

# Chapter 7 - Porch Framing

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This chapter details the framing to be used to build the front and back porches including:

- Porch posts
- Porch beams

The porch roof truss installation will be presented in the “Roof Framing” chapter. The Smart Trim, porch railings and trim installation will be presented in the “Porch Trim” chapter.

### Things to Consider

- Porches are framed with double 2x beams and 6x6 pressure treated posts unless otherwise specified in the prints.
- Concrete porches will be poured as soon as the 1<sup>st</sup> floor deck is completed.

### Safety Issues

- Installing the porch beams will require careful placement of ladders. Spotters should be used when working on ladders near the edges of the porch.

## Timing & Prerequisites

- The porch framing cannot begin until the exterior walls are complete.
- The House/Project Lead will work with the Construction Superintendent to coordinate these volunteer activities.

### Materials Needed

Porch Roof Beams	Porch Posts
2X8s or 2x10s for Porch Beams	6x6s for Porch Posts
2x3s for furring out Porch Beams	Post Bases (ABW66Z)
2x6s for Porch Beams	Post Cap Brackets (AC6 & ACE6)
Concealed Joist Hangers (HUC68)	Metal (4x6) Mending Plates
16d Sinker Nails	2x4s for Bracing
10d Sinker Nails	N10dHGD Hanger Nails (N10)
16d Galvanized Nails	10dHGD Hanger Nails
8d Sinker Nails	1/2” Wedge Anchors
N10dHGD Hanger Nails (N10)	
10dHGD Hanger Nails	

## Organize the Porch Framing Lumber

### *Critical Issues*

#### 1. Keep lumber flat and dry to prevent warping.

1. Separate and crown the lumber into stacks of:
  - 2x8s and 2x10s for porch beams.
  - 2x3s for porch beams.
  - 2x6s for porch beam top plates.
  - 6x6s for porch posts.
2. Crown all of the lumber as described in the “Framing Techniques” in Chapter 4 “Framing Materials, Tools, and Techniques”.

## Types of Porch Roofs

There are two basic types of porch roofs:

1. Shed roof – The trusses are perpendicular to and hang off the front or back of the house. The truss tails sit on top of a beam which runs parallel to the house. Shed roof trusses do not have an energy heel.
2. Gable roof – The trusses run parallel to the front or back of the house. Gable roof trusses which continues the house roof line out over the porch will have an energy heel. Those trusses which do not align to the house trusses will not have an energy heel.

Refer to the prints for the type of porch roofs to be used and details about the roofs.

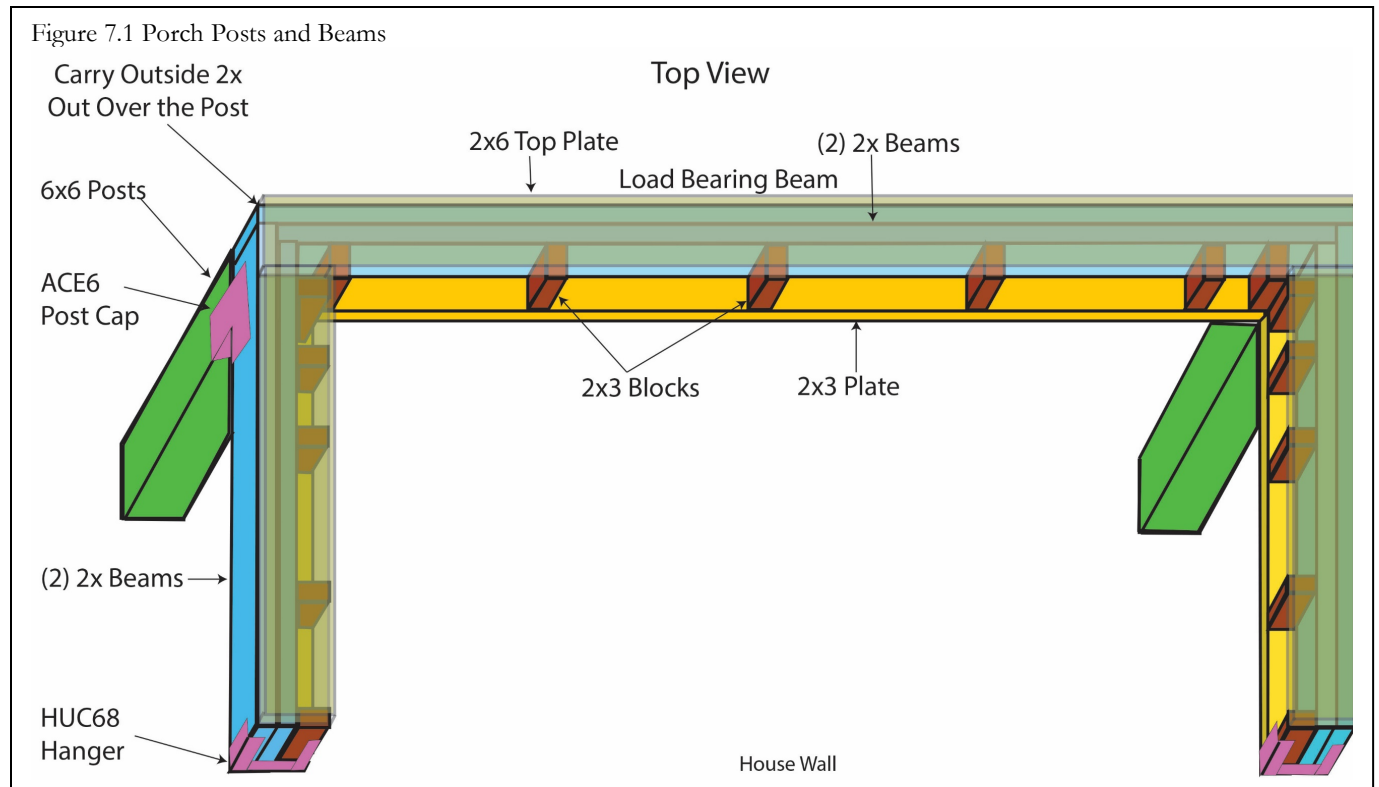
## Porch Beams

### **Critical Issues**

- Porch beams are built with a pair of 2x8 or 2x10, depending on the house model, sandwiched together with a 2x3 furring tacked on.
- The ends of the porch beams must bear 2” on the posts. If a porch beam is built with two (2) sections, the seam between the sections must be centered over a post.

### **Safety Issues**

- Ensure platform ladders are set up securely with their legs well away from the porch edges
- Ensure extension ladders are set up securely with their feet level and the top leaning on a solid surface.
- DO NOT LEAN extension ladders against posts.
- DO NOT LEAN extension ladders against unsecured beams.
- If extension ladders are placed against beams, the top must extend above the beam.
- The beams are heavy. Use many hands to lift them into place.
- Do not leave beams sitting on top of posts unsecured.



## Porch Framing Layout

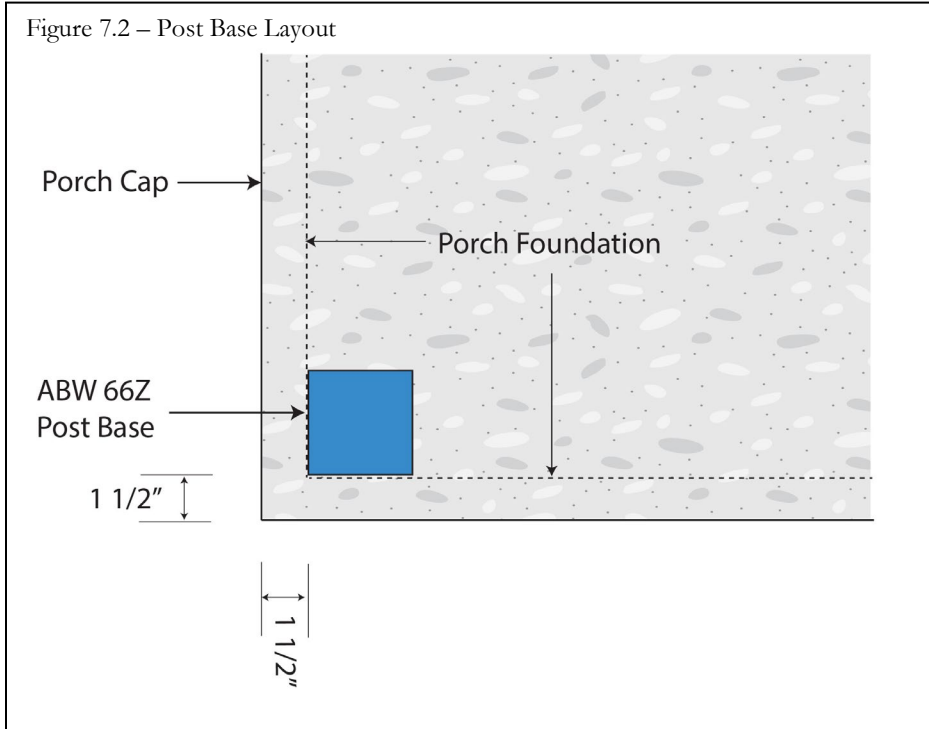
### Identify Location of Porch Posts

#### Critical Issues

- ◆ The porch post cannot be installed until the porch floor is poured.
- ◆ The porch posts must sit on the porch foundation.
- ◆ Only use **BLUE** chalk line on concrete porches.

1. Set the ABW66Z post base 1 ½" in from the front edge and 1 ½" in from the side of the porch. Mark the edges of the post bases at each end of the porch. (See Figure 7.2)
  - **Note:** The posts must set back from the edge of the porch by 1 ½" so they sit over the porch foundation.
2. Snap a blue chalk line across the front edges of the two post bases. Ensure the line is parallel to the house by measuring the distance from the house to the line on each side of the porch. Adjust the line as needed.
3. Reference the prints to determine the placement of the center posts. Mark their positions along the chalk line.
4. Mark perpendicular lines back to the house along the sides of the porch. Check if the line is perpendicular to the house using a "3-4-5" triangle.

5. Draw a vertical plumb line up the house at the point where the lines meet the house.

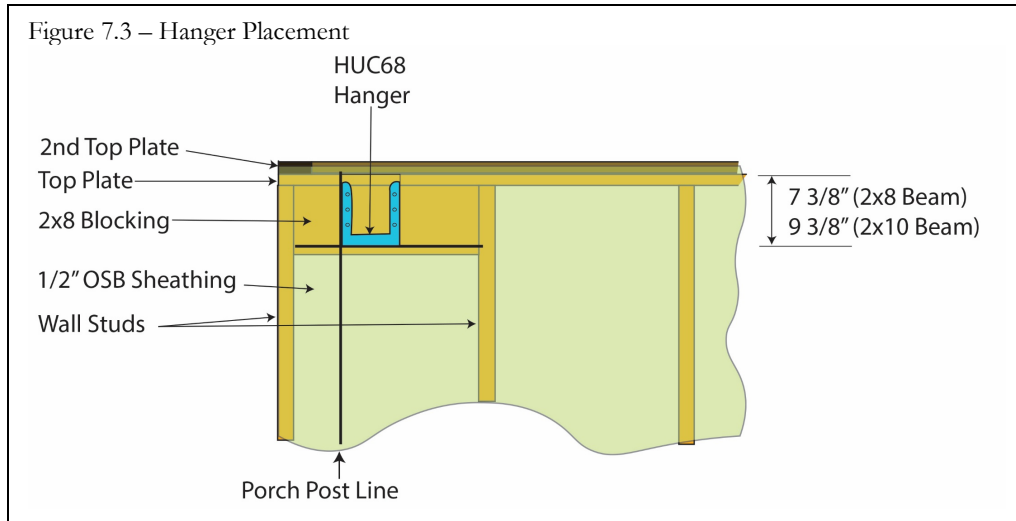


## Porch Beam's Joist Hangers

The porch beams which intersect the house will be supported at the house with concealed joist hanger #HUC68.

### Mark where the beams will be hung on the house

1. Measure and mark the exterior sheathing where the top of the beam will intersect the house. For most porches, the top of the porch beam (without the 2<sup>nd</sup> top plate) will be level with the top of the first top plates on the walls. (See Figure 7.3). For two-story houses (Rachel & Anna) the top of the front porch beams will be lower. Check the prints for the correct height.
2. Measure down from the top mark and mark the exterior sheathing where the bottom of the beam will intersect the house. The height of the beam will be **7 3/8" for 2x8 beams or 9 3/8" for 2x10 beams**.
3. The joist hanger will be installed with its outside vertical edge flush to the plumb line made above. "See "Identify Location of Porch Posts".
4. Make a second mark 5 1/2" from the first mark for the inside edge of the hanger. Use a straight edge to create a vertical line at this mark.



### Install the Beam's Joist Hangers

- Install a HUC68 joist hanger at each point where a beam will be attached to the house. The hangers must be attached to solid framing lumber behind the OSB sheathing; not just into the exterior sheathing. 2x8 blocking should have been installed when the walls were built.
- If the blocking has not been previously installed, install 2x8 blocking in the stud bay where the hanger will be attached.

**Blocking** – Cut and install a block of 2x8 in the stud bay tight to the exterior sheathing. Toe-nail the blocking in place with 16d sinkers.

- Install the joist hanger within the lines made above using 10dHGD hanger nails. Place a nail into all holes in the hanger.

## Porch Posts

### Install Porch Post Bases

#### Critical Issues

- ◆ Each porch post will be anchored to the porch floor with a post base.

1. Install post bases.

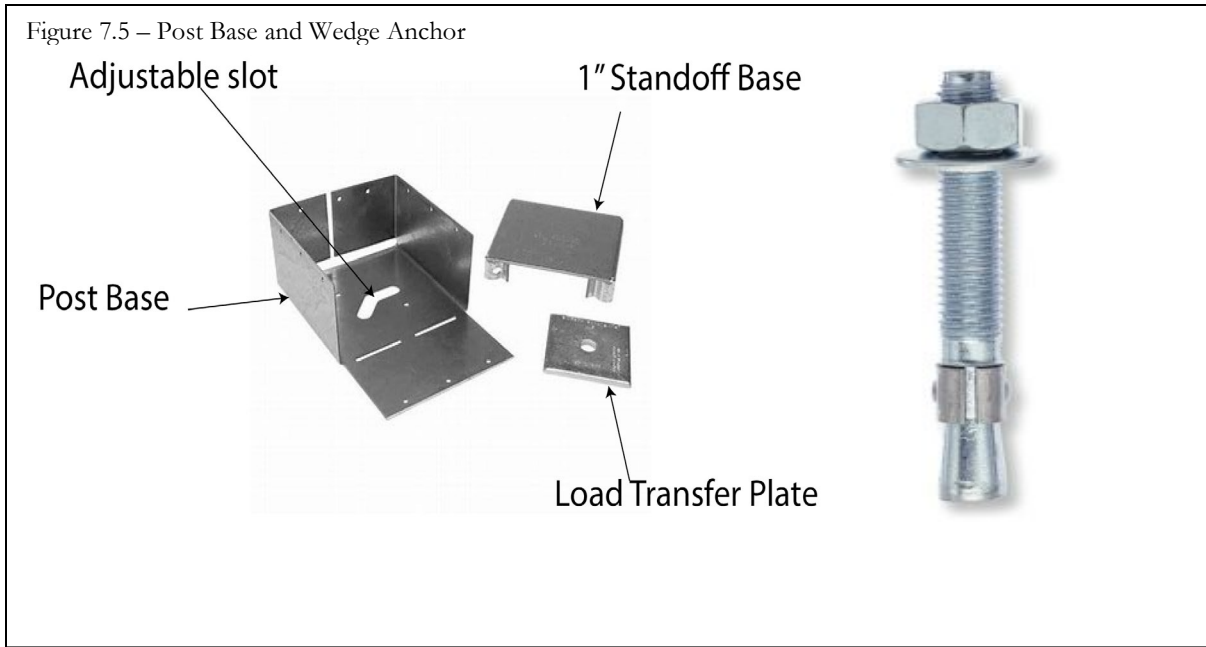
Figure 7.4 – ABW66W Adjustable Post Base



The Strong-Tie ABW66W adjustable post bases provide a 1" standoff for the post and are slotted for adjustability. The slot in the base enables flexible positioning around the anchor bolt, making precise post placement easier. The 1" standoff helps prevent rot at the end of the post and meets code requirements for structural posts installed in basements or exposed to weather or water splash.

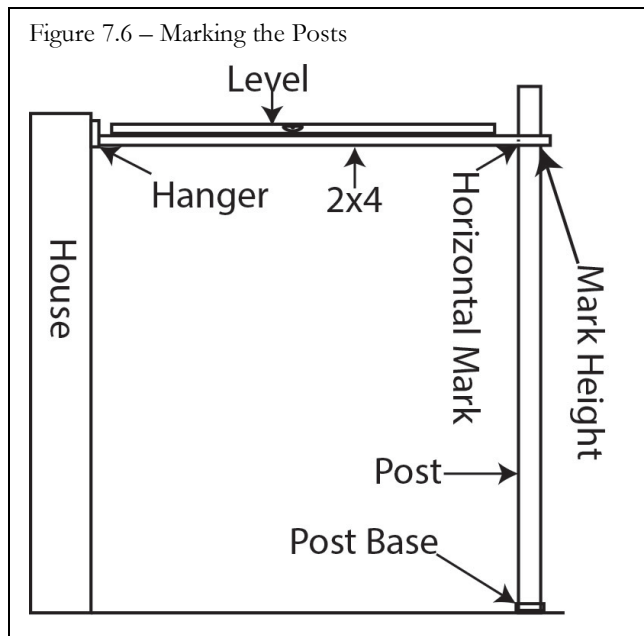
- At each location marked above, install an ABW66Z post base. Ensure the posts will sit at least 1 ½" from the outside edge of the porch cap.
- Mark the center of each base and drill a ½" hole in the concrete at those locations.
- Install a 3 ½" x ½" wedge anchor into each hole.
- Place the bases, load transfer plates and nuts on the anchor bolts. Tighten the nuts using a ratchet wrench to drive the anchor into the concrete. **Do Not Over Tighten.**
- Place the 1" standoff base over the top of the wedge anchor.





2. Install the corner 6x6 posts.

- Cut the top of the post to be level with the joist hangers on the adjacent wall (see figure 7.6).

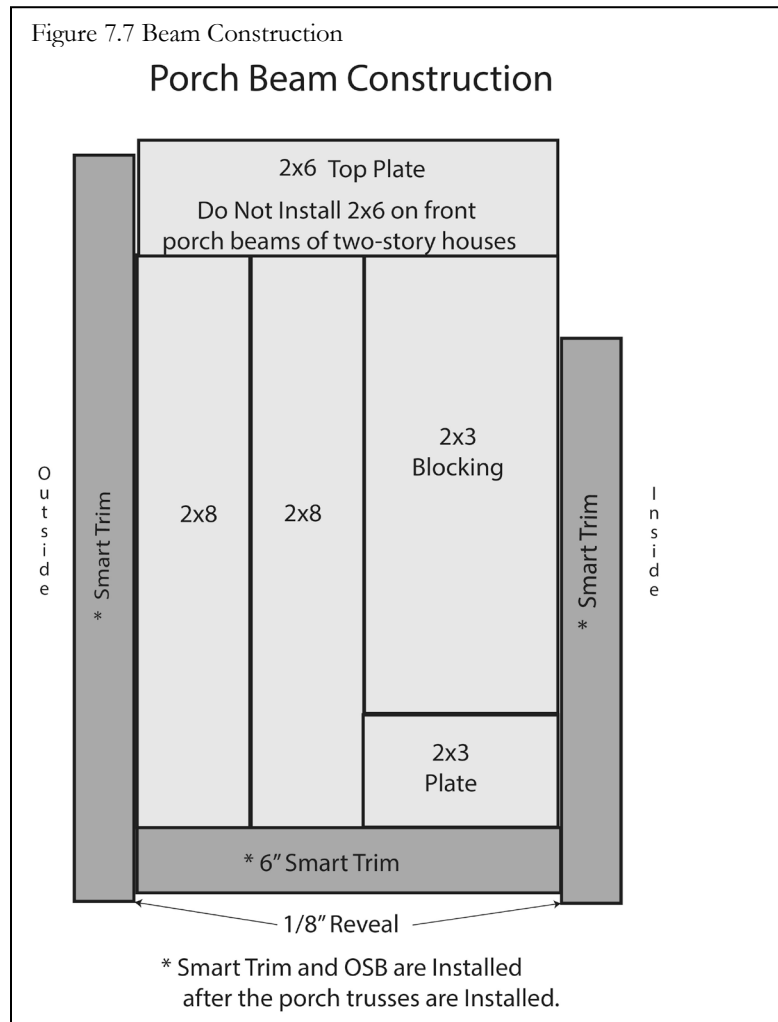


- Position and brace the post into place.
  - Place the 6x6 post in the post base and fasten on three vertical sides, using N10 hanger nails.

- If adjustments to the post base location are necessary, loosen the nut using an open-end wrench, move the base and re-tighten the nut securely on the anchor bolt.
  - Bend up the fourth side of the post base and fasten using N10 hanger nails.
  - Plumb and brace the post in place using diagonal 2x4s onto stakes in the yard or onto blocks on the house.
3. Install the center 6x6 posts.
- Mark the height of the center posts level with the end posts using a chalk line.
  - Cut the post to size similar to the corner post.
  - Position and brace the posts.
  - Attach the posts to the post bases with Simpson N10 hanger nails, similarly to the end posts. Fill all holes.

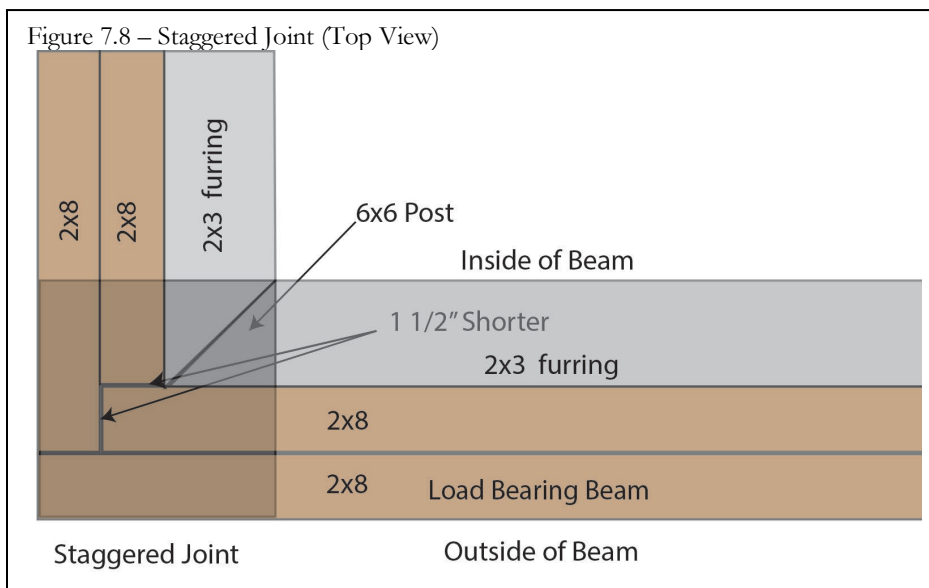
## Porch Beam Construction

- The beam is built with two (2) 2x8s or 2x10 depending on the house model.
- 2x3 blocks are attached to the inside of the beam to fur out the beam to 5 ½". (See Figure 7.7).
- Once the beams are all installed, a 2x6 top plate will be installed. The top plate must be installed overlapping the end joints similar to installing the second top plates on the walls.
  - \*\* For two-story houses, the 2x6 top plate will NOT be installed on the front porch beams to ensure enough clearance below the windows above.
- The porch trusses will be installed on the beam during roof framing. (See “Truss Setting” in the Roof Framing chapter).
- The beam will be wrapped with Smart Trim after it is inspected. (See “Porch Trim” Chapter).



## Load Bearing Beams

- If the tails of the porch trusses are installed over a beam, that beam is considered a load bearing beam. If a load bearing beam terminates at a post, it will extend entirely over the top of the post.
  - Non-load bearing beams which terminate at a post will terminate on the post with the ends positioned behind and perpendicular to the load bearing beam.
  - For **shed roofs**, the beams which parallel the house are typically load bearing.
  - For **gable roofs**, the beams which are perpendicular to the house are load bearing.
- Two (2) layers of 2x8 or 2x10 will be required for each section of porch beam. **Check the prints for the correct beam size for each porch.**



### Build Load Bearing Beams

- Cut the outside layer of 2x(s) to extend the entire length of the beam.
  - For Gable Roofs – Extends from joist hanger to front of porch post.
  - For Shed Roofs – Extends from corner to corner of the porch post. If more than one piece of 2x is required, join the pieces over the center of a post.
- Cut the inside layer of 2x to interlace with any intersecting beams. (See Figure 7.8). The inside layer will be 1 ½” shorter.

- If more than one piece of 2x will be required, join the 2x(s) over the center of a post; but not the same post as the first layer. The joints must be staggered.
- Place the pieces of the beam on a solid flat surface for assembly. Flush the long edges and stagger the short edges as required. Attach the two (2) 2x(s) with 10d sinkers; 3 rows 16" o.c. for 2x8s and 4 rows 16" o.c. for 2x10s.

### **Build Non-Load Bearing Beams**

- The 2x(s) for non-load bearing beams will be cut and assembled the same as for load bearing beams only they will be cut 1 ½" shorter to allow the interlacing of the load bearing and non-load bearing beams.

### **Fur out the Porch Beams**

- Cut a piece of 2x3 for the bottom plate of each beam or section of beam. Cut the 2x3 to the same length as the inside 2x for that section of beam.
- Miter the ends of the bottom plate which sit on top of post at a 45 degree angle. The ends of intersecting beams should fit together.
- Cut 2x3 furring blocks. For 2x8 beams the blocks should be 5 7/8" (7 3/8" – 1 ½") and for 2x10 beams the blocks should be 7 7/8". Cut enough blocks to build the rakes with the blocks spaced 16" oc.
- Lay out the 2x3 bottom plate. A 2x3 block will be installed at the ends which sit in a joist hanger. A 2x3 block will be installed at the ends which sit on a post. The blocks will be attached just before the miter cuts.
- Attach the 2x3 blocks to the 2x3 plate with 10d sinkers; 2 nails through the bottom plate into the bottom of each block.
- Toe-nail the rake to the 2x beam with the bottom of the rake flush with the bottom of the beam with 16d sinkers through the rake into the beam; 1 nail every 16".

### **Install the porch beams**

#### ***Critical Issues***

- ◆ The beams are heavy. Ensure there are enough volunteers to handle the weight of the beam.
- ◆ Install the load bearing beams first.

#### ***Safety Issues***

- All lifting activities must be coordinated by the Lift Leader.
- Avoid walking backwards
- Clear the porch of tools and materials before lifting the beams.

1. Assign a Lift Leader who will coordinate the lifting activities and will provide instructions to the lifting crew.
2. Install the load bearing beams (those sitting on posts) first.

3. Position a volunteer on a platform ladder at each post on which the beam will rest.
4. With many hands, lift the beam or beam section up to the volunteers on the platform ladders. Do not stand under the beam. Do not let go of the beam until told to do so.
5. The volunteers on the ladders will slide the beam into place.
6. Align the tops of the posts with the sides of the beam.
7. Toe-nail the beam to the posts with 16d galvanized nails. Nail only one post at a time while the other volunteers continue to support the beam. **Keep hands on the beam until it is totally secured.**
8. If this beam is installed in a joist hanger, install the Simpson N10 hanger nails to hold it in place.
9. Install the post cap brackets.
  1. Attach two (2) post cap brackets to the top of each post to hold the beam to the post using N10 hanger nails.
  2. The brackets on the end posts are ACE6. There will be a left and a right bracket for each post. Install them as shown. (See Figure 7.9b).
  3. If the beams have been connected using a hanger bracket, do not install the ACE6 post cap over the hanger bracket. Use a 4x6 mending plate to secure the beam to the post. Attach the mending plate with N10 hanger nails; fill all holes.
  4. The brackets on the center posts are AC6. These brackets are identical. Install one on the outside and one on the inside. (See Figure 7.9a).
  5. Remove the temporary supports holding the beam.

Figure 7.9a – Post Cap Center Bracket

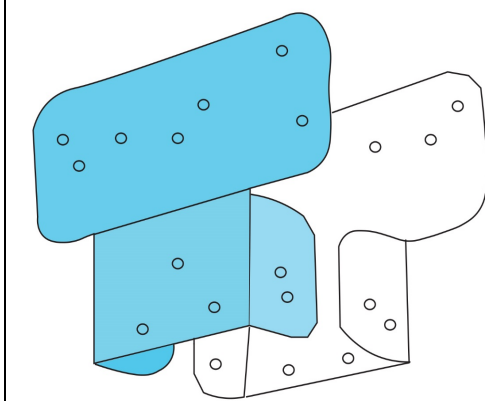
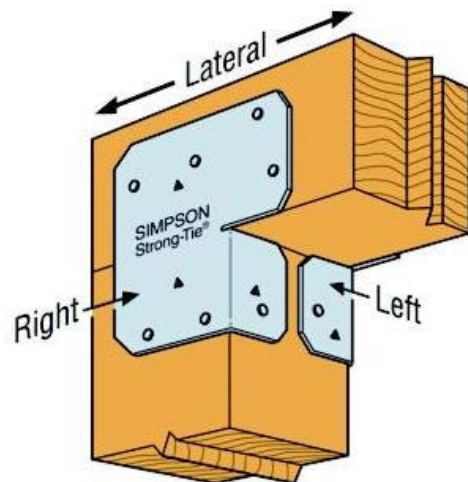


Figure 7.9b – Post Cap End Brackets



**Install Porch Beam Top Plate**

(except for Rachel and Anna front porches)

1. Cut pieces of 2x6 for the top plates. The top plate must be cut to extend across end and center joints in the beam. The top plate must also terminate over a post or in a hanger.
2. If possible, notch the top plate of the house and extend the top plate over the wall of the house.
3. Ensure the corners are square before installing the top plates.
4. Install the 2x6s top plates. Attach the 2x6s with 16d sinkers into the 2x8s of the beam; 2 nails every 16”.