



Advanced Radiant Design • Children's Program Facility • Sullivan County, N.Y.



... Right Brain Radiant

Hydronic Commercial

If the Hill House job gave the artistic left side of the brain a workout, then Advanced's next award winner pumped up the more logical right side.

The facility's managers of this 10,000-sq. ft. children's day care facility had specific design criteria they wanted met. They required, for example, zone circulators to be standardized to Grundfos 15-42s, with a 10-degree delta T across the tubing.

"Other contractors were bidding the job," Abularrage says, "but we were the only ones with in-house design capability." That made a big difference in responding to the client's demands. Where other contractors went back and forth with their wholesalers for help, playing telephone tag along the way, Advanced was able to deliver answers quickly.

We'll describe the finished system later. But while much of the work was done on site, one of the most interesting aspects of the job was built in Advanced's shop an hour and a half away.

"The system's control panel was pre-piped, pre-pressure-tested, pre-insulated and pre-wired in our shop," Abularrage explains. "We do it for all our jobs; it gives us great quality control."

The panel came apart in two sections, with only three piping connections between the two. All the wiring between the sections were routed to a common junction box.

"We delivered the panel at 9 a.m.," Abularrage says. "By noon, the panel was erected and the radiant zones were connected to it. By the end of the day, all the piping to the boilers and high temperature zones was completed."

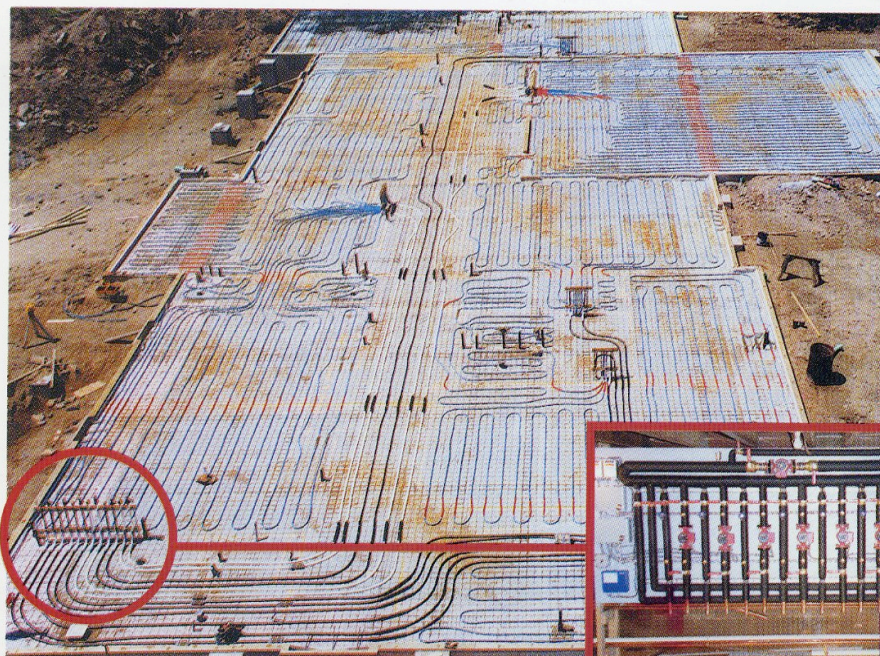
Abularrage figures his crew saved 80 man-hours by building the control panel at the shop.

The heating system is designed around two boilers, one dedicated to radiant zones and the other dedicated to high temperature zones for domestic hot water, a reheat coil for the ventilation system and a radiant boost zone. The system is piped with a separate primary and secondary configuration for each boiler.

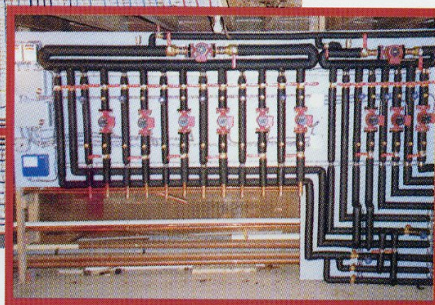
Six zones were partitioned by similar heat loss and all tubing lengths were kept within 5 percent of one another for flow balancing. To meet the client's demands regarding the Grundfos circulators, Advanced installed 5/8-inch tubing with a 250-ft. maximum tube length. Supply and return mains are 1-inch and 1 1/4-inch PEX.

A tekmar 252 two-stage boiler control monitors the

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Since the control panel was built back in the shop, connecting it to the rest of the system was a snap.



radiant boiler and provides partial boiler reset. The 252 controller also activates a high temperature zone from the high temperature boiler when the radiant boiler is unable to meet the load. Hot water is injected from the high temperature secondary loop into the return line of the radiant boiler.

An outdoor reset strategy controls the radiant distribution supply water temperature with variable speed injection mixing through a tekmar

353 controller.

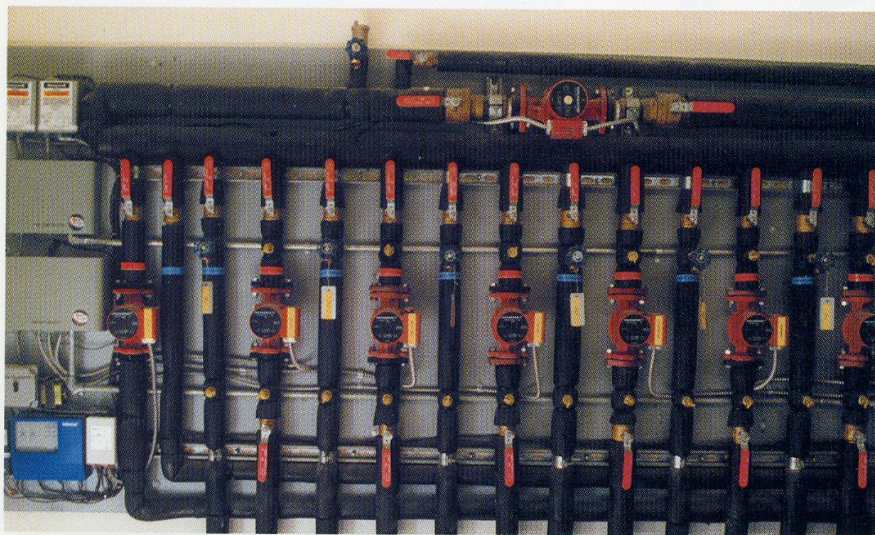
Meanwhile, the high temperature zone is controlled by a relay control. The boiler's operating aquastat controls the high temperature boiler.

Advanced installed test plugs before and after each zone circulator and on the return line of each zone, all of

which measured the delta P across each circulator and delta T across each supply and return line. This helps determine the actual flow rates and Btu heat output to each zone.

On all commercial jobs, Advanced documents every aspect of the system's operation. All parts of the system, including wiring, zone specs and control valves are clearly labeled. The labels correlate to the system's schematic drawings and operational descriptions. Before calling it a day, Advanced also conducted a maintenance class to educate the facility's engineers and maintenance crew about the heating system.

Advanced Radiant Design may be reached at (845) 687-0044 or through their website www.radiant-design.com.



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