



Assembly Instructions Big Kahuna™ PLUS Covered Pergola Kit - Attached



Thank you for purchasing a do-it-yourself pergola kit from Pergola Depot!

Please carefully read these instructions entirely before beginning to familiarize yourself with the whole process. In addition to these instructions, we have a variety of information and resources available on our website under the Resources menu, including How to Measure for a Pergola and Installation Information (including videos for some of the important steps in the installation process).

Contact us if you have questions or need help!

Call: 1-877-563-0002

Email: info@pergoladepot.com

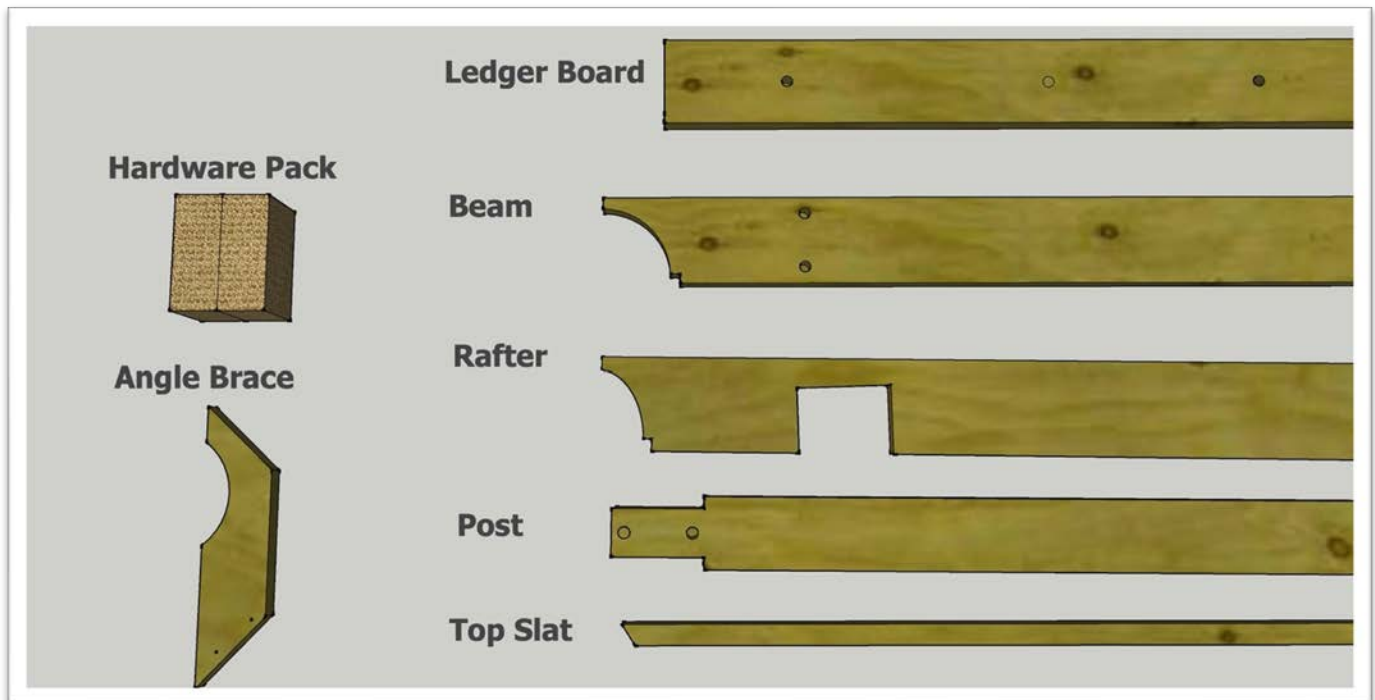
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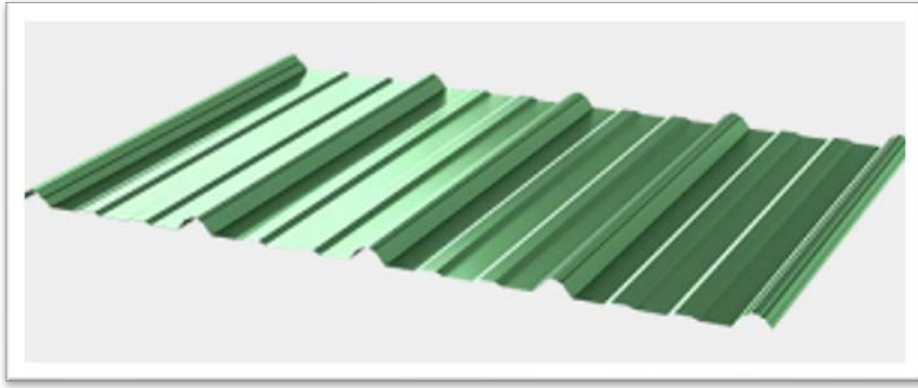
The Team at Pergola Depot

Tools and Supplies Needed

- Helpers - at least 2 recommended, especially for larger kits
- Tape measure (2 better), hammer, level, leveling string and stakes, sawhorses (2) or substitute, clamp, and a few pieces of scrap wood for propping up beams for post location (size and quantity depending upon rafter length and slope of installation location)
- Spray paint, chalk, flags or other materials for marking post locations
- Ladder (tall enough to work the top of your pergola during assembly)
- Screw gun, power drill (min. 18V fully charged cordless) and power saw (skill saw min. 7 1/2" blade) and hand saw
- Socket attachments, wrenches, drill bits:
 - Supplied with Kit: Two star-drive bits (T25, T27) for 3" and 6" screws and one nut driver bit (5/16") for roofing screws
 - 3/4" socket or open-end wrench for bolts
 - 9/16" socket for angle brace lags - drill attachment preferred
 - 1/4" drill bit for pre-drilling post at angle brace attachment
 - 1/2" drill bit for pre-drilling angle brace to beam and rafter attachments
 - 5/8" drill bit for installing rebar into post (if posts going into new concrete foundations)
- For all kits using post bases on concrete: 5/8" masonry drill bit; and 15/16" socket
- For new footings: post hole digger, dry concrete mix, gravel, trowel, shovel and mixing bin or wheelbarrow and concrete footing form tubes
- For Pressure Treated Pine kits using post bases on concrete: 5/32" masonry drill bit, and #2 Philips bit or #2 Philips screwdriver

Kit Components





Reference the packing list that was provided with your shipment confirmation for a complete list of kit components, including the piece count for each type of lumber and hardware pack components. Here is a summary of the kit components:

- 2x8 Beams (2 for standard size kits)
- 2x8 Notched Rafters (# depends upon kit size)
- 6x6 Notched Posts (2 for standard size kits)
- 4x6 Angle Braces (4 for standard size kits) - 2 shorter (post to beam), 2 longer (post to rafter)
- 2x2 Top Slats (# depends upon kit size)
- Metal Roofing Panels (# depends upon kit size)
- Hardware Pack (box) - see Pack List for detailed contents
- Post base mounting hardware if purchased (2 for standard sizes kits) and Tapcons (for PT pine kits only) - for slab or footer post mounting
- Optional: post base trim

Instructions

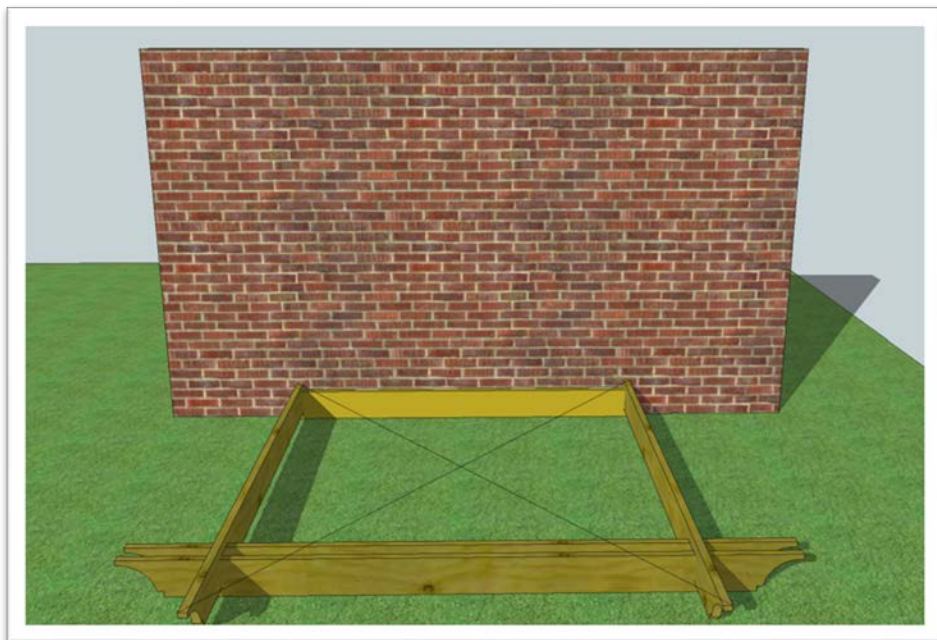
For installations on top of new footings, allow the concrete to dry before completing the rest of the pergola installation. This may require that you dig holes and pour footings a few days or more prior to assembling the pergola depending upon the concrete used and climate. Additional instructions are provided below.

For installations on top of new or existing concrete foundations, we supply post bases, anchors and Tapcons as part of your kit if purchased with the option to be installed "on a concrete slab or footer". These materials can also be purchased as accessories from us or from your local hardware store. Instructions for post base installation are provided below, and we have a video on the [*Installation Information*](#) page on our website.

Please wait for the wood to dry completely before painting or staining a pressure treated pine kit, which may take several months or more depending upon climate and weather conditions.

Step by Step:

- **Step 1** - Move all parts close to where you will be installing the pergola for easy access during assembly.
- **Step 2** - Place the ledger board against the wall exactly where it will be installed but laying on the ground (with the x's facing up) and make a pencil mark on the wall at each end of the board. Once assembled, the ledger board will be installed higher than the beams to create slope for water drainage. The height of the ledger board, and clearance needed for the roofing structure will depend upon the beam side above ground post height, rafter length and slope of existing ground surface as described below.
- **Step 3** - Place beams on the ground (with the x's facing up) parallel to the ledger board and approximately a rafter length away from the wall as shown in the picture below.
- **Step 4** - Slide two rafters over the two X marks on the beams just outside where "post" is labeled on top of the beams - these are the second X marks in from the outside tips of the beams, marked like this: |X| and resting on the same mark on the ledger board with the flat end of the rafters against the wall. Have helpers lift the rafters and ledger board to allow the rafters to sit squarely over the beams (see table below for post and beam height differential assuming level assembly surface) while remaining squarely against the wall, then use blocks of wood to hold. You may also have to move the beams around a little to get the rafters into place. Using 6" screws provided, temporarily screw each rafter through the predrilled holes into the beams. Screw them in just enough to hold the rafter in place.
- **Step 5** - To ensure the assembly is square, hook one end of a tape measure on the outside tip of the rafters and pull the tape to the opposite corner. Write down the measurement. Then repeat for the opposite corner like this. This is easier if you and your helper both have a tape measure and pull them across at the same time.



Move the beams from side to side until you have the same measurement both ways. When you have the same measurement, it is perfectly square. Once square, make sure the assembly does not move.

- **Step 6** - To identify the location for each post hole or post base, look at the top of the beams just inside the rafter where "post" is written with two lines on either side, like this: |post|. Ensuring the assembly does not move, use spray paint, chalk, flags or other material to mark the ground or concrete surface at the center of the lines around the words post and the mid-point between the two boards making up the beam assembly.

Unscrew and remove the rafters from the beams and move all the boards to the side. Now you should be left with four marks where the post holes or post bases will be located.

- **Step 7** - If mounting posts using post bases on top of new footings, please ensure adequate clearance for the ledger board and pergola roofing structure at the wall side. The top of the ledger board when installed will need to be higher than the top of the post and beam assembly as described in the step below.

When ready, dig holes with the center of the hole where marked, minimum 2'4" deep (depending on the depth desired for frost line etc. - see our website under Resources>Pergola Post Guide) and min. 16" diameter. Use concrete footing form tubes and leveling line to ensure the top of each footing is level with each other and ground level at the wall. Adjust footing if needed to accommodate ledger height requirements.

Pour in gravel to fill the first 4" of each post hole. Mix the concrete according to the directions for the concrete purchased and fill the hole to about two-thirds of the way to the top. Use a shovel or piece of rebar to eliminate air bubbles. Insert one piece of 18" rebar supplied with the kit into the wet concrete so that it sits diagonally from the bottom of one side of the hole toward the top of the other side. Pour in more concrete to cover the rebar and until the concrete is level with the top of the form tubes. Work the top portion of concrete to eliminate bubbles and smooth the top with a trowel or shovel. Repeat for each footing. Allow concrete to dry completely, which will depend upon the concrete used and weather conditions.

- **Step 8** - This section will provide information and instructions of securing the posts to the ground and achieving the proper roofing slope, (1) using post bases on top of newly poured footings, (2) burying the posts into newly poured footings, or (3) using post bases on top of an existing concrete surface (slab or footing).

To achieve the proper roofing slope, you will adjust the height of the ledger board and/or the above grade post (and beam assembly) height by trimming the length of the posts provided, by burying the posts to the appropriate depths, or a combination of the two. For standard orders we provide posts in lengths of either 8', 10' or 12' based upon your specifications at the time of order.

- For orders specifying post base mounting on top of new footings or existing concrete surfaces, we supply two posts at 8' or 10' (based upon your low side preference).

- o For orders specifying buried posts (posts installed into concrete foundations), we supply two posts at lengths of 12'.

All standard kits are designed for a slope of ½" for every 12" of total rafter length, making the height difference between the post and beam assembly and the ledger board greater for longer rafter lengths, as follows:

Rafter Length	Post to Ledger Height Differential (1)
8 feet	2 ½ inches
9 feet	3 inches
10 feet	3 ½ inches
11 feet	4 inches
12 feet	4 ½ inches
13 feet	5 inches
14 feet	5 ½ inches
15 feet	6 inches
16 feet	6 ½ inches
17 feet	7 inches
18 feet	7 ½ inches
19 feet	8 inches
20 feet	8 ½ inches

(1) Post to ledger board height differential measured from the wall to the outside of the posts.

Mounting Posts on New Footings

When mounting posts using post bases on top of new footings, the tops of the footings are assumed to be level with the ground at the wall where the ledger will be installed (per instructions above). Check using a leveling string and level, measure the height differential between the two points, and adjust for that difference as described for an existing concrete surface below. With level footings, the top of the ledger board will be equal to the desired post height plus the post to ledger board height differential from the table above.

For example: Assume pergola size is 12x16 (12' rafter length), desired 8' post height, two 8' posts supplied, and tops of footers are level with the ground at the wall.

Post to ledger board height differential required = 4 ½" (for 12' rafters per table).
 Ledger board height requirement = 8' or 96" (post length) + 4 ½" = 100 ½" to top of ledger board.

The ledger board will be installed (per later step) so the top is 100 ½" up from ground level.

For this example, there is no trimming of the posts. See below for desired 9' post height example.

Mounting Posts on Existing Concrete Surface

When mounting posts on top of an existing concrete surface (pre-existing slab or footings), you must account for any existing slope: using a leveling string and level,

measure the height differential between the outside post location and ground level at the wall, then adjust for that difference to the required post height differential from the table above.

For example: Assume pergola size is 18x20 (18' rafter length), desired 9' above ground post height, two 10' posts supplied, and 2" of height differential for slope of existing concrete surface (ground surface is 2" lower at the post side).

Post to ledger board height differential required = $7 \frac{1}{2}"$ (for 18' rafters per table) minus 2" (for existing slope) = $5 \frac{1}{2}"$. Ledger board height requirement = 9' or 108" (desired post length) + $5 \frac{1}{2}"$ = $113 \frac{1}{2}"$ to top of ledger board.

Place 10' posts on sawhorses, measure 9' or 108" from the top (notched end) of the post down and mark a line toward the bottom across two opposite sides of the posts.

Adjust measurements accordingly for different desired post height.

The ledger board will be installed (per later step) so the top is $113 \frac{1}{2}"$ up from ground level.

Double check measurements before cutting. Using a power saw, evenly trim the bottom portion of the posts below the lines. Most saws will require cutting one side of the posts, flip the posts to cut the other side, then finish with a hand saw for a clean cut.

Burying Posts into Concrete Footers

When burying posts into the ground (into concrete footers), you will be able to make smaller post height adjustments later. Measure and mark posts for the required above ground post length, then dig the post holes to accommodate. Like existing concrete surfaces described above, you will need to account for any existing slope using a leveling string and level: measure the height differential between the outside post location and ground level at the wall, then adjust for that difference to the required post height differential from the table above.

For example: Assume pergola size 20x20 (20' rafter length), desired 10' above ground post height, two 12' posts supplied, 4" of height differential for slope of existing ground surface, and minimum post depth of 2 feet or 24 inches (varies depending upon your situation for frost line etc.).

Post to ledger board height differential required = $8 \frac{1}{2}"$ (for 20' rafters per table) minus 4" (for existing slope) = $4 \frac{1}{2}"$. Above ground post height = 10' (or 120"). Ledger board height requirement = 10' (or 120") + $4 \frac{1}{2}"$ = $124 \frac{1}{2}"$ to top of ledger board.

Place posts on sawhorses, measure 120" from top (notched end) down and mark a line toward the bottom across two opposite sides of the posts - at approximately 2' or 24" from the bottom of the post.

Adjust measurements accordingly for different desired post height.

The ledger board will be installed (per later step) so the top is $124 \frac{1}{2}"$ up from ground level.

For this example, there is no trimming of the posts. For lower desired post height, dig deeper holes or trim posts accordingly to accommodate.

For posts being installed into concrete footings, we recommend inserting one piece of supplied 10" rebar into the bottom of each post. Locate and mark a spot at the center of each post approximately 10" below ground level. Using a 5/8" drill bit, drill a hole through the post at the desired mark on each post. Note that the rebar will be inserted in a later step.

Double check measurements before digging or trimming posts.

Dig post holes to a depth of 28" (24" plus 4" for gravel layer at the bottom of the hole) and min. 12" diameter. Pour in gravel to fill the first 4" of each post hole. Test correct depth by inserting posts into the holes. The marked lines should be level with the tops of the holes and ground surface. Adjust hole depth as needed by adding or removing material from the holes.

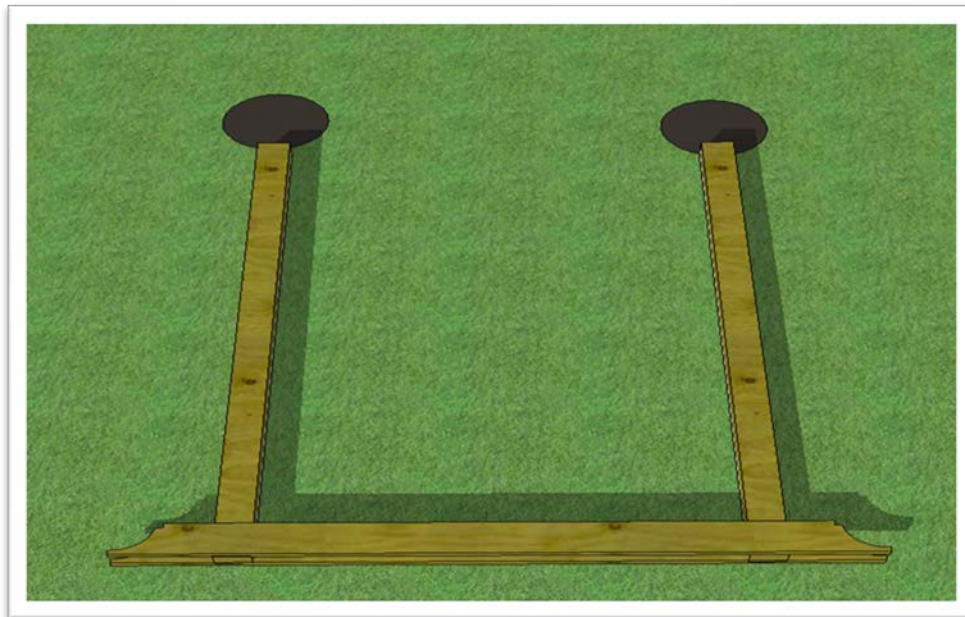
- **Step 9** - If installing using post bases on top of an existing concrete foundation or previously poured footings, the concrete must be dry before installing post bases. Place the bases on the concrete in the exact position where they will be installed at your marks from an earlier step. Measure the distance between the center of the post bases and from the wall to center of the post bases to ensure they match the prescribed distances for your size pergola. The center post to post measurement (for standard sizes) is 3'6" less than the overall beam length, and the wall to center post measurement is 1'9" less than the rafter length. For example, a 10x12 (rafter x beam) pergola has a center post to post measurement of 8'6" (12' beam minus 3'6") and a wall to center post measurement of 8'3" (10' rafter minus 1'9"). Once post base placement is confirmed, mark the concrete at the center of the hole at the bottom of each base.

Remove the bases and drill into the concrete at each marked point with a 5/8" concrete drill bit to a depth of at least 4". Clear excess debris from the hole. Place the washer and nut on the concrete anchor, place the flared end of the anchor through the post base and into the hole in the concrete. Hammer the anchor down into the hole in the concrete until it is against the post base, but do not tighten. Repeat for each base.

Before tightening the anchor to the post base, turn the post bases so that the side walls (vertical pieces of the bases) are parallel with the direction of the rafters (once installed). This will allow for small adjustments in the placement of the post in the base on the rafter dimension of the structure. Then, square each base to the outside edge of the pergola footprint. To square bases, lay one of the beams or rafters (depending upon length needed) on the ground directly outside two of the post bases, then rotate the post bases until the outside edges of each base are touching and square with the board and the side walls are parallel with the rafters. Repeat this for the other bases. Tighten each anchor with a 3/4" socket or wrench until snug to the base.

- **Step 10** - Lay the posts on the ground, with the bottoms at the edge of each hole or post base, the tops (notched end) facing away from the wall, and notched end up and down so that pre-drilled holes are visible.
- **Step 11** - If installing post base trim, slide trim over the bottom of each post and up the post so it will be out of the way for the next couple steps. For posts being installed into the ground (into concrete footings), insert the rebar through the hole at the bottom of each post. Use a hammer to move the rebar through the hole until there are approximately equal lengths of rebar on either side of the post.

- **Step 12** - Lay one beam down on the ground near the top of the posts. Slide the posts up and onto the beam between the lines on the beam where it says "post". Set the other beam on top sandwiching the post in between the two beams.
- **Step 13** - Place 1 washer on each ½" x 8" bolt. Lift the beam assembly enough to fit the bolts between the ground and the beam and insert the bolts into the holes from the bottom. You may want to place a block of wood on the ground under the bolt, so you can push the beam down to get the bolt to come up through the hole. Place a washer and nut on each of the bolts and make them snug but do not tighten them down yet. Now you should have this:



- **Step 14** - With one person at each post, tilt assembly up, lift and drop the posts into the postholes, or into the post bases if on concrete. Have your helper(s) hold the assembly plumb.

If posts are going into footers, check to ensure the ground lines marked toward the bottom of the posts are level with the tops of the holes. Adjust the hole depth until lines are level with the top of the ground. Once lines are at ground level, fill the holes around the posts with dry concrete. **Do not water in the concrete yet.**

Check for level across the top of beam assembly and on the sides of the posts. If needed, adjust the amount of dry concrete under the posts by lifting-up the low post and allowing a small amount of dry concrete to fill in underneath. If installing with post bases you may need to use a shim under one of the posts.

If installing with post bases, have your helper continue to hold the assembly or prop the assembly up (using 2x4's for example) so that it does not fall.

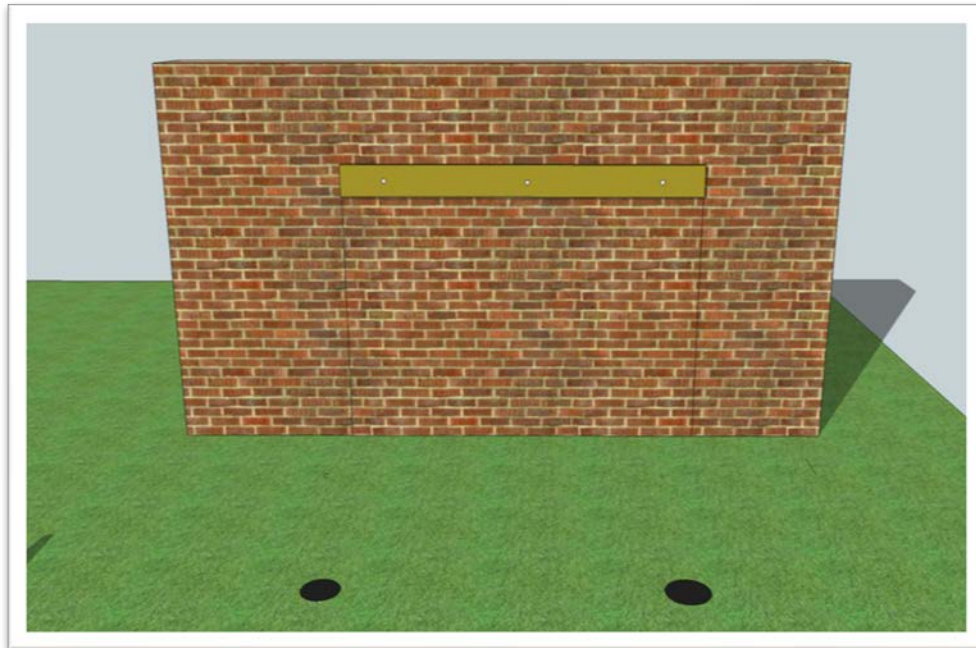
- **Step 15** - Level up from the marks you made on the wall earlier so that the top of the ledger board is equal to the height calculated in the step above (taking into account the desired post height, adjusted for the height differential from the table and slope of

existing ground as required). Holding the ledger board in place exactly where it will be installed, ensuring that the board is level, mark with a pencil through the pre-drilled holes in the ledger board.

If installing on a concrete wall, using a 5/8" masonry drill bit, pre-drill holes in the masonry wall to a depth of at least 4 1/2". Clear excess debris from the holes. Having your helper hold the ledger board in place, insert the 5/8" anchor bolts supplied with the kit, hammer them into the wall and tighten with a 15/16" wrench. Hint: drill the two outer holes first, secure the ledger board with two anchors, and then drill the rest of the holes.

If installing on a wood frame wall, locate the studs behind the framing or the top mounting plate above a window or door, and mark where the holes will be drilled. For wood frame walls, we do not pre-drill the ledger board so that you can match the holes in the ledger to the stud locations. If the top of the ledger board does not match the calculations made in the earlier step, you will need to adjust the above ground height of the posts accordingly to achieve the required roofing slope. Once you have identified and marked where the ledger will be attached, using a 1/2" drill bit, pre-drill holes to a depth of at least 4 1/2", insert the 1/2" lag screws provided with the kit through the ledger board and tighten with a 3/4" wrench.

The ledger should now look like this:



- **Step 16** - [Restart here] Move the stepladder in between the beam assembly and wall/ ledger board. Position one of the rafters with the end cut pointing away from the wall. Slide the rafter onto the same X marks on the beams as you did on the ground in an earlier step (the second X marks in from the outside tips of the beam), leaving the outermost set of rafters for a later step after the angle braces have been installed. The notch on the rafter should slide over the beam and rest on the ledger board to fit squarely with a slight slope away from the wall. Adjust the position of the posts if needed to allow the rafters to slide on and fit squarely, and so that the posts are plumb. If more significantly out of alignment, you may need to further adjust post

placement or height of either the post and beam assembly or ledger board. Please contact us as needed to assist.

When the first rafter fits squarely, secure the rafter to the beam and ledger using 6" screws provided through the predrilled holes in the rafter onto the top of the beams. Then move to the opposite side and secure another rafter into position over the corresponding X marks on the other side of the beam assembly (second X marks in from the tip of the beams) and ledger board. Adjust as described above as needed.

Now your helpers should be able to let go of the assembly.

Leaving the outermost rafters for later, install the remaining interior rafters over the "X" marks and secure them to the beam and ledger with 6" screws through the predrilled holes.

- **Step 17** - If using post bases, secure the bases to the posts using the galvanized nails supplied. If installing a pressure treated pine kit using post bases, install one Tapcon screw provided through one of the holes in the side of each post base and into the concrete. Using a 5/32" concrete bit, drill the Tapcon screw hole to a depth of at least 2". Once the hole is drilled, clear excess debris from the hole, and slowly screw the Tapcon through the post base using a #2 Philips head screw bit or screwdriver until snug to the base. Repeat for the other base.
- **Step 18** - Install two angle braces per post, the shorter (36" long) brace for attachment between the post and beam and the longer (~40 1/2" long) brace between the post and inside edge of the outside rafter - as shown in the picture below. Each angle brace is pre-drilled for attachment at the post. Attachment of the angle braces to beams and rafters require pre-drilling at the time of installation through the angles and beams to accommodate the 1/2" bolts provided.

Using one of the shorter braces for the beam side, position the brace with long side up towards the beams and predrilled side down towards the post. Slide the top part of the brace between the two boards that make up the beam until flush with the top of the beam, then place the bottom side against the post. Note: the angle braces are planed to fit but will likely fit tightly between the beam assembly. As needed, loosen the bolts connecting the beams to the post, and have your helper hold the beams open while moving the angle brace into place. Using a hammer and scrap block of wood carefully tap the angle into place and/ or sand the sides of the angles at the top to allow for easier insertion. Make sure the angles are flush to the post and to the top of the beam. Re-tighten bolts and use a clamp or have your helper hold the angle in place until secured.

Ensuring the top of the angle brace remains flush with the top of the beam, secure the angle brace to the post using one 3/8"x6" lag screw through the pre-drilled hole in the brace. You may find it easier to pre-drill the post first, using a 1/4" bit, pre-drill with the angle in place to ensure proper location of the pre-drilled hole in the post. Tighten using 9/16" socket or drill attachment.

For the brace to beam attachment, with top of angle brace flush to top of beam, carefully mark the outside of the outer beam for pre-drilling two holes through both beams and angle brace as follows. For the first hole, mark a spot that is two inches up from the bottom of the beam and in the center (side to side) of the angle brace.

Then, mark another spot down two inches from the top of the beam (where the angle brace meets the top of the beam) and in the center (side to side) of the angle brace - avoid the rafter as shown in the picture below. Ensuring the beams and angle brace do not move, pre-drill through the beam and angle brace at the marked spots using 1/2" drill bit. Once pre-drilled, fasten using two 1/2"x8" bolts with one washer on the outside of each beam. Tighten bolts using 3/4" socket or wrench.

Repeat for the remaining angle brace to beam attachments.

For the angle brace to rafter attachment, place one of the longer angle braces with predrilled side towards the post and long side against the inside of the outer rafter (there will be one more rafter mounted on each side of the beam that will become the outermost rafter in a later step). Make sure the angles are flush to the post, level with (at the same height as) the angle on the beam side, and flush to the top of the rafter. Use a clamp or have your helper hold the angle in place until secured. Ensuring the top of the angle brace remains in place, repeat angle brace to post attachment as outlined above. For brace to rafter attachment, carefully mark and pre-drill through the rafter and angle brace as outlined above. Once pre-drilled, fasten using two 1/2"x6" bolts with one washer on the outside of rafter and brace. Tighten bolts using 3/4" socket or wrench.

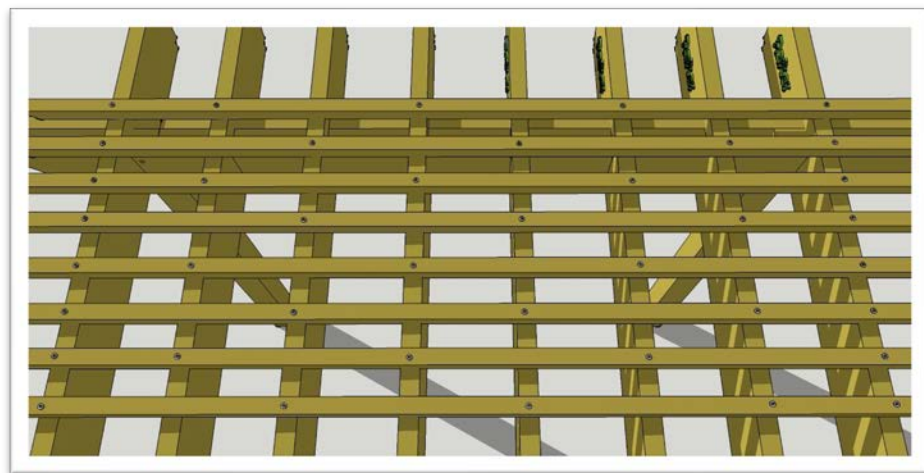
Repeat for remaining angle brace to rafter connections.

This is what they should look like when installed correctly:





- **Step 19** - Install the remaining two rafters over the two outermost X marks on the beam assemblies. Secure each rafter to the beam and ledger board using 6" screws provided with your kit through the predrilled holes.
- **Step 20** - Place the top slats into position across the top of the rafters between the marked lines, with equal spacing outside the outer rafters on both sides. Screw the top slats down onto each rafter using 3" screws. Start on one side and make your way across to the other side screwing down each outer every other inner rafter. Stagger your screw pattern as pictured below:



Be careful with the screws because stainless steel is a soft metal, and they strip easily. Make sure your screw gun is straight and that the bit is inserted all the way into the screw, then push down hard while screwing them in. There are extra screws in every

kit just in case you strip some, but if you need more you should be able to find them at any local hardware store. If you are having trouble with the screws stripping, it is helpful to get a bar of soap and rub the threads of the screw across it before screwing them in. This lubricates the screw, and they will go in a little easier.

- **Step 21** - Check the whole pergola assembly, tighten down loose bolts, screws and lags.
- **Step 22** - Install roofing panels with panel ridges running parallel to the rafters, secured into the top slats (purlins) using 1 ½" roofing screws at each end (beam and ledger board side) and every other top slat in between.

Please reference roofing panel manufacturer installation instructions provided and available for download on our website under Resources>Installation Information.

To ensure proper fit before fastening, lay all panels on top of the pergola, starting on one side and overlapping panels as needed to align the edge of the outer panels with the edge of the top slats and outer rafters. There will be more or less panel overlap required depending upon pergola size. Make note of overlap pattern, then remove panels.

For PT Pine kits, cover the top of each top slat (purlin) with tape supplied to create a barrier between the wood and metal roofing.

Starting from one outer rafter, place and secure each panel following noted pattern from above using 1 ½" roofing screws according to manufacturer instructions. For each panel seam follow instructions for application of Side Lap tape and 7/8" Lap Tek screws supplied.

- **Step 23** - Water in the concrete around the posts if applicable. Mix the concrete with a shovel following the directions for the concrete you purchased and eliminating air bubbles. Be sure not to move the unit around while the concrete cures (amount of time depending upon concrete used and weather conditions).

Please let us know if you have any questions or feedback on the instructions, products or our support process. We always appreciate receiving photos of the build and finished spaces!

Congratulations and thank you for being a Pergola Depot customer!



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