Assembly Instructions
Big Kahuna Timber Frame™ Pergola Kit

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

Before beginning to install your new pergola, please read these instructions entirely 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.

Contact us if you have questions or need help!

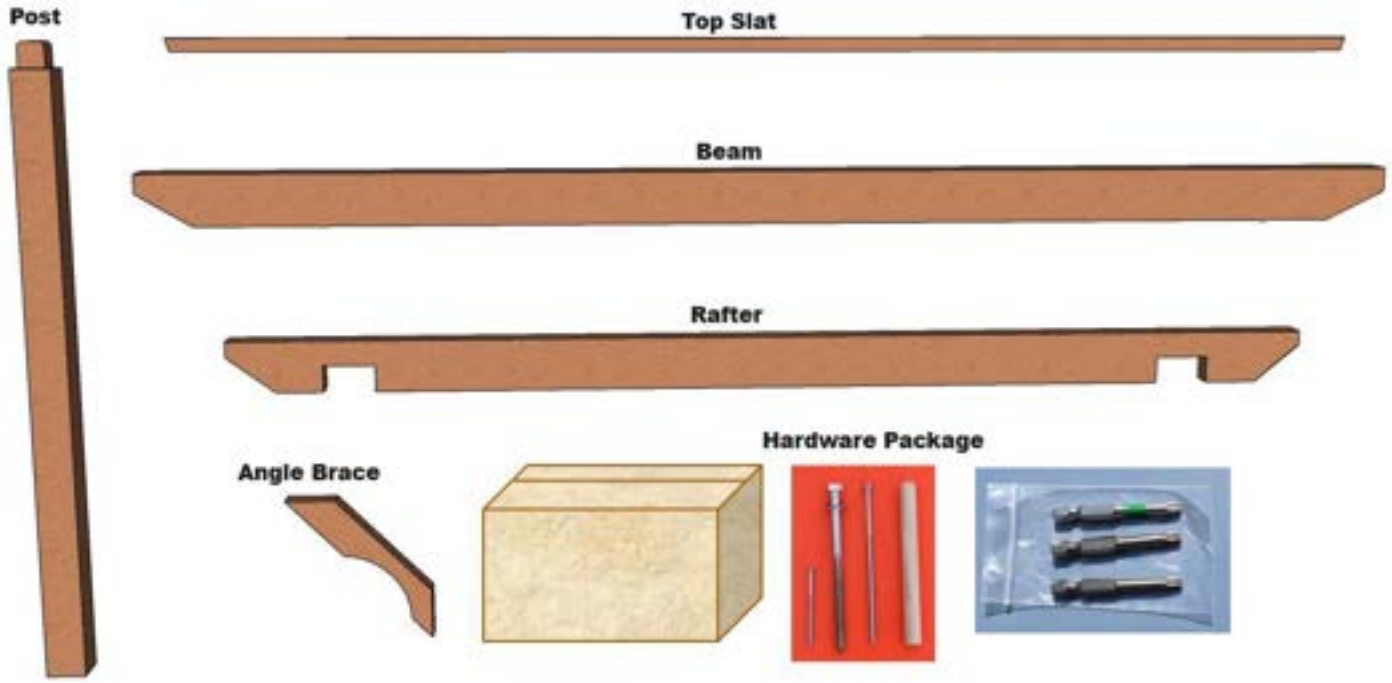
Call: 1-877-563-0002
Email: info@pergoladepot.com
Visit: https://pergoladepot.com/

The Team at Pergola Depot

Tools and Supplies Needed

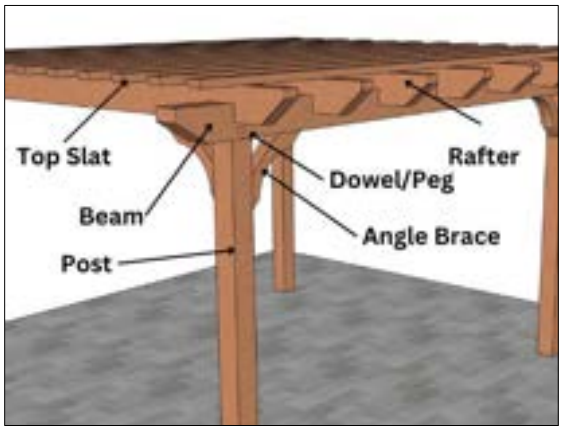
- Helpers - at least 2 (minimum 3 people in total), especially for larger kits
- Tape measure (2 better), hammer, level, leveling string and stakes, sawhorses (2) or substitute, bar/jaw clamps (4 ~12" or more), ratchet strap, small pieces of scrap wood (2x4 ~4-6"), rubber or wooden mallet for wooden peg installation
- 2x4s (8 pieces) of approximately 6 feet in length for propping up the post and beam assemblies during installation
- Stakes, flags, spray paint, chalk or other materials for marking post locations
- Minimum 2, preferably 3 step ladders (~6 feet or taller, to work the top of your pergola during assembly)
- Screw gun, power drill (min. 18V fully charged cordless)
- Socket attachments, wrenches, drill bits:
    - Supplied with Kit: Two star-drive bits (T25, T27) for 3" and 6" 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 angle brace attachment
    - 9/16" drill bit for pre-drilling wooden peg installation
    - 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 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:

- 6x6 Beams (2 for standard size kits)
- 4x6 Notched Rafters (# depends upon kit size)
- 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)
- 2x4 Top Slats (# depends upon kit size)
- Hardware Pack (box) – see Pack List for detailed contents
- Optional:
    - Post base mounting hardware (4 for standard sizes kits) and Tapcon screws (for PT pine kits only) – for slab or footer post mounting if purchased
    - Post base trim – if purchased



Instructions

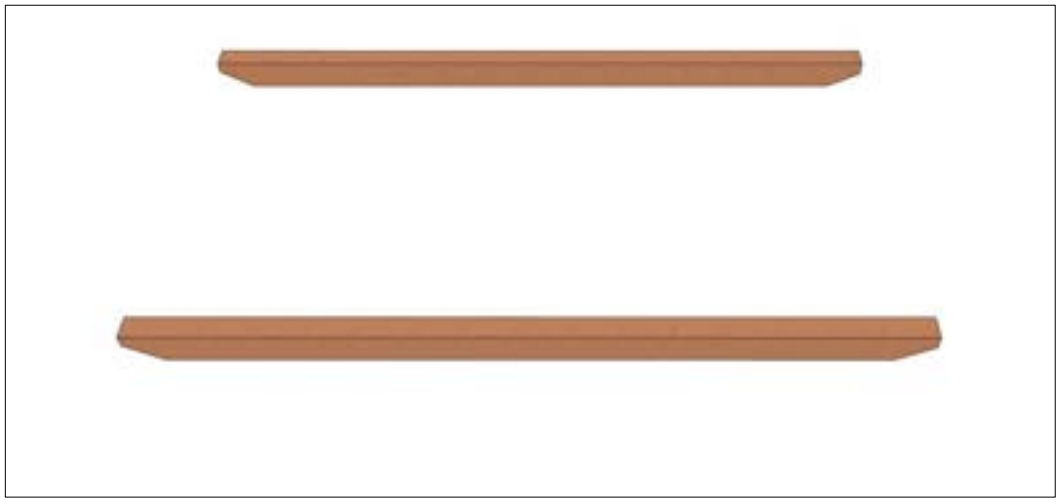
For installations on top of new footings, allow the concrete to dry before completing the rest of the pergola installation. This may require that you dig holes and pour footings a few days or more prior to assembling the pergola depending upon the concrete used and climate. Additional instructions are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

For installations on top of new or existing concrete foundations, we supply post bases, anchors and Tapcon screws 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:

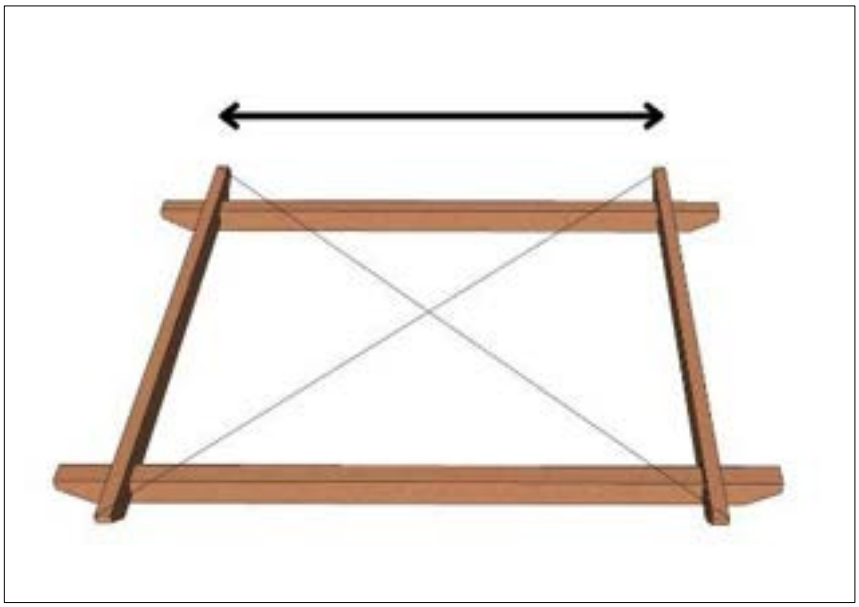
- **Step 1** – Move all parts close to where you will be installing the pergola for easy access during assembly.
- **Step 2** - Place beams on the ground (with the x's facing up) exactly where you would like the pergola to stand, like shown below. Position the beams perpendicular to the desired placement of the rafters.



- **Step 3** - Slide two rafters over the two outermost X marks (marked like this: IXI) on the beams, positioning the notch in the rafters on top of the X on the beams. Make sure each rafter is positioned on top of the same mark on the beams so there is equal amount of beam outside of each rafter. You may need to move the beams around a little to get the rafters into place.

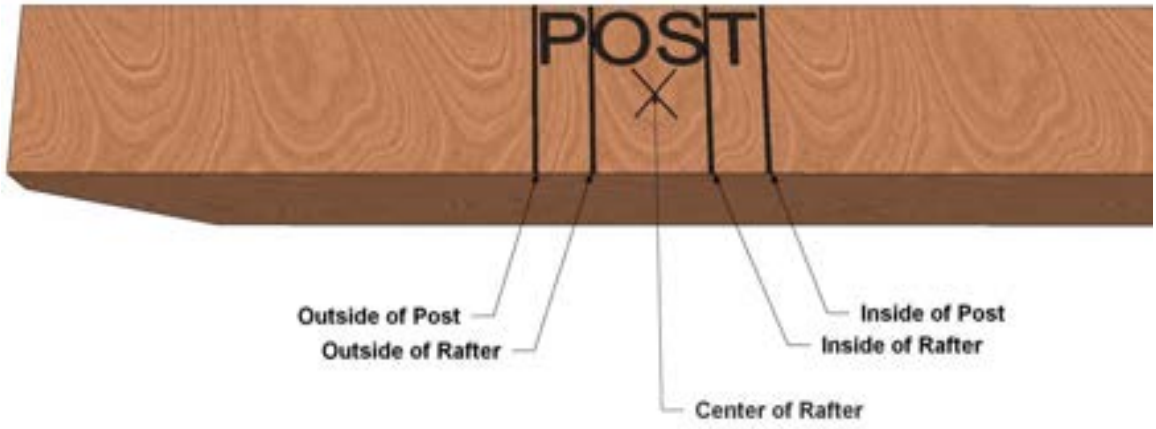
  Using 6" screws provided, temporarily screw each rafter through the predrilled holes into the beams. Screw them in just enough to hold the rafter in place.

- **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 as shown below. This is easier if you and your helper both have a tape measure and pull them across at the same time.



Adjust one or both sets of 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, making sure the assembly does not move, use stakes, spray paint, chalk, flags, or other material to mark the ground or concrete surface at each corner where the beam and outer rafters intersect. The post will be placed at the center of the 4 markings.



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

- **Step 6** – Post hole, footing, and post base instructions:

  In-Ground

  If burying posts into concrete footings, dig footer holes with the center of the hole at the center of the four marks from above. Dig holes to a minimum of 2′4″ deep (depending on the depth desired for frost line etc. – see our website under Resources>Pergola Post Guide) and min. 12″ diameter. Adjust post depths to ensure tops of posts will be level with each other once installed. Pour in gravel to fill the first 4″ of each post hole.

  We recommend you install a piece of 10″ rebar, supplied with the kit, into the bottom of each post. Locate and mark a spot that is 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.

  New Footings

  If mounting posts using post bases on top of new footings, dig footer holes with the center of the hole, where marked, from an earlier step, minimum 2′ deep (depending on the depth desired for frost line etc. – see our website under Resources>Pergola Post Guide) and min. 12″ diameter. Use concrete footing form tubes and leveling line to ensure the top of each footing is level with each other.

  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.

  Post Bases

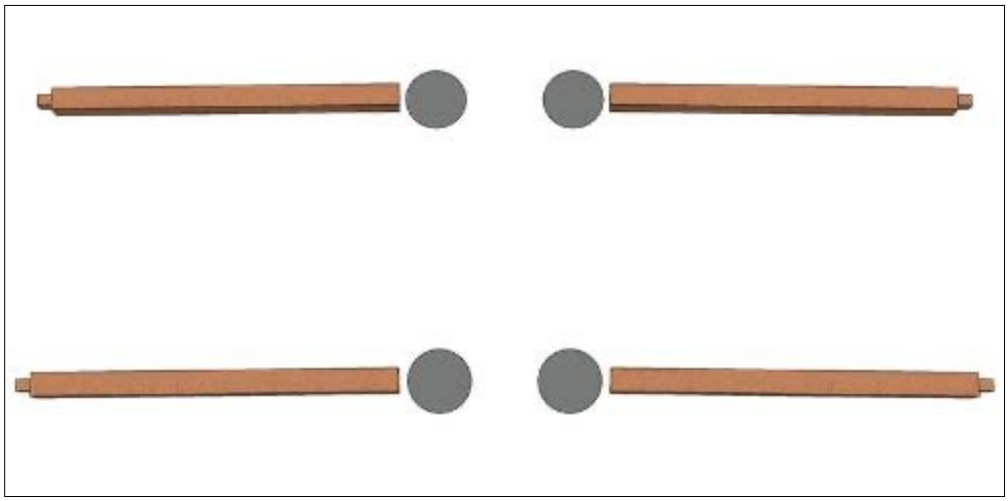
  If installing using post bases on top of an existing concrete foundation or previously poured footings, the concrete must be dry before installing post bases. Place the bases on the concrete in the exact position where they will be installed at the center of your post location marks from above. Measure 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 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.

If installing a pressure treated pine kit using post bases, install one Tapcon screw provided through one of the holes in the bottom 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 7** - Lay the posts on the ground, with the bottoms at the edge of each hole or post base, the tops (tenon cut ends) facing away from each other.



- **Step 8** - 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 9** – **Lift and drop each of the posts into the postholes, or into the post bases if on concrete. Brace the posts in place using scrap 2x4 wood pieces and clamps.** If using post bases on concrete, the bases are secured to the posts in a later step after the beam and rafters have been assembled.

- **Step 10** - Lay the beam(s) down on the ground just outside the posts on each side with mortise cut (square holes) in beams facing the ground and the marked spot on the beams (marked for pre-drilling for peg installation) facing away from the posts. Position ladders, one just outside each post (and one at the midpoint between the posts if available) to allow for lifting and placing the beam on top of the posts. With 2-3 healthy adults, lift the beam with the mortise side facing down while climbing the ladder to the height needed to position the beam on top of the posts and connecting the tenon into the mortise on the underside of the beam.

Now you should have this:

Repeat Step 10 for the other beam(s).

- **Step 11**- If posts are going into footers, fill the holes around the posts with dry concrete. **Do not mix 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 (and as needed with in-ground installation), 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 12** - Move the stepladder in between the two assemblies. Position two of the rafters onto the beams over the first X mark on the inside of each set of posts.

The last rafter you will install is the outermost X mark on the beam. Installing rafters in this order allows for enough space to maneuver for drilling the hole for the peg that connects the beam to the post and installing the peg securely. The notch on either side of the rafters should slide over the beams on each side and fit squarely. Adjust the posts if needed to allow the rafters to slide on and fit squarely over the beams. **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 two rafters fit squarely over the beams, secure the rafters to the beams using 6" screws provided through the predrilled holes in the rafter onto the top of the beams.

Now your helpers should be able to let go of the assembly and you can remove post braces if used.

- **Step 13** – Install the angle braces connecting the post to beam securing with 3/8"x6" lag screws provided. The shorter braces (36" long) are for the post to beam and the longer braces (40" long) are for the post to rafter (installed at a later step). Using 9/16" socket or drill attachment, partially screw the lags into the pre-drilled angle braces so about 1/4" of the lag screw tip comes through the brace.


Position the brace with radius cut facing in and flat ends centered on the underside of the beam and side of the post. Make sure the angles are flush to the post and to the top of the beam, then clamp or have your helper hold the angle in place. Use a hammer to tap both lag bolts to leave an indentation.

Set the brace aside, and pre-drill holes using a 1/4" bit where the indentations are located.

Place the brace back into position so the tip of the lag bolts meet with the pre-drilled holes. Tighten using a 9/16" socket or drill attachment. Repeat for the other post to beam side angle braces.

This is what they should look like when installed correctly:

- **Step 14** – Before installing the wooden pegs, pre-drill the posts at the marked spot on the beams. Using 9/16" drill bit, drill through the beam and into the tenon(post), approximately 4" to no more than 5". We recommend marking your drill bit 4.5" from the tip with tape so you can see the depth of the hole while drilling. Clear out the excess debris from the hole. Then, insert the rounded end of the wooden peg through the pre-drilled holes in the beam and post. Using a rubber/wooden mallet or hammer and a small block of wood, carefully hammer in the wooden peg until there is approximately ½" of the peg remaining outside the hole. (Optional) You can leave the peg as is (pictured below on the left) or trim the wooden peg to desired length. (Note peg trimmed to be flush with the beam in picture below on the right) Repeat for each post to beam connection.

- **Step 15** – Install the remaining rafters over the "X" marks and secure them to the beams with 6" screws through the predrilled holes.

- **Step 16** – If using post bases, secure the bases to the posts using the galvanized nails supplied.

- **Step 17** – Now install the angle braces connecting the post to the outer rafter at each post, securing with 3/8"x6" lag screws provided. Using 9/16" socket or drill attachment, partially screw the lags into the pre-drilled angle braces so about 1/4" of the lag screw tip comes through the brace.

Position the brace with radius cut facing in and flat ends centered on the underside of the beam and side of the post. Make sure the angles are flush to the post and to the top of the rafter, then clamp or have your helper hold the angle in place. Use a hammer to tap both lag bolts to leave an indentation.

Set the brace aside, and pre-drill holes using a 1/4" bit where the indentations are located.

Place the brace back into position so the tip of the lag bolts meet with the pre-drilled holes. Tighten using a 9/16" socket or drill attachment. Repeat for the other post to rafter side angle braces.

This is what they should look like when installed correctly:

- **Step 18** - Place the top slats into position across the top of the rafters between the marked lines. Ensure each top slat is centered by adjusting for equal measurement outside of the beam on each side (as pictured below). Then screw the top slats down to the rafters using 3" screws provided. Start on one side and make your way across to the other side screwing down the top slats to each rafter.


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 screws and lags.

- **Step 20** – Slowly add water (follow concrete manufacture instructions for amount of water) to the dry concrete and mix with a shovel or trowel to eliminate air bubbles. Be sure not to move the pergola unit around while the concrete cures. Follow concrete manufacture instructions for curing time.

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!

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