

Community Ties

Green Schools Offer New Lessons

By James Copeland and Bryna Dunn

In the new age of green buildings, input from school officials, parents and the community is crucial to ensure that a new facility is designed with components that are the most beneficial to the people it serves. Environmentally friendly bells and whistles are rendered irrelevant and sometimes become costly add-ons if they are not understood, accepted and harnessed by the community.

Stakeholders at T.C. Williams High School in Alexandria, Va., were initially cautious about buying into the concept of the green school when planning started, but, after the idea took hold, planners found themselves incorporating environmentally friendly concepts in almost every aspect of the project.

Increasing enrollment at T.C. Williams High School prompted plans for a new facility. The old building was built to hold 1,770 students, but by 2004 it had 2,160 students, some of which were accommodated in portable classrooms.

As the school board began to consider options for a new T.C., something unexpected happened: the idea of a green

David Peabody, an architect and T.C. parent who started Alexandrians for a Green T.C., said the operational savings helped persuade the school board to back the idea but that parents were persuaded by the health benefits.

That night was a turning point, after which project planners never looked back. The school board, reflecting its constituency, committed to the idea of a green T.C. in 2004 and approved a plan to build a new environmentally progressive 461,000-square-foot school building to accommodate 2,500 students. It has the potential to achieve LEED Silver certification.

As the design process continued, Moseley Architects began to meet in earnest with district and building personnel to craft together what their green building should become. Besides doing a lot of listening in that process, the designers also shared a lot of ideas with the educators about how a building's green features could also be innovative teaching tools. The more that the educators heard, the more excited they became.



school began to circulate around the community. At first, the notion of a green school was generally received with limited interest due to fear that it would cost too much.

But the idea did not go away and it steadily gained momentum. In fall 2002, the grass-roots effort came together. An ad hoc group of about a dozen Alexandria residents formed to lobby the school board, calling themselves Alexandrians for a Green T.C. Eventually about 150 families signed up.

The group, along with the Alexandria PTA Council, the Alexandria Environmental Policy Commission and the project design team held a forum in January 2003 to present aspects of sustainable architecture that apply to school design.

By typical standards, that type of an event should have been an obligatory and poorly attended public meeting, with seats filled mostly by salaried district employees, perhaps a school board member and a building representative or two.

Instead, hundreds of parents and community members packed the school cafeteria, bringing electrifying energy, optimism and unifying momentum. The topics from the design team and other non-bias green panel members included what other green schools has accomplished in recent years, how an environmentally healthy design would improve school attendance and provide a comfortable work environment, and how a building that conserves water and energy would provide long-term savings.

Age-Old Technology

Perhaps the most frequently mentioned green feature of the building is the 450,000-gallon cistern buried beneath the building that collects rainwater runoff.

"It's an idea that's as old as biblical times," says Mark Burke, the district's director of planning and construction.

The T.C. math and science departments use it to teach modern lessons about water flow rates, climatology and water quality studies. It also provides more than 5 million gallons of water a year for non-potable uses including toilets and irrigation. Coupled with T.C.'s waterless urinals and low-flow lavatories, the cistern provides significant savings – 6 million gallons per year – on public utility costs.

Another green feature is the vegetated roof that covers parts of the facility. It offers sustainability benefits such as lower heating and cooling costs, fewer water runoff structural needs and a significantly extended service life of the roof. Similar to the cistern, it utilizes technology dating back to the Hanging Gardens of Babylon from around 600 BC. It provides the basis for a hands-on ancient history curriculum at T.C.

The roof has an area designated for the culinary arts program where fresh herbs are grown. It also offers lessons about the sources and effects of urban heat; ways of controlling storm water runoff, erosion and pollution; strategies for improving water quality; and a multitude of other science and cultural studies topics.



Natural Light

Students also enjoy more natural light at the new facility. Classrooms feature large windows and pop-up skylights, and the glass-enclosed media center has 28-foot ceilings that allow for abundant natural light.

More than 70 percent of the regularly occupied interior spaces have direct views of the outdoors and access to natural daylight, significantly reducing the building's electricity consumption.

In addition to the generous natural lighting, all of the classrooms utilize a mix of direct/indirect lighting, where luminaires emit light both up to the ceiling and down to the workspace to diffuse the light and make computer screens easier on the eyes.

The new light fixtures all use energy-efficient, high-output T5 lamps (T5HO), creating additional electricity savings. A single T5HO lamp can often serve where a pair of traditional T8 fluorescent fixtures would be needed.

In addition to the more obvious math, science, pre-architecture/engineering and vocational technology curricular benefits of T.C.'s many green features, creative-

building teachers are also able to create lessons in areas such as urban planning, global warming, political science and ethics and the responsibilities of developed nations.

In order to facilitate these multi-discipline studies, T.C. is equipped with a permanent measurement and verification system to track its water and energy usage, which is displayed at a central kiosk in the student commons.

The district is confident that T.C. will receive the exclusive LEED certification once the former T.C. high school demolition and LEED application process is completed later this year. T.C.'s annual energy savings will likely total more than \$250,000. The district is now receiving inquiries from other communities and districts that want to replicate the concepts at T.C.25

Jim Copeland and Bryna Dunn are vice presidents at Moseley Architects. Copeland can be reached at jcopeland@moseleyarchitects.com and Dunn can be reached at bdunn@moseleyarchitects.com

