ThermoFin U heat transfer plates for radiant heating are available for use with nominal 1/2” and 3/8” PEX tubing. Each “U-Fin” plate is 4 inches wide. U-Fin is available in 4 foot or 8 foot lengths. U-Fin is typically spaced 8 inches on center above the floor, but 6 inch on center spacing may be appropriate for high heat load areas. ¾” inch plywood “sleepers” are placed between the channels to provide accurate spacing and to hold the U-Fin to the floor. These sleepers also provide a large nailing area for installation of the finished floor materials. The correct widths are 7.25” for 8” On Center spacing and 5.25” for 6” On Center spacing. Radiant sells routed MDO return bends to provide the 180 degree bends at the ends. Return bends are available for 6” or 8” O.C. spacing.

Plan the tubing layout perpendicular to the direction of finished wood flooring. The plates can be cut with band saws, hacksaws, or miter or chop saws equipped with multi-tooth carbide-tipped aluminum cutting blades. A miter or chop saw works the best. After cutting, the new edges of the plates should be de-burred with a file to prevent sharp edges from damaging the tubing.

A. The first step is to square the room. Most houses are slightly out of square, so it’s important to establish a right angle in one corner so the ThermoFin U will line up correctly with the precut sleepers.

1. Measure and make a mark 6” (8” if using 8” O.C. spacing) from the wall on each end of one side of the room. Use a chalk line to mark out a straight line between the marks.
2. Make a right angle 6” from one end of the room using the Pythagorean theorem: make a second mark 4’ from your mark from step 1. Tack or hold down one end of the chalk line at the first mark, and make a third mark on the line at three feet. Adjust the angle between the chalk line and the first marked line until the distance between the second and third marks is equal to 5 feet.

3. Make another chalk line perpendicular to the first chalk line. Use the procedure in step 2 to create another right angle from this line. Mark another chalk line, parallel to the first line.

4. Check that the two parallel lines are the same distance apart at both ends of the room.

B. Next, place the precut plywood return bends along the sides of the room.

C. Mark out the tubing runs on the sub-floor. Measure the lengths of the tubing runs and pre-cut the ThermoFin U to appropriate lengths. Allow for a gap of at least ½ inch between the end of the U-Fin and the bends at the end of the run. Runs should end at least 6 inches away from walls. Make sure that you have a sufficient number of sleepers and return bends ready.

1. Place the PEX tubing roll on the uncoiler tool and connect the end of the first loop to the manifold set.

2. Lay down the return bends at the end of the runs, if you are using them.

3. Roll the tubing out over your guidelines you drew, and place the U-Fin on top. Make sure the tubing is completely snapped into the channel and that the U-Fin lays flat on the floor. Be careful to avoid kinks in the tubing. If a kink does occur it can be removed with a heat gun, or by cutting out the kink and reconnecting the tubing with crimp fittings. Contact Radiant Design & Supply (formerly Radiant Eng.) for exact instructions.

4. It is helpful to use pre-cut spacers to maintain the correct distance between the U-Fin.
runs. After the spacing has been adjusted, hold the U-Fin in place with 2 short roofing nails on each end of each piece, with one nail on either side of the channel. If you are not using Radiant Design & Supply return bends, we recommend using a 1” piece of ThermoFin to hold down the bends to the floor.

5. Run a thick bead of construction adhesive on the subfloor centered between the runs of ThermoFin. Place the pre-cut sleepers on top of the adhesive, and attach to the floor using ring-shank nails or screws. Make sure that the nails or screws also pass through the ThermoFin, and into the joists when possible. Air gaps between the ThermoFin and the subfloor or sleepers will decrease heat conduction, so the sleepers should be attached as tightly as possible. If you are using Radiant Design & Supply return bends, nail or screw them down now. If you are not using our return bends, cut plywood to fill in the space around the 180° bends at the end of the runs. Fill in as much space as possible to maximize the floor area available for the finished floor material installation.
6. After all of the tubing, U-Fin, sleepers and return bends have been installed, fill in the gaps between the tubing return bends and the plywood surrounding it with a high strength liquid cement or thin-set compound. This will hold the loop ends in place to prevent thermal expansion noises, and will also increase the heat transfer.

7. Allow the fill-in material to dry completely. Use a moisture meter to determine whether the material is dry.

8. The tubing should be pressure tested with 50 PSI air pressure. If there is no significant pressure loss for 24 hours, it is safe to assume there are no leaks in the tubing.

9. Install final flooring materials.