

CONTRACTOR[®]

THE NEWSMAGAZINE OF MECHANICAL CONTRACTING

Reprint from September 1995

'Dry' radiant heating system ideal for wooden frame building

BY JOE FIEDRICH
Hydronic heating authority

LAST MONTH I talked about the basic rules of installing tubing in concrete (wet) applications. This article will cover the same topic for "dry" systems - tubing sandwiched into wooden frame floor structures without using cement to encase the tubing.

Since the predominant form of residential construction in the U.S. and Canada is wooden frame, dry systems are an extremely popular and practical way of installing a floor heating system.

Compared to wet installation methods, dry systems have several advantages, which are listed below:

- No (or a minimal) build-up of subfloors is needed. A frame structure can be built conventionally without lowering ceilings or doubling up wall plates to accommodate concrete pours. No special building design considerations are necessary.
- Lightweight construction eliminates the need to beef up the joist structure.
- A dry system is ideal for retrofit applications without altering moldings and doors.
- Fast responding, low mass floor heating systems are easier to

control by reducing the flywheel effect associated with high-mass systems. This is especially important for lightweight wood frame structures and their associated fast responding interior temperature response to outdoor conditions.

- No moisture introduced into the structure. This eliminates potential finished wooden floor problems such as buckling and cupping.
- No logistical problems associated with lightweight concrete pours. A dry system can be built in stages without interrupting the rest of the construction sequence or can be installed even after all the finished floors are in place without interfering with any of the subcontractors during construction.
- A concrete drying period which often can take weeks - is not necessary during construction.
- Costs are lower, especially in systems with floor areas of 1,200 sq.ft. or less.
- Response times of dry systems on top of subfloors are within 15 to 30 minutes, gradually building up a thermal storage capacity in 2 inch of flooring sandwich. This is perfect for a wooden frame structure, compared to the hours of heat stored in wet systems.
- Nailing of conventional strip flooring is no problem because

the tubing is fully exposed on top of the subfloor or can be installed from below the subfloor at a later date without nailing into the tubing.

- Dry-floor heating systems are thermally stable. They eliminate the cracking or expansion problems associated with concrete pours over subfloors, especially a problem with ceramic or natural stone tiles, due to thermal expansion of concrete products and deflection of wooden frame structures.

A dry floor heating sandwich with its finished floor, underlayment, subfloor and warm air cushion between the fiberglass insulation below the subfloor makes an ideal low mass thermal storage sandwich for a low-mass wooden frame structure. Remember, by midday on a sunny winter's day there's not much of a heating load until the sun goes down.

Resistance is eliminated from builders and subcontractors who dislike concrete and excessive moisture over their structures. Concrete and wooden frame don't mix.

Tubing is accessible if that's ever necessary for peace of mind.

The author is president of Stadler Corp. (tel. 781/275-3122), a Bedford, Mass.-based supplier of hydronic heating equipment