

Alta Vista Charter School



Project Type:	K-8 Charter School
Owner:	Alta Vista Charter School
Certification Goals:	CO-CHPS Verified Leader
Construction Cost:	\$6.17 million (CDE/BEST)
Building Size:	6240 sf historic renovation 18,000 sf new addition
Site Size:	10 acres
Floors:	2 story historic, 1 story addition
Completion:	September 2011

Project Team:

Architect:	SlaterPaull Architects
Owner's Rep:	Agora West
MEP Engineer:	ME Group
Civil Engineer:	Entitlement and Engineering Solutions, Inc.
Structural Engineer:	Anderson and Hastings Consultants, Inc
Energy Consultant:	ME Group

GEO High Performance Consultant (HPC)

Ambient Energy

Images courtesy of SlaterPaull

historic results - the first CO-CHPS verified leader school in the state

sustainable goals

- Long term energy efficiency
- Quality learning environment/community facilities
- Save and restore a historic school house

project description

The Alta Vista Charter School serves 125 students and occupies a 1917 building that is on the State Historic Register. It is the only charter school in southeast Colorado and the last country school in Prowers County. The charter was established as an alternative to the school being closed by the Lamar School District due to low enrollment. Since the charter, enrollment has steadily increased and a community asset was preserved. As continued support of the facility was not anticipated before the charter, no bond funds had been acquired for necessary improvements. The Colorado Department of Education (CDE) BEST grant was the critical mechanism that enabled the renovation of the historic facility and a new addition.

historic facility with challenging realities

The historic building was structurally in good condition. However, failing building systems, and a less than optimal building configuration created constant operational challenges, and compromised safety as well as the learning environment. Modular classrooms had poor lighting, limited daylight, no plumbing, and rodent problems. The site configuration presented difficulties for buses and parent drop off, and there were no sheltered exterior play areas to buffer winter winds, or adequate interior play areas.

integrating a historic building with a new addition

Because the existing building was on the historic register and a valued community icon, Alta Vista needed to address how to renovate the historic structure. The project architect began to develop a master plan based on the school and community needs. A number of options were evaluated before determining that a major renovation of the historic school building, paired with a new addition, offered the best solution. High performance building strategies were considered, at this early stage, to address energy efficiency, daylighting, air quality, and thermal comfort. The GEO Consultant reviewed drawings and specifications, and provided conceptual energy modeling and daylight analysis. The GEO also developed the RFP for the commissioning agent, and assisted with the Owner Project Requirements. The careful planning by the project team enabled a facility to be created that was energy efficient and a quality learning environment. It allowed the school to address the needs not accommodated by the current facility and to have a strategic plan for the future of the school.

high performance meets historic

By working with the community and school, the project team was able to develop a solution that addressed multiple needs while retaining a historic landmark for the community. The renovation of the existing school house received plan approval from the Colorado Historical Society and will comply with the Guidelines for Rehabilitation of the Secretary

of Interior. Ceiling heights will be returned to their original configurations. Wood floors and stairs will be preserved. Upgrades to the foundation and preservation of the masonry will occur. Energy saving strategies include: a new roof with insulation, insulated walls, enhanced daylighting, and a new mechanical system integrated with the addition.

new addition complements the historic original

The new addition includes a high performance envelope of brick veneer, air space, spray foam exterior insulation, and blown in cellulose cavity insulation. The envelope integrates with other strategies for increased energy savings. These include tuned window glazing and tubular daylighting devices (TDD's) for classroom daylight and a water to air ground source heat pump with Energy Recovery Ventilators (ERVs) for fresh air. The addition also addresses a number of problems with the existing facility. The 'L' shaped plan creates an entry and exterior play area that is sheltered from the harsh winter winds. This new entry is adjacent to the administrative area and provides a single point of entry for the school. The multi-use gym and cafeteria allow for an indoor winter play area and is at the ground level for easy access by all students and visitors for school and community events. Natural vegetation, drip irrigation, and a small artificial turf play area round out the overall efficiency strategies for the project.

collaborative for high performance schools (CHPS)

The Colorado CHPS (CO-CHPS) is a sustainability criteria created specifically to provide a benchmark for high performance schools in the state. While similar to LEED, CO-CHPS provides regional focus to sustainability strategies and an emphasis on an integrated design process. Additional pre-requisites over LEED include: more focus on site selection criteria, educational opportunities within the school on performance and strategies, low VOC materials and finishes, and thermal comfort. The criteria also includes a design process tool called Flex Energy that allows for the project team to consider energy strategies for now and the future. The Alta Vista Charter School will be the first school certified in the state under this criteria.

high performance design features

- High performance building envelope consisting of brick veneer, 1.5" airspace, 2.5" spray-applied polyurethane foam insulation, and 6" metal studs with blown-in cellulose insulation.
- Georexchange ground source loop with water to air heat pump powered by high efficiency ECM motors.
- Roof top energy recovery ventilators for fresh air.
- Tuned glazing, sunshades, and TDDs, for optimum daylight in classrooms.
- High efficiency fluorescent lighting and dual technology occupancy sensors.
- Recycled content products include: concrete reinforcing, structural steel, steel doors, aluminum storefront, gypsum board, acoustical panel ceilings, rubber wall base, and toilet partitions.

efficient results from a historic structure



projected results

- **59.6 kbtu/sf/yr** combined energy use benchmark for both buildings.
- **27.9 kbtu/sf/yr** projected energy use for the project.
- **62%** energy cost savings above ASHRAE 90.1 2007.
- **53%** energy use savings above ASHRAE 90.1 2007.

planning for future energy efficiency strategies

The CO-CHPS criteria includes a pre-requisite for the use of the **Flex Energy** design planning tool. This tool enables project teams and owners to consider alternative energy strategies during the design process and to show how those strategies might be included now and in the future. By using this tool, the design team was able to address the site area requirements for ground source heat pumps and their impact on the rest of the building systems. The tool also enabled the team to document the space requirements of a potential on-site wind turbine.