Pergola Installation Guide

When only the *best* will do.

Heartland Pergolas

Tools Needed
Installation

Heartland Pergolas

Tools for assembly

- Drill(s)
- Miter or Circular Saw with carbide blade *(cut slowly)*
- ½" Drill Bit
- ⅝" Drill Bit
- 5/16" Magnetic Driver(s)
- ⅜" Magnetic Driver(s)
- 6" Drill Extension(s)
- Phillips Bit for Drill
- Level
- Hammer
- Tape Measure
- String Line/Stakes
- Hammer Drill if necessary for concrete or footing mounts
- Wrench for Anchors on post
- Composite Shims
- Step Drill Bit *(Vari –Bit®) (For reaming holes in aluminum)*
- C-Clamps or Quick Clamps
- PVC Pipe de-burring tool *(optional)*

Tools for digging and setting pier type footings

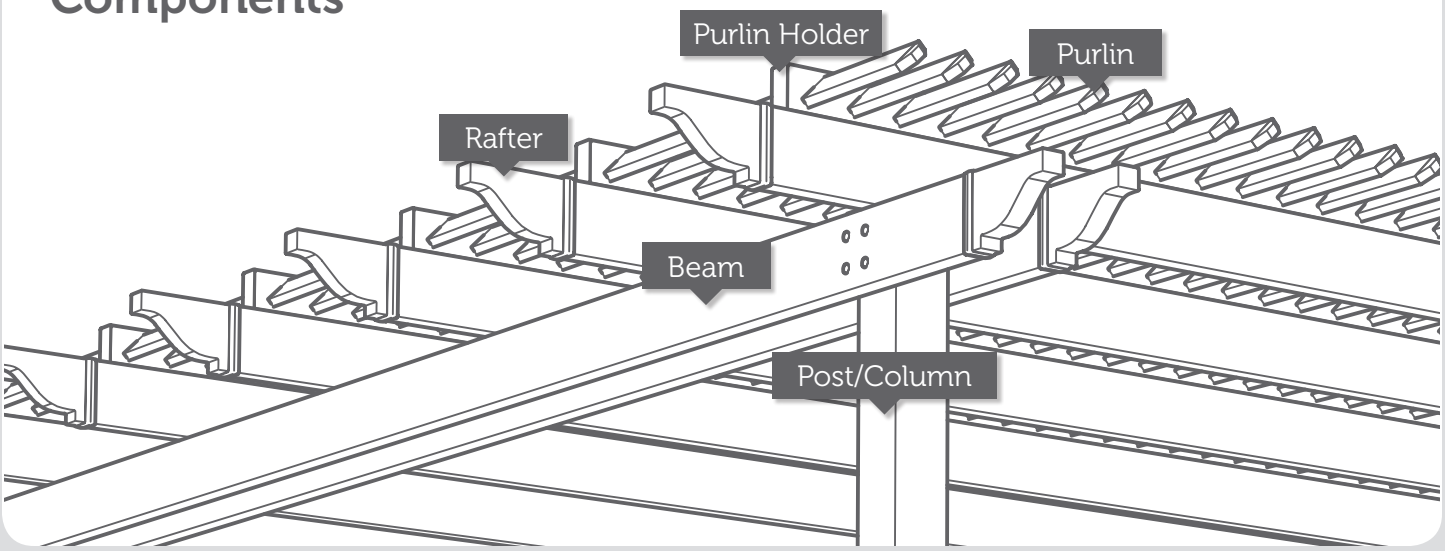
- Hand Diggers/Auger
- Scrap Lumber *(for making forms)*
- Concrete Stakes *(for holding forms)*
- Shovel
- Wheel Barrow or Small Concrete Mixer
- Trowel
- Saw to cut concrete or pavers *(optional)*

Note:

All fasteners for beams, rafters, purlin holders and purlins are included in kit.

Fasteners NOT provided in kit: *Post mount attachment, Ledger plate attachment*

Components



Step 1
Layout

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A Note on Pergola Sizes.

Sizes are defined by the total width and depth of the roof. For example, a 12' x 16' pergola will have a roof area of 12' x 16' and post spacing of 10' x 14'.

Each post location, beam span and rafter span is customizable for each kit. Allow for a standard 1' of over-hang on each end. Order one-size up on custom sizes and trim to desired overhang.

View photos of installed pergolas on **Heartlandpergolas.com**.

Example:

If you have a patio that is 10' 6" deep x 13' wide you would want a roof that was at least 12' 6" deep x 15' wide. This will allow a standard beam & rafter overhang of 1' on each end. You would order a 14' deep x 16' wide kit and trim the beams and rafters to your desired overhang.

Measure

a) Determine necessary height, post locations and overhangs based upon site. Make note of the following measurements as you will want these later:
   1. Desired outside to outside dimensions of your posts.
   2. Desired height to the top of your beam *(same as height to bottom of your rafter).*

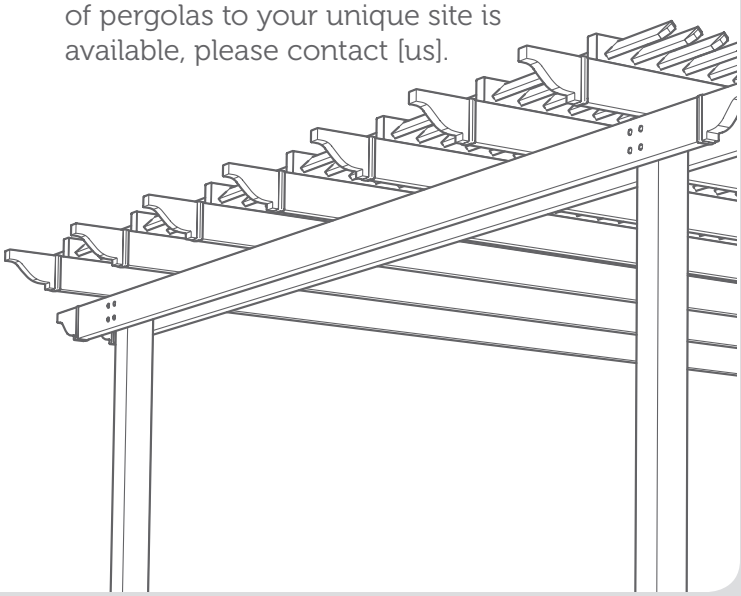
b) Ensure posts are square with each other and/or any adjoining structure.
   1. Post and beam spacing is adjustable to fit installation site and any obstructions. Overhangs of beams and rafters not to exceed 36".
   2. ***Note:*** *If adding to existing slab or patio, do not assume that they are built square!*

c) It is common that existing concrete and paver patios are installed with a certain degree of slope. If slope is minimal *(less than 1" in 10')* you can simply disregard it. If slope is more pronounced consider that your posts may be differing lengths to allow pergola roof to be level to horizon. Start with the lowest area and work back from there. This will be the post that is longer than the others.

d) Maximum span of 2x6 beams and rafters 16'. *(Optional 2x8 beams and rafters can span 21').*

e) Note that purlin holders do not have to run under any roof overhangs on your site. This allows maximum head clearance for your rafters.

f) For challenging sites, custom fabrication of pergolas to your unique site is available, please contact [us].



Step 2
Post Mount Attachment

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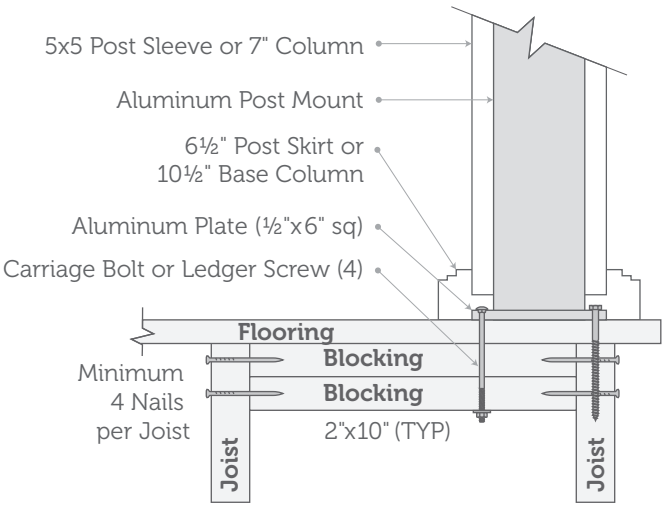
2a Post Mount to deck



a. Add blocking below deck flooring under each post mount. Minimum blocking thickness of 3" *(this is two 2x10's thick).* This step can be completed by removing decking boards at each post mount location, cutting blocks and cross nailing them into place. Often it is possible to leave the deck boards in place then measure, cut and fit all blocking from under the deck.

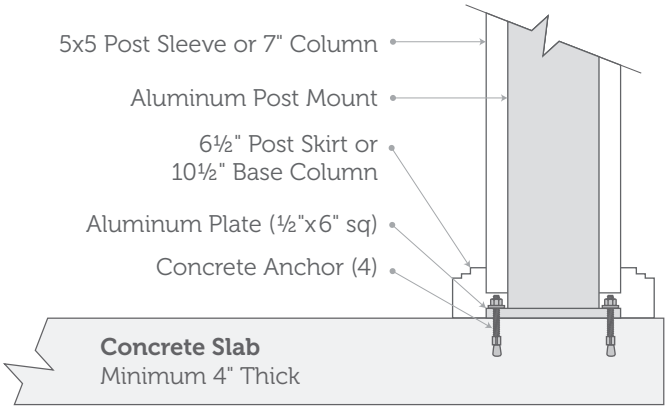
b. Inset post as necessary to ensure post skirt does not overhang edge of decking.
   1. Minimum 5¼" inset from edge to center of mount for a column type installation.
   2. Minimum 3¼" inset from edge to center of mount for 5x5 post installation.

c. Ensure aluminum face of mount runs parallel to beam for fastener attachment *(shaped like an H, see drawing on page 9).*

d. Detail on nailing blocking: Minimum 4 nails on each side of 2 by block.

e. Mount Fasteners using carriage bolts or ledger attachment screw *(5" Minimum Length).*

2b Post Mount to Slab



Note:

For this mount application concrete must be at least 4" thick

a. Inset post as necessary to ensure post skirt does not overhang edge of slab.
   1. Minimum 5¼" inset from edge to center of mount for a column type installation.
   2. Minimum 3¼" inset from edge to center of mount for 5x5 post installation.

b. Ensure aluminum face of mount runs parallel to beam for fastener attachment *(shaped like an H, see drawing on page 9).*

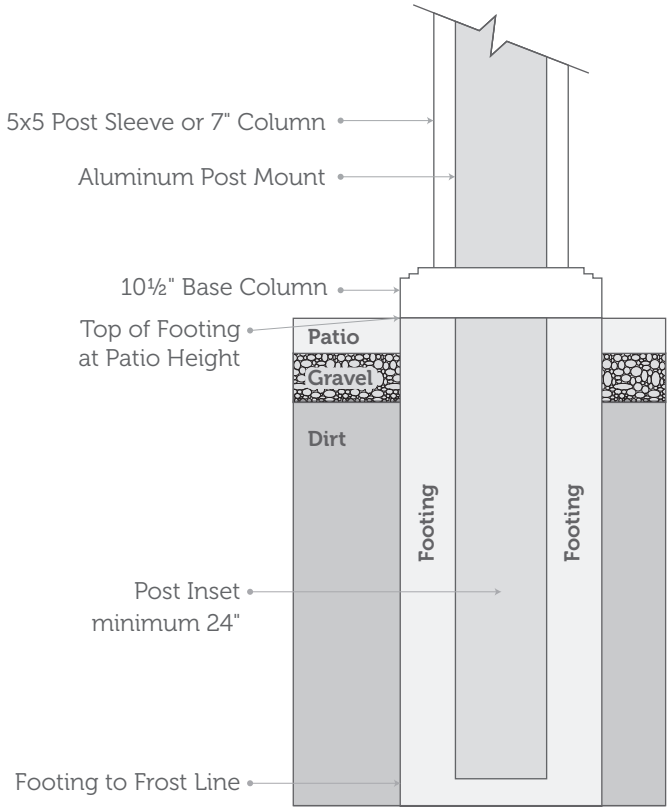
c. We recommend Mount Fasteners - ⅜" Hot Dipped Galvanized Wedge Anchors, minimum 3" embedment.

2c Post Attachment Mount in Footing (Column Style Post)

a. The main goal is to isolate the pergola posts from the patio area without looking like it. This will allow the patio to move up and down over the seasons while the pergola posts stay rock solid. To do this properly you need to make sure you know the finished grade of the patio.

   1. If there is a patio existing you can simply remove blocks as necessary to form and pour footings to the height of the existing patio surface. Use a concrete saw to cut the paver blocks to fit around the footing once the forms are removed.
   2. If the patio is not yet installed you MUST establish the desired patio surface height prior to forming and pouring your footings. The end goal is that the patio block will fit neatly around the column base without sliding under it. This allows the patio to freely move up and down without squeezing or crushing parts of the pergola column.
      Note: *It is common that the patio will have some slope. This is no problem. Simply set the top of your forms to follow the desired slope. The roof of pergola can still be installed level.*

b. Determine post locations and layout with strings and tape measures.



c. Footing size is the same size as the base of the column. 10½" square dug to frost line depth *(varies geographically).*

d. Dig footings to frost line, making sure to remove excess loose dirt from the bottom of the hole and to square off the top of the footing to fit the form.

f. Build, stake and level forms over your holes. Ensure your forms are installed square to patio or structure. It is often helpful to set string lines to double check the locations as well as desired height of the footings.

e. Set post stiffener into footing ensuring it is at least 2' deep and centered in the form. It may be helpful to fill your hole partially with concrete prior to setting in your post stiffener.

f. Ensure aluminum face of stiffener runs parallel to beam for fastener attachment *(shaped like an H, see drawing on page 9).*

g. Pour footings to top of forms and trowel level.

h. Check that your post is plumb both directions and is tall enough out of the concrete to reach the desired top of your beam.

2d Mount in Footing (5x5 Post)

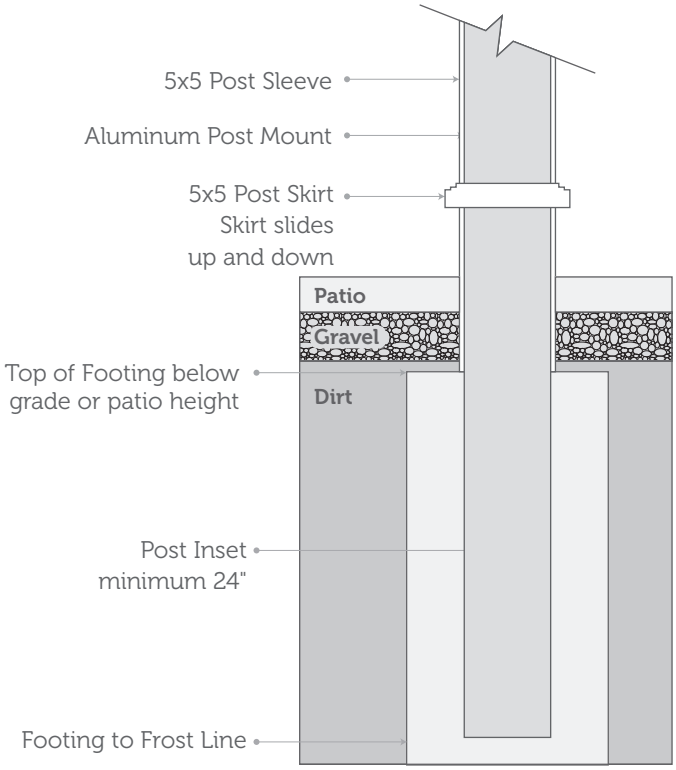
a. The 5x5 post comes with a movable skirt and trim ring. These can slide up or down the post and allow you to finish your patio height at any level and simply slide the skirt down to meet the finished surface. Because the trim will move up and down with ease, you can set your posts first and build your patio around them. Make sure to leave the top of your footings low enough that they do not interfere with the patio being installed around them.

b. Dig a 12" round footing to frost depth making sure to clean any loose dirt from the bottom of your hole.

c. Set post stiffener into footing ensuring it is at least 2' deep and centered in the hole. It may be helpful to fill your hole partially with concrete prior to setting in your post stiffener.

d. Ensure aluminum face of stiffener runs parallel to beam for fastener attachment *(shaped like an H, see drawing on page 9)*.

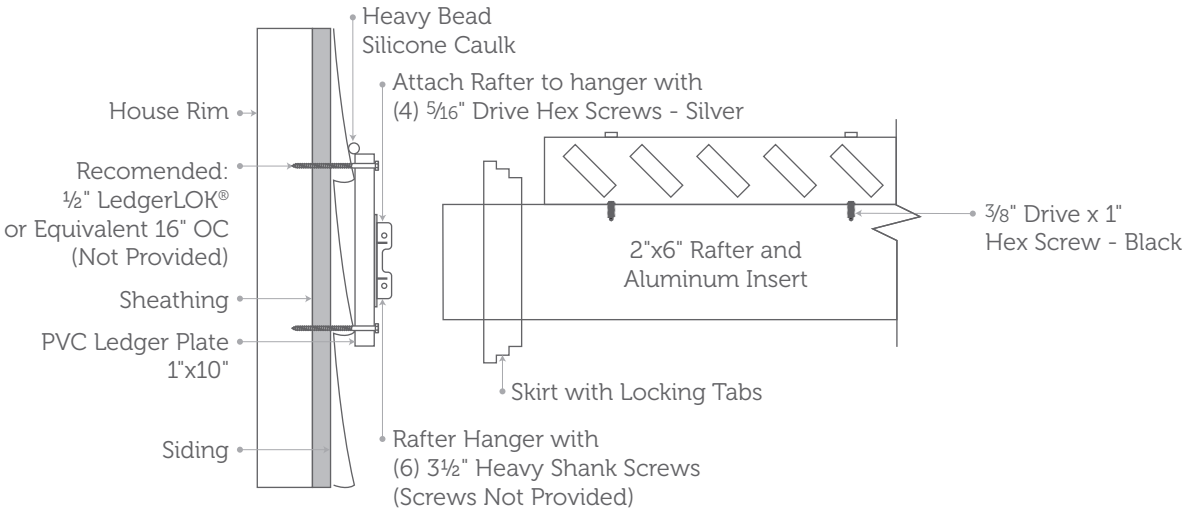
e. Check that your post is plumb both directions and is tall enough out of the concrete to reach the desired top of your beam.



Note:

This type of footing is best when building pergola in conjunction with a paver patio or a concrete patio that is less than 4" thick. This is also the best application if you have any concerns of frost heaving the patio.

Step 3
Optional Ledger Attachment to Structure



a) Secure ledger to structure ensuring you are screwing into headers or studs as much as possible.
Pro Tip: *Layout and mark rafter hanger locations prior to installation of ledger plate.*

b) Fasteners: Necessary fasteners for Ledger are NOT provided in kit. Requirements are determined by type of structure.

c) If removing siding ensure that ledger plate is properly flashed and sealed.

d) If ledger is installed over top of siding ensure that top and sides are caulked adequately.

e) Minimum clearance between top of window or door and underside of overhanding soffit is 7½". This is the height of the rafter and skirt.
Note: *For a tight spot you can trim skirt carefully with a utility knife and shave another ½" off the overall height of rafter attachment.*

f) Attach rafter hangers based on your layout measurements.

Note:

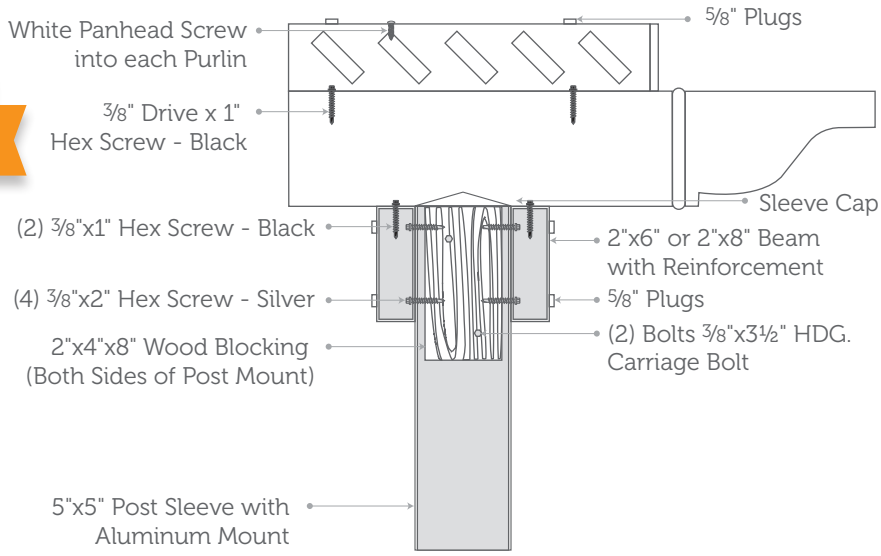
Ledger plate provided in kit is Azek® Trim and measures ¾" thick by 9¼" tall.

4a Beam Attachment to 5x5

Pro Tips:

If flat caps are desired on ends of a beam cut aluminum insert short by ½" per end to allow for insert of cap.

Ream holes larger in ALUMINUM ONLY for easier plug installation.



a) Double check desired height of pergola roof and mark each post at top of beam. The simplest way *(short of using a laser level)* is to quick clamp your beams to your post mounts and mark the mount at the desired height.

b) Cut aluminum post mount 1" below the desired top of beam. This will leave room to install a cap on the vinyl post sleeve when you are finished.

c) Install wood blocks on post mount.

1. Hold blocks at the top of the post mount with a quick clamp.
2. Drill two ½" holes through the block and aluminum center web of the post mount keeping drill as level as possible.
3. Secure wood blocks to post mount with provided carriage bolts and washers. Tighten until washers sink into the wood.

d) Cut 5x5 post sleeve to proper height.

1. If you are using a post mount, this is the height from the top of the post mount plate to the desired top of your beam. Remember, your post sleeve should stick up 1" taller than your mount to allow room to fit in your sleeve cap.
2. If you are using a post stiffener set into a footing, this measurement should be long enough to reach the top of beam and still allow the post sleeve to reach below the desired patio height. Your post sleeve should stick up 1" taller than your mount to allow room to fit in your sleeve cap.

e) Install skirts and optional trim rings onto your vinyl post sleeve.

f) Slide post over the top of the mount. If using a stiffener without a mounting plate you can hold this sleeve in place with a self-drilling screw below the patio height.

g) Mark and drill OUTSIDE FACE ONLY of beam and aluminum insert with ⅝" diameter bit. Four holes per beam connection.

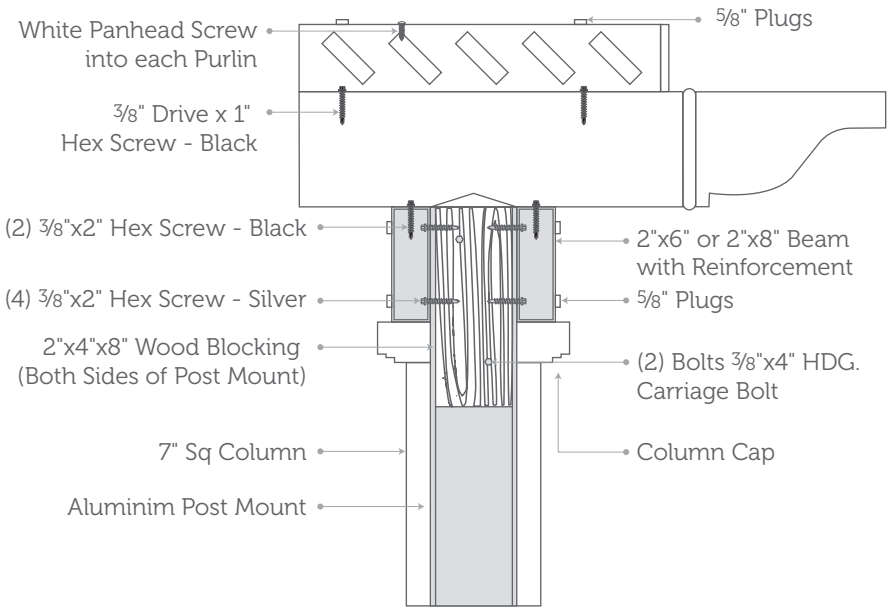
j) Attach beam to post with provided heavy ⅜" x2" hex screws *(silver)* and cover with ⅝" plugs.

4b Beam Attachment to Column

Pro Tips:

If flat caps are desired on ends of a beam, cut aluminum insert short by ½" per end to allow for insert of cap.

Ream holes larger in ALUMINUM ONLY for easier plug installation.



a) Double check desired height of pergola roof and mark each post mount at top of beam. The simplest way *(short of using a laser level)* is to quick clamp your beams to your post mounts and mark the mount at the desired height.

b) Cut aluminum post mount 1" below the desired top of beam This will leave room to install the vinyl sleeve cap when you are finished.

c) Install wood blocks on post mount.

1. Hold blocks at the top of the post mount with a quick clamp.
2. Drill two ½" holes through the block and aluminum center web of the post mount keeping drill as level as possible.
3. Secure wood blocks to post mount with provided carriage bolts and washers. Tighten until washers sink into the wood.

d) Cut column sleeve 2" shorter than floor *(or patio height)* to bottom of beam height *(to allow for base and cap thickness)*.

e) Slide column base, sleeve and top over mount *(in that order)* These should fit together and fit relatively snugly.

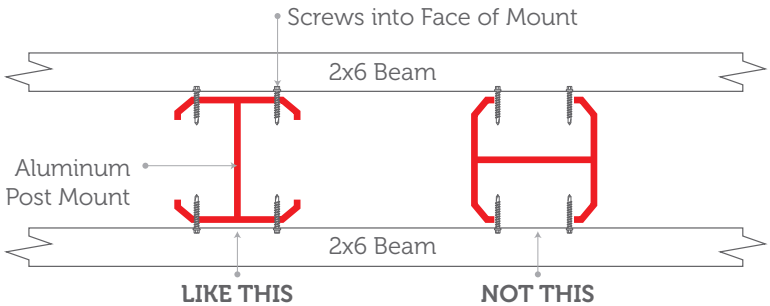
f) Slide 5x5 vinyl top cover & cap over the aluminum that sticks out of the top of the column cap. This is a tight fit.

g) Secure column base to deck with wood deck screws, to footing or slab with small concrete screws *(Tapcons® or similar) (not provided)*.

h) Mark and drill OUTSIDE FACE ONLY of beam and aluminum insert with ⅝" diameter bit. Four holes per beam connection.

i) Attach beam to post with provided heavy ⅜" x2" hex screws *(silver)* and cover with ⅝" plugs.

Post/Beam



Step 5
Rafter Attachment

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Pro Tips:

Pro-tip: *If pergola is attached to a structure always attach rafters to ledger before securing them to the beam.*

If flat caps are desired on ends of a rafter cut aluminum insert short by ½" per end to allow for insert of flat cap.

5a Rafter Attachment to Beam

a) Set rafter on top of beam with desired overhang. Mark hole locations directly above each beam.

b) Drill through TOP ONLY of rafter with step bit directly over center of both beams. This is safest to do on sawhorses at ground level.

c) Attach rafter to each beam with 3/8" x 1" hex screws *(black)*.

5b *Optional* Rafter Attachment to Ledger

a) Install rafter hangers to ledger plate per desired layout.

b) Slide rafter hanger skirt over 2x6 rafter. ***Note:*** *Skirts are directional and need to be slid on with the four locking tabs in the downward direction.*

c) Attach rafter to rafter hanger with 5/16" x 1" hex screws *(silver)* ensuring that screws penetrate aluminum insert.

d) Slide skirt to cover hangar bracket.

e) ***Pro-tip:*** *If structural wall is bowed, adjust rafter length as necessary to ensure uniform overhang of beam.*

Step 6
Purlin Attachment

a) For maximum shade, determine primary direction of sun and install purlin holders to angle purlins accordingly.

b) Determine desired length of purlin holders. ***Note:*** *Holders must be held back a minimum of 1½" from end of rafter to allow installation of curved rafter end cap.*

c) Cut purlin holders as necessary ensuring that you cut between holes.

d) ***Pro-tip:*** *For easiest purlin installation make sure that holes in purlin holders line up. DO NOT depend on rafters or face of your structure to be perfectly in line.*

e) Using provided 5/8" holes screw holders to rafter with 3/8" x 1" hex screws *(black)*. If purlin holder was cut down it may be necessary to drill a new 5/8" mounting hole.

f) Plug holes with 5/8" plugs.

Step 7
Purlin Installation

a) Measure and cut purlins to desired length.

b) ***Pro-tip:*** *Purlin overhang from holder should not exceed 16".*

c) Install cap on both ends of purlins.

d) Slide purlins into secured holders ensuring to line up ends.

e) Fasten purlins through top of purlin holder with tan or white 1½" phillips pan head screws.

f) ***Pro-tip:*** *It is only necessary to screw purlins through one holder as long as purlins have not been cut or spliced.*

g) ***Pro-tip:*** *If is it necessary to splice a purlin, measure and cut to allow for the splice in the center of the purlin holder, This is the best area to screw the purlins, as any extreme cold temperatures will not pull the splice apart.*

Step 8
Caps and Finishing

a) Glue on beam and rafter end caps.

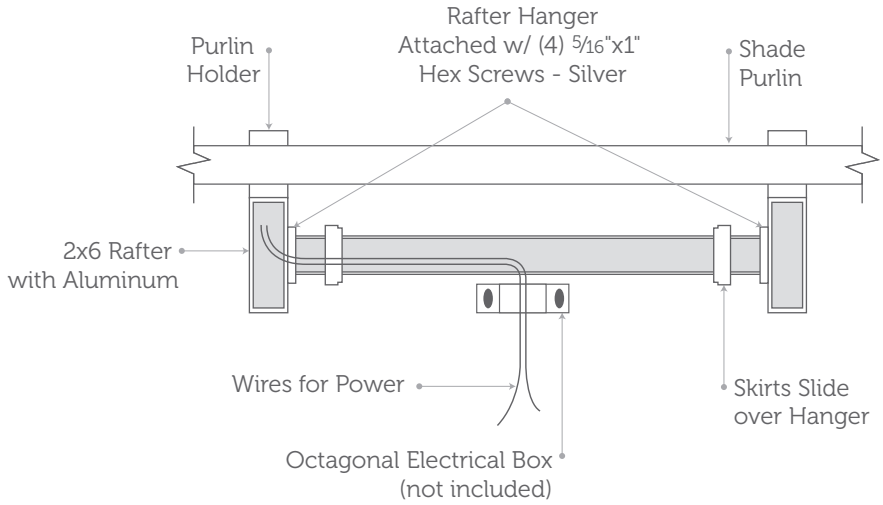
b) Glue in plugs for column cap and bases.

c) Wipe off any construction marks.

d) ***Pro-tip:*** *Window cleaner and Mr. Clean Magic Erasers® work excellent on any hard to remove marks.*

Step 9
ENJOY THE SHADE!

Optional



a) Use qualified electrician for rough in during pergola construction. You will need a loop of electrical wire pulled into one of the rafters that the fan mount is attached to.

b) ***NOTE:*** *The mount can be installed anywhere from the top to the bottom of the rafter. For more head clearance with the fan, install hangers towards the top of the rafter. Ensure that you leave enough room for the skirt to slide over the rafter hanger.*

c) Once height is determined, attach rafter hangers horizontally with (4) 5/16" x 1" hex drive screws *(silver).*

d) Carefully drill through the center hole in the rafter hanger into the rafter to access the loop of wire for the fan.

e) Pull wire through the hole in the rafter hanger.

f) Measure the clearance between the rafter hangers.

g) Cut aluminum and vinyl 2x6 piece 1/8" shorter than the distance between hanger plates to ensure enough room to fit the 2x6 into place. Test fit the 2x6 between the hangers *(trim if necessary).*

h) Once 2x6 is the proper length, mark and drill a hole for the wire to come through the 2x6.

i) Slide skirts over each end of the 2x6 and test fit the mount in place.

j) ***NOTE:*** *The skirts must be turned the correct way to fit properly into the rafter hangers. If they do not lock into place covering the hanger try removing them and flipping them 180 degrees.*

k) Fish wire through and out of the 2x6 carefully to avoid damaging the sheath.

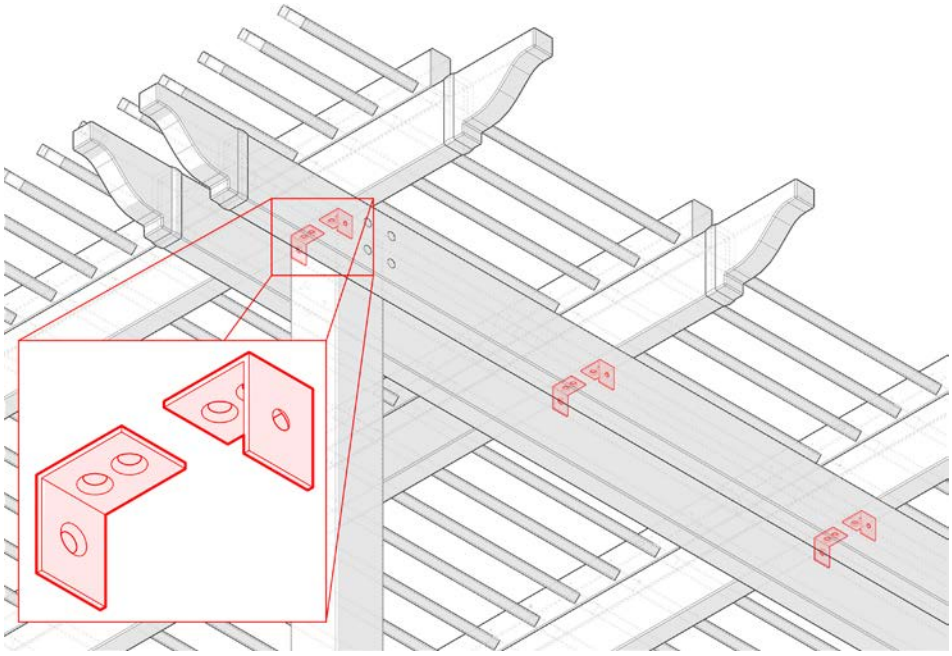
l) Fasten each end of the 2x6 with (2) 5/16" x 1" hex screws *(silver).*

m) Slide the skirts into place.

Hurricane Clips
Accessories

Heartland Pergolas

Optional



These clips, when installed properly dramatically increase your pergola's uplift and sideways sway resistance under heavy wind loads. Refer to your warranty for more information regarding our residential lifetime wind warranty.

Clips are designed to be installed at each rafter to beam intersection in one of three ways:

1. On the inside of the beam double beam *(as shown in diagram, least visible).*
2. On top of the beam *(works well when a post or column is in the way).*
3. On the outside of the beam *(most visible, not recommended).*

As long as the clips are installed with the two hole side fastened to the rafter, all three of the methods will work. The screws provided are self-drilling. Along with the right angle drill attachment *(provided with hurricane clip kit)*, this makes installation on the inside of the beams easy.

a) Hold the clip in the desired place, in between the beams and under the rafter.

b) Install two screws into the underside of the rafter.

c) Attach the right angle drill adapter.

d) Install one screw though the clip into the beam.

e) Repeat at each rafter and beam intersection.

f) Where a post or other obstruction prevents attachment in between the beams mount the clip on top of the beam and into the side of the rafter.