

## INSTALLING A RADIANT HEAT FLOOR

Installing bamboo over radiant heat isn't much different from laying a typical bamboo floor. Most important is good communication with the radiant heat system designer. It's critical that everyone is notified of any work pertaining to installation, especially if specifications are changed. It is not recommended to float bamboo flooring over radiant heat systems.

To ensure a superior end product, pay attention to the following factors before, during and after installation:

- Floor Temperature
- Sub-floor
- Tube Installation
- Climate Controls
- Moisture Content

### Floor Temperature

Provide the radiant heat system designer with the bamboo dimensions, sub-floor style and the desired temperature of each room. This will give her/him the information needed to calculate the necessary system supply water temperature. Do not allow the surface temperature of the bamboo flooring to exceed 70 F.

**Operation** – New radiant systems have control valves and other features that prevent the system from rapidly heating the floor. Older systems may or may not have these regulators. It is imperative that the user gradually increases the heat when the system is utilized. Rapid heating will result in the bottom of the flooring shrinking faster than the top of the flooring, causing cracking and possible delamination of the boards.

### Sub-floor

Work with the system designer to choose the option that best meets both of your needs. The heat system designer is responsible for the sub-floor installation, but you will want to be familiar with some styles. Direct contact of the tubing with the flooring is not recommended. Foil-faced insulation is highly recommended. The following are five sub-floor options recommended for bamboo installation:

1. **Stapled To Sub-floor** – This is a common method. The water tubes are stapled onto the elevated sub-floor. Insulation is placed under the tubing.
2. **Sandwich Over Frame Floor** – An approach used when you don't have access under the existing floor or when the underside of the floor can't be used, such as a second story over beamed ceilings. The tubing is laid onto the existing sub-floor. Furring strips (sleepers), that are somewhat higher than the tubing, are glued to the existing sub-floor. A new sub-floor is installed onto the furring strips. The bamboo flooring is then installed onto the new sub-floor.
3. **Masonry Filled Sandwich Over Frame Floor with Fiberglass Insulation** – This method provides fire resistance, sound dampening and thermal mass of a thin slab. Insulation is placed under the existing sub-floor. Fiberglass insulation is placed under the sub-floor. Furring strips are attached to the existing sub-floor, somewhat higher than the tubing. Concrete mix or gypsum covers the tubing. A new sub-floor is attached to the furring strips and the bamboo is installed onto the sub-floor.
4. **Masonry Filled Sandwich Over Frame Floor with Foam Insulation** – This is another method used when access under the existing floor is impossible. It also offers fire resistance, sound dampening and thermal mass. A rigid insulation is placed between the sub-floor and the tubing. Furring strips are attached

to the existing sub-floor. A concrete mix or gypsum covers the tubing. A new sub-floor is attached to the furring strips onto which the bamboo is installed.

5. **Glue Down** – Insure that the heating system is operating correctly and has been turned on for a minimum of 72 hours. Acclimate the flooring, outside of the box, for a minimum of 5 days in the living space with the heating system on. Rack (spread) the flooring over the heated surface to allow proper moisture balancing. Use Bostik BST adhesive and follow their directions as to trowel size and application.

### **Tube Installation**

Consult with the system designed to determine the tube network layout so you will know where the tubes are before you nail down the floor. It is best to have the tubing spaced evenly between the sleepers. You nail the bamboo flooring onto the sleepers at eight-inch intervals. When the tubing circuits are crossed over the center of a joist cavity, have the system designer use nail plates to protect the radiant circuits from being punctured.

### **Climate Controls**

The following climate controls should be operational before the bamboo is installed to minimize expansion and contraction during and after installation:

**Mechanical Humidity Control** – The HVAC system should have mechanical humidity control. This will ensure stable relative humidity levels, thereby keeping the equilibrium moisture content of the bamboo stable.

**Heat Transfer Point Control** – The system designer should install a set point control that will monitor the bamboo flooring's temperature. This set point control should either reduce the system water temperature or temporarily cycle the system off to prevent over heating the flooring in case of equipment malfunction.

**Exterior Thermostat** – This is recommended to protect the perimeter of the system from condensation absorption during the spring and fall when rapid temperature changes may occur.

### **Moisture Content**

Once the sub-floor, tubing and climate controls have been installed, the heating system is fully operational and should be run for a minimum of 72 hours to balance the dwelling's moisture content. Follow the Bamboo Installation Instructions for installing the floor, being careful to monitor the moisture content of the sub-floor and bamboo, as this will have a profound effect on the end result of the installation. Do not install the bamboo over green concrete or wet plywood. The bamboo will pick up the moisture from the wet sub-floor.

**Concrete Slab** – The slab should be well aged before installing the bamboo floor. Never install the bamboo over concrete until the floor heating systems has been used to remove any residual moisture from the slab. A simple method to determine the presence of excessive slab moisture is to tape a 4' x 4' section of plastic sheeting to the slab and turn on the heat. If moisture appears under the plastic, heat the slab for another day. Repeat this test until no moisture is visible

**Plywood Sub-Floor** – Turn on the heating system to acclimate the plywood and bring the room to the proper relative humidity. Plywood is recommended for sub-floor material in radiant heat installations. Radiant heat companies do not recommend particle sub-floors.

The bamboo should be removed from the boxes and spread out in the room to acclimate to the local conditions. Care should be taken to not over-dry the flooring. Once the bamboo reaches the desired moisture content (typically 3 to 5 days), you are now ready to install the flooring.