INSTALLATION PLANNING

The first step is to determine how many Square Feet each zone will be. A zone is any area that has multiple circuits connected to a remote manifold.

Once you have determined the size and number of zones. The next step is to select the right size package or packages for your installation.

Each In-Slab Radiant Heat package developed by Radiant Heat Products was developed using the same design formula.

The Tube is 1/2" Kitec XPA (X-linked Polyethylene Aluminum). Circuit are 300 feet in length. Circuit spacing is calculated as 12" on center. The circuits are spaced 6" away from outside walls. For help selecting the right package for your installation call 1-585-919-6505.

IN-SLAB RADIANT HEAT PACKAGE INSTALLATION

The installation of a heated slab begins by verifying the sub grade has been properly leveled and compacted. Failing to check for proper subgrade preparation could eventually compromise the embedded tubing circuits.

After the subgrade has been prepared, the soil vapor barrier and underslab insulation should be installed. Some building specifications may not call for an underslab vapor barrier. However, its ability to resist moisture migration from the underlying soils can be indispensable, especially when wood products are used as the finish flooring.

INSULATING YOUR SLAB

Heat loss from the edge and underside of a heated slab on grade can be substantial, especially in areas with high water tables or where the slab rests on bedrock. Edge and underslab insulation are essential in reducing these losses. They are a necessary part of any quality floor heating
system. Not taking steps to mitigate such heat loss is like leaving the windows open throughout the winter.

Realistically there’s only one opportunity to install underslab insulation—before the slab is poured. Discovering high downward heat loss after the system is in operation is a situation that’s virtually impossible to correct. It makes little sense to attempt the installation of a high quality heating system while omitting crucial and relatively low cost details. Do it right the first time.

The most commonly used material for slab edge and underside insulation is extruded polystyrene. It’s sold in 2 by 8 foot and 4 by 8 foot sheets in several thicknesses. It’s also available in several densities to handle different floor loading. Extruded polystyrene panels are highly resistant to moisture absorption, and have a well-established record in ground contact insulation applications.

New insulating materials are developed to promote the use of under slab insulation. One of them is called radiant barrier foil. It is a composite of plastic and aluminum layers. The concrete Barrier Foils consists of an aluminum layer sandwiched between two layers of “bubble” insulation. The “insulating” effect of this new product is comparable with the rigid foam products, but its handling and resistance to mechanical damage is far superior.

In most buildings the underslab insulation should have a minimum R-value of 5. In colder climates, it is often recommended having R-10 underside insulation. The insulation is generally omitted under structural bearing points such as beneath interior columns or bearing walls. The edge of the slab is especially vulnerable to heat loss. It should be insulated to a minimum of R-5 in mild climates and R-10 in colder climates.

**LOCATE REMOTE MANIFOLDS**

The next step on most installations is to locate and temporarily mount the remote manifold(s). If one or more of the remote manifold will be located within a stud cavity, it’s imperative to make accurate measurements when fixing the manifold’s location.

The manifolds can be temporarily bracketed to a plywood panel supported on wooden or steel stakes driven into the subgrade as shown.
Once the insulation is in place, the steel reinforcement for the slab is installed. Most concrete slab on grade floors use welded wire fabric (WWF) for reinforcement and crack control. WWF comes in sheets or rolls. It should be placed directly on top of the underslab insulation. Edges should be overlapped approximately 6” and tied together.

Tubing installation takes place one circuit at a time. The pipe ends should be organized according to the piping layout usually in Supply/Return order for every loop. Mark the loop number and R or S with a marker on a sticker or on the pipe, so it is easy to identify the ends after the pipe is installed. Begin by securing one end of the circuit to the supply manifold. Roll out the coil like rolling a “tire” following the layout pattern. The composite pipe, because of the metal content, allows laying the pipe roughly without tying down immediately. This allows it to run the full loop and get the end out to the manifold. Make sure the end reaches the manifold and then tie the piping to the wire mesh. The main difference to laying Kitec PEX tubing is that the pipe stays in place and does not want to go back to the coil shape.

Kitec tubing should be secured to the WWF using either twisted wire ties or nylon pull ties. The tubing should be tied to the WWF reinforcing every 60 to 72” on straight runs, and two ties at the bend on each side.

When all circuits have been installed, prepare the manifold(s) for pressure testing. Install a pressure gauge in one end of either the supply or return manifold and a schrader air valve in the other end. Plug the unused manifold ends. Use an air compressor to increase the pressure in the circuits to about 100 psi. Use a soap bubble solution to check for leaks at the manifold connections. Leave the circuits pressurized for at least 24 hours. If the air pressure drops double check all manifold connections for possible leaks before inspecting the tubing. Aside from the possibility of extreme damage from other construction activity, it’s very unlikely that the tubing is the source of the air leak. Still, a pressure test is mandatory on any radiant tubing installation.

Refer to the next page for a sample tube layout