

## Chapter 23 - Interior Doors & Trim

### Things to Consider

#### Components

Interior Doors Windows Casing	Door Casing Knee Wall Cap	Baseboards
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#### Timing & Prerequisites

- This phase of the project cannot begin until the interior painting is complete and the laminate and vinyl floorings are installed.
- The House/Project Lead will work with the Habitat Supervisor to co-ordinate these volunteer activities.

#### Materials Needed

Interior Doors	Interior Trim
Pre-Hung Doors Door Slabs (By-Pass Doors) Jambs for By-Pass Doors Shims	Door Casing (pre-primed) Baseboard (pre-primed) Quarter Round (white) Shoe Molding (pre-primed) Latex Caulk Silicone Caulk 2" Pneumatic Nails 1" Pneumatic Nails
Handrails	Stain
Handrail Handrail Brackets	Stain Rags Foam Brushes
Kneewall Cap	Window Sills
1x8 Poplar	Adhesive Caulk Door Stop Trim

#### Phase Specific Tools Needed

Description:	Quantity:
<b>Woodwork &amp; Trim</b>	
○ Offset Gauge	1
○ Coping Saw	3
○ Nail Set	2

○ Pneumatic Finish Nailer	2
○ Pneumatic Brad Nailer	2
○ Tack Cloth	1
○ Block Plane	1
○ Sander	1

## Activities

### Order Doors (Supervisor / Project Lead)

1. Review the prints to determine the number and size of doors needed.
1. Measure the door openings to confirm door sizes.
  - Changes may have been made during the construction of the walls. If the changes were unintentional, it is too late to change the door opening. A different size door will need to be ordered.
  - Measure the opening. A 32" door (2-8) should have an opening of 34", but anything from 33" to 35" will usually work.
  - Review the prints to identify the swing of the doors. If changes need to be made, verify the changes with the Construction Director / Supervisor.
  - Adjust the order as needed. Order doors which are approximately 2" smaller than the opening.
2. Place the door order.
  - The Construction Director / Supervisor will take the list and order the doors. They usual take 1-2 weeks for delivery.
3. Validate and Distribute Doors
  - When the doors are delivered, check the inventory of doors to be sure they are doors requested. If the wrong door was delivered, do not open it. It can be exchanged.

### Order Window Sills (Supervisor / Project Lead)

1. Measure window openings and create a list of the window sills and sizes needed for each specific window.
2. Keep the list with the plans; it will be needed when installing the window sills.

### Organize Materials

1. Sort the trim pieces and store them out of the way.
2. Place doors in rooms where to be installed.

### Install Interior Doors

1. Set Interior Doors

Note: the doors can be installed with 2" casing nails or with a pneumatic finishing nailer.

- Unpack the door.
- Position the door in the doorway with the hinge on the correct side. Make sure the door will swing properly.
- If the doorway will be carpeted, place a scrap piece of baseboard trim under the hinge side jamb. If the doorway has been covered with laminate or vinyl, do not use a spacer.
- The door will need 3 sets of shims on each side of the door and one set at the top of the door. On the hinged side one set of shims will be inserted just above or below each hinge and on the latch side one set of shims will be inserted across from the ones on the hinge side. The center shims should be just above or below the latch. The last set will be inserted in the center of the top jamb. Place two shims behind the jamb at each point. Insert 1 shim from each side of the doorway so that they are aligned and opposing.
- Start with the hinged jamb and align the jamb with the wall and start a 2" casing nail through the center of the jamb just above the middle shims.
- Plumb the hinged jamb (door side) adjusting the shims at the top and bottom.
- Plumb the hinged jamb (casing side). If the wall is out of plumb, the jamb will not exactly align with the wall. A small amount of variance from the wall will be covered by the casing trim.
- Finish nailing the hinged jamb with 2" casing nails through the shims.
- Close the door and position the latch side jamb so that there is equal spacing between the door and the top jamb all the way across the top of the door and that the door stop on the latch side is against the door.
- Check that the jamb is plumb (casing side).
- Insert shims to bring the latch jamb plumb (door side).
- Check to be sure the door swings freely.
- Finish nailing through the latch side jamb with 2" casing nails.
- Insert the shims at the top of the door. Make sure the spacing between the door and the jamb is consistent.
- Set all nails.

### **Install Door Casing**

1. Cut a piece of casing molding to fit across the top of the door.

- Both ends of the molding will be mitered cut at 45°.
  - The piece should be cut long enough that the short side (edge toward the door) measures the length of the distance across the door plus  $\frac{1}{2}$ ".
2. Position the top piece centered across the door with a  $\frac{1}{4}$ " reveal along the top edge
  3. Nail the trim with the pneumatic nailers.
    - Place 1 set of nails along the top edge into the rough framework with a finish nailer (2" nails)
    - Place 1 set of nails along the bottom edge into the door casing with a brad nailer (1" nails)
  4. Cut 2 pieces of casing molding to fit along the sides.
    - The top of the molding will be mitered cut at 45°.
    - The piece should be cut long enough that the short side (edge toward the door) measures the length as the distance from the bottom of the side casing to the bottom of the top casing plus  $\frac{1}{4}$ ". It may be best to set the casing molding in place and mark it to the top piece which has already been installed.
    - The molding will be installed flush with the bottom of the casing and the miter cut will start  $\frac{1}{4}$ " above the bottom edge of the top casing.
  5. Position the casing on the sides of the door flush with the bottom of the casing and with a  $\frac{1}{4}$ " reveal along the door.
  6. Nail the trim with the pneumatic nailers.
    - Place 1 set of nails along the outside edge into the rough framework with a finish nailer (2" nails)
    - Place 1 set of nails along the inside edge into the door casing with a brad nailer (1" nails)
  7. Fill the nail holes with wood putty.

### **Install Bypass Doors**

1. Install the door jambs.
  - Cut 1 piece of jamb material to fit across the top of the doorway. Cut the piece 1" shorter than the width of the doorway.
  - Assemble the top jamb with 2 side precut jambs. Position the top jamb into the slot in the side jambs and attach using pneumatic nailer using 2" finishing nails. Place 3 nails through each side jamb into the top jamb.

- Place the assembly into the door opening. If the doorway will be carpeted, place a scrap piece of baseboard trim under both jambs. If the doorway has been covered with laminate or vinyl, do not use a spacer.
  - Using a 6' level, check the top jamb for level. If the jamb is not level, place shims under the jamb on low side until the top is level.
  - Place shims behind side jambs at the top to hold the top tight in the opening.
  - Align the front edge of top jamb flush with the wall, then nail the top of both side jambs into place using a pneumatic nailer with 2" finishing nails. Place 2 nails through each side jamb at the top, 1" from front and back edge.
  - Using the 6' level, shim each side jamb until they are straight and plumb. Having the side jambs straight and plumb is critical to having the doors fit tightly to the frame. Keep the front edge of the side jambs flush with wall.
  - Nail the side jambs into place with pneumatic nails using 2" finishing nails. Place shims every 16"; check for straight and plumb; and then insert 2 nails just below the shims, one 1" from the front and one 1" from the back.
  - After all of the shims are installed, recheck that the jambs are still straight and plumb. Adjust the shims as needed. The shims should still be loose which will allow slight adjustments with a hammer tap. Then place 2 more finish nails through the jamb and shims.
2. Install the door track to the top jamb per the manufacturer's instructions.  
Be sure when installing the track to move it far enough back in the opening to allow the doors to be installed. The door must clear the casing trim.
  3. Install door casing. Casing will be installed with a 3/16" reveal using a pneumatic nailer with 2" finishing nails Cut and install similar to the hinged doors.
  4. Cut and install a piece of casing at the top of the doorway opening to cover the bypass track. Attach 2 small blocks of wood to top jamb just in front of the track. Attach the casing to the blocks. Cut the casing to fit snug to the side jambs.

### **Install the Baseboard Trim**

1. In areas which will be carpeted, the baseboard trim will be raised off of the floor to allow the carpeting to be pushed under the baseboards.  
Cut scrap pieces of baseboard to be used as spacers. Be careful not to use casing trim.

Place several spacers under the baseboard before nailing it in place.

2. In areas where laminate or vinyl flooring has been installed, hold the baseboard tight to the flooring.
3. Over the stairway stringers, install a piece of window casing and baseboard trim as shown in Figure 23.1.
4. Avoid multiple joints in the middle of walls. If multiple pieces are required for a wall, join the pieces with a spline cut.
5. Install the baseboard trim with a pneumatic finish nailer. Place 2 nails into each stud. Do not nail close to the floor. Nailing close to the bottom will draw the bottom of the baseboard in causing it to be towed-in. Place 1 nail along the top edge and 1 in the middle.
6. Create a cope joint for the inside corners. (See Coping Joints). The end of the baseboard which extends along the wall which is opposite the door will be cut square. The end of the baseboard which meets the square cut will be cut with a cope joint. In this way, the joint will be constructed so upon entering the room, any imperfections in the joint will not be obvious.
7. Miter cut the outside corners.
8. At doors with door casing, flush cut the baseboard to the door casing.
9. In corners where doors are within an inch or two of the corner, flush cut the baseboard on both ends and install it prior to installing the adjacent piece of baseboard.
10. Miter the baseboard on the staircase. (See Figure 23.2)
  - Use 2 pieces of scrap baseboard to find the angle.
  - Extend 1 piece over the top of the stringer and 1 piece up the edge of the stringer.
  - Mark where the 2 pieces come to a point.
  - Use the angle from the point at the end of the stringer and the mark to determine the angle for the miter.
11. Fill the nail holes with wood putty and sand to a smooth finish.

### **Install Shoe Molding**

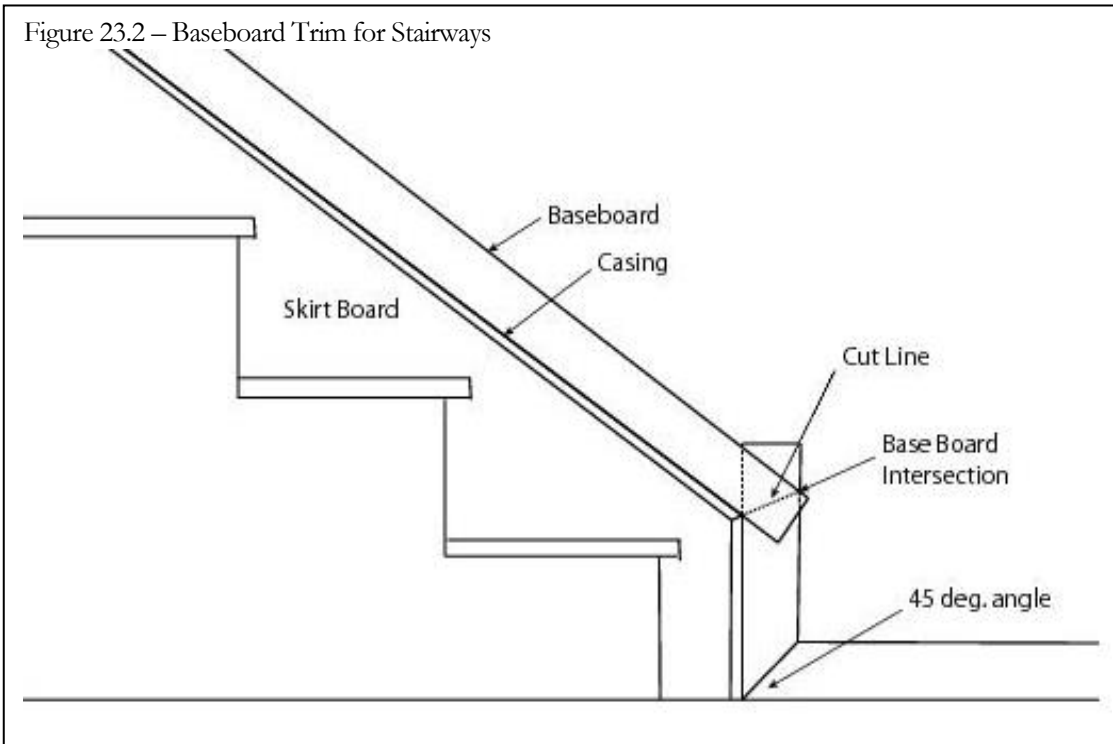
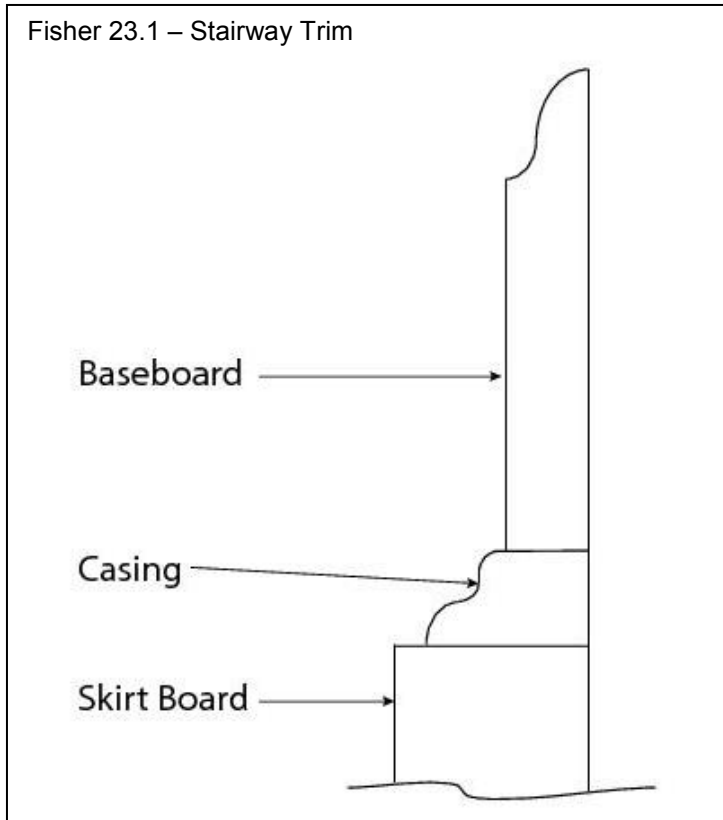
Apply shoe molding to the baseboard in areas where laminate flooring has been installed. Shoe molding covers the gap between the laminate flooring and the baseboard. Laminate flooring requires a  $\frac{1}{4}$ " to  $\frac{1}{2}$ " gap between the wall and the flooring. The baseboard molding is not thick enough to completely cover this gap.

1. Cut shoe molding to fit along the bottom edge of baseboard molding. Miter cut the shoe molding in the corners. If more than one piece is required for a wall, spline cut the molding.
2. Install the shoe molding with the wider edge positioned against the baseboard molding and the narrow edge positioned against the flooring.
3. Hold the molding down flush to the flooring and attach with a pneumatic nails using 2" finish nails. Insert the nails at an angle back into the baseboard. **Avoid nailing into the flooring.**

### **Back Caulk Trim**

Using a white latex caulk fill the gaps between trim and the wall, including door casings and baseboards. **This is a task for an experienced person.**

1. Tape the wall. Apply blue painters tape to the wall along all of the trim. Allow a 1/8" gap from the trim to the tape.
2. Apply latex caulk. Cut a **very** small hole in the end of the caulk tube. Start at a corner and apply a small bead of caulk. Apply a small amount of pressure on the tube with the caulking gun. Move smoothly along allowing the caulk to flow evenly. Release the pressure just before reaching the other end.
3. Smooth the caulk. Using a wet finger, **lightly** press the caulk into the gap. Move along the edge quickly and smoothly. Always start at one end and move to the other end with a continuous motion.



### **Install Marble Sills**

Note – The sills are cut specifically for each window by the manufacturer and should be marked with window location.

1. Clean the sill area.
2. Place 2 - ½” beads of adhesive caulk snaked across the 2x4 sill.
3. Set the marble sill into place and press down firmly to level the sill.

### **Install the Window Trim**

1. Install the door stop trim on the top and sides of the window opening.
  - Cut pieces of trim to fit into the opening; 1 up each side and 1 across the top.
  - Cut the trim at the top corners to 45° angles.
  - Hold the back edge of the trim tight to the window.
  - Install with a pneumatic brad nailer. (1” nails)
2. Fill the nail holes with wood putty and sand to a smooth finish.

### **Install Quarter Round at Bathtub**

1. Cut a piece of white quarter round the length of the tub.
2. Apply a bead of silicone caulk to the edge of the bathtub and the floor.
3. Push the quarter round into the caulk.
4. Nail the quarter round in place with a pneumatic brad nailer. (1” nails).

### **Install Quarter Round at Exterior Doors**

1. Cut a piece of white quarter round the width of the door.
2. Apply a bead of silicone caulk to the edge of the threshold along the floor.
3. Push the quarter round into the caulk.
4. Nail the quarter round in place with a pneumatic brad nailer. (1” nails).

### **Install the Kneewall Caps**

1. Create kneewall cap

Use a 1x8 piece of poplar to create the cap.

Rip the poplar to a width which is 2” wider than the kneewall. Smooth the cut edges with a block plane or sander.

For horizontal caps, but the cap to extend over the end of the wall by 1” and flush to the wall at the other end.

For diagonal caps, cut the wall end at an angle to fit flush to the wall. Cut the other end at the same angle with the bottom extending over the wall by 1”.

2. Before installing the cap, sand it smooth with an orbital sander; then wipe it clean with a tack cloth. Once the board is sanded and clean, apply a coat of stain.
3. Install the kneewall cap using a pneumatic finish nailer (2” nails). Make sure the cap is centered on the wall and tight against the vertical wall.
4. Install the cove molding under the kneewall cap. Cut pieces of molding to fit under the cap. Miter cut a 45° bevel into the bottom edges of the trim. Install the trim with a pneumatic finish nailer.
5. Fill the holes with putty and sand smooth.

### **Install the Handrails**

1. Sand and stain the handrail. It is much easier to sand and stain the railing before it is installed.
2. Install handrail brackets.

The top of the handrail must be between 32” to 36” from the nosing of the steps. Unless otherwise noted in the plans, set the top of the handrail at 34”.

Snap a chalk line below the handrail which will be used to install the brackets. The bottom screw hole in most brackets is 5 ¼” from the top of the handrail. Measure straight up from the nose of the bottom step 28 ¾” and make a mark. Adjust this measurement based on the size of the handrail bracket.

Repeat this process for the top step.

Snap a chalk line between the 2 marks. The bottom screw hole of all brackets will be positioned on this line. Using a stud finder locate framing lumber along this line for installation of brackets; place 1 close to the bottom; 1 close to the top and 1 every 6’ in between.

Plumb the brackets and attach with the screws provided.

3. Cut the handrail to length.

Cut a 45° angle into top end of the handrail.

Place the handrail on the brackets and hold in place with the top end directly above the nose of the top step; use a level to ensure the location. Mark the bottom of the handrail using a level to draw a plumb line from the nose of the bottom step. Cut a 45° angle at the point where the plumb line intersects the top of the railing.

4. Install handrail returns on each end of the handrail.

Place the handrail on the brackets and hold in place with handrail centered on each bracket. Measure the distance from the front edge to the wall. This will be the length of the returns.

Cut two (2) returns from the cut-off ends of handrail. Cut a 45° angle into the end of the cut-off piece; then cut the piece to length with a 90° angle.

Glue the returns onto the handrail. The miter joint should be held tight until the glue sets.

5. Sand the handrail smooth and apply a coat of stain.
6. After the stain is dry, set the handrail in place and mark the location of the screw holes on the bottom of the handrail. Remove the handrail and drill point holes at each mark. Attach the handrail with screws supplied.

### **Install Attic Access Cover**

1. Cut pieces of casing to create a picture frame for the attic access.
2. Cut 2 pieces which are 2" longer than the length of the opening and cut 2 pieces which are 2" longer than the width of the opening.
3. Cut 45° angles into the ends of the pieces.
4. Remove the cover which was temporarily installed previously and remove the drywall screw which held the cover.
5. Install the pieces over the opening of the attic access.

Position the pieces so that all but 1" of the trim extends over the edge of the opening.

Nail the pieces in place with a pneumatic finish nailer. (2" nails)

The ends should meet in a nice 90° angle.

6. Install foam weather-stripping to the top of the casing.
7. Set the cover on top of the casing.
8. Fill the holes with putty.

### **Stain and Polyurethane the Trim**

1. Sand any unfinished wood, such as the kneewall cap or the ends of the handrail. Always sand in the direction of the wood grain.
2. Clean the wood with a tack cloth or damp cloth.
3. Apply a coat of stain to the wood.
4. Let the stain dry for 8 hours.
5. Apply 2 coats of polyurethane to the areas.

6. Lightly sand between coats with a scratch pad.
7. Let the polyurethane dry 4 hours between coats.
8. Keep the area clear of dust while the polyurethane is drying.

## Tips & Techniques

- Identify the swing of a door.

**Doors are identified as right-hand (RH) or left hand (LH) doors depending on the placement of the hinges. To determine which door you need:**

Stand in the doorway opening with your back to the side where the hinges will be installed.

Extend your arm which faces the side to which the door opens.

If you extended your right arm, you need a right-hand door. If you extended your left arm, you need a left-hand door.

- Coping joints

Make a 45° bevel cut with a miter saw.

With a sharp coping blade remove the material outlined by the miter cut.

Cut the edge with a slight back-cut.

## Quality Assurance Checklist

- ◆ Double check the interior doors to make sure they latch and do not rattle.