WITHIN CEILING INSTALLATION

Ceiling

Radiant ceiling heat is under utilized and underappreciated. The ceiling surface is heated to a temperature above the rest of the room so that radiant energy from the surface warms the environment.

Advantages are that there is no furniture or carpet to lower performance. Also, the occupant's feet cannot get too warm, so surface temperatures and heat output can be higher.

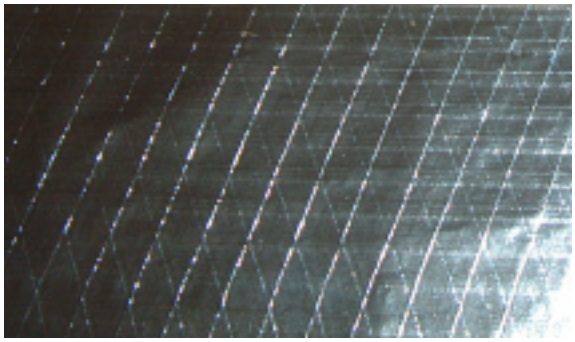
An uninvestigated benefit is that if the house catches on fire, you will have a Rube Goldberg sprinkler system.

A disadvantage is that the ceiling surface temperature must be fairly warm. With *underfloor* heating, the heated area is warmed both by radiation and convection (the rising of warm air). With the ceiling heat application, the air cannot rise and so all of the heating must be done by radiation. That means that radiant ceiling temperatures must be somewhat higher to do the same work. More insulation is needed to prevent higher heat loses upward.

Nevertheless, a ceiling temperature of 88^0 F will emit 30 BTU/ft^2, which should be adequate for most work.

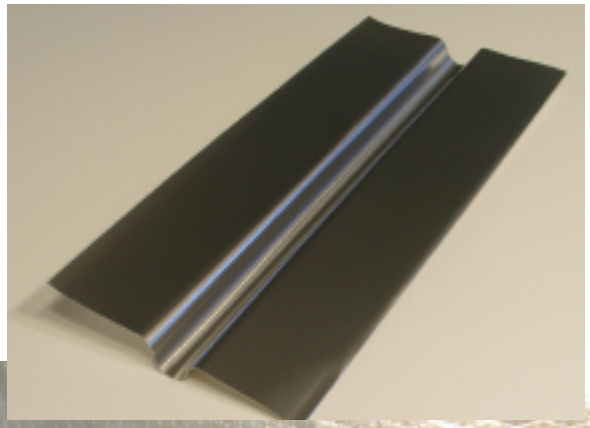
It is possible to combine ceiling radiant heat with floor radiant heat and perhaps wall heating for exceptional comfort in hard to heat areas.

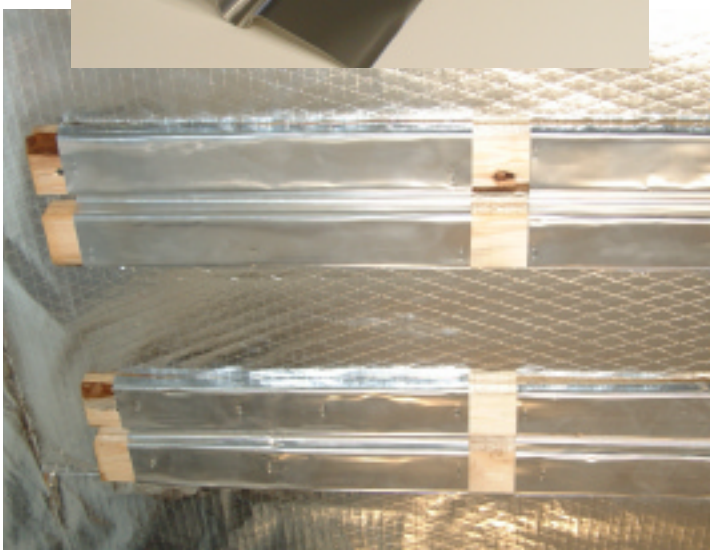
1. First lay a course of reflective material such as aluminum faced building paper over the framing materials. We want the heat to be reflected downward and not upward, so the aluminum will face down. The material must be bare aluminum with no plastic coating.



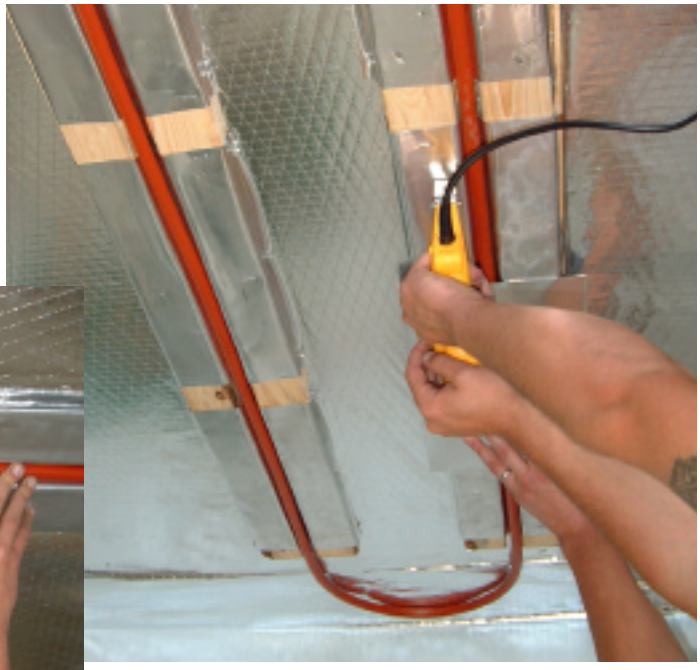
2. Then apply 1" X 3" STRAPPING in a manner that produces channels for heat exchanger tubing. Use the same strapping that you would need to apply sheet rock, just use more of it.

3. Then staple aluminum heat emission fins to the strapping. Use continuous covering with only short gaps.





4. Press the tubing into the groove.



5. Staple some flat aluminum stock (unbent) over everything to hold the tubing up and increase heat conduction to the sheet rock

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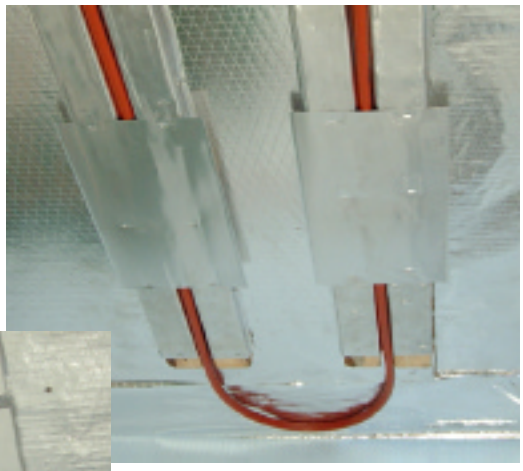
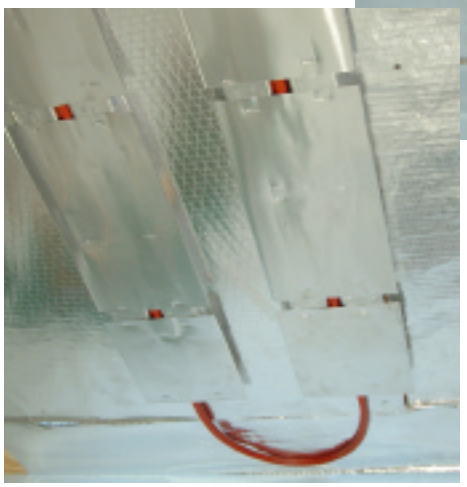
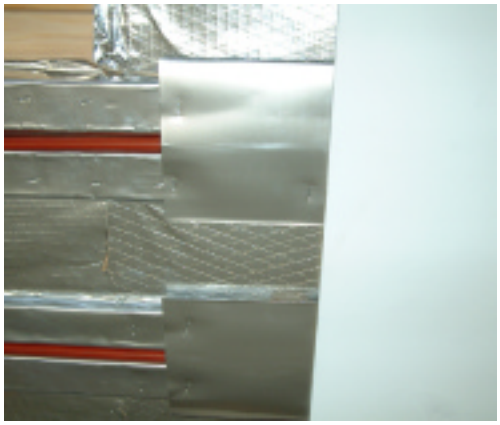




6. Then install the sheet rock in the usual manner. A heavier gauge of sheet rock is not necessarily more efficient.



7. Run the tubing ends back to the water heater and control with the usual pumps and thermostats.

8. Enjoy the comfort.

Revised on
1/18/04