



# What can go wrong? A builder's perspective

IN MY PART of the country, the Front Range area of Colorado, hydronic radiant floor heating is enjoying a huge surge in popularity, especially in the custom-home market. As a residential building contractor specializing in fine new homes and high-end remodeling, I have experienced some unique challenges in the installation of floor heating, both surface mounted and under-floor mounted.

## Under-floor mounted

The only time I would ever consider installing an under-floor system would be in a retrofit, remodeling situation. Otherwise, from my perspective as a builder, the potential for unhappy customers is too great.

Generally, we have had problems such as noise from the contraction and expansion of the tubing resonating through the sub-floor, sagging created by the tubing not being properly supported between staples and a much higher temperature of water needed to maintain an even heat.

These and other problems can contribute to a higher stress level on the tubing as well as the boiler, leading to the dreaded, but well known, warranty call.

## Surface mounted

Obviously, a surface-mount system of tubing stapled to the sub-floor and encased in lightweight concrete is easier to install and much more efficient in heating output.

So, the system is great, but compe-

tent individuals to install it can be hard to find, especially in the residential arena. Even when the subcontractor of record is experienced and trained, the people doing the actual hands-on work may not have a clue. Here are a few classic examples of problems we have encountered over the years:

- On interior layouts, run the tubing too close to the walls and you are inviting a puncture from carpet tack strips.
- On slab-on-grade applications,

● Are you pumping or wheel barrowing? In my experience, pumping is quicker and safer, but not always feasible. Small jobs, remodels, bad access — there are many reasons you may have to move the mud with a wheelbarrow. Now, you really better watch the pressure gauge.

- Try to set up some elevated ramps over the tubing (just make sure the wheelbarrow driver doesn't run off the side and drop the whole thing on your

crew had used a "salamander" to heat the room.

The crew had built a deflector to direct the heat down on the floor and away from blowing in their faces. The constant high heat had actually melted the tubing encased in the concrete. You just never know.

## Final thoughts

Who is going to run the thermostat wiring — the electrician or the HVAC sub? Make it clear on their scopes of work so you don't end up fishing wire through the walls.

And where are your thermostats placed? Hopefully not on exterior walls, or where the hot sun shines on the wall, or in a drafty area.

Give critical thought to where you want the manifolds located. We try to find an interior closet wall or other accessible place that won't be covered by a heavy piece of furniture. And although you will be putting a removable cover over the manifold, take photos of the area before covering and give them to your clients. They might appreciate it down the road when trying to remember where everything is.

In my opinion, hydronic radiant floor heating system is the way to go. Obviously, it takes a good contractor with caring, well-trained subs to make a successful, headache-free installation.

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decide beforehand who is responsible for laying out the wire mesh, and then CHECK IT. Too often, flat workers will roll out the wire off square, leave it crooked and barely tie their overlaps together. What a difference a clean wire job makes — the tube runs are straight, everything is secure and the HVAC crew doesn't threaten to walk off the job.

● Also, the vertical height placement of the tubing in the concrete can determine response time as well as evenness of heat. Is your client building a warehouse with a 6-in. thick slab, and he doesn't care about response time? Or maybe your project is a custom home with a sensitive homeowner who wants to feel the heat now! Give some thought to where the tubing will lie in the concrete and avoid future problems.

● One more thought about laying tube: Don't let anyone smoke during the process. A carelessly dropped cigarette butt can roll against the tube, melting a nice, neat hole in your system. Then try finding someone to back charge for that little oversight.

● How many times have you started pouring the mud with the best intentions of being there through the whole process? Did you take off and ask your flatwork sub to watch the pressure gauge for you? Do you invite the fox into your henhouse?

● The most important thing you can do — no, have to do — is watch the pressure gauge while your precious tubing layout is kicked, rolled on and abused. Tubing these days is pretty darn tough, but with a little determination, even the most careful sub can ruin it.

system). And be aware of the metal brace on the front of the wheelbarrow when a load is dumped — it can crimp a tube faster than you can say lawsuit.

● Also, watch the guy with the shovel or rake. He isn't thinking about the tubing; he is there to spread mud! Don't let him go around chopping the concrete with his weapons of destruction.

● An interesting failure happened to a friend of mine, Charlie Hensley, an HVAC consultant in Colorado Springs, Colo. Although he eventually located the tube break, he was at a loss as to why it had occurred. Finally, after several interviews with guys who had worked in the general area of the breakage, it was discovered that one

## Energy-efficient builders cited

DENVER — Six Colorado home builders were honored Oct. 7 with the Energy Star 2003 New Millennium Builder Awards for their commitment to energy-efficient homes.

E-Star Colorado, a statewide non-profit that promotes energy efficiency in housing, together with Energy Star for Homes, part of the U.S. Environmental Protection Agency's Energy Star program, presented the New Millennium Builder Awards to this year's winning builders. The utility Xcel Energy joined as a sponsor of this year's program.

In its third year, the Energy Star New Millennium Builder Awards recognize and celebrate Colorado builders with a clear understanding of the positive effects of energy-efficient construction on their businesses, customers and Colorado as a whole. The awards are

intended to show the building industry the advantages of constructing highly energy-efficient homes.

The awards were presented to:

Front Range Production Builder — Aspen Homes of Colorado, based in Windsor.

Denver Metro Production Builder — Engle Homes Colorado, a division of TUSA Homes.

Denver Metro Custom Builder — Kurowski Development Co., based in Littleton.

Greater Colorado Custom Builder — Balanced Construction, based in Montrose.

Affordable/Attainable Builder — Habitat for Humanity of Metro Denver, based in Denver.

Front Range Specialty Builder — Wonderland Hill Development Co., based in Boulder.