

## Chapter 3 - Foundation

### Things to Consider

- During this phase, Contractors & Volunteers will need to coordinate activities.
- Caution: Tie the sump pump switch up off of the floor to keep it from getting wet.

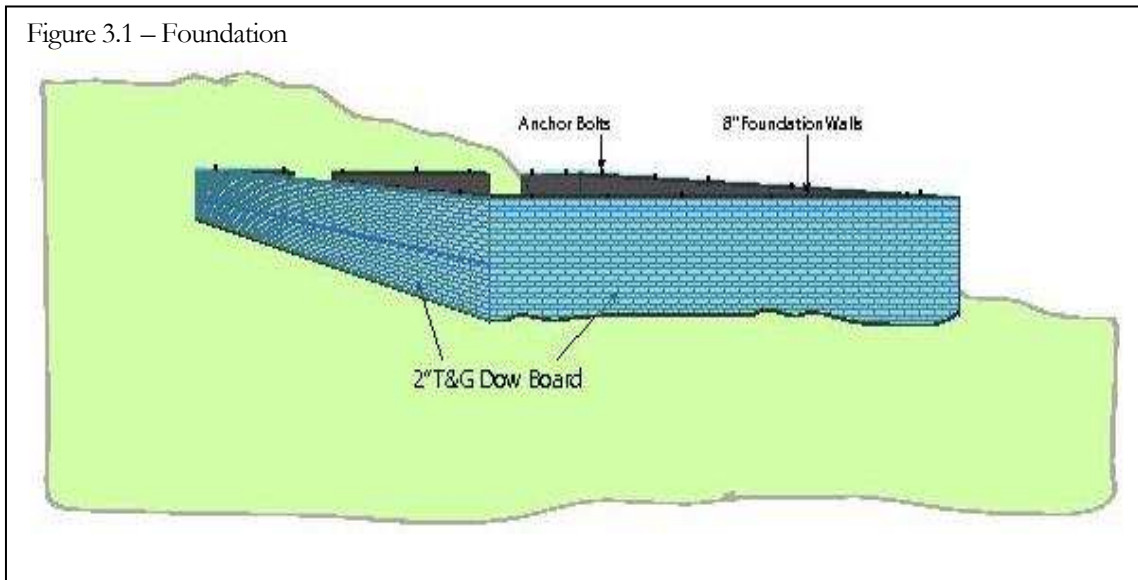
### Components

Footers	Foundation Walls	Post pad
Sump Pump	Interior Drainage	Backfill
Temporary Power Pole	Sewer Tap	Water Tap
Gas Tap		

### Timing & Prerequisites

- This is the initial phase of the build.
- The Habitat Superintendent will work with the contractors to initiate this phase and co-ordinate the timing of Contractor and Volunteer activities throughout the phase.

Figure 3.1 – Foundation



## Materials Needed

Basement Floor Insulation	Basement Wall Insulation
<b>2" T&amp;G Dow Board</b> <b>1/2" Dow Board</b> <b>Construction Tape</b> <b>Silicone Sealant</b>	<b>1 1/2" Thermax®</b> <b>2" Dow Styrofoam</b> <b>Construction Adhesive</b> <b>Construction Tape</b> <b>Dow Clip Strips</b> <b>Dow J-channel</b> <b>Dow White Foil Tape</b> <b>3 1/2" tap cons</b>
Interior Drainage	Radon System
<b>3" Perforated PVC Pipe</b> <b>Gravel</b> <b>Sump Pit</b>	<b>4" Solid PVC Pipe</b>

## Phase Specific Tools Needed

- Impact Drill
- Concrete Saw
- Needle Nose Pliers

## Activities (New Build & Additions)

### Foundation (Contractor)

The cement contractor will:

- Excavate the hole for the house
- Pour the footers
- Frame up the basement walls
- Pour the walls
- Clean off the frames
- Install the bituminous asphalt coating
- Install the exterior drainage
- Install the 2" tongue and groove (T&G) Dow board on the exterior foundation walls

Note: the Dow board will be installed vertically from the footer to the top of the foundation wall.

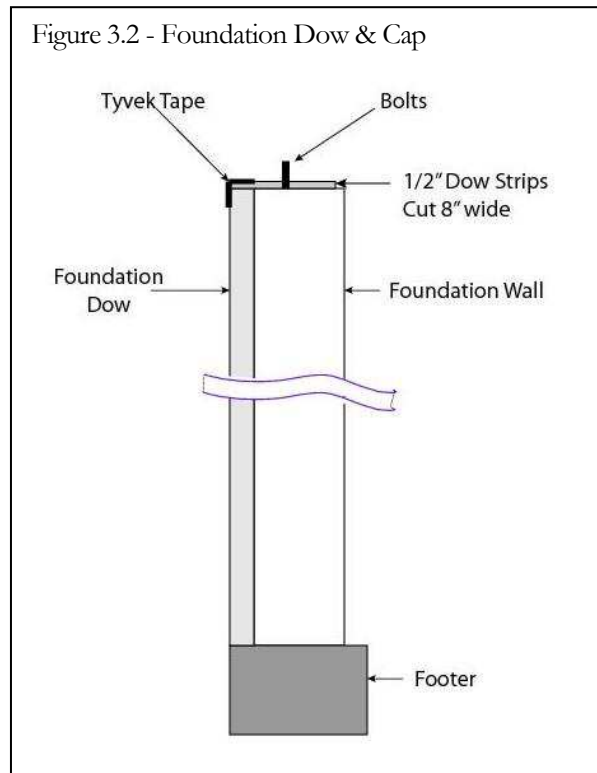
Note: The Dow Styrofoam will be installed also be installed between the foundation wall and the concrete porch slabs.

### Utility Taps (Contractor)

The plumber will install the water tap, sewer tap, and gas tap.

### Temporary Sill Cover (Volunteers)

1. Cut 8" wide strips of 1/2" Dow boards. (See Figure 3.2)
2. Lay strips on top of the foundation wall; overlapping the foundation Dow. Push it down over the bolts.
3. Tape the Dow Strips to the foundation Dow board with Construction tape.



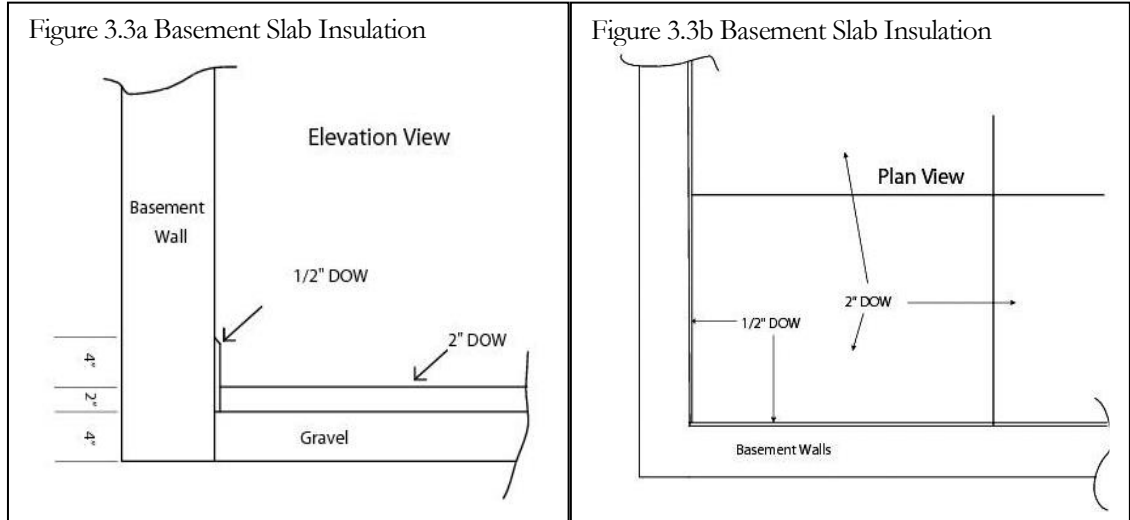
### Interior Drainage (Contractor)

1. The plumber will install the sump pump & interior drainage.
2. The cement contractor will install 4" of gravel over the interior drainage.

### Basement Slab Insulation (Volunteers)

1. The Habitat Volunteers will install Dow Board for the thermal break under the basement slab. (See Figures 3.3a & 3.3b).
  - Level the gravel in the basement to the height of the poured footer. Leveling the gravel will allow the Dow board to sit smoothly on top of the gravel.
  - Cut 6" wide strips of 1/2" Dow board.
  - Install 1/2" strips along the outer edges of the foundation walls. The strips will rest on the gravel.

- Cut and install 2" T&G Dow board over the gravel. The 2" Dow will fit snugly to the 1/2" Dow on the exterior walls and will fill all of the voids.
- Tape the seams in the Dow board with construction tape.



**Basement Slab (Contractor)**

1. The cement contractor will install 6 mil polyethylene plastic over the Dow board to create a vapor barrier.
2. The cement contractor will pour the basement floor.

**A/C Pad (Contractor)**

1. The cement contractor will pour the pad of the a/c condenser.

**Foundation Backfill (Contractor)**

1. Once the slab is poured and the utilities taps are installed, the contractor will backfill the foundation.

**Basement Slab Sealing (Volunteers)**

1. After the first floor deck is installed, apply a large bead of silicone caulk to the outside perimeter of the basement slab and around the sump pump pit. Any cracks or penetrations in the basement slab must be caulked.

**Temporary Power Pole (Contractor)**

1. The electrical contractor will install the temporary power pole and grounding rod.
2. AEP will connect up the power.

**Activities (ReBuild)**

The following tasks may be performed at the discretion of the Construction Superintendent depending on the condition of the existing

foundation. A combination of contractors and volunteers will be used as appropriate for the level of expertise needed for the task.

**Foundation Wall Repair (Contractor)**

If the foundation walls are bowed, the contractor will install reinforcing steel beams to the walls.

**Foundation Wall Repair (Volunteer)**

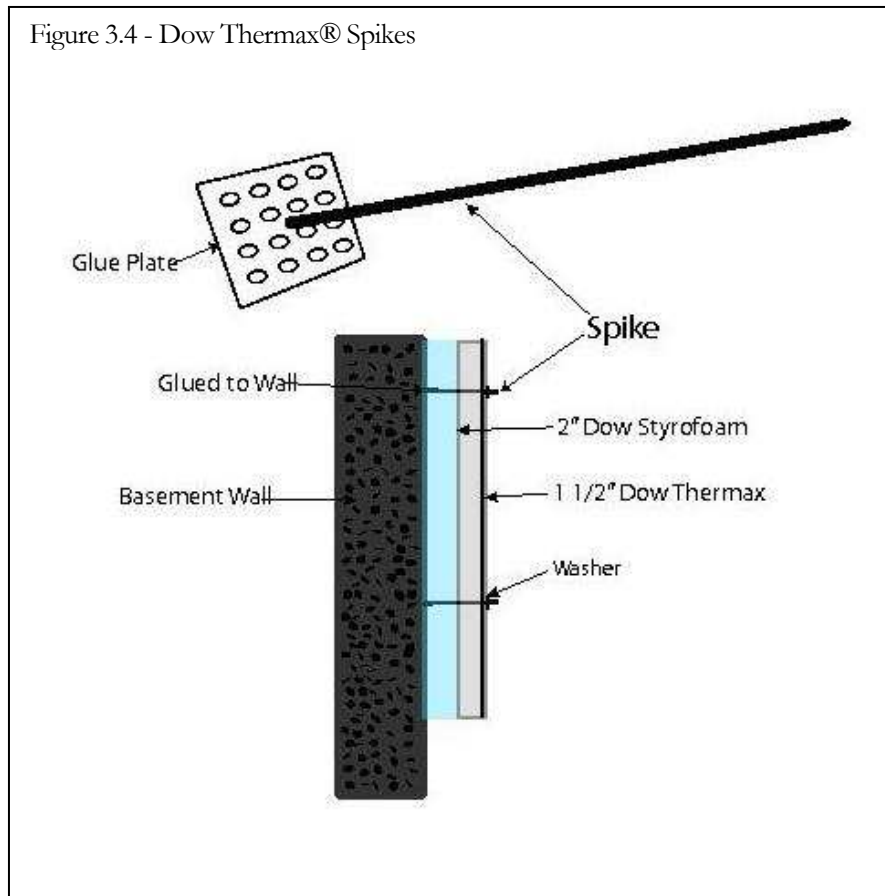
If the foundation walls have cracks or holes in the mortar, the cracks and holes will be filled with hydraulic cement.

**Foundation Wall Insulation (Volunteers)**

The top 4' of the foundation walls will be covered with 2" Dow board and 1 ½" Thermax®. The seams in the Thermax® should not line up with the seams in the Dow board.

Masks and gloves must be worn when cutting or handling Thermax®.

1. Mark the location for the Thermax® spikes on the wall. They will be placed 12" on center. Starting 6" from one of the basement corners, place three (3) rows of marks; one 12" from the ceiling; one 24" from the ceiling; and one 36" from the ceiling. Continue marking these rows every 12" around the basement.
2. Glue a spike to the basement wall at each mark. Clean the wall and then apply a dab of adhesive to the wall. Press the spike into the adhesive. The adhesive should squish up through the holes in the glue plate. Hold in place until the adhesive sets.
3. Cut 4x8 sheets of 2" Dow Styrofoam to fit the wall horizontally. Cut off 12" of the first sheets of each wall so the first vertical seam is 7' from the corner.
4. Press the 2" Dow Styrofoam over the spikes. Press it firmly to the wall.
5. Tape the Dow Styrofoam joints with construction tape.
6. Cut the 4x8 sheets of 1 ½" Thermax® to fit the walls with the 8' dimension installed horizontally.
7. Press the Thermax® over the spikes. Press it firmly against the Styrofoam.
8. Place the washer on the spike and then bend the spike down against the Thermax® using a pair of needle nose pliers.
9. Cover the spike and washer with construction tape.
10. Tape the Thermax® seams with Dow White Foil Tape.



### Interior Drainage & Sump Pump (Optional)

1. Cut the existing concrete floor 12" from each of the exterior walls.
2. Break out and remove the concrete between the line and the Wall. Remove the gravel and dirt below the floor to a depth of 8".
3. Cut and remove the concrete, gravel and dirt for the sump pump pit. The hole should be 18" x 18" wide and 2" deeper than the pit is tall.
4. Drill 3" holes in the sides of the sump pump pit to allow installation of the PVC pipe.
5. Cut perforated 3" PVC pipe along the wall in the trench.
6. Install 2 or 3" of gravel in the trench and the sump pump hole.
7. Install the sump pump pit with the lip just above the existing or planned basement floor level.
8. Install the PVC pipe in the trench. Start at the sump pump pit and keep the piping level entirely around the foundation. The perforated holes must face down. Add gravel as need to support the piping.

9. Infill the remaining space in the trench with gravel until it is even with the bottom of the basement slab.

**Post Pads (Volunteers)**

If new support posts are to be installed based on the architect's prints, new cement pads will be installed.

1. Cut a 12" by 12" hole in the existing floor.
2. Remove cement, gravel and dirt to a depth of 8"
3. Fill the hole with concrete. Trowel off the concrete even with the existing floor.

**Basement Floor (Contractor)**

If the basement floor has been cut or is significantly cracked and broken, the cement contractor will pour a new concrete slab. The existing slab may or may not be removed.

**Radon (Volunteers)**

Both new builds and ReBuild basements will be tested for Radon. If the levels of Radon gas are actionable, an active Radon system will be installed.