add 2" to this measurement. You'll want to notch out 1.5 inches of the stud so that you can nail it to the back side of the truss.

As always, please verify all measurements before cutting.
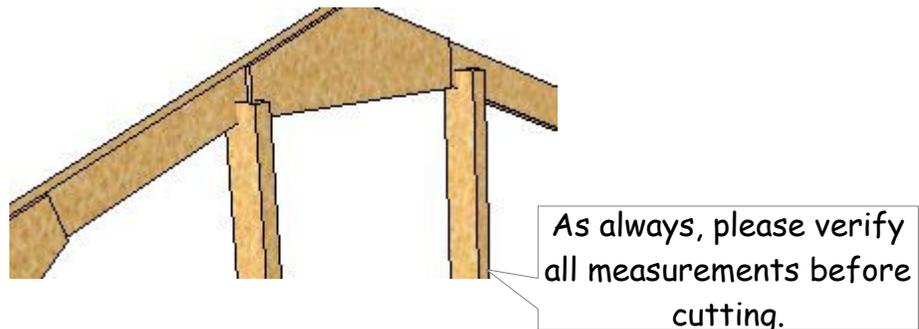
End wall studs notched to fit for nailing to trusses

Building the Porch

Cut the number of porch supports - 4x4's - to length shown on the layout for the porch supports . Space as shown and attach to the porch floor with post base fasteners and follow manufacturers directions for attaching to floor and post.

All framing is done with 16d box nails.

Add temporary bracing to the outside posts for support so that you can add the header.

Next you will build the header that will be placed on top of the supports you just fastened to the porch floor. Attach the header to the post tops with post caps and follow manufacturers directions.

Cut 1 porch rafter and ceiling joists to proper lengths . Cut the rafter ledger board and

nail into place just temporarily on the 2 outside main roof trusses with 16d nails on the lower side of the main shed roof at location indicated in the next illustration.

Please verify that your ceiling joist, and roof rafters fit before cutting the rest of the rafters and joists. If they don't fit, adjust as necessary. Finish nailing on the ledger board, the rafters and joists until entire porch roof is framed in.

Attach rafters and joists with 16d nails

2x6 porch rafter

2x6 rafter ledger board

2'10 7/8"

2x4 porch ceiling joists
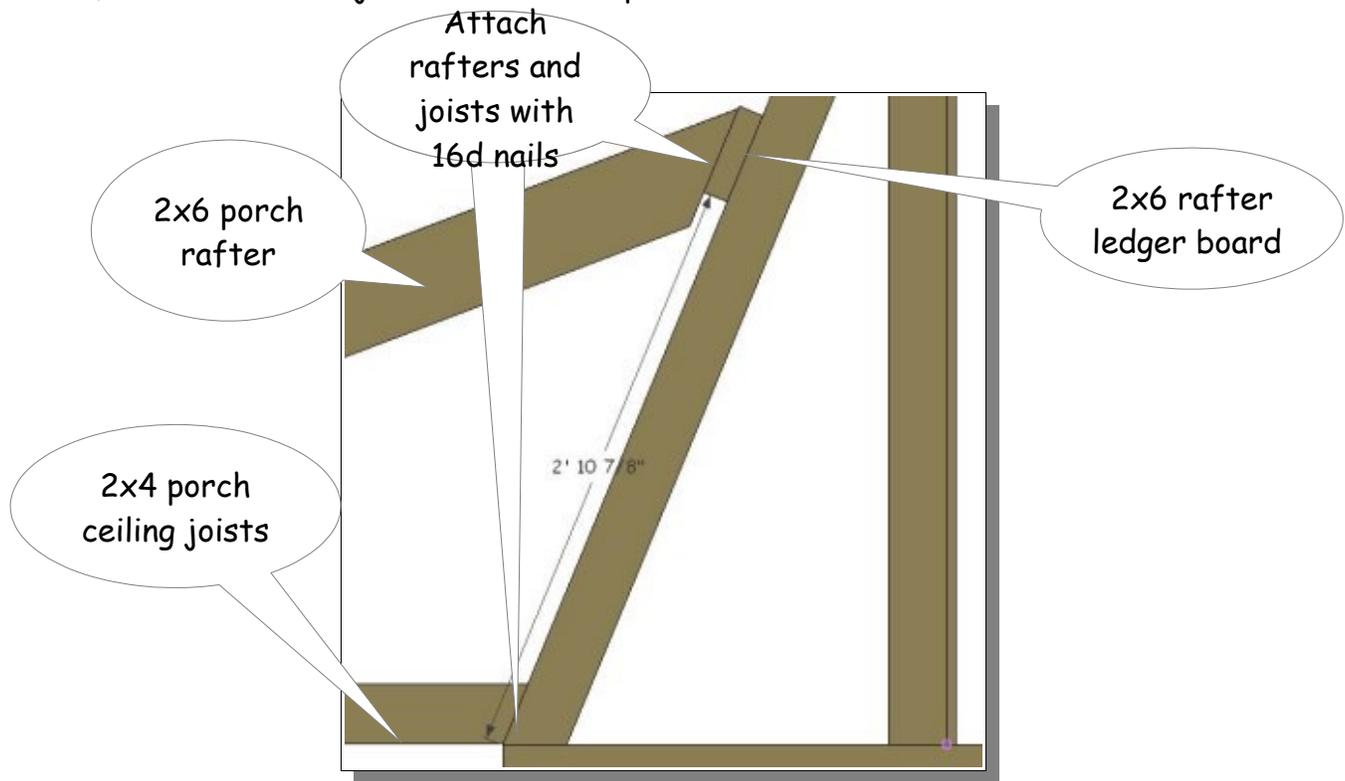
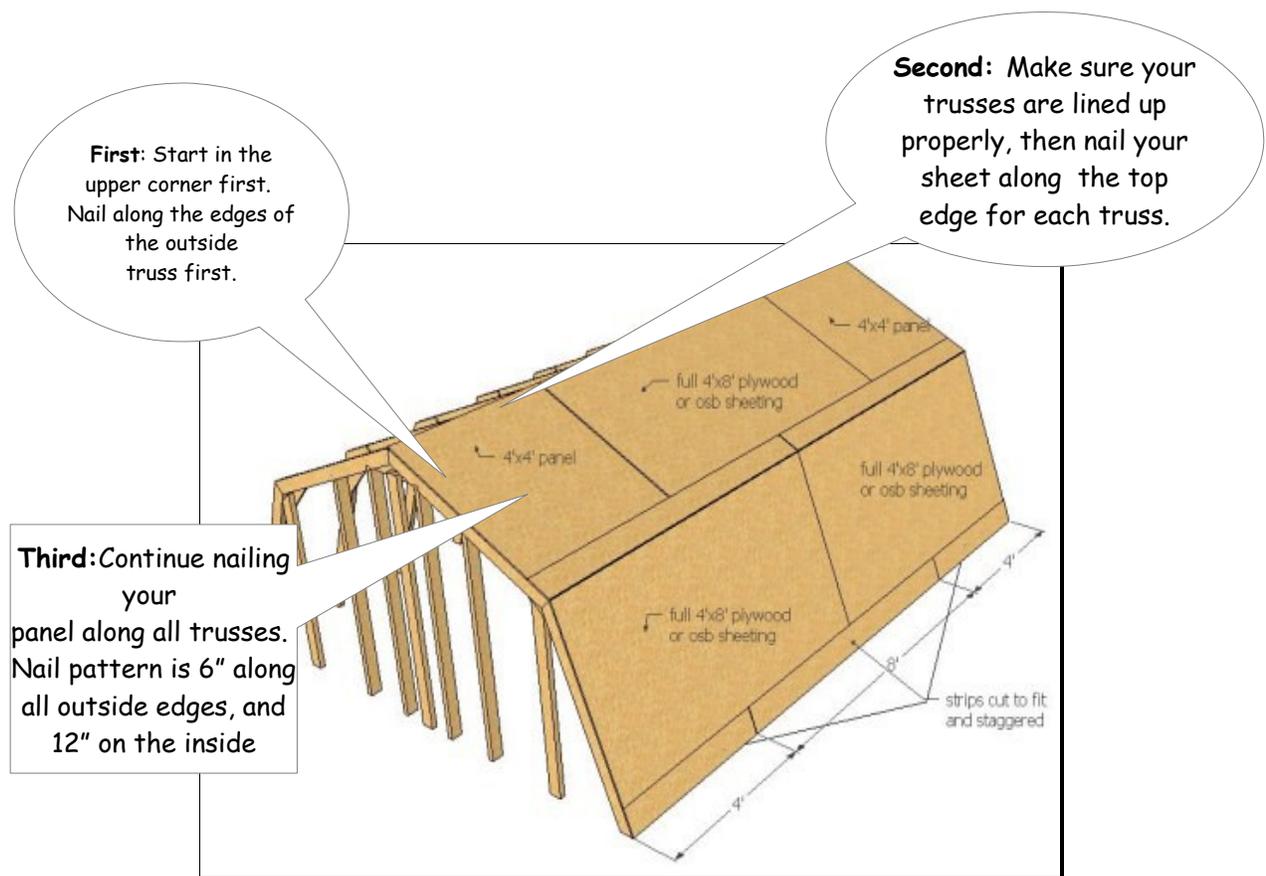Location of ledger board off of top plate (end view)

Add the side nailers as shown in the plans to your 2 outside ceiling joists. This is a nailer for attaching siding to.

Add Roof Sheeting

Now that all the framing is finished for both the main barn roof and the porch roof, its time to sheet the roof with 1/2" osb or plywood.

The following illustration shows a sheeting pattern you can use for the side of the barn roof without the porch roof framing. Make sure to stagger the panels. This will help to strengthen the roof.   For the side with the porch roof, follow the diagram shown for the roof sheeting layout.

Once you have your first panel nailed on, this should square your roof up and you can continue adding and nailing your panels in place.

First: Start in the upper corner first. Nail along the edges of the outside truss first.

Second: Make sure your trusses are lined up properly, then nail your sheet along the top edge for each truss.

Third: Continue nailing your panel along all trusses. Nail pattern is 6" along all outside edges, and 12" on the inside

4'x4' panel

full 4'x8' plywood or osb sheeting

4'x4' panel

full 4'x8' plywood or osb sheeting

full 4'x8' plywood or osb sheeting

strips cut to fit and staggered

4'

8'

4'

Finish Siding

With the roof sheeted, the upper end walls of the main barn and the ends of the porch roof can be sided.

You will want to start in the middle of the main barn end, but first make sure to attach a 'z' molding strip on top of the bottom front siding. This step will help protect the top edge of the lower siding from water damage from rain, snow, etc.
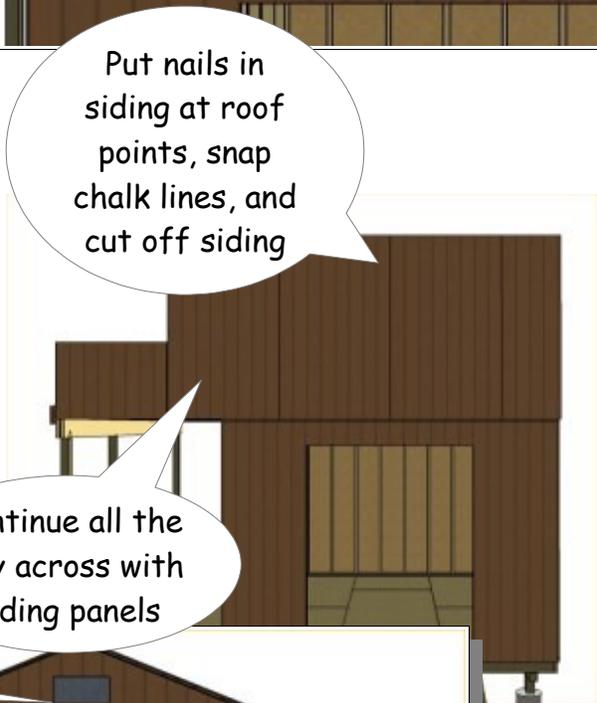
Before siding your upper end walls, make sure to attach 'z' molding for water protection first.
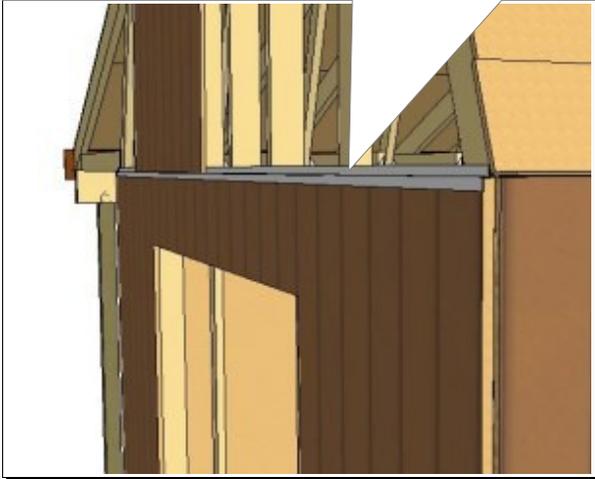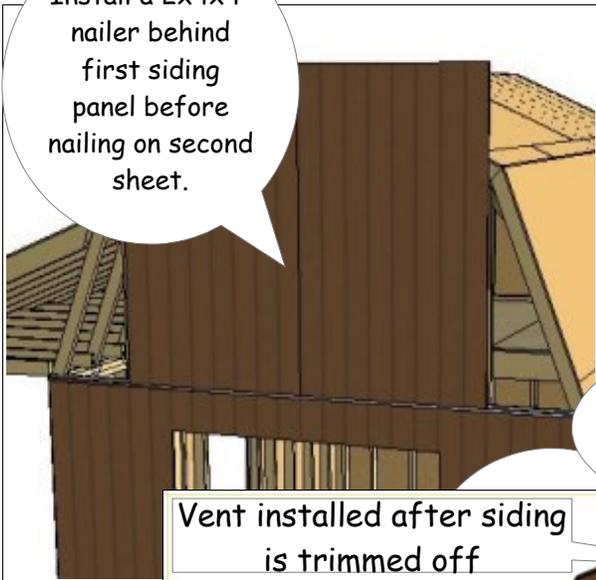
Siding starts in the center

Install a 2x4x4' nailer behind first siding panel before nailing on second sheet.

Put nails in siding at roof points, snap chalk lines, and cut off siding

Continue all the way across with siding panels

Vent installed after siding is trimmed off
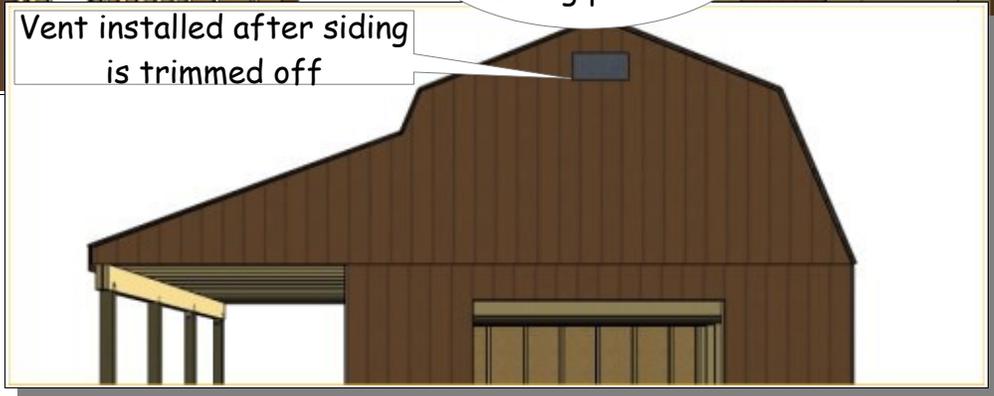
The upper back wall can be sided just as you did the front.

Add your fascia board for the porch roof, and paneling underneath the porch roof.

Next step is to nail on your cedar trim with galvanized nails. You may want to use stainless steel nails here as sometimes galvanized nails will bleed on the cedar wood. The cost is more but worth it in the long run.

Start with the trim for the upper barn ends, then do the front and back trim,then porch ends. Wait to do the side wall until after you have the side overhang attached.

Side overhang is measured from front cedar trim to back cedar trim

Rip one edge of your side overhang at 22.5° for bevel

Now nail on the side overhang just underneath the bottom edge of the roof panel, and nail into the wall joists just behind the side overhang with 16d nails. For this size barn you will have to use 2-2x6x10'. Divide measurement you need by 2, cut your 2x6's to this length, and join both boards exactly in the middle.

Once you have the side overhang attached, finish nailing on the rest of the cedar trim.

Finish the Roof

I always recommend putting on roofing felt or tar paper. 15# roof felt is sufficient but by all means if you prefer you can go with 30# felt.

Once you have your roof felt paper on, you will want to nail on your drip edge, then install roof shingles.

*Tip:
    You will want your roof shingles to lay just right when you come to the juncture of

the roof panels. To do this, i.e. if your shingle tab is 5" deep, you will want to measure down in increments of 5" down from the juncture.

At the point closest to the side overhang, this is where you will want to start the first row of your shingles.

This way when you get to the bend, your shingle will have a full row of tabs to bend over. I will then face nail these tabs down and cover the nail heads with roofing caulk.


Where the shingles bend over, nail down and caulk nail heads

*Tip:
    I always try to leave about 1/2" overhang of my shingles past the drip edge. This is just an extra measure of protection.

Adding a Shed Loft

With this particular barn, the loft is built with 2x8 supports nailed on to the wall studs just below the top plates. Normally you could add the 2x8 supports just above the top plates before nailing on your roof sheeting as shown in the picture below, but because there are rafter ties to contend with for the porch framing, this loft is constructed below the top plate.
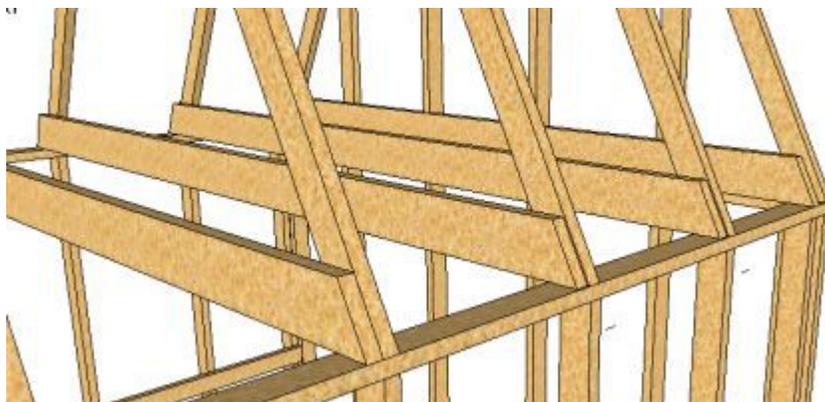
Loft supports butted up to trusses and nailed

So, the picture below shows the loft framing that is best for this barn.
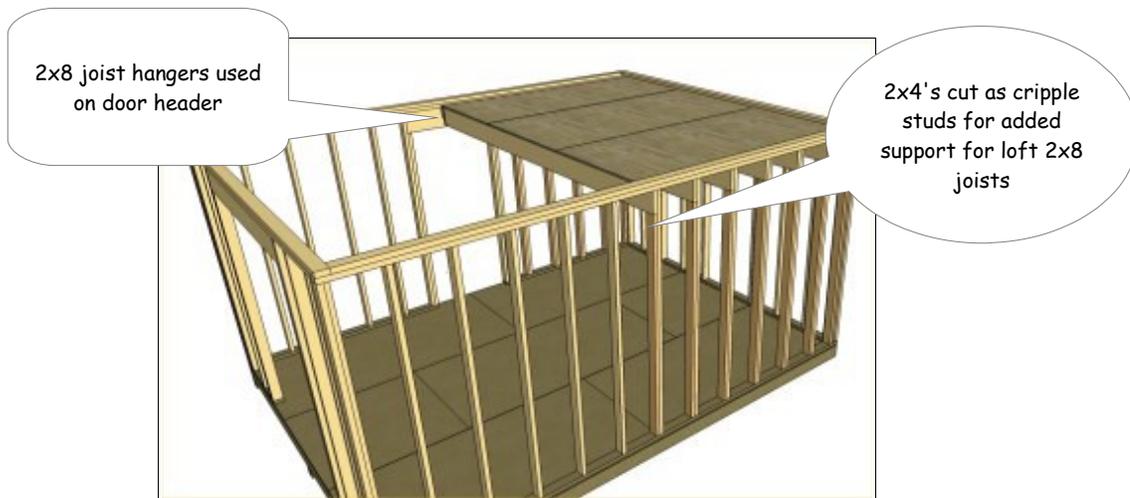
This loft shown is 8' in length and is the width of the barn. The 2x8 loft floor joists are nailed to the walls 2x4 studs, then cripple 2x4 studs are cut to length and nailed underneath the loft joists for added support.

Now all you have left to do is to plank your loft with 3/4" plywood.


Simple Shelf Building

I usually always wait till shed construction is done before adding any shelving. That way, I can use all left over 2x4's, osb, siding, etc for the shelf construction.

The best way I can tell you to add shelves to your shed would be the following:

Decide on the length and width of your shelves. I prefer going from stud to stud, but this may not always be possible.

Lets say you want an 8' long x 1' wide shelf. First thing to do is build the frame for your shelf as follows:

Cut 2 – 8' long 2x4's, then cut 4 – 9" long support 2x4's. Build your shelf support by lining up the back and front 8' board and mark off 2' on center marks for the 9" 2x4's. Assemble and nail together with 16d box nails so they look like this:
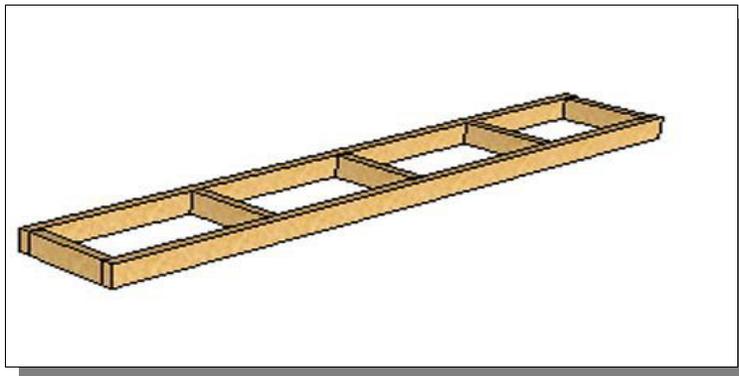
Now, hopefully with some help, place this frame exactly where you want it, and nail from back support board into a wall stud everywhere the two meet up, using 16d nails. Cut

some support boards for this shelf as such:
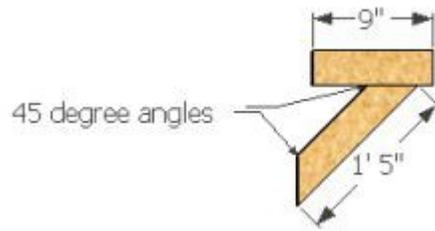
Now, place and nail your support boards to the wall stud and cross members of your shelf as such

One nice feature about building your shelves in this manner is that there are no shelf supports coming off the ground to interfere with a riding mower, etc.

If you want to add a second shelf above this, do it in this manner:

You can nail on leftover osb or plywood to complete your shelving!

# Painting, caulking, and finishing your shed or barn

This is probably the best and most important advice I can give you for helping you give your shed some long life after you have built it. All vertical surfaces should be caulked with silicone. Latex caulk will crack over time in the weather, so use silicone.

Upper horizontal surfaces should be caulked, but I don't recommend the lower vertical surfaces as this will just retain water. For example, if you have a window on your shed and you have trimmed it out with lets say cedar, caulk all vertical edges, and upper horizontal edges of each trim board, but not the under edge as this will hold water and moisture. You don't want that as it causes rot over time.

Next after caulking, prime your shed with an oil based paint. I always use oil based paint on anything exposed the the elements outdoors, and sheds are no exception. After priming, your remaining finish coats of paint should also be oil based paint, and put at least 2 if not more coats of this on.

I can't stress this enough. Over time when wood is exposed to rain, it will rot unless you do something to deter this, and the more coats of oil based paint you can put on your shed, the better. Although not a major investment in money, you still don't want your shed to rot. Check it in the spring, and re-coat with more paint, and re-caulk if necessary.

Another nice little tip I'll give you is this. On the wooden edge of your floor that's exposed where your door way is, go buy a thin piece of aluminum angle iron and cut it to length, drill holes every foot on the top with a beveled bit, and attach to your floor. This will help immensly with keeping this area from deteriorating from moving garden equipment in and out over the lifetime of your shed or barn.
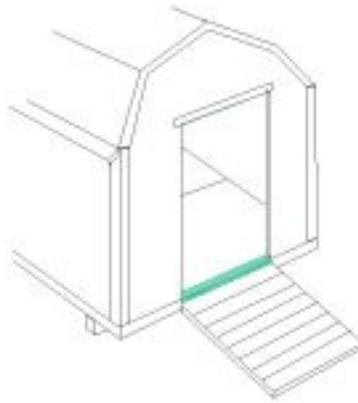
Here's an example (dark shaded area) of a piece of aluminum
angle iron used for a door threshold on your shed or barn.

I want to hear from you!

I sincerely appreciate the fact that you chose my website to purchase shed and barn building plans from. I am deeply indebted to you. Please, if you have made it this far with the construction of your shed, barn, playhouse, greenhouse or other outdoor structure, please send me an email and a picture if you don't mind, of your newly built project. I would love to hear from you, and I will post your pictures on my website.

You can email me and send pictures to:

shedking@gmail.com

Take care, and I look forward to hearing from you.

John Shank
shedking.net