

Chapter 1

1.1 ESTABLISHING SQUARE SILL PLATE CHALK LINES

1.2 INSTALLING THE TREATED PLATE

1.3 INSTALLING LAMINATE BEAM

Tools needed by volunteer:

Hammer
Nail apron
Tape measure
Square
Utility knife
Pencil

Materials needed:

Treated 2x6 sill plate
2 lam beam members
Sill seal
16d nails
8d nails
Washers and nuts
Metal shims

Tools and equipment needed:

House Plan
Extension cords
Generator
Circular saw
Chop saw
Drill with $\frac{3}{4}$ " wood auger bit
Drill with $\frac{1}{2}$ " masonry bit
Paslode nailer
Framing square
String line
Chalk box
Wood chisel
Ratchet wrench and socket
30' tape measure
100' tape measure
6' level
Stepladders

Personal Protection Equipment:

Ear protection (Recommended)
Safety glasses (required)
Hard Hat (required)

1.1. ESTABLISHING SQUARE SILL PLATE CHALK LINES

1.1.1. Checking the Foundation

1. Measure the foundation to see how close it is to the blueprint dimensions. The plate may have to extend over or be pulled in from the foundation's edge depending on what the foundation measures.

EXAMPLE: If the blueprint dimensions are 40' and the foundation measures 39' 11", extend the plate ½" over each end of the foundation. If the foundation is off more than 1", then the measurements on the blueprint will need to change.

1.1.2. For Square or Rectangular Foundations

1.1.2.1. Setting the "Baseline"

1. Establish a "Baseline" on the longest wall. Assuming the foundation and the blueprint dimensions match, make a pencil mark 5⅛" from the outside edge of the foundation wall. Do this on both ends of the longest wall and snap a chalk line. **This "Baseline" is the chalk line used to establish all other chalk lines.** If the foundation and the blueprint dimensions do not match, adjust as stated above.

1.1.2.2. Setting the "Parallel" line

1. At one end of the "Baseline" have a helper hold the 10¼" mark of a long tape on the chalk line, measure across the foundation and mark the width of the house to establish the "Parallel" line.

EXAMPLE: The blueprint measurement of the house is 28'. The helper is holding the end of a tape on the 10¼" mark on the "Baseline". Measure across the foundation to the 28' mark on the tape and make a pencil mark.

2. At the other end of the "Baseline" repeat Step 1. From those two marks snap a chalk line, this is a "Parallel" line to the "Baseline". Check measurements: if the house is 28' wide, the distance from the "Baseline" to the "Parallel" line should measure 27' 1¾" ($28' - 10\frac{1}{4}" = 27' 1\frac{3}{4}"$).

1.1.2.3. Marking the first two corners

1. Start at one end of the "Baseline" and mark 5⅛" in from the edge (assuming the blueprint and the foundation measurements are the same). This mark will be 90° adjacent to the "Baseline" marks. Have a helper hold the 10¼" measurement of a tape on the mark just made and pull the tape along the "Baseline" to the other end. Make a mark at that end at the proper measurement.

EXAMPLE: If the house is to be 36' long, make a mark at 35' 1¾" ($36' - 10\frac{1}{4}" = 35' 1\frac{3}{4}"$).

1.1.2.4. Finding the center of the opposite wall

1. Starting from one of the corner marks just made in Section 1.1.2.3, have a helper hold the 1' measurement of a tape on that mark (remember that the measurement will read 1' longer than it actually is). Pull the tape over to about the center of the "Parallel" line wall (close to the center, by eye is close enough) and mark a spot on the chalk line where an even number on the tape falls. Say 34' or 36'.
2. Repeat Step 1 from the other corner mark on the other end of the "Baseline". Measure between the two marks just made and make a mark exactly in the center of these two marks. This is the center of the "Parallel" line wall.

1.1.2.5. Marking the last two corners

1. From the center point measure an equal distance to the right and left of the mark, exactly half the distance that was established in setting the first two corners for the "Baseline" and mark each end.
2. With a long tape take diagonal measurements of the corner marks to check for square. If it is out of square adjust the last two corner marks accordingly.
3. When the diagonal measurements are the same, snap the remaining chalk lines perpendicular to the "Baseline".

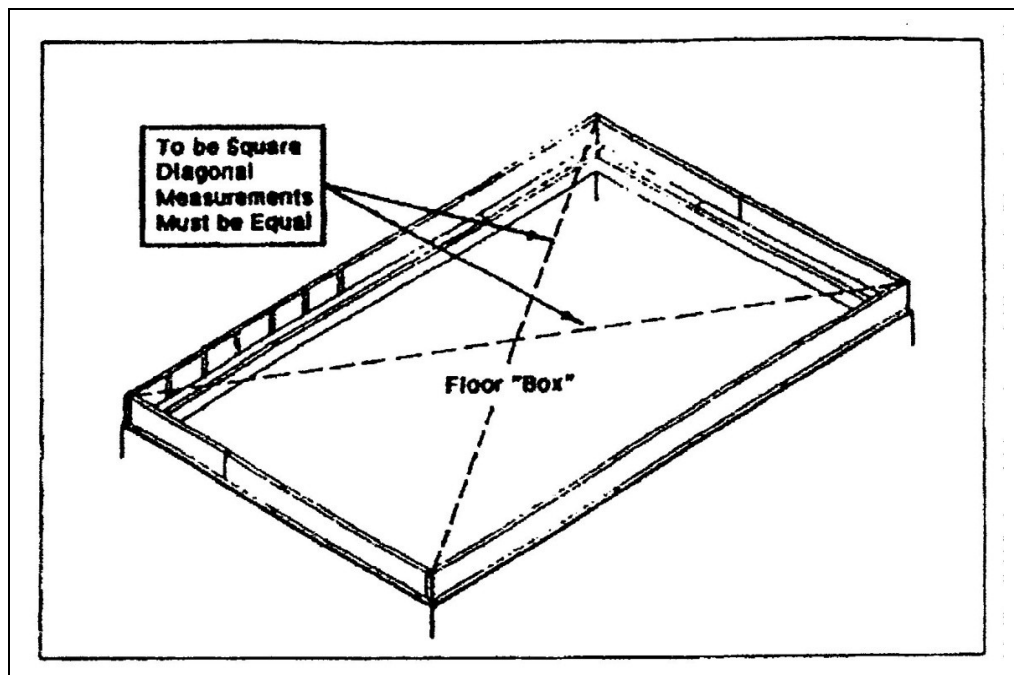


Figure 1-1.

1.1.3. For L-Shaped or Irregularly Shaped Foundations

1.1.3.1. Setting the “Baseline”

1. Establish a “Baseline” on the longest wall. Assuming the foundation and the blueprint dimensions match, make a pencil mark $5\frac{1}{8}$ ” from the edge of the foundation wall. Do this on both ends of the longest wall and snap a chalk line. If the foundation and the blueprint dimensions do not match, adjust as stated in Section 1.1.1 above.

1.1.3.2. Setting the “Parallel” line

1. At one end of the “Baseline” have a helper hold the $10\frac{1}{4}$ ” mark of a long tape on the chalk line, measure across the foundation and mark the width of the house to establish one end of the “Parallel” line.

EXAMPLE: The blueprint measurement of the house is 28’. The helper is holding the end of a tape on the $10\frac{1}{4}$ ” mark on the “Baseline”. Measure across the foundation to the 28’ mark on the tape and make a pencil mark.

2. **With an L-Shaped or Irregular foundation, move down along the “Baseline” until straight across from the corner of the foundation where the “Parallel” line will start.** Have a helper hold the $10\frac{1}{4}$ ” mark of a long tape on the chalk line, measure across the foundation and mark the width of the house to establish other end of the “Parallel” line.
3. From those two marks snap a chalk line, this is a “Parallel” line to the “Baseline”. Check measurements: if the house is 28’ wide, measure from the “Baseline” to the “Parallel” line; it should measure $27’1\frac{3}{4}$ ” ($28’ - 10\frac{1}{4}$ ” = $27’1\frac{3}{4}$ ”).

1.1.3.3. Marking the first two corners

1. Start at one end of the “Parallel” line and mark $5\frac{1}{8}$ ” in from the edge (assuming the blueprint and the foundation measurements are the same). This mark will be 90° adjacent to the “Baseline” marks. Have a helper hold the $10\frac{1}{4}$ ” measurement of a tape on the mark you just made and pull the tape along the “Parallel” line to the other end. Make a mark at that end at the proper measurement.

EXAMPLE: If the house is to be 36’ long, make a mark at $35’1\frac{3}{4}$ ”. ($36’ - 10\frac{1}{4}$ ” = $35’1\frac{3}{4}$ ”)

1.1.3.4. Finding the center of the opposite wall

1. Starting from one of the corner marks just made (see Section 1.1.3.3), have a helper hold the 1’ mark of a tape on that mark. Pull the tape over to about the center of the “Baseline” wall (close to the center, by eye is close enough) and

mark a spot on the chalk line where an even number on the tape falls. Say 28' or 30'.

2. Repeat Step 1 from the other corner mark on the other end of the "Parallel" line. Measure between the two marks just made and make a mark exactly in the center of these two marks. This mark will be used to establish the corner marks.

1.1.3.5. Marking the next two corners

1. From the center point measure an equal distance to the right and left of the mark, exactly half the distance that was established in setting the first two corners for the "Parallel" line and mark.
2. With a long tape take diagonal measurements of the corner marks to check for square. If it is out of square adjust the last two corner marks you made accordingly.
3. When the diagonal measurements are the same snap the remaining chalk lines perpendicular to the "Parallel" line.

1.1.3.6. Marking the remaining walls

1. There will be some remaining walls to mark. It may be a bump out or a section of wall that is pushed in from the main foundation footprint.
2. A square or rectangle footprint on the foundation is already established. Measure off the already established chalk lines to match the blueprint measurements and make marks accordingly. (If adjustments were made because the foundation and blueprint measurements do not match, continue to do the same.). Check for square and snap the remaining chalk lines.

1.2. INSTALLING THE TREATED PLATE

1. Place foam Sill Seal 1" back of the chalk lines. The Sill Seal should be about 4" wide. Sometimes it comes in a roll about 7½" wide. In this case, cut the roll in half yielding two discs, each approximately 4" wide.
2. When measuring for length of plate material, make sure that each section of plate is long enough so that two of the bolts can be attached to it.
3. Cut 2x6 treated sill plates for top of foundation. Mark and drill bolt clearance holes. Use a ¾" or ⅞" bit to drill holes larger than the bolt diameter in order to allow correct positioning of the plates on the foundation. Place the predrilled 2x6 treated plate members over the bolts. Notch sill plates at the beam pockets.
4. Align the interior of the sill plates with chalk line. Install washers and nuts tightly.

5. [Site along the top of the sill plates to ensure they are level. If helpful, string a tight line to test. Shim as necessary.](#)

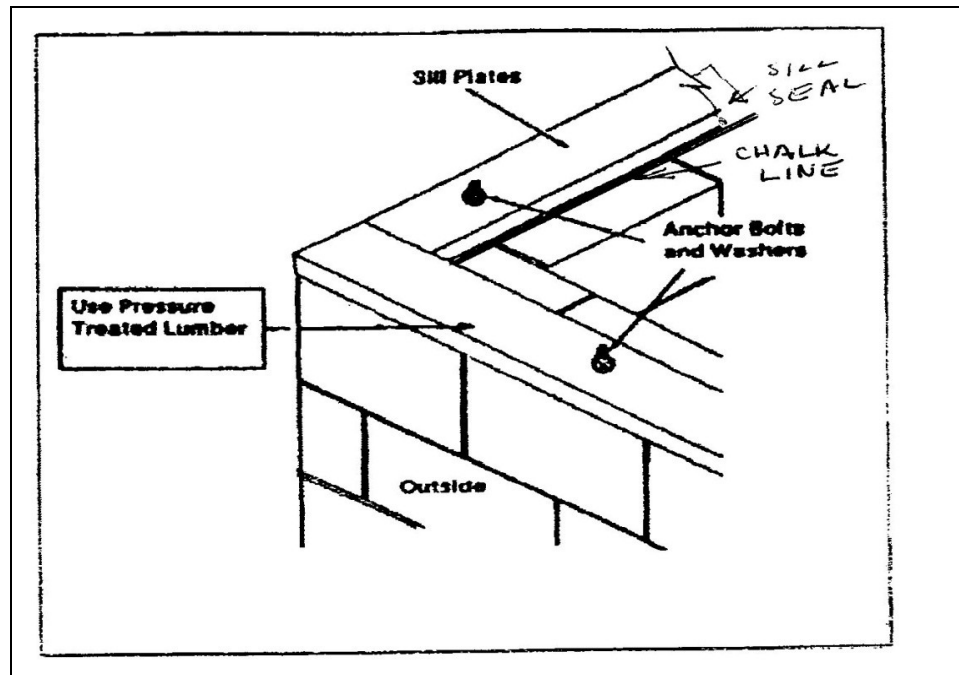


Figure 1-2.

6. Lay a thick bead of exterior grade caulk on the interior side of the sill plate where it meets the foundation. Make sure there are no gaps in the caulk when the application is complete.

NOTE: Do NOT apply caulk if the temperature is below 40°F or if the foundation surface is wet. If either condition exists, the caulking must be postponed to the next build date.

1.3. INSTALLING LAMINATE BEAM

NOTE: The beam that supports the floor joists is made up of two laminated members.

1. To determine the required beam length, measure from the back edge of the beam pockets on each end of the basement walls. Subtract 1" from overall length and cut laminated members to length. Double-check the length before cutting.
2. Lift and set each member into both beam pockets and center them in the pocket. Temporarily block them to prevent the two members from falling out. [Put a C-clamp temporarily across the two beams in the center to prevent them from bowing out and](#)

- falling out of the pocket. Clamp them top to bottom to ensure that the tops of the two members are flush
3. Nail both ends of the two beams (within 3" of each pocket) together with three 16d nails to prevent them from separating.
 4. Place the beam so there is a 1/2" gap between the end of the beam and the pocket wall.

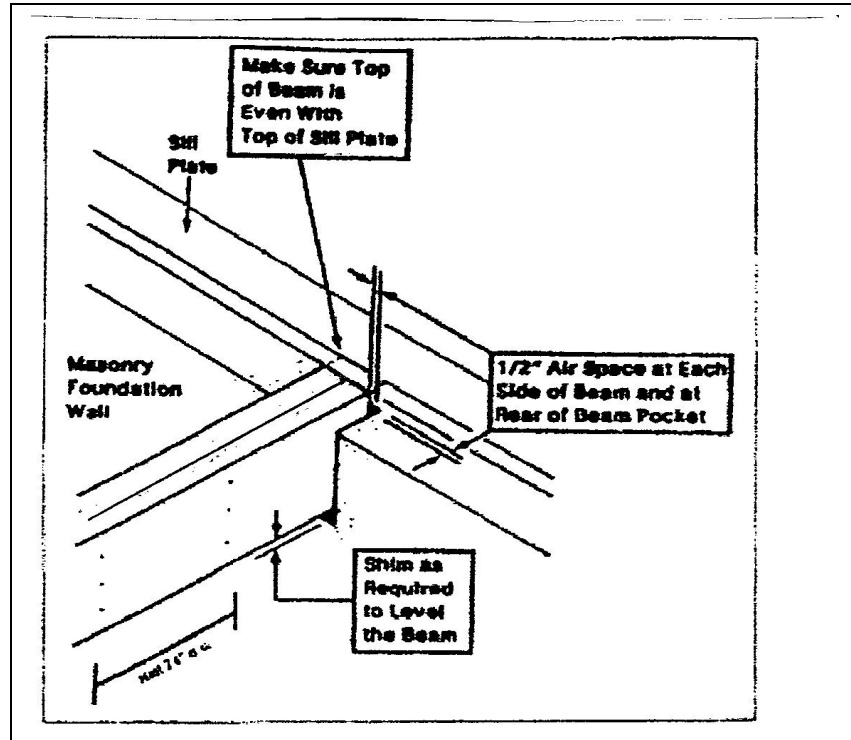


Figure 1-3.

5. Using the dimensions from the foundation wall to the beam as shown on the House Plan, mark the concrete wall below the pocket and position the beam at this location.
6. Using metal shims, raise the beam until it is flush with the top of the sill plates on each end of the basement wall. Securely nail a temporary piece of 2x from the beam to the sill plate to maintain this position. This will prevent the beam from falling while support posts are being installed and later when the basement floor is being poured.
7. Cut a piece of 2x scrap into three pieces of equal thickness. Nail one piece to the underside of the beam at each end. (The third piece will be used as a gauge block.) Stretch a string from the ends of the beam under the 2x blocks directly under one edge of the beam at each end.

8. Attach support posts to the underside of the beam at proper intervals according to the House Plan. Fasten the plate flush on the finished basement side of the post to the bottom of the lam beam with 1½” lag bolts and washers. Set the bottoms of the posts on the pads and roughly plumb them, but do not anchor at this time.

REQUIREMENT: The threaded adjustment screw and plate must rest on the concrete pad.

9. Cut scrap pieces of treated lumber and wedge them between the sides of the beam and the concrete in the beam pocket. These are a permanent part of the installation and must be anchored securely.
10. Nail two or more 2x4’s from the beam to one side wall sill plate, between floor joist locations, holding the end 2” back from the outside edge of the plate (to allow for installation of the rim joist).
11. Reconfirm beam placement dimensions from Step 8. Sighting along the string and the edge of the beam, adjust the 2x4 supports until the beam is straight and parallel with the string and the side wall. Using the 2x gauge block, adjust the support posts vertically until the beam is level to the string line installed in Step 7 above (these settings can be approximate at this point).
12. Using a standard construction tape, mark each side of the beam on 16” centers, staggering the marks on opposite sides. Nail the two members of the lam beam together with three 16d nails at each location. Remove the C-clamps,
13. Plumb the posts, ensuring that the gauge block settings have not changed, and that the beam is still straight and level. Before anchoring the posts, run a tight line from the sill plates on each side wall across the beam above each post. If the beam is level with the side walls, proceed with Step 14. If, however, there is a significant difference that may cause problems with leveling the I-joists, adjust the post heights to minimize the problem.
14. Attach the posts to the concrete pads with the Remington gun (two short nails per pad). Remove the adjustment pins from the support posts prior to pouring the basement floor.
15. Leave the tight string line in place. It can be used to confirm the beam location during I-joist installation.