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But if you take all of these factors into consideration when you're laying out the job, you'll find that electric zone valves work well and get the job done.

Zoning with Two Temperatures

When the GIs returned home from World War II there was a tremendous need for housing. Communities such as Levittown in Pennsylvania and on New York's Long Island sprung up almost overnight.

Many of these new homes had no basements. They were heated with radiant panels that were buried in the concrete slabs. The builder would have copper tubing laid out in a grid. The concrete guy would show up the next day and bury the pipes.

The boilers in many of these houses were in the kitchen. Right next to the refrigerator!

Now you have to understand that when you heat a house by running hot water through the floor there's a limit to how hot that water can be. Usually, if the temperature of the water in the radiant panel went above 140°F, the family cat would get stuck to the ceiling!

And yet, since the boiler was making hot water with a tankless coil, it had to maintain 180°F. This could have presented a real problem. But because the installers of those boilers knew how to pipe in a simple bypass to blend water from the boiler with water that had already been through the radiant panel, the 180°F boiler water didn't present a problem.

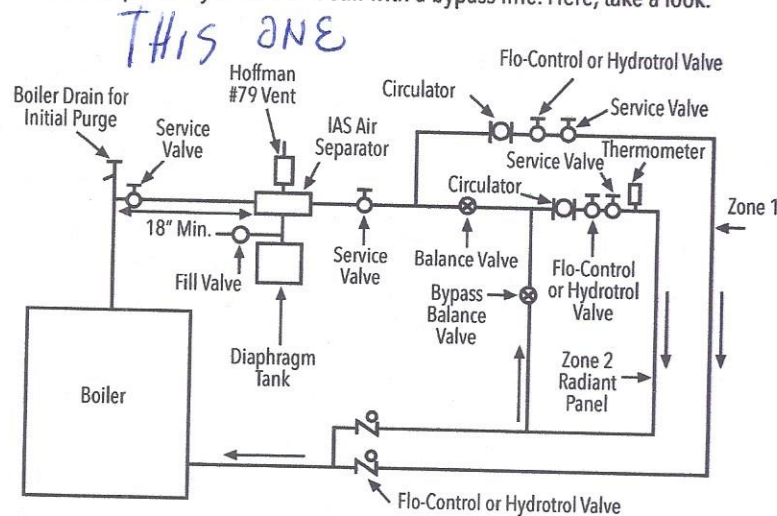
Those Old-timers would blend just the right amount of hot water into the cooler return water to get 140°F, degree supply temperature out to the panel. It didn't take a lot of complicated controls, just a piece of pipe.

Sometimes they used a special close nipple made just, for this purpose. The nipple had a 1/8" tapping for the boiler water. That nipple would go in the return piping, right at the inlet to the boiler. It would divert water through a bypass and back out to the panel.

An Old-timer showed us one of these special nipples not too long ago. It was pretty chewed up. In fact, it looked like it had been removed from the boiler with a four-foot wrench.

"This is the difference between youth and experience," he told us. "You have to know this thing is in there before you can convert the system to baseboard. You have to know it's in there. And then you have to get it out!"

Radiant panels are making a comeback nowadays. Few people are using copper tubing anymore, most use flexible tubing made from space-age plastics.

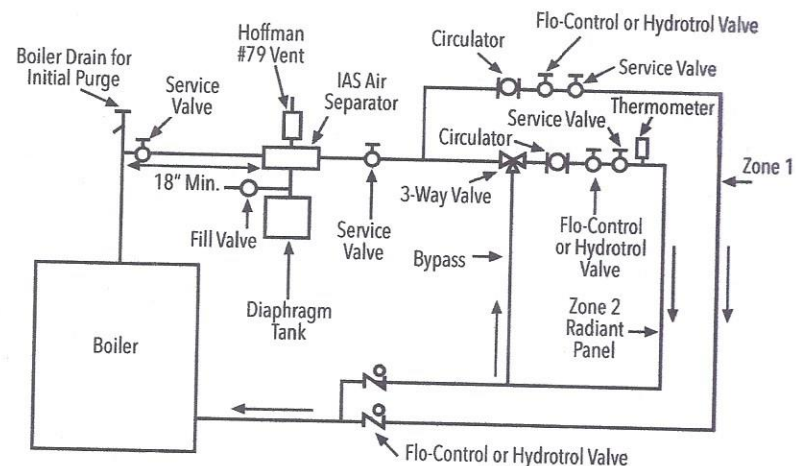


We use a full-size bypass line with a full-port balancing valve. We also have a thermometer on the discharge side of the circulator. When we start the zone circulator, all the system water will flow through the bypass because that's the path of least resistance.

To adjust the temperature in the panel, we run the boiler up to high limit and then throttle the full-port balance valve until the thermometer on the discharge side of the circulator reaches 120°F. Then we take the handle off the balance valve so the homeowner leaves it alone.

This method has traditionally worked well. It's simple and it's inexpensive. The drawback is that you're, setting it up for the worst case, the time when the boiler is operating at limit. Since the balance valve is a fixed opening, it has no way of adjusting to allow in more hot boiler water if the boiler temperature is below high-limit.

So we can get a bit more complicated and do it this way.



This is how commercial systems work. The 3-way valve senses what's flowing out to the system and adjusts the zone supply temperature as needed.