

Northwood Apartments I, II, and III Fire Alarm and Boiler Upgrades



Project Description

Constructed between 1955 and 1958, the Northwood Apartments I, II, and III are an approximately 419,000-gross-square-foot, 58-building complex on North Campus with 686 units housing student families. The existing stand-alone smoke detectors will be upgraded with a new central fire alarm system to meet current life safety standards. The project will

also replace the hot water boilers to improve operating efficiency, reduce energy use, and provide increased reliability for the heating system.

Energy Efficiency Measures

The existing heating hot water boilers will be replaced with noticeably more efficient condensing units.

- The expected efficiency improvement will increase from an existing thermal efficiency likely no greater than 75%, to a minimum efficiency of 85; and to values exceeding 95% in the spring and fall when milder outdoor temperatures allow lower HWH temperatures to be used.
- The new boilers will be furnished with modern controls to perform the lead/lag function automatically. This will insure only the required number of boilers are operating for any given load, ramping up and down seasonally, daily and hourly to reflect the varying outdoor temperatures throughout the year. The new controls will insure that the best combination of boilers are running under any given load, with a continued focus on condensing whenever possible.
- A key control function provided with each boiler group is monitoring of the Outside Air Temperature (OAT) at all times. Milder temperatures result in less heat loss from the buildings. This lower heat demand can be met by circulating lower temperature HWH. Lower HWH temperatures allow the condensing boilers to operate in the highly efficient condensing mode.
- The automatic lead/lag boiler operation, along with the OAT continuous reset of the HWH supply temperature insures that only the required amount of natural gas is used under all of the varying system loads.
- The boiler burner controls will be specified with a 5:1 turndown which allows each boiler to remain in efficient operation down to 20% of full load. Additionally, the design specifies that one of the three boilers will be half the size of the other two. This boiler group configuration creates the ability for each of the five sites to turn down to 10% of full load. The composite 10:1 turndown means that only at seasonal loads less than 10% would require the smallest boiler to go into an on/off cycling mode; saving additional energy.
- The existing heating hot water system distribution pumps will be replaced with units driven by variable speed drives (VSDs), which represents electric power savings, as this feature would allow the system to circulate only the minimum amount of water necessary to meet the load.

Project Data

- Budget: \$7.5 M
- Schedule: Completion scheduled for Summer 2013
- Square Feet: 419,000 gsf

Status as of February 2012

- Project Status: Bid-Award
- Design Complete: 98%
- Construction Complete: 0%

