



THE JOURNAL OF LIGHT CONSTRUCTION

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JLC's

Letters

Questions on Radiant Heat With Water Heaters

To the Editor:

Good article on using water heaters for radiant heating ("Using Water Heaters for Radiant Heat," 11/98). It answered several questions I've been asking myself for awhile. I still have one question: What's the function of the expansion tank? Certainly there will be changes in the volume of the system as hot water warms up various parts of it, but the same applies to any plumbing system. I've always assumed the difference was made up by flow back into or out of the supply mains.

Bob Fankhauser
Portland, Ore.

Bill Clinton responds: Traditionally, plumbers have indeed relied on volume increases flowing back into the mains and have not installed expansion tanks on water heaters. However, if there is a check valve of any sort on the supply line, you need an expansion tank. Realize, too, that many pressure reducers are in effect check valves, and that even if a reducer allows backflow, this can't happen until house pressure exceeds street pressure. In some hilly areas around here, that can be 125 psi. Over time, pressure fluctuations like that can damage a water heater. My advice: If you need a pressure reducer, you need an expansion tank.

Preventing Legionnaires

To the Editor:

In describing installations with no heat exchanger, Bill Clinton suggests installing a timer to ensure that water circulates through the system daily in summer months to avoid stagnation. Would it not be more efficient to plumb the system with a check valve and have the "cold water in" line feed through

the radiant tubing or baseboard? This would result in movement within the system any time domestic hot water is used, which, at least in residential settings, ought to preclude stagnation problems. Moreover, in hot weather it might also preheat the incoming cold water to a limited extent.

Bill Aileo
Springville, Pa.

Bill Clinton responds: Although I don't see any efficiency gain, your suggested method would indeed prevent stagnation. Be careful the run isn't too long or you may have an unacceptable pressure drop in your hot water system. Your method wouldn't work in a zoned system because you need something to open the zone valves. The timer could be wired in parallel with thermostats to accomplish that.

Oil-Fired Water Heaters Okay

To the Editor:

Do you have any suggestions as to oil-fired hot water heaters for dual use (domestic hot water and radiant heat)? In my locale, I'd prefer an oil-fired unit and have had good results with these for domestic hot water.

David Lyle
Heating Research Co.
Acworth, N.H.

Bill Clinton responds: Oil-fired water heaters are just great and can be used exactly like gas-fired. They're probably a bit more efficient to boot because of reduced draft during off-cycle.

Water Heater Longevity, Mineral Clogging

To the Editor:

I enjoyed Bill Clinton's article, but was left with a few nagging questions. It makes sense that a radiant heat system, which usually runs at lower

temperatures than hydronic baseboard or radiator systems, would be happily fed by the lower Btu/hr. output of a domestic water heater. But I was also taught that running systems at higher temperatures is generally more efficient. What does this mean for Mr. Clinton's claims about efficiency?

Second, in areas where the incoming water is "hard," or high in mineral content, we find a recurrent problem with mineral clogging of hot water piping. I am concerned that the two dual-purpose designs in the article, providing both domestic hot water and heat through the same system, and frequently cycling new hot water through the heating piping, will result in both mineral clogging of heat piping and maybe bacterial contamination of the house water piping.

Finally, regarding Myth 3 that water heaters don't last, most domestic water heaters I see have about a 10-year life expectancy — less than the 20-year-or-more life expectancy I see for steel boilers and much less than the 30-year-or-more life I expect from a cast-iron boiler. It seems to me that with the more frequent duty cycle of a water heater used for space heating, we would expect it to expire even sooner. What has been Mr. Clinton's field experience with system life?

Dan Friedman
American Home Service Co.
Poughkeepsie, N.Y.

Bill Clinton responds: I'll take your questions in order. At the water heater, lower water temperatures increase efficiency. The greater the temperature differential between hot gases off the burner and water in the tank, the more heat transferred. More heat transferred means higher efficiency. At the heat emitter (baseboard, radiator, radiant panel), the same principle applies, but with the opposite effect: Lower water temperature in the system means a smaller temperature differential exists between water and air. Therefore heat emitters must be upsized to compensate.

My reading suggests that precipitation of minerals occurs mostly in the water

heater tank where water is heating and not flowing, not in the pipes where it's cooling and moving. I haven't run into problems here, so I don't really know firsthand and therefore advise you to find someone more knowledgeable about conditions in your area.

Regarding length of service life, I haven't been installing water heaters for space heating long enough to have an answer from experience. Manufacturers I've talked to foresee no loss in longevity. If a water heater is maintained (flushed and the anode replaced periodically), its life can be extended greatly. Nonetheless, I doubt even a well-maintained steel water heater will last as long as a cast-iron boiler, but some of the stainless steel water heaters may come close.

Making the Connection

To the Editor:

I would like to comment on the letter titled "No Connection" from Richard J. Mailhot, Sr. (12/98). We have framed many a house in the Denver area and often wondered how this sheathing practice is overlooked, while other areas border on overkill, such as 10d nailing schedules 4 inches on-center. What good are all those nails if we're not required to connect the floors beyond toe-nailing the rim joist to the top plates below and bottom plates above? The only other thing holding the two floors together is the siding — usually made out of a paper and glue mixture.

The reason we framers do not take the initiative to "make the connection" is that there are 4x9-foot sheets of OSB available, and it should be the general contractor's responsibility to supply them to us. Otherwise they should pay us to install seam blocking around the entire house.

Simply put, I don't know of a frame crew that would do the extra work if it's not required and paid for. It's much simpler and faster to reach over the edge before lifting a wall and install a 10¹/₂-inch rip to the rim and be done.

Joe Guerra
Hammerhead Builders
Lakewood, Colo.

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Floor Truss Span-to-Depth Ratio

To the Editor:

I have a question regarding the article "Beyond Code: Preventing Floor Vibration" (*Practical Engineering*, 11/98). Is the span-to-depth ratio of 20 or less truly adequate for floor trusses? It seems to be a little high. Experience indicates that a span-to-depth ratio of 16 for sawn lumber joists (2x12s 16 inches on-center spanning 16 feet, or 2x10s 16 inches on-center spanning 13 feet) performs very well. Since floor trusses are typically at 24 inches on-center, it would seem that a span-to-depth ratio of 16 or less could be argued.

Brian M. Juedes, P.E.
Shea Homes, Phoenix Division

Frank Woeste responds: If you'll refer to Table 2 in the article (11/98, page 70), you'll see that we don't actually assert that a span-to-depth ratio of 20 or less is adequate. If a strongback is installed and the span-to-depth ratio is 20 or less and

the sheathing is glued down, then we believe the floor truss system will perform well with respect to vibration. Readers should note the first line of the table — a floor is only rated for vibration when a strongback is installed.

While the table does not address the issue, strongbacks also help support concentrated loads from heavy residential furniture that would not typically be specified for the floor truss design. The conclusion we wanted builders to reach is that a properly installed strongback should greatly enhance the performance of a floor truss system.

Mutual Respect

To the Editor:

As I finish a sketch explaining a straightforward geometrical problem in the field to a contractor, I am reminded of the devious ad declaring that contractors are always saving the architects from their lack of understanding of construction. I also

remember another instance where I could not participate in construction monitoring. The modifications made by the contractor to save money for himself, not the owner, were appalling.

The truth is, a good contractor has saved me on occasion, and vice versa. What we all need to understand is that the owner, architect, and contractor all make up a successful project and we must operate with respect for each other's contributions.

Josiah Stevenson
Cohasset, Mass.

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