HARDWOOD FLOORS FOR TODAY & TOMORROW ... AND NOW WITH RADIANT FLOOR HEATING SYSTEMS.

Mickey Moore, NOFMA Technical Director, explains how these two can work together.

For decades radiant floor heating systems have been popular in Europe. The typical European installation involves parquet patterns or engineered products, either floated, adhesive applied, or mechanically fastened. With the increased popularity of radiant floor heating systems in the USA the question arises, "Can these systems be compatible with wood flooring both solid and engineered?" The answer is most often an emphatic "YES" with certain cautions and restraints.

First of all, check with the manufacturer for their recommendations.

The most common recommendation for all systems is to have the heating system installed and "on line", running, before wood flooring products are delivered. Most contractors report a minimum of 72 hours of heating is required to dry the system; however, a week or more is suggested. Light weight concrete, gypcrete, gypsum slurrys, etc. tend to dry slowly so that the extra time is necessary.

For engineered flooring: adhesive applications, the adhesive manufacturer should be consulted for compatibility with the heating system. Engineered flooring mechanically fastened, - use fasteners which do not extend below the subfloor material.

For solid wood flooring, the following three installation systems are the most common:

1) Plywood subflooring over the heated slab. If the slab is on grade, above grade, in contact with the ground, or over an uncontrolled environment; a vapor retarder of 6 mil polyethylene, should be placed over the slab. Do not glue the polyethylene. A proper subfloor can be composed of 2 layers of 1/2" plywood, southern yellow pine or douglas fir. The first layer is placed on the normal square of the room; the second layer on a 45 degree angle to the first layer; space 1/4" to 1/2" around the perimeter of panels of both layers; pin plywood together with 7/8" ring shank nails or screws; nail from center out on a 6" grid pattern, avoid trapping a hump between layers; nail flooring to plywood with fasteners which do not extend below plywood. You may have to cut the nails for face nailing starter and finish runs. An alternate method is to use 16" wide x 8' long 3/4" thick plywood planks, scored across the back 3/8" deep every 12" or so. Score more often if curling of the plywood is a problem. Lay these planks over the slab perpendicular to the direction of the flooring and stagger plank ends at least 2 ft. with up to 1" space along edges and 1/8" to 1/4" space between ends. Always use at least a 2 ft. length of plywood plank at flooring starting wall and ending wall. Fill in short pieces in the center of the room. Again use appropriate length fasteners (1 1/2") for blind nailing and cut the nails to less than 1 1/2" lengths for face nailing.

2) Conventional wood joist construction with heating tubes fastened to the underside of the subfloor; with this installation fastener length is important also. No fastener should penetrate through the subfloor and risk puncturing a tube.

3) Conventional wood joist construction with 3/4" or thicker firring strips fastened to subflooring; the heating tubes run between the strips with light weight concrete, gypsum, etc., poured over and around the tubes filling the space between the firring strips. The flooring is nailed to the firring strips. Firring strips should be group #1 dense softwoods (southern yellow pine, douglas fir, larch, etc.) spaced 12" on center or less and well attached to the subfloor. Flooring is oriented perpendicular to firring and nailed to firring strips.

When deciding on radiant heat under hardwood flooring keep in mind the following:

1) Strip or plank **less** than 4" wide is recommended, the more narrow the better. Edge grain or quartered product is also more stable.

2) Use a moisture meter to check average moisture content of the flooring, make 20 or more readings and average them.

3) Acclimate to the average condition of the area. Heating does not occur year round so the contractor must allow for the expected flooring expansion of the non-heating season, in most areas. In other words, try to avoid installing a very dry flooring product over a very dry system in the winter with the heat running. If flooring has to be installed under these conditions provide adequate field expansion or "spacer rows" to accommodate expected expansion.

4) With radiant floor heating some extra cracks between strips may be expected in the finished floor during the heating season. But they should not be significantly greater than a non-heated floor where proper installation guidelines are followed and occupied jobsite conditions are met.

5) Provide an outside thermostat to call for heat during rapid outside temperature drops. These heating systems are slow to react and pre-heating helps even the demand load. Do not use "set back" thermostats. Continually changing the temperature shocks the flooring and finish with excessive heat and can cause performance problems.

6) It is not necessary to use asphalt felt (or rosin paper) under flooring as some odors may develop when heated.

In summary, wood flooring and radiant heating can perform very well together for the life of the structure. Be sure the jobsite is ready for the flooring installation and check the moisture content of the flooring to establish the present condition and provide necessary spacing for the expected movement.

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