BCM BARHAM / CAIN / MYNATT, INC. CONSULTING ENGINEERS

SENATOBIA CONVALESCENT CENTER NURSING HOME – WATER HEATER REPLACEMENT

GOALS:

1. Eliminate 180°F hot water in the facility.
2. Address safety and scalding concerns.
3. Provide a more energy efficient hot water system.

OVERVIEW OF EXISTING SYSTEM:

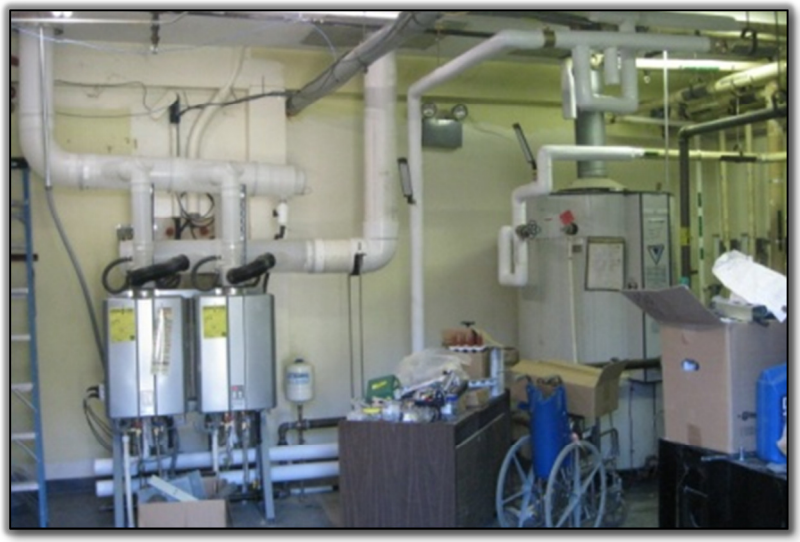
Hot water was supplied by two large 250 gallon, 500,000 Btu/hr water heaters in a centrally located mechanical room. The hot water was recirculated to four wings and a kitchen. The water heaters stored water at 180°F and utilized two mixing valves to create 110°F and 140°F hot water loops. The 180°F water supplied a dishwasher and sinks in the kitchen. The 140°F water supplied kitchen fixtures and a laundry facility, while the 110°F loop supplied hot water to patient rooms. Cross connections were a concern, and the mixing valves were not functioning properly and required replacement. The leaking mixing valves were dripping scalding hot water in the mechanical room.

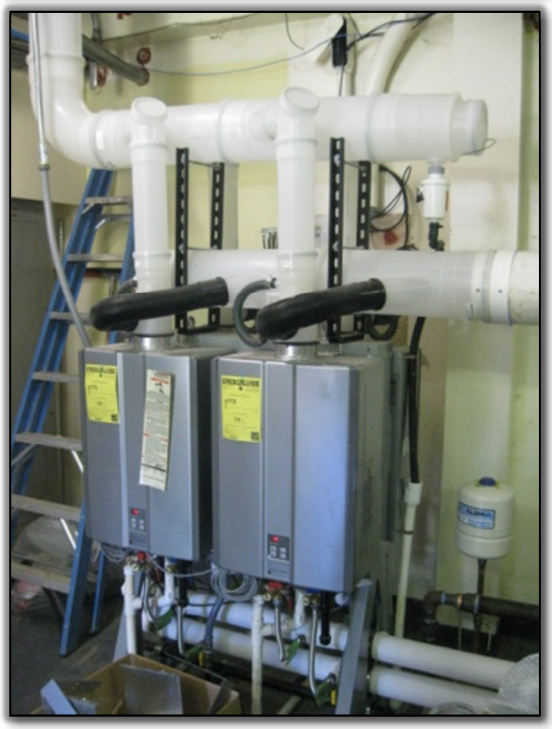
(Above) Existing 250 gallon, 500,000 Btu/hr storage type, gas-fired water heaters (Below) Existing mixing valves near ceiling with steel pan for water leaks.

SOLUTION:

The water heaters were nearing replacement, and the cost of replacing the mixing valves was significant. The existing 180°F water loop in the building was a safety concern. The solution was to eliminate the 180°F hot water loop and convert it to a 140°F loop. A booster water heater at the dishwasher would provide 180°F at the point of use. This would eliminate concerns with scalding of employees. The newest water heater remained in place and supplied the 140°F loop, while also temporarily supplying hot water during the water heater replacement. The older water heater was removed and replaced with four tankless water heaters to provide 110°F water. The water heaters were wired to a common control board to provide sequencing of the water heaters and to stage water heaters on as hot water demand increased throughout the facility. The water heaters will provide energy savings by only using fuel when there is a demand for hot water.

(Below) Replacement of storage type water heater with new tankless water heaters (Right) Four 199,000 Btu/hr rack-mounted, common vented Rinnai tankless water heaters for 110°F hot water supply.





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