

# Chapter 22 - Cabinets & Vanities

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## Things to Consider

- **The kitchen cabinets must be installed before the flooring.**

### Timing & Prerequisites

- The cabinets and vanities are installed after the walls are painted and before the flooring.
- The House/Project Lead will work with the Construction Superintendent to coordinate these volunteer activities.

<b>Materials Needed</b>	
<b>Cabinets &amp; Vanities</b>	<b>Countertops</b>
Cabinets Vanities Cabinet Handles Kick-Plates Cabinet Screws 3" Cabinet Screws .1" x 2-1/4" Trim Screws Wood Screws (2") Shims	Counter Tops Sinktops Adhesive Caulk

<b>Phase Specific Tools Needed</b>	
<b>Description:</b>	<b>Quantity:</b>
<ul style="list-style-type: none"> <li>○ Countersink Bit</li> <li>○ Torpedo Level</li> <li>○ Cabinet Handle Template</li> <li>○ Compressor</li> <li>○ Brad Nailer</li> <li>○ Air Hose</li> <li>○ 4' Level</li> <li>○ Cabinet Clamps</li> <li>○ Wood Clamps</li> </ul>	

# Cabinets

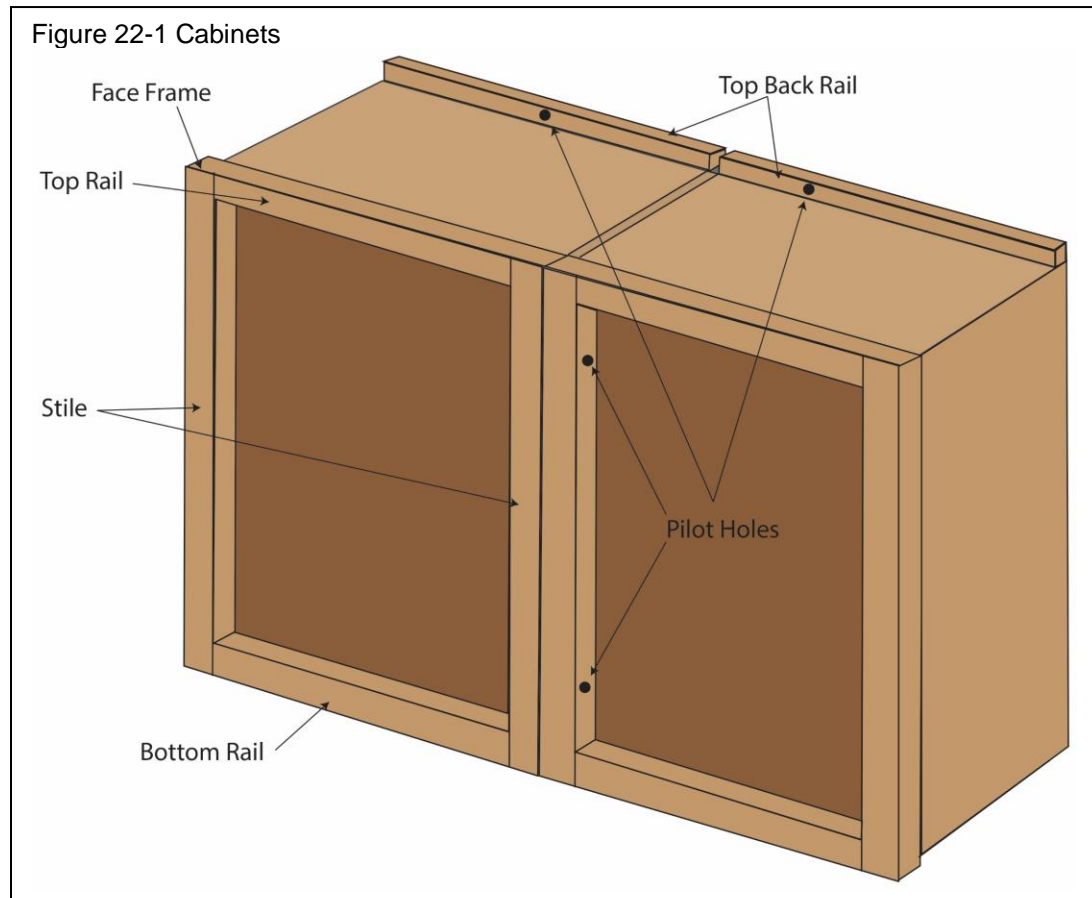
## Cabinet Layout

1. Check the Cabinets
  - Verify that all of the right cabinets have been delivered.
  - Unpack the cabinets and spread the cardboard out on the floor. Assembling the cabinets on the cardboard will help protect them.
  - Remove the doors and shelves and set them aside. Be sure to label and keep track of which doors belong to which cabinets.
  - Stage the cabinets in an area close to the kitchen.
  - Place them in order.
  - Inspect them for damage.
2. Identify the Location for the Cabinets
  - Mark out the cabinet locations on the floor
  - Mark a level line on the wall for the top of the wall cabinets. This should be 84" from the highest point of the sub-floor.
  - Mark a level line on the wall for the top of the base cabinets. This should be 34 ½" from the highest point of the sub-floor.
  - Find a place where the wall cabinets align with the base cabinets. This will usually be at the end of the run. Mark a plumb line from the side of the base cabinet to the line for the top of the wall cabinets.
  - Mark the position of each cabinet on the lines.
3. Confirm the location of the blocking or studs using a stud finder. Place an "x" to indicate the location.
4. Confirm that the wiring for the microwave outlet comes through the wall behind the upper cabinet. You may need to dig out some drywall to move it up behind the cabinet.

## Wall Cabinets

### Assemble the Wall Units

- It is best to start with the wall cabinets to allow volunteers access to lift the cabinets into place.
- Connect the wall cabinets together in one or two runs with the face frames flush, before lifting them into place.
- 1. Attach the cabinets at the stiles. (See Figure 22-1).
  - Place the cabinets side by side on a level surface.
  - Align the stiles and clamp them together using a pair of face frame clamps. Ensure the top edges of the face frames are flush.
  - Using a 1/8" drill bit, drill pilot holes through the stile to a depth of 2 1/4". The holes should be made in the area covered by the hinge.
  - Connect the cabinets using .1" x 2-1/4" trim screws.



### **Add Filler Strips**

Some house models have cabinets sitting next to a wall. Often a filler strip will be needed between the cabinet and the wall to fill in the gap. This filler strip will need to be cut to fit the space and then attached to the end of the cabinet run.

1. Hold the cabinets in place and measure the gap to be filled. Measure at both the top and bottom of the cabinets as the gap may not be consistent.
2. Rip the filler strip to size with a table saw. Cut the strip 1/8" smaller than the gap. The gap will be covered with a trim strip later.
3. Attach the filler strip to the face frame of the end cabinet similar to attaching face frames together. Install the cut side toward the wall.

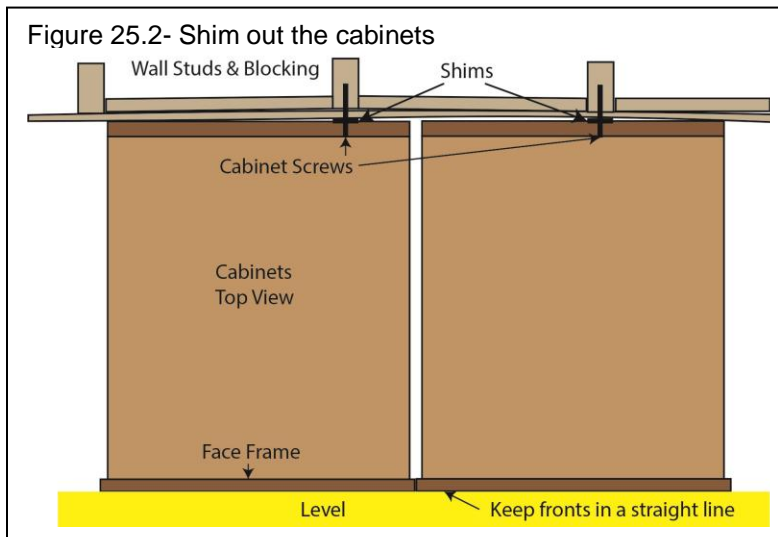
### **Prepare the Wall Units**

1. Using a stud finder, locate solid blocking or studs behind the cabinets.
2. Using a 3/8" drill bit, drill holes in the top back rail of the cabinets for installing the cabinet screws into the solid framing found. There should be blocking across most of the run; therefore, finding a solid anchor point should be easy.
3. Start a 3" cabinet screw in each hole.
4. If the cabinet run will include the cabinet above the range, locate and drill a hole in the back of the cabinet for the electric cable which will be used to install the microwave outlet. Ensure to pull the wire through as the cabinets are being installed.

### **Install Wall Units**

1. Position the cabinets in place.
  - Two or three volunteers will be needed to lift the run of cabinets into place.
  - Flush the top edge of the Top Back Rail of the cabinets to the upper line on the wall (84" from the subfloor).
  - For cabinets which are adjacent to a wall, ensure cabinets fit snugly to the wall with less than a 1/8" gap.
    - Some or all of the outside 1/4" of the face frame can be removed with a block plane to allow the cabinets to fit to the wall.
2. Attach the top rail of the cabinet.
  - Sink the 3" cabinet screws which were started above through the top back rail of the cabinets into the blocking in the wall.
  - Install the screws starting at one end and working down the run, holding the cabinets to the 84" line.
  - Check the level with a 4' level across the top of the cabinets. Adjust as needed.
3. Align the face frames. (see figure 25.2)

- Check the alignment of the top of the face frames of the cabinets with a long level with its narrow edge held across the front of the face frame.
  - As needed, add shims behind the cabinets to bring them out even.
  - The cabinets screws will need to be loosened to allow the shims to move the cabinets.
4. Attach the bottom rails.
- Drill pilot holes through the bottom back rail at each stud in the wall behind. Attach the bottom of the cabinets with 3" cabinet screws through the holes into the studs in the wall.
  - Check the alignment of the bottom of the face frames of the cabinets with a 4' level across the front. As needed, add shims behind the cabinets to bring them out even.



## Base Cabinets

### Prepare Base Units

1. Cut holes in the back of any cabinets which will be located in front of plumbing or electrical connections.
  - Measure up from the floor and in from the adjoining cabinet to find the location for the hole.
    - Note – There will be a ½” gap between the cabinet sides. Be sure to account for this in your measurement.
  - The back of most cabinets can be cut with a utility knife, but a jig saw can be used.
  - Cut the holes to fit as close as possible to the outlet or plumbing.

### Dry-Fit the Base Cabinets

1. Before installing the base cabinets, set them in place for a dry-fit.
  - Check that the cabinets fit together and can be aligned as needed.
  - Check that the cabinets sit square to the wall.
  - Check spacing for stove and refrigerator.

### Install Base Units

1. For small stand-alone cabinets, install a floor anchor to hold the front of the cabinets in place.
  - Draw a line on the floor along the front of the toe kick of the cabinet.
  - Remove the cabinet
  - Mark a line ¾” back from the first line.
  - Cut a 10” piece of 2x4. Position it flat (3 ½” side down) on the floor behind the back line and in the center of the cabinet. Screw it to the floor with 2 ½” deck screws.
  - Set the cabinet back in place. It should fit over the blocking.
2. Level the cabinets.
  - Place shims under the bottom of the cabinet to bring the top back edge of the cabinet level with the line on the wall, made above. (see “Cabinet Layout”).
  - Using a 12” torpedo level, check the level front to back. Shim the bottom to bring the front to level.
  - Check the level side to side and adjust as needed.
  - Check the alignment of the front of the cabinets with a 4’ level across the top of the face frame. Shim the back to bring the cabinets in line.

2. For adjoining cabinets, attach the cabinets at the stiles.
  - Align the stiles and clamp them together using a pair of face frame clamps. Ensure the top edges of the face frames are flush.
  - Using a 1/8" drill bit, drill pilot holes through the stile to a depth of 2 1/4". The holes should be made in the area covered by the hinge.
  - Connect the cabinets using .1" x 2-1/4" trim screws.
3. Attach the top of the back of the cabinets to the wall.
  - Using a 3/8" drill bit drill holes in the top rail in line with the studs in the wall.
  - Add shims between the top rails of the cabinets and the wall.
  - Install a 3" cabinet screws through the holes, through the shims and into the framing.
4. Recheck the level and alignment and adjust as needed.
5. If a 2x4 anchor block has been installed for this cabinet, attach the bottom of the cabinet to the blocking with 3" wood screws through the toe-kick into the block.
6. If no anchor block, angle a 3" wood screw through the toe-kick into the floor.
7. Add the kick-plate later, after the flooring has been installed. (See "Door & Trim" chapter).

## Islands

The cabinets for an island are installed with just floor anchors. Install a 2x4 behind both the front and back kick plates of each cabinet, similar to installing stand-alone base cabinets. (See above).



## Cabinet Hardware

### Reinstall and Adjust Doors

1. Identify on which side the doors will hinge.
2. Re-attach the doors using the pre-drilled holes in the stiles.
3. Place a straight edge across the bottom of the doors. Adjust the hinges until the doors rest flush on the straight edge. Align all of the doors in each run.

### Reinstall and Adjust Drawers

1. Reinstall the drawers.
2. The fronts of the drawers should fit flush against the face frames and the drawers should slide easily. Adjust the drawer slides to get the drawer aligned. Make sure the drawer still slides easily.

### Install Shelves

1. Insert the shelf pins into the holes. Use the same set on both sides.
2. Position the shelf on the pins.

### Install Cabinet Pulls

- All door pulls shall be a loop or U shaped handle style.
  - The pulls for the upper cabinets will be located near the bottom of the cabinet doors. (see figure xx.xx). The spacing from the bottom of the doors can be at the Home Owner's discretion. Ensure the spacing on all doors is the same.
  - The pulls for the lower cabinets will be located near the top of the doors. The spacing from the bottom of the upper cabinet doors to the pulls should be the same as the spacing from the top of the upper cabinet doors to the pulls.
1. Use a Cabinet Handle Template to mark the placement for the holes. (see figure 25.4).
  2. Drill the holes with ¼" drill bit.
  3. Install the hardware.
    - Note - Do not install handles on cabinet or vanity drawers.

Figure 25.3 – Cabinet Pulls



Figure 25.4 – Cabinet Hardware Jig



## Countertops

### Install Countertops on base cabinets

Install a plastic laminate countertop at the standard height of 36". Seal all bare wood and wood composite surfaces including the underside of the countertop with a low VOC sealant.

1. If two or more pieces of countertops are required, assemble the pieces into one unit using the clamps provided. Make sure the tops are flush.
2. In some houses, the countertops may need to be ascribed to the side wall. A cardboard template and a jig saw can be used to accomplish this.
3. Seal all bare edges and underside of the countertops with a coat of low VOC polyurethane.
4. Drill pilot holes through the corner blocks in the top corners of the cabinets. Drill the holes angled slightly towards the center of the cabinet.
5. Set the countertops in place.
6. Attach the countertops with 2" wood screws. Install the screws up through the corner blocks at an angle. Do not over tighten the screws. The angle will keep the screws from penetrating the top of the countertop.
7. Apply low VOC latex caulk along the edge where the countertop meets the wall. Cut a very small hole in the tip of the tube. Apply a small bead of caulk along the tops and sides of the countertops and smooth the caulk with a wet finger.

### Install the Island Countertop

The countertop for an island will not have a filler strip to support it across the back edges of the island cabinets. Strips of  $\frac{3}{4}$ " OSB will need to be added to the top of the cabinets to provide support for the countertop.

1. Set the countertop in place and identify the areas where support will be needed.
2. Remove the countertop and install 2" wide strips of  $\frac{3}{4}$ " OSB to these areas.
  - Rip a 2" wide strip of  $\frac{3}{4}$ " OSB.
  - Cut the strip to the length needed; 1" less than the space to be filled.
  - Install the strip on top of the cabinets with 1  $\frac{1}{2}$ " wood screws through the OSB into the top rail. Ensure the strips are flush with the front or back of the cabinet.
3. Install the countertop similarly to the base cabinets.
  - Drill the corner blocks and newly installed spacer at an angle as above.
  - Ensure the top is square to the cabinets. Measure the overhang of the top in several places.
  - Attach the top with 2" wood screws, installed at an angle.

## Cabinet Trim

### Install trim on wall and base cabinets

Pieces of flat  $\frac{3}{4}$ " wide trim, stained to match the cabinets, are provided for covering:

- A gap between a face frame and the wall next to it.
- A gap between the back of the end cabinet and the wall behind it.

Cut these pieces to fit and nail in place with 1  $\frac{1}{4}$ " finish nails.

### Install trim on Islands

A sheet of  $\frac{1}{4}$ " plywood, stained to match the cabinets will be provided for covering the backs of the island cabinets.

- Cut the plywood to fit the backs of cabinets.
- There will be a 4" hole at the bottom-back edge of the cabinet. Add a 2x4 block under the back edge of the cabinet to provide solid blocking for attaching the back and trim. Install the 2x4 flush to the edge with its wide side down. Attach with 2  $\frac{1}{2}$ " wood screws; 1 screw every 16".
- Add  $\frac{1}{4}$ " filler strips vertically up the back of the cabinet from the floor to the top of the cabinet. Attach the filler strips at the bottom (into the blocking added above) and at the top into the top back rail. Add 1 strip every 16" across the back.
- Attach the plywood to the back of the cabinet with 1  $\frac{1}{4}$ " finish nails; install 1 nail every 8" around the edges into the cabinet back frame.
- Do not nail into the cabinet backs ( $\frac{1}{4}$ " plywood).

(Optional) Pieces of white casing can be cut to fit under the island countertop to cover the filler strips under the countertop.

- Install the casing across the entire back and along each side.
- Install the wide edge up.
- Miter the corners.

Pieces of outside corner trim, stained to match the cabinets, are provided to cover the back corners.

- This trim will run from the floor to the casing (if installed) or the bottom of the countertop.
- Leave a space under the corner to slide the flooring under.
- Install the trim with 1  $\frac{1}{4}$ " finish nails.

Pieces of  $\frac{1}{4}$ " round, stained to match the cabinets, are provided to cover the gap between the flooring and the cabinets. Install this trim after the flooring is installed similarly to the  $\frac{1}{4}$ " round on the baseboards.

## Cabinet Quality Assurance Checklist

- Ensure the top of the cabinets are level.
- Ensure the face frames are aligned and flush.

- Ensure the cabinets are secured to the wall.
- Ensure the hardware is aligned at the proper height.
- Ensure the shelves are installed and level.
- Ensure the cabinet doors are properly aligned.
- Ensure the gaps behind the countertops have been caulked with painter's caulk.

## Vanities

### Prepare Vanities

Note: Bathroom vanities will be replaced with wall sinks based on Home Owner's needs. The Habitat Supervisor will advise as required. Wall sinks will not require volunteer activities.

1. Cut holes in the back and/or bottom of the vanity for plumbing connections.  
The back of most cabinets can be cut with a utility knife, but a jig saw can be used.

### Install Vanities

1. Set the vanity into position.
3. Install a floor anchor to hold the front of the vanity in place.
  - Draw a line on the floor along the front of the toe kick of the vanity.
  - Remove the vanity.
  - Mark a line  $\frac{3}{4}$ " back from the first line.
  - Cut a 12" piece of 2x4. Position it flat ( $3\frac{1}{2}$ " side down) on the floor behind the back line and in the center of the vanity. Screw it to the floor with 2  $\frac{1}{2}$ " deck screws.
  - Set the vanity back in place. It should fit over the blocking
2. Check the level side to side. Shim the bottom to bring the back level.
3. Check the level front to back. Using a 12" torpedo level, level the cabinet. Shim the bottom to bring the front to level.
4. Attach the top of the back of the cabinet to the wall using 3" cabinet screws. Recheck the level and adjust as needed.
5. Attach the bottom of the cabinet to the blocking with 3" decking screws through the kick plate into the block.
6. Cut and install the kick-plate using the brad air-nailer.

### Install Vanity Pulls

1. Using a cabinet handle template, mark the placement for the holes. Use the same template and hole placement on all cabinets.
2. Drill the holes using a  $\frac{1}{4}$ " drill bit.
3. Install the hardware.

### Install Sink Tops

1. Apply latex adhesive caulk to the top edge of the vanity.
2. Position the sink top centered on the vanity. If the vanity sits next to a wall, position the sink top flush to the wall.

3. Press the sink top into position and hold for several minutes until the caulk sets up.
4. Apply latex painter's caulk along the edge where the sink top meets the wall. Cut a very small hole in the end of the tube. Apply a small bead along the edge; move quickly. Smooth the caulk with a wet finger.

### **Vanity Quality Assurance Checklist**

- Ensure the tops of the vanities are level.
- Ensure the vanities are secured to the wall.
- Ensure the hardware is aligned at the proper height.
- Ensure the gaps behind the sink tops have been caulked with painter's caulk.