

Chapter 11 - Porch Framing & Trim

Things to Consider

- Concrete porches will be poured as soon as 1st floor exterior walls are complete.
- Porch beams will be wrapped with Smart Trim.

Components

Concrete Porches
 Wood Porch Framing
 Porch Decking
 Porch Post & Beam Trimming
 Porch Railings & Balusters

Timing & Prerequisites

- This phase of the project will begin as soon as the First Floor Walls are complete.
- This phase must be completed before the siding phase can begin.
- The Porch Railing activities cannot begin until the siding is complete.
- The House/Project Lead will work with the Habitat Supervisor to co-ordinate these contractor and volunteer activities.

Materials Needed	
Porch Framing	Porch Decking
2x10s Pressure treated 2x10 Joist Hangers N8 Hanger Nails 4" Lag Bolts 8" Carriage Bolts, Washers & Nuts 8d Galvanized Nails 16d Galvanized Nails Ledger Flashing 2 ½" Tap-cons 1x4s for porch skirting 1 ½" screws Styro Taplts/Washers	6" TimberTech Decking 2 ½" TimberTech Decking Screws
Beam & Post Trim	Railings & Balusters
8" Wide Smart Trim 6" Wide Smart Trim 4" Wide Smart Trim White Caulk 2 ½" Galvanized Finish Nails 2" Finish Nails	2x4s for Railing 1x4s for Railing 2X2 Balusters ¾" Spacers 2 ½" Coated Decking Screws 2" Coated Screws

	Wood Putty Sand Paper 4" Lag Screws Exterior Primer Drop Cloths Water for Cleanup
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Phase Specific Tools Needed	
Description:	Quantity:
Framing	
○ Small Pilot Bit	1
○ 1/4" Bit	1
○ 1/2" Bit	1
○ Nail Set	1
○ Paint Brushes	1
○ Pneumatic Finish Nailer	2
○ Spring Clamps	4
○ Socket set	1

Activities

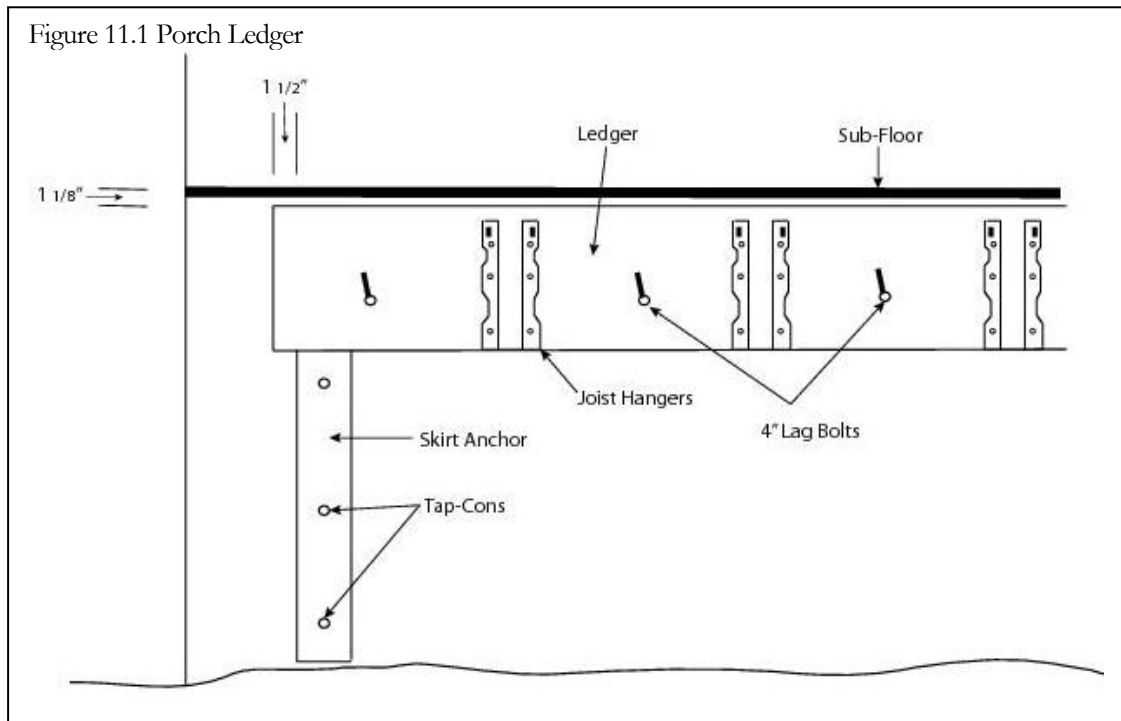
Concrete Porches (Contractor)

Contractors hired by Habitat will form-up and pour the porches.

Wooden Porches (Volunteers)

1. Install Porch Ledger. (See Figure 11.1)

- Snap a chalk line on the exterior sheathing 1 1/8" below the top of the OSB decking or sub-floor. If the sheathing is covered with any siding or insulation material, remove it before installing the ledger.
- On the chalk line, mark the location of the porch edges.
- Cut pressure-treated 2x10s for the porch ledger to the width of the porch less 3". Position ledger with top edge flush to the chalk line and 1 1/2" in from the porch edges. Attach the ledger to the house with 4" lag bolts through the center of ledger into the framing lumber; 1 bolt every 16".
- Cover top edge of the ledger board with 1 1/2" ledger flashing. Nail the flashing into the house with 8d galvanized nails. Do not nail into ledger board.



2. Install 2x4 anchors for porch skirting.

- Cut two (2) 2x4s pieces to a length equal to the distance from the bottom of the ledger to final grade. One anchor will be installed at each end of the ledger.
- Position the 2x4 anchors vertically below the ledger with 3 1/2" dimension flat on the house; top edge flush to bottom of ledger; and long edge 1 1/2" in from end of the ledger.
- Plumb and attach to the house using 2 1/2" screws at top and 2 1/2" tap-cons at bottom.

3. Install 2" Dow board below the porch ledger. Cover the area from the bottom of the ledger to grade in between the support anchors. Attach the Dow board using StyroTaplts with Washers; 1 every 24"

4. Install Joist Hangers.

- Starting at one end of the porch, mark along the bottom of the ledger the location for the porch joists which are installed 16" OC Use a speed square and mark location of one edge of porch joist.
- Install the 2x10 joist hangers. Position one side of the joist hangers even with the mark for the joist and the bottom flush with the bottom of the ledger. Attach the one side of the hanger with two (2) N8 hanger nails. Only fill 2

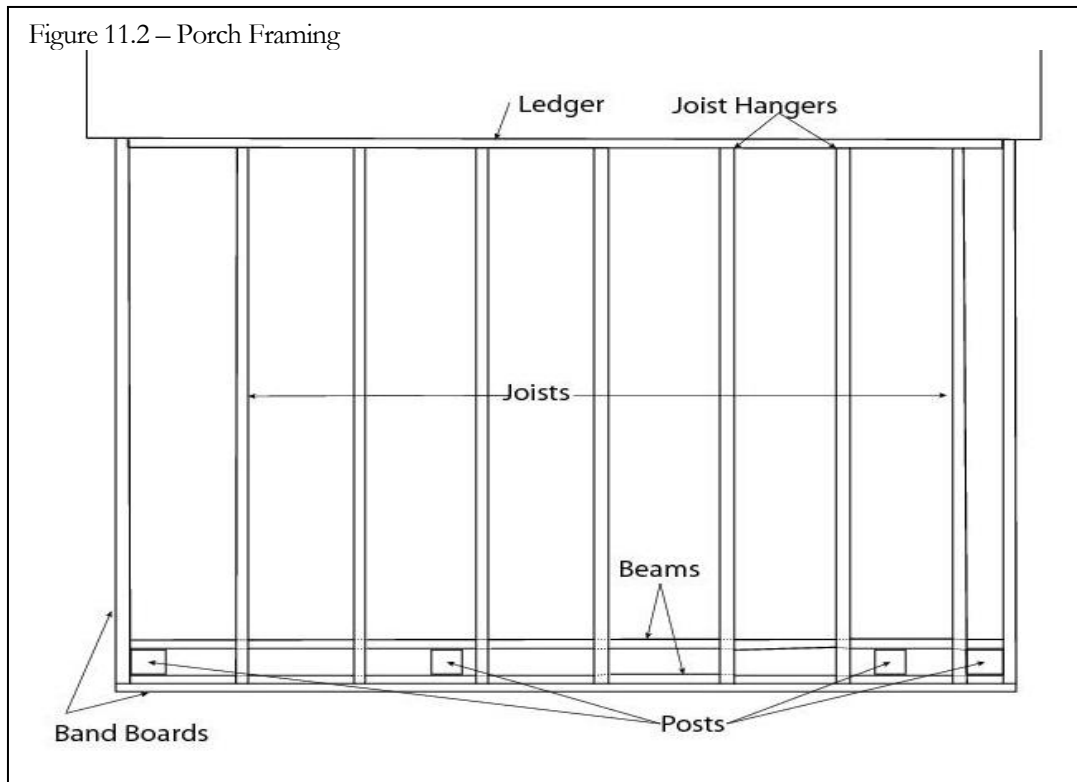
holes and leave the other side loose. Remaining nails will be installed after the joist is in position.

5. Install porch beams. (See Figure 11.2)

- Cut pressure-treated 2x10s for the porch beams to the width of the porch less 3". This should also be the distance between the outside edges of the end posts.
- Hold a porch joist in place against one end of the ledger flush to the top of the ledger. Level joist and mark the post where top and bottom of the joist intersect. Repeat for the other end. Then snap a chalk line between the bottom marks. Using a speed square, transfer this line around each post.
- Position the inside porch beam across the back of the posts with top edge flush to the chalk line. The ends of the beam should align with edges of the end posts. Attach the beam to the post using 16d common nails.
- Position and attach the outside beam to the fronts of the post with top edge flush to the transferred line. Attach with 16d common nails.
- If more than one piece of 2x10 is required to span the porch, splice the beam at the center of a post. Attach a 12" piece of 2x4 vertically below the splice; using 2 1/2" screws through the 2x4 into the post. The splice in the front beam must be staggered from the splice in the back beam.
- At end posts, drill two (2) - 1/2" holes through the front beam; through the post and through the back beam. Drill the holes through the center of the posts; 2" from the top and bottom of the beam. Insert 8" carriage bolts through each hole and secure with washers and nuts.

6. Install floor joists.

- Transfer the marks from the ledger for the location of the porch joist to the beam.
- Cut pressure-treated 2x10s for the porch joists to a length equal to the distance from the front of the ledger to the front of the front porch beam.
- Install the 2x10 joists into the joist hangers. Set each joist into hanger against the nailed edge. Push other side of joist hanger up tight to the joist and attach with N8 hanger nails.
- Toe-nail the joists to the beams using 8d galvanized nails; 1 nail on each side of the joist.



7. Install band boards.

- Cut pressure-treated 2x10s for the side band boards to a length equal to the distance from the house to the front of the front porch beam.
- Position the side band boards along the sides of the porch; flush with the top of the ledger board and flush with the top line of the end posts. Attach the band boards to the ledger board and posts with three (3) 2 ½" exterior screws.
- Cut pressure-treated 2x10s for the front band board to a length equal to the distance between outside edges of the side band boards. Attach front band board to the side band boards and porch joists with three (3) 2 ½" exterior screws.

Porch Decking

1. Plan your work.

- Decking will run perpendicular to the porch joists.
- Pieces of decking must butt together over a joist.
- Joints in adjacent rows must be staggered.

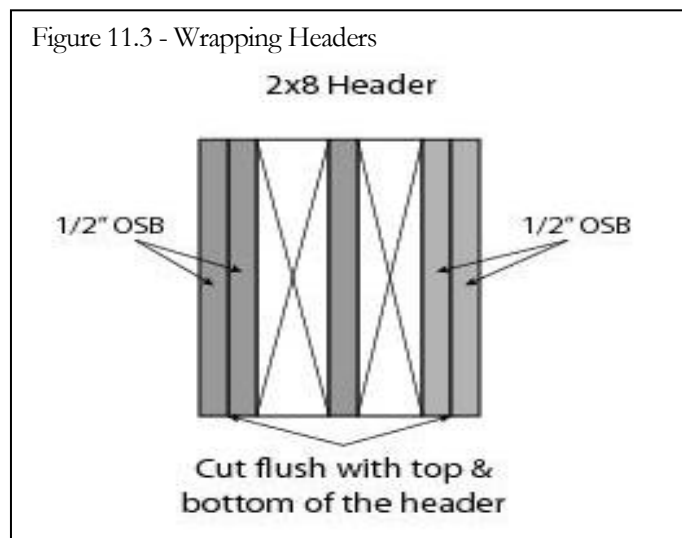
- Outside row must be full width. Rip inside row.
 - Joints should **NOT** fall in front of doorways.
 - Decking will overhang the band boards by $\frac{3}{4}$ " on front and sides.
2. Cut and install decking.
- Starting with outside row, cut and install decking using 2 $\frac{1}{2}$ " decking screws.
 - Notch decking around posts. Support 2x4s may need to be added to posts to support the decking where notched.
 - Continue installing rows working towards the house. Stagger joints, leave $\frac{1}{8}$ " space between rows and $\frac{1}{8}$ " space at joints.
 - Rip the last row to fit.

Wrap Porch Beams (Volunteer)

Note: the porch beams should be covered prior to the porch posts being wrapped.

OSB Spacers (See Figure 11.3).

1. Cut 4 pieces of $\frac{1}{2}$ " OSB; 7" wide to cover the sides of the beam. These are only spacers for the Smart Trim. Leave them shorter than the 2x8s to ensure they do not protruded below the beam. Two layers of OSB will be added to both the inside and outside of the beam.
2. Attach two sheets of $\frac{1}{2}$ " OSB to each side of the beam with 8d common nails; 2 nails every 16".



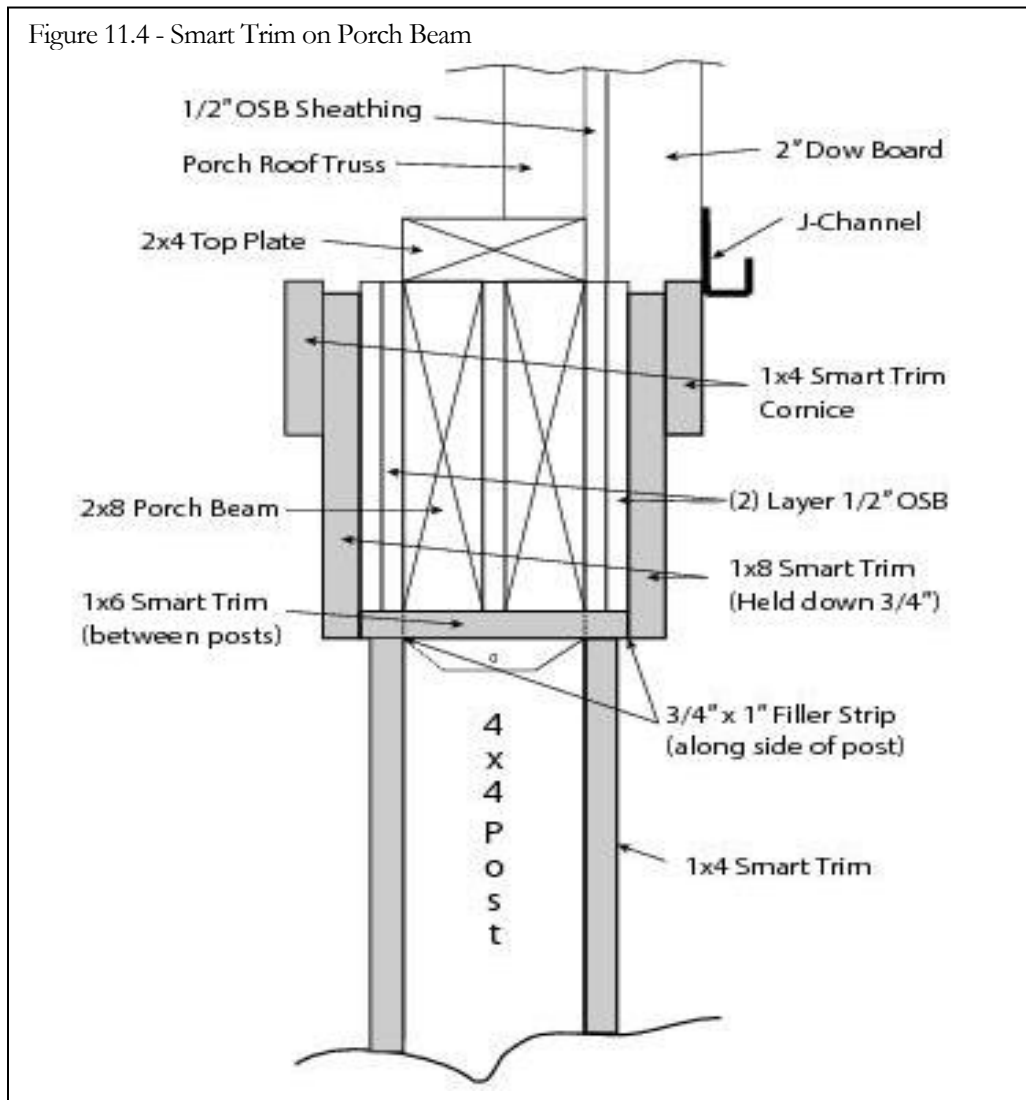
Smart Trim on the Side of the Beam

1. Cover the sides of the beams with 8" and 4" Smart Trim. Cover the beams which extend down the sides of the porches first. Cover the beams which extend across the front and back of the porches. (See Figure 11.3).
2. Cut pieces of 8" Smart Trim long enough to cover the sides of the beams.
 - The pieces for the outside and inside faces of the side beams will be cut to the length of beam.
 - The pieces for the outside face of the front and back beams will be cut to extend $\frac{3}{4}$ " beyond the end of the beam.
 - The pieces for the inside face of the front and back beams will be cut to fit inside the Smart Trim on the side beams.
3. Place the 8" Smart Trim on the sides of the beams with $\frac{3}{4}$ " of the Smart Trim extending below the beam. Using a scrap piece of Smart Trim works well.
4. Attach the Smart Trim to the beam with 2" finishing nails; 1 nail every 16" along the top of the Smart Trim.
5. Cut pieces of 4" Smart Trim long enough to cover the sides of the beams. Cover the beam with the same pattern as the 8" Smart Trim.
6. Place the 4" Smart Trim on the sides of the beams; flush with the top of the beam.
7. Attach the Smart Trim to the beam with 2" finishing nails; 1 nail every 16" along the top of the Smart Trim (approximately $1\frac{1}{2}$ " down from the top).

Smart Trim on the Bottom of the Beam

1. Cover the areas on the bottom of the beams between the posts and between the house and the posts with 6" Smart Trim. (See Figure 11.4).
2. Cut pieces of 6" Smart Trim long enough to cover the areas between each post. Also, cut pieces of 6" Smart Trim to cover the areas between the last post and the house.
3. Place the Smart Trim in between the Smart Trim on the sides and attach it with 2" finishing nails through the bottom on the side pieces into the bottom pieces; 1 nail on each side every 16".
4. Cut small pieces of 6" Smart Trim to fill in the space beside the posts. These filler strips fit along the sides of the posts flush with the Smart Trim on the side. These pieces will be 1" wide and $3\frac{1}{2}$ " long.

5. Install these pieces with 2" finishing nails; 2 per piece.



Wrap the Porch Posts (Volunteer)

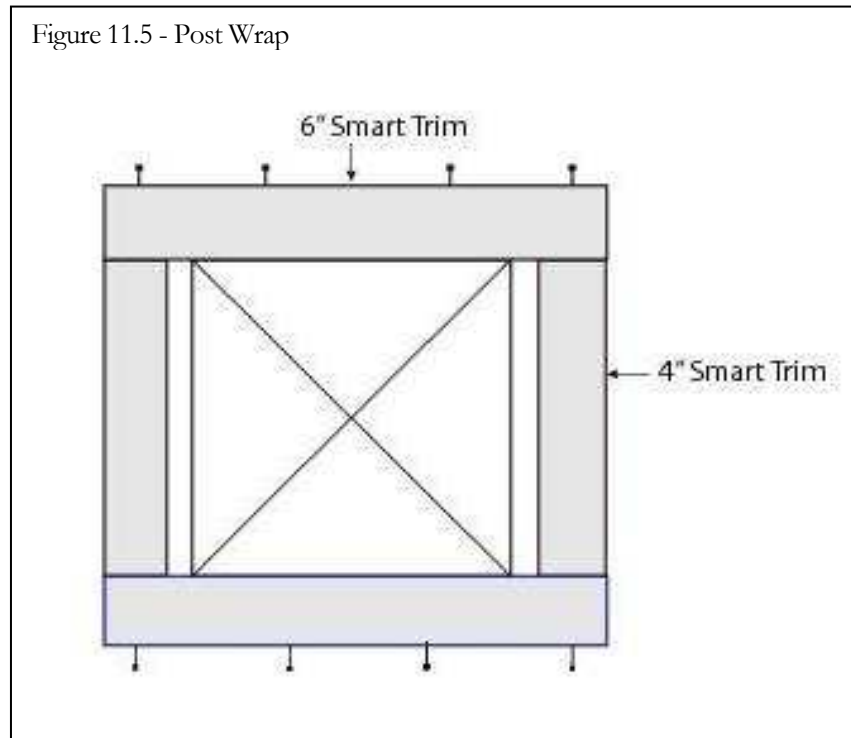
1. Cut and install Smart Trim to wrap the porch posts. (See Figure 11.5).

- Cut pieces of 6" Smart Trim to fit on the front and back of each post. Make sure to measure each post and mark the piece to fit there. The Smart trim should be cut $\frac{1}{2}$ " shorter than the length of the post.
- Cut pieces of 4" Smart Trim to fit on the sides of each post. Leave these pieces $\frac{1}{2}$ " short also.
- Assemble the sides and back pieces of Smart Trim into a three sided box. On a flat surface, lay the side pieces on edge with the back edge facing up. Position the back piece on top of the side pieces. Adjust the

side pieces until the sides are flush with back edges. Attach the pieces with a pneumatic nailer using 2" finishing nails; place 1 nail every 16" down each side.

- Position the assembly over the back of the post with the sides evenly spaced from the post and the top flush to the top. Attach the assembly with pneumatic nailer using 2" finishing nails; place 1 nail every 24" down the center of the post.
- Position the front Smart Trim on the post with edges flush with the side Smart Trim. Clamp the front piece in place to close the gaps between the front and the sides. Attach the front with pneumatic nailer using 2" finishing nails; place 1 nail every 24" down the center of the post and 1 nail every 16" down each edge into the side trim.

Figure 11.5 - Post Wrap



Install the Porch Railings (Volunteer)

1. Cut the porch railings and balusters. (See Figure 11.6).
 - For each section of railing, cut one (1) piece of 2x4 and four (4) pieces of 1x4 which fit snugly between the posts. The 2x4 will be used for the top of the railing; and the 1x4s will be used for the sides; 2 at the top and 2 at the bottom.
 - For each of the sections which butt into the house, cut a 31" piece 2x4. The 1x4s for that section will need to be cut 1 1/2" shorter.

- Cut the balusters to 31". Cut off the beveled end. Cut approximate 2 ¼ balusters per foot of railing. Pre-drill the balusters with one hole at the top and one at the bottom.
 - Cut four (4) 3" pieces of 2x2 for each section of railing.
2. Prime the railings and balusters.
- Prime the railing pieces before assembling, making sure to watch for drips. Cleanup any drips before using.
3. Installing the porch railings.
- Measure up 34" from the porch deck on each post. Using the lowest mark, set a level chalk line across the back of all of the posts. (*Use blue chalk not red which is permanent*) Using a speed square carry the line around to the sides of the posts. Add a second line 1 ½" below the first line.
 - Attach a 3" piece of 2x2 to each side of the posts where the railing will be attached. Position the 2x2 vertically in the center of the post; with top flush to the second (lower) line made above. Attach the 2x2 to the post with 2 ½" wood screws; 2 per piece. Attach a second piece of 2x2 in the same plane; 25" below bottom of the first. These two pieces must be plumb and in the same line.
 - On sections of railing which butt into the house, install a vertical 2x4 with the top level with the top of the 3" piece of 2x2 on the post in front. Position the 2x4 back from the edge of the deck by ¾" more than the distance from the edge of the deck to the edge of the post. Attach the 2x4 with 4" lag bolts through the 2x4; through the siding; and into the framing lumber. Add a ¾" spacer made from ½" PVC pipe, between the 2x4 and the siding.
 - Position the 2x4 top railing on top of the 2x2s. Center the 2x4s on the posts with tops flush to the first (upper) line. Attach the 2x4s to the posts with 2 ½" screws inserted diagonally through tops of the 2x4s into the side of the posts.
 - For each section of railing, position 1x4s on the inside of the top 2x2 pieces with top edges of the 1x4 flush with bottom of the 2x4. Attach the 1x4 with 1 ½" screws through the 1x4 into the 2x2.
 - Install the bottom 1x4s with the same process, holding the bottom edges of the 1x4s flush with the bottom edge of the 2x2s.
4. Install the balusters. (See Figure 11.7)
- Position the balusters on the front of the 1x4s with the top flush to the bottom of the 2x4s.

- Space the balusters by placing a scrap 2x4 between them so there is a maximum of 3 ½” between each baluster.
 - Some planning is needed to achieve even spacing of the balusters.
 - ◆ Calculate the distance from the edge of the post to the mid-point of the railing.
 - ◆ Divide the distance by 5 and discard the fraction. If the remainder is less than 3, the number of balusters required will be 1 more than this number; otherwise, the number will be 2 more than the number.
 - ◆ If the number of balusters is odd, position one baluster centered at the midpoint, then use the 2x4 spacer to place the balusters from the middle out to the post.
 - ◆ If the number of balusters is even, center the 2x4 spacer at the midpoint, and then place a baluster on either side of the spacer. Use the spacer to position the remaining balusters to the post.
 - Attach balusters at the top and bottom into the 1x4s with 2” decking screws through the holes.
5. Install Front 1x4s.
- Position front 1x4s to the front of the 2x2s with the top edge flush to the bottom of the 2x4s. Attach the 1x4s with 2 ½” screws through the 1x4 into 3” - 2x2; 2 screws each end.
 - Insert 2 ½” screws down through 2x4 into balusters; 1 screw every 14”. Take care to ensure the screws are straight up and down and hit the center of the balusters.

Figure 11.6 – Baluster Layout (Odd Number of Balusters)

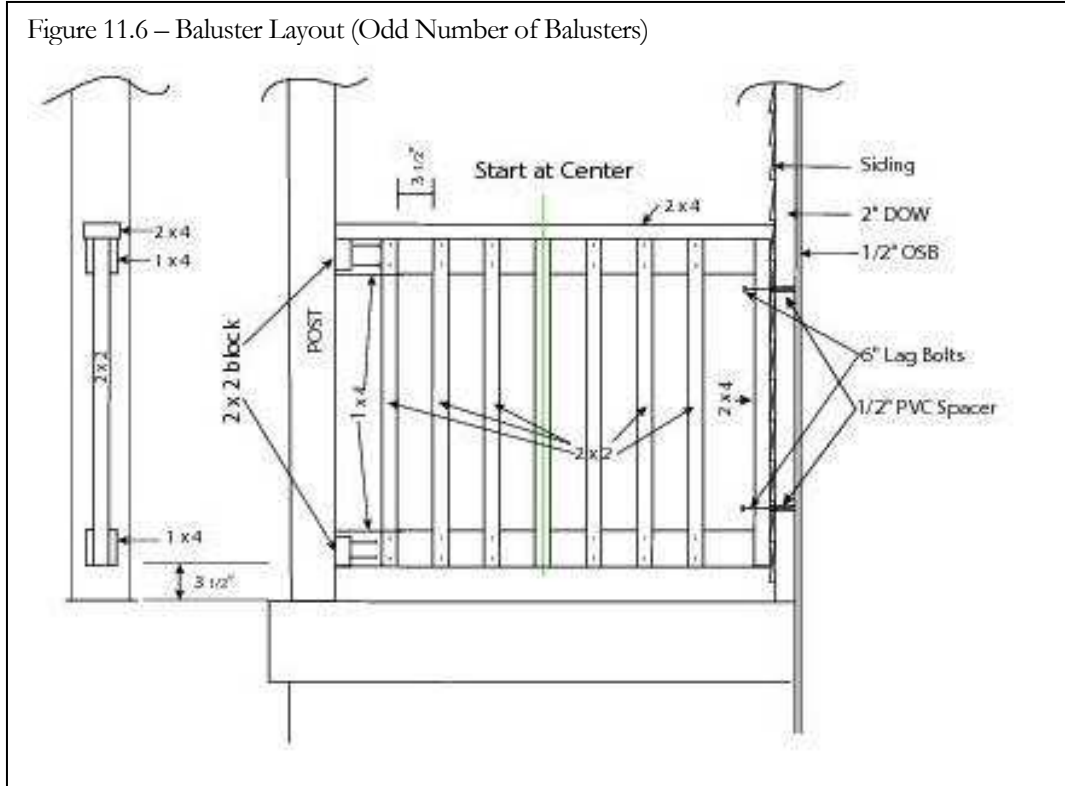
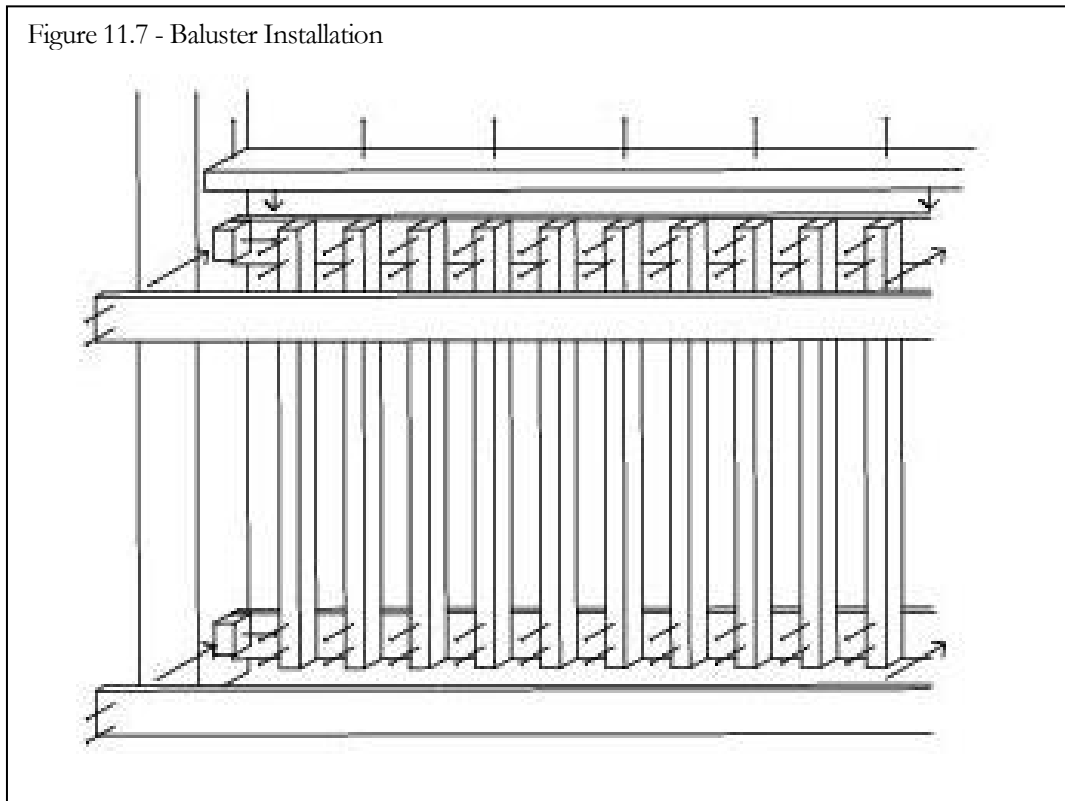


Figure 11.7 - Baluster Installation



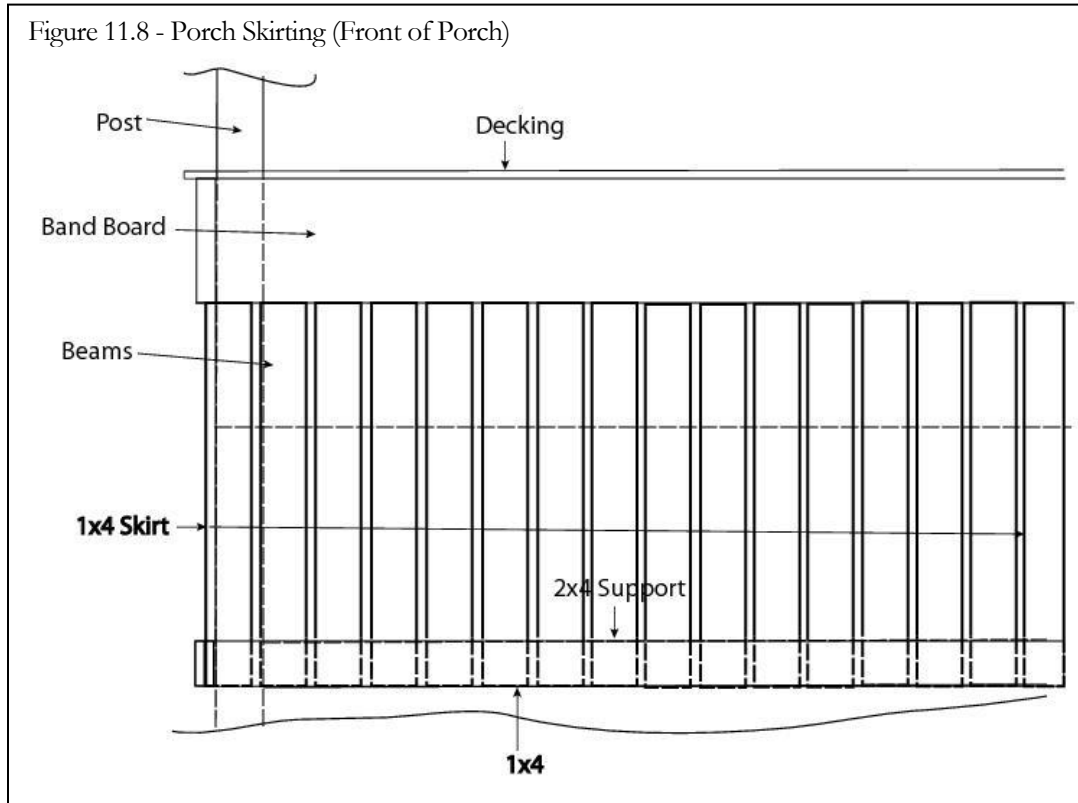
6. Fill the holes.
 - Apply wood putty to the holes made by the screws. Also fill-in any holes caused by knots in the wood. Only apply enough wood putty to fill the hole to a level just slightly above the surface.
 - Allow the putty to dry, then sand to a smooth finish.

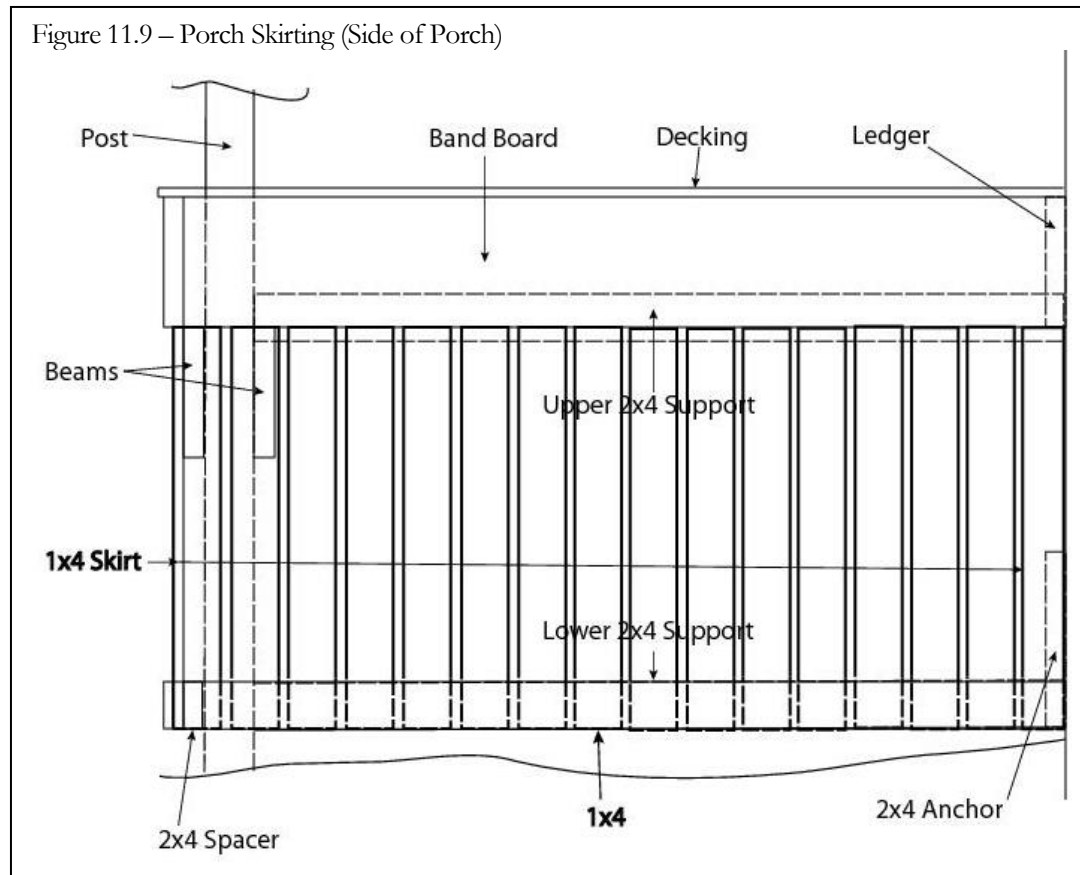
Install Porch Skirting

Cut and install framing to cover the area below wooden porches. (See Figures 11.8 & 11.9).

1. Mark location of the bottom 2x4 supports. Measure up 4" from the final grade and chalk a level line on the posts.
2. Install lower 2x4 supports of porch front. Cut a 2x4 for the front support to a length equal to the distance between the outside edges of the corner posts. Attach the support with 2 ½" screws through the 2x4s into the posts; 2 screws per post. If more than 1 piece is needed to span the distance, join the pieces in the center of a post.
3. Install upper and lower 2x4 supports on sides of porch. Cut two (2) 2x4s for side supports of each side of the porch to a length equal to the distance between the house and the back of the posts. Position one 2x4s across the bottom of the porch flush with the chalk line; with one end on the 2x4 anchors and the other flush with the face of the post. Attach the 2x4 supports to the back of the posts with 2 ½" screws diagonally into the posts. Attach the other end to the 2x4 anchor with 2 ½" screws through 2x4 into the anchor. Position the second 2x4 support behind the band board with 1 ½" of the support extending below the band board. Attach the support with 2 ½" screws through the band board into the support.
4. Cut 1x4 skirt boards to a length equal to the distance from the bottom of the band board to the bottom of the 2x4 supports. Cut enough for all sides of the porch.
5. Install first skirt board on side of porch. Starting at corner post, position the 1x4 vertically, with the top flush to the bottom of the band board. Align the skirt board's front edge with the front edge of front band board, then attach the skirt board with 1 ½" screws through 1x4 into 2x4 supports; 1 screw at top and 1 at bottom.
6. Install remaining skirt boards on the side of porch. Position the remaining 1x4s as before with a ¾" spacing between the boards. Rip the last board to fit the space.

7. Install first skirt board on front of porch. Starting at one end of the porch, position the 1x4 vertically, with the top flush to the bottom of the band board. Align the skirts board's edge with the front edge of the side skirt board. Attach skirt board with 1 1/2" screws; one through top into the beam and one through bottom into the support board.
8. Install remaining skirt boards on the front of porch with 3/4" spacing between each board. Rip the last board to fit the space.





Tips & Techniques

Quality Assurance Checklist

- Double check the spacing of the balusters.
- Double check the alignment of the balusters to the posts.