

PHILADELPHIA • CEDARBROOK • GERMANTOWN • ROXBOROUGH • EAST FALLS • MOUNT AIRY • ANDORRA • CHESTNUT HILL • LANSDALE •

"One of the first conditions of happiness is that the link between Man and Nature shall not be broken." LEO TOLSTOY, 1878-1910

NATIVE FLORA and FAUNA

Informational text and small images related to native flora and fauna.



The Wissahicko wate

LANDMARKS of THE VALLEY

Find out the remarkable historical and natural sites of the region to locate the historic landmarks shown in the Wissahickon Riverwalk. Start the discovery of them to have more about their history and impact on the surrounding landscape.

- 1. North Falls
- 2. Fairmount Park
- 3. Morris Arboretum
- 4. Chestnut Hill Academy
- 5. Valley Green Inn
- 6. Germantown
- 7. Roxborough

MAP LEGEND

- Reservoir
- Stream
- Property Line





Green Building in Education and Practice

Stephen C. Potter and Adam Rockmacher

Chestnut Hill Academy's Science and Technology Center

WHEN CHESTNUT HILL ACADEMY, a private K - 12 school located in northwest Philadelphia, decided to build a dedicated Science and Technology Center for its students, the school's leadership decided early in the process to include LEED design elements and seek certification. The resulting building – which the architect, Lilley-Dadagian Architects, just submitted for a LEED Silver rating – is a showcase of Green construction that combines an aesthetically pleasing design with a host of environmentally-friendly elements to create a unique learning environment.

Building

Much of the building's green technology doubles as teaching tools instructors use to increase student awareness of green building and the way their new Science and Technology building works. A small array of photovoltaic solar panels and a marine wind turbine located on the roof feed electricity into the grid to reduce the building's utility consumption. This energy is measured and the data fed into a monitor in the lobby that instructors use to teach students about the value of alternative energy sources. Instead of illustrating savings in kilowatt hours, teachers can show students the practical benefits of solar and wind power in terms children can more easily grasp, such as how many

air conditioners could be powered at a given time. Furthermore, the data center display in the lobby also integrates a rooftop weather station – rain gauges, hydrometers, barometers, thermometers and anemometers – that teachers can use as part of their classes.

Another green feature on the roof is the solar hot water energy collection system. A manifold of evacuated tubes on the roof absorbs the sun's energy and transfers this energy to a circulating loop of glycol. The loop runs through the hot water heater and the glycol transfers the heat energy to the water. The glycol is cooled in the process then flows back up to the roof where the cycle begins again. An electric element in the heater compensates when the water temperature drops below its setpoint.

Site

The site engineer, Cairone Et Kaupp, worked with the Morris Arboretum to design a site that manages storm water while simultaneously extending the classroom experience to the outdoors. The building, which is designed to collect rain water and grey water for irrigation and the flushing of toilets, is bordered by two rain gardens of indigenous plants – Pennsylvania sedge, Virginia wild rye and switchgrass – that absorb excess rain water. In the event the tank's capacity is exceeded, one garden specifically absorbs overflow from the



photo credit: Jeffrey Totaro

Photovoltaic solar panels and a marine wind turbine on the roof feed electricity into the grid to reduce the building's utility consumption.

grey water system, while the other absorbs water channeled off the roof. The site itself was replanted with 88 new trees that are indigenous, including American holly, sweet bay magnolia, sorgum and scarlet oak.

The adjacent parking lot consists of porous asphalt paving over a subsurface infiltration bed designed for a 100-year storm. Overflow water is channeled through a perforated pipe enclosed in geotextile and stone that ultimately terminates in a level spreader that allows excess water to percolate out and onto grade. The lot itself has bike racks and designated hybrid car spaces to promote environmentally friendly travel.

Forward to the Future

Now that the green revolution is truly taking shape, we can expect to see some visible changes in design and construction through the next few years. According to Greg Smith, Turner Construction Company's Regional Preconstruction Manager and a former DVGBC Board Member, some developments we can expect to see in the coming years include:

- Window glazing enhancements such as tinting, double and triple glazing, and specialty coatings that improve thermal performance by up to 50%
- Building-integrated photovoltaic (PV) curtainwall systems in which thin layers of PV solar cells are laminated between layers of thin glass and installed in conventional curtainwall and skylight systems. PV curtainwall systems can generate almost 10W of power for every square foot of wall space
- Storm water collection systems that capture rain water from roof drains for flushing toilets or other non-potable water demands, much like the storm water system used at the Science and Technology Center
- Cogeneration plants that use high-pressure steam to both generate electricity and drive turbine chillers for cooling, thereby counterbalancing rising utility costs over the life cycle of the building

As the Science and Technology Center demonstrates, green building is more than a trend: it is a reality.■

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