



case study

products

CITY MULTI

market

Educational Facility

location

Portland, Ore.



Comfort for Wilcox Elementary School

Project Name:
Wilcox Elementary School
Location:
Portland, Ore.
Completion Date:
April 2005

The Team

Owner
**Portland Public Schools,
Portland, Ore.**
HVAC Contractor
**American Heating,
Portland, Ore.**
HVAC Distributor
**Thermal Supply,
Portland, Ore.**

Portland Public Schools (PPS) today serve 47,000 students, from pre-kindergarten through 12th grade. PPS assets include 85 regular school buildings, as well as alternative schools, charter schools and education services provided at other locations for students with special needs.

Wilcox Elementary School

Located in northeast Portland and built in 1959, this 19,000-square-foot, single-story facility houses a regional program of specialized education for children with vision and hearing impairments, autism spectrum disorders, severe orthopedic impairments and deaf blindness. The program serves students from birth to 21 years of age from four counties and 22 school districts.

Specialized Education Calls for First-ever Air Conditioning

In fall 2004, Pam Brown, PPS director for facility maintenance and asset management, contacted Robert Smith, special projects manager for American Heating, Portland, Ore. In addition to mounting maintenance issues with the aging 45-year-old boiler/radiant heat system at Wilcox, Brown had to deal with multiple facility challenges for the staff. Wilcox teachers and specialists identified ways PPS could provide a better learning environment including a first-time request for air conditioning.

The Mother of Invention

A 39-year HVAC veteran, Smith especially enjoyed the challenge of finding solutions for older buildings and outdated HVAC systems. For Wilcox, Smith designed nine ducted, individual heat pump systems that required nine roof penetrations, duct and chase wall construction and new electrical service and sent his bid to Brown and her committee. A week later, he got a call. "Congratulations! The good news is you are the low-bidder," Brown said. "The bad news is you are way over budget." So, it was back to the drawing board.

Two months earlier, Smith had received a presentation from Jim Benville, Mitsubishi Electric regional sales manager, which turned out to be a timely discovery and an ideal solution for Wilcox. Benville had told him about CITY MULTI®, a modular Variable Refrigerant Flow Zoning (VRFZ) system integrated with a sophisticated controls network. In short, this meant each teacher would have complete control of his/her room's comfort level. Rooms can be simultaneously cooled or heated.

Delivers Huge Cost Savings and Wins the Contract

Although the initial equipment cost was more expensive, Smith found huge cost savings elsewhere. He cut 90 percent out of the general contractor's fee because



chase walls to build. He eliminated the costs for a roofing contractor because there were no outdoor units on the roof. Finally, he shaved the electrical contractor fees by over 50 percent. Now, well under budget, Smith presented his findings to Brown and secured the contract!

A Facility Manager's Dream

"Every building in America has its own unique set of cooling and heating issues," Brown said. "What impressed me about CITY MULTI technology is it's designed to provide intelligent and fully customizable solutions for comfort conditioning inside each zone."

Brown has allocated funds within the 2008 capital improvement plan for three new air-conditioning systems, especially for the trimester schools that operate through the summer months. With the Wilcox CITY MULTI installation, Brown discovered the elements she values most: smart, user-friendly solutions; individual comfort zones; effective use of energy; indoor environmental quality; ease of maintenance; long system life; and integration with the building's energy management systems.

CITY MULTI Equipment Installed:

- (4) PURY-100TMU R2-Series Outdoor Units
- (3) PDFY-40NMU-A Ceiling-concealed Cassette Air Handlers
- (9) PDFY-48NMU-A Ceiling-concealed Cassette Air Handlers
- (4) CMB-105NU-F 5 Branch Circuit (BC) Controllers
- (12) PAC-YT51CRA Simple Controllers
- (1) G-50A Central Controller

A Perfect Fit: No Ductwork

Smith designed the outdoor units to sit on concrete pads on the ground behind the school. Since there was little room above the ceilings for air ducts, CITY MULTI was a perfect fit because no air ducts were required. A 3-inch hole in the wall was all that was needed to connect the outdoor units to the BC Controller and indoor air handlers.

In his bid, Smith submitted costs for refurbishing the old boiler/radiant heat system to service school hallways and common area spaces. His crew then sealed all the old ducts leading to the classrooms. Working with his electrical contractor, he placed the outdoor compressor units, connected the electrical and refrigerant lines and installed the 12 indoor air-handling units, one for each room. Existing interior ductwork down the central school corridor was used to deliver essential fresh air to the indoor air handlers.

Simultaneous Cooling and Heating

"CITY MULTI's ability to simultaneously cool and heat is an ideal solution for Wilcox," Smith said. "The teachers and specialists in this building are independent—each desiring control of his/her own room temperature, which allows individual

cooling and heating solutions and comfort levels. If one teacher wants his/her room at 62 degrees, and the next adjoining room requires a setting of 80 degrees, CITY MULTI provides this simultaneous operation with great efficiency."

Amazing Quietness

Another special need was a quiet teaching environment. Once again, CITY MULTI was a perfect fit. CITY MULTI's indoor units are quiet, running from 24 decibels at low speed up to 47 decibels at high speed. The outdoor units operate with a similar quietness – about 56 decibels; quiet enough to be placed directly under windows. Smith laughed and said, "When we were showing the teachers how the outdoor units operate they had to actually place their hands on the units to determine which ones were running."

Better Productivity and Enhanced Teaching Environment

"The CITY MULTI system has been up and running for the past 28 months without a hitch," Brown said. "We haven't had to call for service once. That's rare in this business. I've had zero complaints from Wilcox, and have heard from the school's director that her teachers are very happy with the quiet comfort and enhanced teaching environment."