



A High-Performance School for the Dresden School District

Richmond Middle School

Energy improvements can cost less than conventional building practices. Because the performance of the building envelope leads to a much lower design load, the mechanical systems can be downsized significantly, thus reducing the initial cost of construction. As a bonus, this saves energy for the life of the building.

While long-term energy savings are important, a high-performance building envelope also saves during construction. By focusing on energy efficiency during the design process and integrating this with a rigorous quality assurance program and compliance testing, it is possible to guarantee the building's performance. This allows the mechanical system to be "right-sized" which means the components are smaller and less expensive than in a standard building. This reduction in system size saves a portion of the cost of construction.

Richmond Middle School had a total area of 107,000 square feet and a building cost of about \$13 million. The HVAC system cost \$1,944,000. At an estimated 25% reduction in size and initial cost, the HVAC savings were \$486,000. The high-performance building envelope only cost about \$63,000 more than a conventional system. This results in a net savings of \$423,000, or about \$4.00 per square foot.

Dave Laurin, AIA of Banwell Architects reported that the School only spent \$14,000 on fuel for heating last winter.

This is less than \$.10 per square foot compared to other schools that often spend more than \$.50 per square foot.

The high-performance building envelope savings are not just realized during the construction process. These savings are ongoing for the life of the building in the form of lower operating and fuel costs, proving that building green can be a win-win proposition.





Performance Data

Air Leakage Rates (in CFM50/Sq. Ft. of shell)

Compliance Test Results	0.22
ASHRAE Recommended Max.	0.31
Conventional – U.S. Average	0.93

Air Leakage Rates (in ACH50/Hr)

Compliance Test Results	0.06
ASHRAE Recommended Max.	0.08
Conventional – U.S. Average	0.23

Air Leakage Rate Comparisons (Times better than the US Average)

Compliance Test Results	4.25
ASHRAE Recommended Max.	3.00
Conventional – U.S. Average	1.00