

Our Levittown houses are referred to as slab-on-grade, wood-frame construction. In other words, there are no basements – the house sits on a concrete slab.

All of these houses were originally heated using radiant heat which used copper pipes embedded in the concrete floor to transfer heat from circulating hot water to the concrete slab itself. With this method, heat radiates to the room across the entire heated slab. It is a very comfortable method of heating a home. The intention, of course, is for the heat to radiate up into the room, but heat energy doesn't know up from down and some of that heat will warm the stone and soil beneath. At some point, heat will travel by conduction to the edge of the concrete slab and radiate out to the environment.

For our housing construction, Levitt added a 1" thick fiberglass rim layer along the edge of the slab extending down to the footer to limit this heat loss. See the figure below. The top of the insulation layer was covered by a skim coating of concrete to seal it off and create a uniform floor appearance.

Issues

- 1) Over time, the skim concrete coating cracks, particularly if carpet nailers are installed for wall-to-wall carpeting. Cracks expose the top of the insulation layer and can permit air leaks.
- 2) It is not evident that a sill seal was used at the bottom of the sill plate (Point A) or between it and the wall plate (Point B). Where irregular surfaces meet, gaps may exist to allow air infiltration. Air movement through Point A into the insulation layer and up through cracks in the concrete skim coat can also occur.

DIY Things To Do

- 1) If the outside wall is exposed for re-modeling, apply a high-quality caulk along the entire length of the sill and wall plate joints. (Points A and B)
- 2) If the inside wall is exposed, apply a high-quality caulk along the entire length of the wall plate joint. (Point B inside). If the wall bays are open for re-insulation, apply a high-quality caulk along the inside of the bay along the intersection of the 2x4s and the exterior wall – all the way around from the bottom plate to the top header.
- 3) Fill the cracks and gaps in the floor along the skim coat on top of the insulation with a self-leveling, polyurethane, concrete crack sealant. It may take a few passes. This will seal off the top of the insulation layer and prevent air infiltration.

