



Assembly Instructions Big Kahuna™ PLUS Covered Pergola Kit



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 complete 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

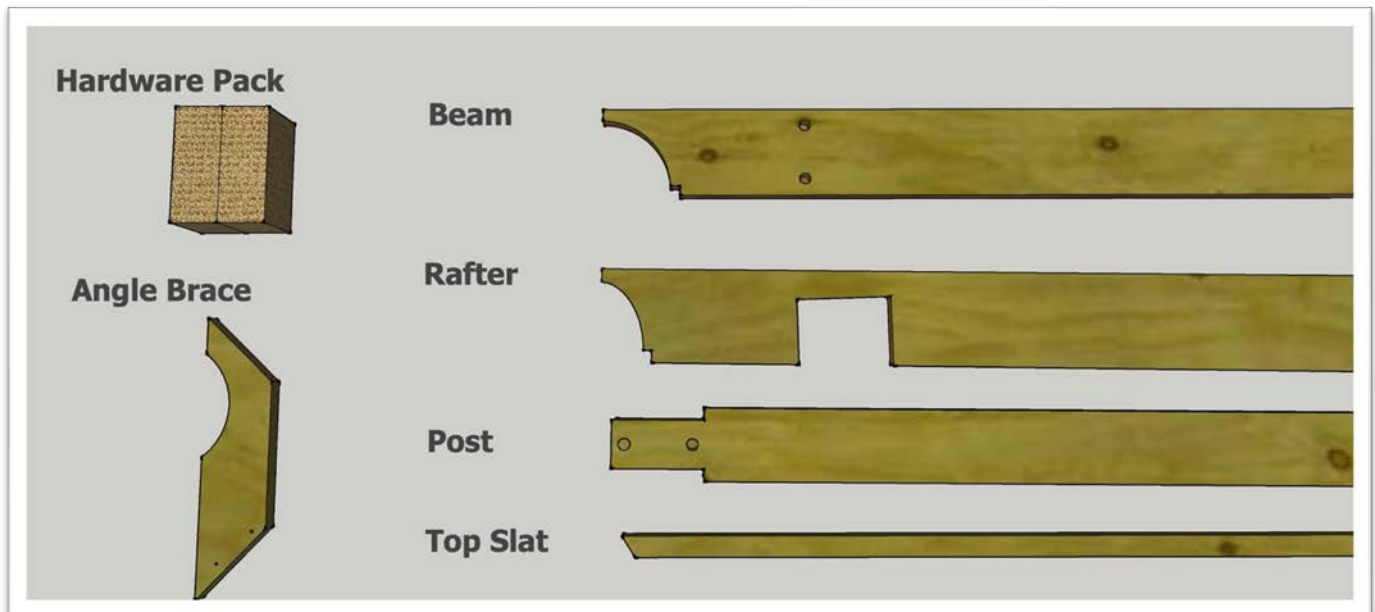
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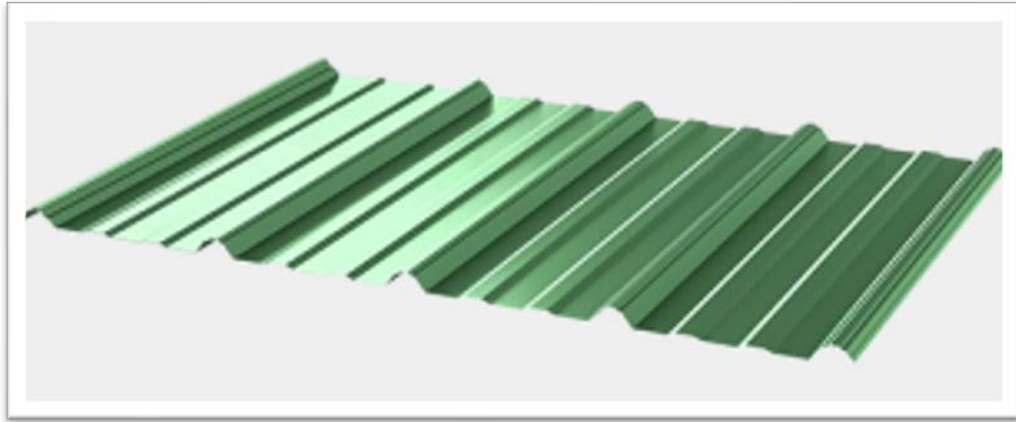
The Team at Pergola Depot

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 (4 for standard size kits)
- 2x8 Notched Rafters (# depends upon kit size). Note that the word “low” will be written on the top of the rafters on one end indicating that will be the low side of the assembled pergola.
- 6x6 Notched Posts (4 for standard size kits)
- 4x6 Angle Braces (8 for standard size kits) - 4 shorter (post to beam), 4 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 (4 for standard sizes kits) and Tapcons (for PT pine kits only) - for slab or footer post mounting if purchased
- 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.

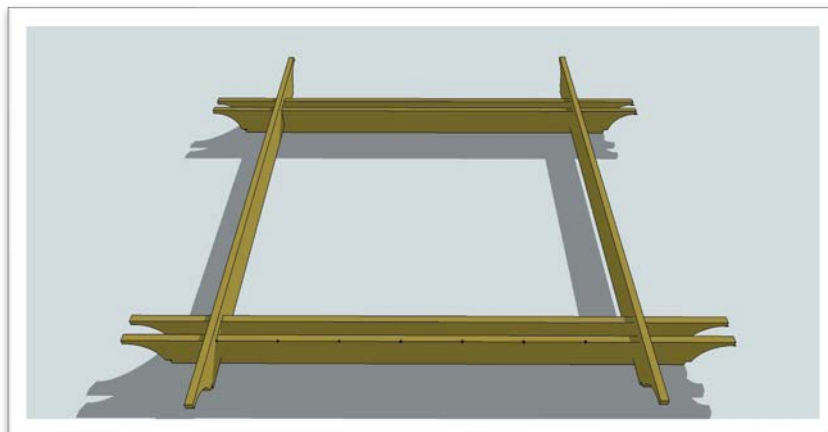
Please wait for the wood to dry completely before painting or staining a pressure treated pine kit, which may take several months or more depending upon climate and weather conditions.

Step by Step:

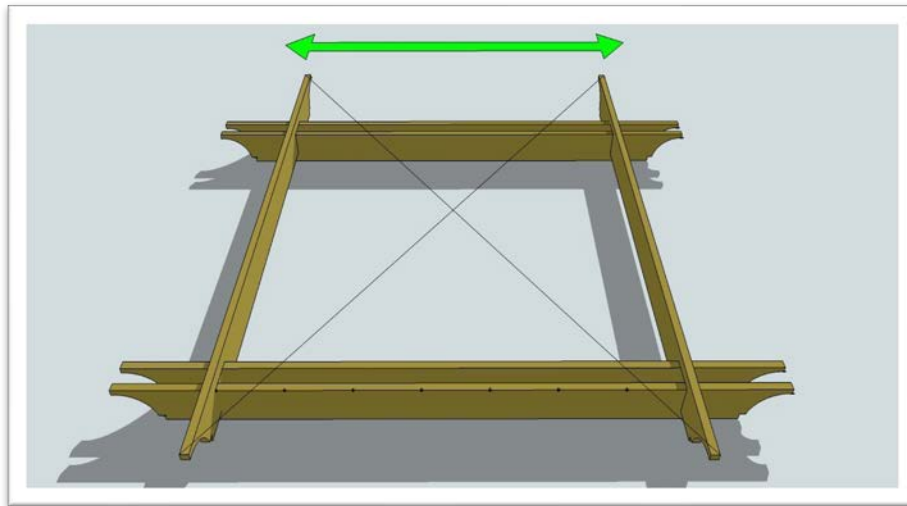
- **Step 1** - Move all parts close to where you will be installing the pergola for easy access during assembly.
- **Step 2** - Place all four beams on the ground (with the x's facing up) exactly where you would like the pergola to stand, like shown below. Position the beams perpendicular to the ribs of the roofing panels (roofing ribs will run parallel with the rafters). Once assembled, one set of beams will be higher than the other to create slope for water drainage.



- **Step 3** - 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: IXI. Position the rafters with the word "low" marked on the top at one end toward the downslope (shorter post and beam assembly) side. Make sure each rafter is positioned on top of the same mark on both beams so there is equal amount of beam outside of each rafter. Use blocks of wood to prop up one set of beams to allow the rafters to sit squarely over the beams (see table below for post and beam height differential assuming level assembly surface). 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 4** - 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 one set of 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 5** - 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|. Making sure 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 word post and the mid-point between the two boards making up each beam assembly. Repeat at all corners.

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 6** - If mounting posts using post bases on top of new footings, dig footer 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. 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 7** - This section will provide information, instructions and examples for 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 and ensure rafters will fit square over the beams, you must ensure post placement (per earlier steps) and accurate height differential between the downslope and upslope beam assemblies as described in this section.

During installation, the beams are attached to the posts, resting in the pre-cut notch at the top of each post. Each beam assembly includes two beams, one on either side of two posts. To create the roofing slope, each beam assembly must be level, and one beam assembly must be higher than the other per the table below.

All standard kits are designed for a slope of ½" for every 12" of rafter length, making the height difference between the two beam assemblies greater for longer rafter lengths as follows:

Table 1 (Beam Height Differential):

Rafter Length	Beam 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) Height difference between the downslope and upslope beam assemblies once installed, measured from the bottom of each assembly.

Since the beams are mounted to pre-cut notches in each post, the beam assembly height difference is achieved by creating the proper post height, measured at the bottom of the notch in the posts (the bottom of the beams once installed). Each post notch is pre-cut to the following measurements from the bottom of the post to the bottom of the notch:

Table 2 (Post Lengths):

Post Length in Feet	8'	9'	10'	12'
Post Length in Inches	96"	108"	120"	144"
Bottom of Notch to Bottom of Post in Inches (Post Length minus 7")	89"	101"	113"	137"

For standard orders we provide posts in lengths of either 8', 10' or 12' (9' post length in table above shown as example when trimming 10' post down to desired 9' length) based upon your specifications at the time of order as follows:

- o 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). The other two posts are provided 2' longer, either 10' or 12'.
- o For orders specifying buried posts (posts installed in ground, into concrete foundations), we supply all four posts at lengths of 12'.

The following section provides instructions and examples for each post attachment method.

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 each other. Check using a leveling tool or string and level, measure the height difference, and adjust for that difference if needed as described for an existing concrete surface below.

With level footings, the required beam height differential is equal to the post length difference measured at the bottom of the post notch between the downslope and upslope posts. The upslope post length will be equal to the downslope length plus the Beam Height differential per Table 1 above.

For example: Assume pergola size is 12x16 (12' rafter length), desired 8' post height at shorter/ downslope side, two 8' and two 10' posts supplied, and tops of all footers are level with each other.

Beam height differential required = 4 ½" (for 12' rafters per Table 1). Downslope post length (from bottom of post to bottom of notch) = 89" (per Table 2 for 8' posts). Upslope post length requirement = 89" + 4 ½" = 93 ½".

Place the two 10' posts on sawhorses, measure 93 ½" from the bottom of the notch in the posts down and mark a level line across two opposite sides towards the bottom of each post.

Double check all measurements before cutting. Using a power saw, evenly trim the bottom portion of the posts at your pre-marked lines. Most saw sizes will require that you cut one side of the posts, flip the posts to cut the other side, then finish with a hand saw for a clean cut.

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 tool or string and level, measure the height differential of the existing surface between the upslope and downslope outside post locations, then adjust for that difference to the required Beam Height differential from Table 1 above.

For example: Assume pergola size is 18x20 (18' rafter length), desired 9' post height at shorter/ downslope side, two 10' and two 12' posts supplied, and 2" of height differential for slope of existing concrete surface (ground surface is 2" lower on the shorter/ downslope side).

Beam Height differential required = $7\frac{1}{2}$ " (for 18' rafters per Table 1) minus 2" (for existing slope) = $5\frac{1}{2}$ ". Downslope post length (from bottom of post to bottom of notch) = 101" (per Table 2 for 9' posts). Upslope post length requirement = $101" + 5\frac{1}{2}" = 106\frac{1}{2}"$.

Place two 10' posts on sawhorses, measure 101" from the bottom of the notch in the posts down and mark a level line across two opposite sides towards the bottom of each post. Place two 12' posts on sawhorses, measure $106\frac{1}{2}"$ from the bottom of the notch in the posts down and mark a level line across two opposite sides towards the bottom of each post.

Double check all measurements before cutting. Using a power saw, evenly trim the bottom portion of the posts at your pre-marked lines. Most saw sizes will require that you cut 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 and may be able to avoid trimming the post lengths depending upon your specific circumstances.

Measure and mark posts for the required above ground post length, then dig the post holes to accommodate - typically the downslope post holes will be deeper unless trimming posts. Like existing concrete surfaces described above, you will need to account for any existing surface slope using a leveling tool or string and level: measure the height differential between the upslope and downslope outside post locations, then adjust for that difference to the required Beam Height differential from Table 1 above.

For example: Assume pergola size 20x20 (20' rafter length), desired 9' above ground post height at shorter/ downslope side, using four 12' posts supplied, 4" of height differential for slope of existing ground surface, and minimum footer depth of 2 feet (varies depending upon your situation for frost line etc.).

Beam Height differential required = $8\frac{1}{2}$ " (for 20' rafters per Table 1) minus 4" (for existing slope) = $4\frac{1}{2}$ ". Downslope above ground post height (from bottom of notch to ground level) = 101" (per Table 2 for 9' posts). Upslope above ground post height = $101" + 4\frac{1}{2}" = 105\frac{1}{2}"$.

For the downslope posts, place two 12' posts on sawhorses, measure 101" from the bottom of the notch down and mark a level line toward the bottom across two opposite sides of the posts - the mark will be approximately 3' or 36" from the bottom of a 12' post but use the measurement from the notch down to be more precise.

For the upslope posts place the other two 12' posts on sawhorses, measure $105\frac{1}{2}"$ from the bottom of the notch down and mark a line toward the bottom across two opposite sides of the posts - the mark will be approximately $31\frac{1}{2}"$ from the bottom of a 12' post but use the measurement from the notch down to be more precise.

Double check all measurements before digging or trimming posts.

Note: for this example, you can reduce the depth of the post holes by trimming the post lengths by a corresponding amount. Keep in mind the desired minimum post hole depth.

Dig downslope holes to a depth of 40" (36" plus 4" for gravel layer at the bottom of the hole) and min. 12" diameter. Dig upslope holes to a depth of 35 ½" (31 ½" plus 4" for gravel layer) and min. 12" diameter. Alternatively, trim 12" from the bottom of the downslope posts and 7 ½" from the bottom of the upslope posts, then dig all four post holes to a depth of 28" (achieves min 24" footer depth plus 4" for gravel).

Pour in gravel to fill the first 4" of each post hole. Test correct depth by inserting posts into the holes. The marked lines on the posts 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.

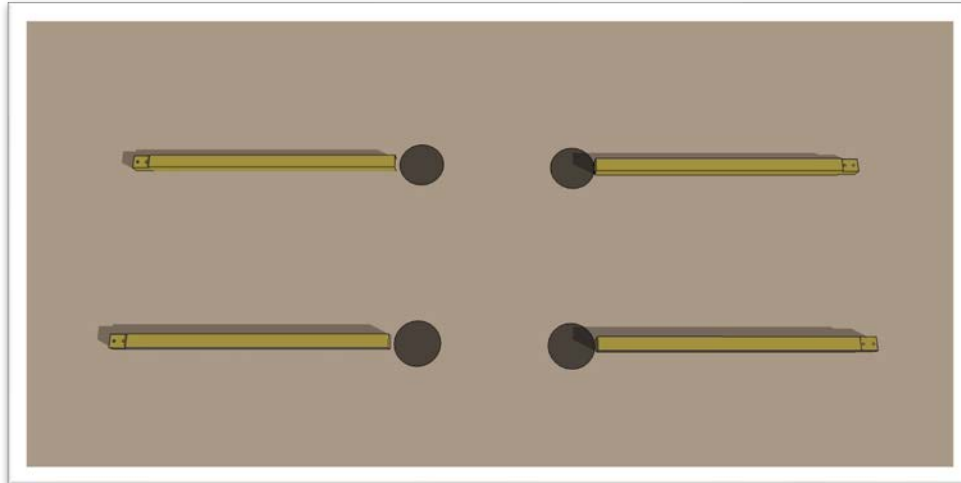
For posts being installed into concrete footings, we recommend inserting one piece of supplied 10" rebar through each post at approximately 10" below ground level. Remove posts from holes, locate and mark a spot at the center of each post approximately 10" below ground level. Using a 5/8" drill bit,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

- **Step 8** - 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 each post base to ensure they match the prescribed distance between the center of each post for your size pergola. The center post to post measurement (for standard sizes) is 3'6" less than the overall length of each dimension. For example, a 10x12 (rafter x beam) pergola has a center post to post measurement of 6'6" (10' rafter minus 3'6") x 8'6" (12' beam minus 3'6"). Once post base placement is confirmed, mark the concrete at the center of the hole at the bottom of each base.

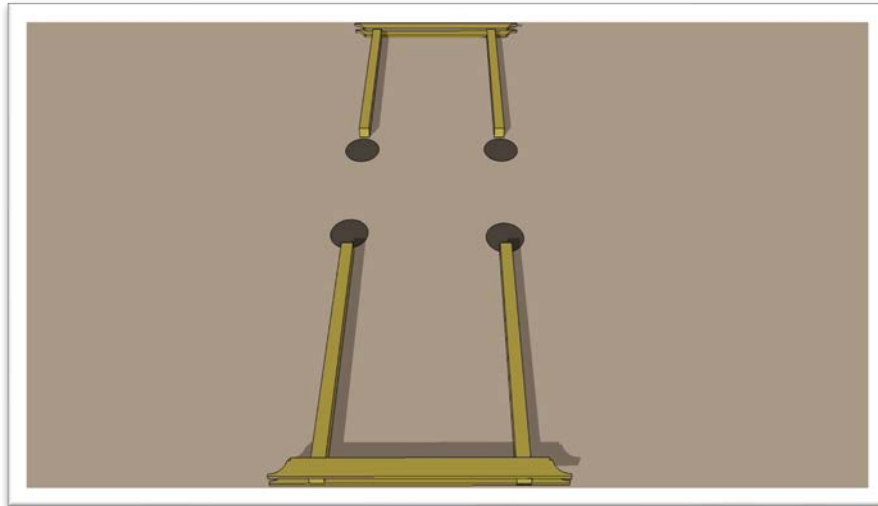
Remove the bases and drill into the concrete at each marked point with a 5/8" concrete drill bit to a depth of at least 4". Clear excess debris from the hole. Place the washer and nut on the concrete anchor, place the flared end of the anchor through the post base and into the hole in the concrete. Hammer 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 side 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 9** - 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 each other, and notched end up and down so that pre-drilled holes are showing as pictured below. Ensure the shorter posts (or the posts with shorter above ground length) are placed on the low side of the pergola footprint - the lower side of the roof slope once installed.



- **Step 10** - 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 11** - 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 12** - Place 1 washer on each 1/2" 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 13** - With one person at each post, tilt one 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 each 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.

Repeat for the other beam and post assembly.

- **Step 14** - Move the stepladder in between the two assemblies. Position one of the rafters with the word "low" marked on the top toward the downslope side (the shorter post and beam assembly). 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 beams), leaving the outermost set of rafters for a later step after the angle braces have been installed. The notch on either side of the rafter should slide over the beams on each side and fit squarely with the rafter sloping from one side to the other. If not, check the direction of the rafter (marked with word "low" to low side beam assembly), and adjust the posts if needed to allow the rafters to slide on and fit squarely and the posts are plumb. **If more significantly out of alignment, you may need to further adjust post placement or height for one of the post and beam assemblies. Please contact us as needed to assist.**

When the first rafter fits squarely over the beams, secure the rafter to the beams 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). 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 beams with 6" screws through the predrilled holes.

- **Step 15** - 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 each base.
- **Step 16** - 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 a 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.

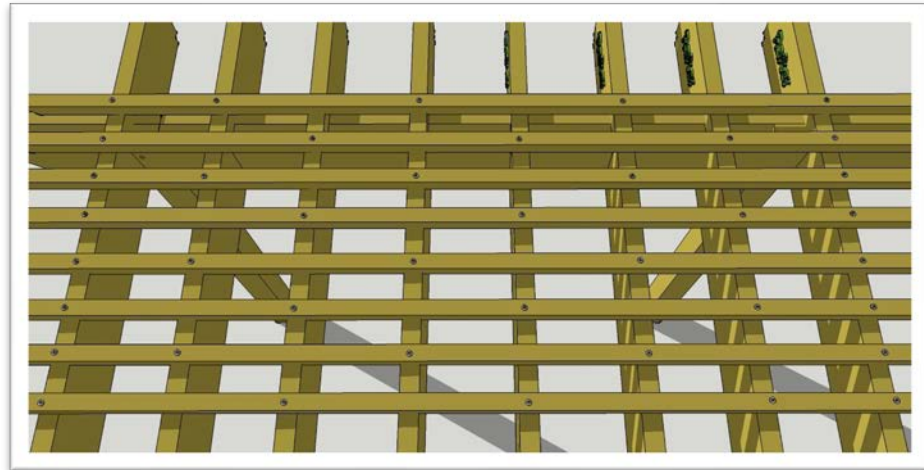
For the angle brace to rafter attachment, place one of the longer angle braces with predrilled side towards the post and long side against the inside of the outer rafter (there will be one more rafter mounted on each side of the beam that will become the outermost rafter in a later step). Make sure the 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 17** - Install the remaining two rafters over the two outermost X marks on the beam assemblies. Secure each rafter to the beams using 6" screws provided with your kit through the predrilled holes.
- **Step 18** - 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. Then screw the top slats down to the rafters using 3" screws. Start on one side and make your way across to the other side screwing down each outer and 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 19** - Check the whole pergola assembly, tighten down loose bolts, screws and lags.
- **Step 20** - 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 sides) 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 21** - 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!



Hand made in the U.S.A!

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