EI ASSOCIATES Progress

ARCHITECTS ENGINEERS PLANNERS

EDUCATION ISSUE 2009

EI ASSOCIATES WINS OVERALL DESIGN AWARD

EI Associates was awarded the 2009 Overall Design Award from the Green Building Association of Central Pennsylvania (GBACPA) for the design of the New Paradise Elementary School, Pequea Valley S.D., Lancaster County. The award ceremony was held on April 16, 2009 at the Wildwood Conference Center at Harrisburg Area Community College. The Awards were given in several categories including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality and design innovation. The Paradise Elementary design, which is seeking LEED® Gold Certification, excelled in each of these categories.

Pequea Valley S.D. sought to build a building that conserved land resources, optimized energy performance, reduced energy consumption and costs, reduced water consumption, lessened storm water impact, and supported the regional economy by utilizing regional materials and resources. The Green Building Association of Central Pennsylvania held a tour of this Award Winning facility.

Large Group Instruction Area

New Paradise Elementary School, Pequea Valley School District.

Fresh Start for the Leaguers Head Start Program

Families and pre-K children recently celebrated the September 2009 opening of the new Leaguers headquarters and Head Start School, located at 405-425 University Avenue, Newark, NJ. The Leaguers, Inc., a non-profit community service organization, retained EI to design the new 45,000sf, 3-story facility. The building is elevated to provide a secure parking garage for 75 cars. The first floor which is approximately 22,000sf houses the Leaguers' Head Start Program with seven classrooms containing state of the art technology, a Nurses station, supporting administrative offices, teachers lunch room, a Head Start lobby with built-in display cases, a media center, secured outdoor play area, access to a fully functional kitchen for daily meal distribution to the Head Start Program, and multi-purpose/training rooms to support administrative, child and community services including adult learning

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"Questions About GREEN Roofs"

EI Associates recently collaborated with the Pennsylvania State University's Green Roof Research Center to design Green "Vegetative" roofs on several facilities which are seeking LEED® Certification. Listed below are several commonly asked questions.

Is a Green roof a better option than a traditional roof?

Traditional and Green (Vegetative) Roofing Systems each have appropriate uses depending upon the ultimate goal of the project.

Who would benefit from a Green Roofing System?

Facilities in areas with storm water runoff issues, storm water quality control issues, urban areas where "heat island effect" causes increased energy consumption, or building owners who are looking to build a high performance building.

Is this a viable option for most school districts?

Green roofs provide significant educational opportunities for locations that lack the space to build a greenhouse or other features for science studies. There are cost considerations which must be considered by each District.

What are the benefits of this roofing system?

Green roofs reduce the urban "heat island effect" which can reduce mechanical system loads which in turn reduces energy consumption. This will reduce the impact of carbon dioxide which is released into the atmosphere. Most importantly, a Green roof has a life span that is two to three times longer than a traditional roofing system.

Can a Green roofing system be installed on all types of facilities?

Green roofs can be placed on many building types, however the roof structural design must take all the loads into consideration.

Can buildings be retrofitted with a green roof?

Due to the weight of the system and the vegetation, many existing facilities may be unable to support a Green roof without structural reinforcement.

What is the cost on an average school building?

A Green roof premium on a school building is about $15.00 per square foot for an extensive system with 4"-6" high plant materials. This cost can be partially offset by the reduced size of the HVAC system required and the simplied storm water management system.

What is maintenance like?

Periodic weeding and plant maintenance is required as needed after the initial replanting or supplemental planting is established.

Initial Green Roof Planting

Growth After One Month

Are there funding sources available to assist with set-up costs?

There are funding sources available through grants such as Energy Harvest Grant and the Pennsylvania High-Performance Green Schools Planning Grant Program. Each state is different and may offer various programs associated with environmentally friendly design.

Woodland Elementary School Construction Is Complete

The Methacton School District's Woodland Elementary School project involved renovations and additions to an existing elementary school built in 1969. The improvements included relocating and centralizing the existing Administration, Nurse and Guidance areas towards the front of the building to be located adjacent to a new, secured Main Entrance and Lobby area. Other improvements include centralizing and enlarging the core Library, Music and Art areas. New finishes are seen throughout along with the installation of new, energy-efficient windows and a new geothermal heating and ventilation system. Additions to the facility include four new one-story Classrooms as well as a new Multi-Purpose Gymnasium and Cafeteria space with expanded stage adjacent to an enlarged and updated existing Kitchen area.

Woodland Elementary, Methacton School District.

Summit Boiler Replacement Projects Yield Energy Efficiency & Cost Reduction

When the Summit School District retained EI Associates to design their boiler replacement projects for five schools they had established basic objectives: Make them efficient, make them safe, with minimum maintenance, and do it at a reasonable cost. EI designed and specified modular ultra-high efficiency condensing boilers in conjunction with a high performance hot water system. These new types of boilers have the following significant advantages for schools over conventional boiler systems:

- ***These boilers are super efficient. Where standard high efficiency boilers have a maximum efficiency of 85%, condensing boilers minimum efficiency is 90% and can go to 99% efficiency as conditions allow.***
- ***In the Northeast the vast majority of the heating season does not require boilers to operate at maximum output. Steam boilers cannot operate below 212°F at all; standard hot water boilers are limited to 140°F minimum to prevent thermal shock from damaging the boilers. Condensing boilers have no minimum water temperature requirement. This allows the boilers to be reset based on outside air temperature over a larger range than conventional boilers. Condensing boilers increase their efficiency and enhance thermal comfort by reducing overheating. Water is delivered at a temperature to match just what the building needs.***
- ***These boilers have no minimum flow requirement. This allows their integration directly into the existing hot water system as a variable primary pumping system. The boilers do not need secondary pumps, mixing valves, or additional piping historically required to protect the boilers.***
- ***Maintenance costs are reduced and provide for a simpler system to operate. Variable speed drives are incorporated for the pumps to improve efficiency of the hydronic system. By reducing flow through the boilers their efficiency increases. EI developed a custom sequence of operation for the unit ventilators to take maximum advantage of a condensing boiler's efficiency and operating characteristics while maintaining temperature control and eliminating the chance of frozen coils.***
- ***These boilers have high "turn-down" capability and very low internal volume. This eliminates boilers cycling on and off which will lead to "hunting" and poor temperature control at the unit ventilators. Seasonal efficiency is thereby increased.***

Tackling Critical Health and Safety Improvements With ROD Grant Funds in New Jersey

Recent economic conditions have hampered the ability of many school districts to address basic Infrastructure-related improvements. According to a recent US Department of Education Report, 33% of all school buildings need extensive repair or replacement, nearly 60% of schools have at least one building function in need of extensive repair or replacement, and approximately 50% of school buildings have at least one unsatisfactory environmental condition related to ventilation, heating, lighting, noise or indoor air quality. Many school facilities contain inefficient mechanical/electrical systems, leaking roofs, single pane windows, and inadequate security systems.

To assist Districts with addressing badly-needed infrastructure improvements, the State of NJ has created a program for funding projects for Regular Operating Districts (non-Abbott Districts). ROD Grant Funding offers non-Abbott districts the ability to obtain up to 40% state aid for priority level improvements. Three tiers of improvements are identified with Level 1 comprising the highest priority improvements addressing MEP infrastructure upgrades, building envelope improvements and program deficiencies. To date only Level 1 priority projects have been approved to receive ROD Grant Funding.

In the past year EI Associates has submitted more than sixty Phase 1 and Phase 2 ROD Grant Applications to the Department of Education for a variety of projects that total approximately $60 million in construction cost. These projects have been for Green Brook, Hackettstown, Hasbrouck Heights, Jefferson Township, Metuchen, Oakland, Summit and Tewksbury. They include boiler, window, roof and door replacements, HVAC and electrical system upgrades, classroom renovations and security improvements.

Most of the Phase 1 ROD projects were completed this summer for the 2009-2010 school year. EI is currently assisting several districts with obtaining Phase 3 ROD Grant funding, applications for which will be accepted by the state beginning October 28, 2009 until January 29, 2010.

Designing Schools for All Students

Much of the emphasis in school design over the last several years has focused on sustainability, designing school facilities that are energy efficient, environmentally sensitive and serve as "Living Textbooks" for students. The Summerfield Elementary School in Neptune Township is an example of such a school. Certified by the USGBC as the first LEED® Gold public school in New Jersey, Summerfield has served as a model for other districts that are interested in reducing energy costs and enhancing environmental literacy through the District's recently developed Green Schools Curriculum.

The impact that the Individuals with Disabilities Education Act (IDEA) has had on inclusion and promoting full participation of special needs students in general education classrooms has placed greater emphasis on how our school facilities enhance or inhibit learning for students with disabilities. Therefore the need to design educational facilities that are sensitive to the needs of all students is paramount.

A recent study by Lynn Hutchings and Dr. Richard Olsen from the Center of Architecture & Building Science Research at NJIT outlined some basic design concepts that should be adhered to in the design of inclusive schools:

- *Designs must foster interaction of students and foster similarities of students rather than differences.*
- *Eliminate physical barriers and promote accessibility.*
- *Design flexible areas to accommodate different activities.*
- *Designs and layouts should encourage repetition of visual, auditory and tactile signs and patterns.*
- *Environments should be predictable, consistent and orderly.*
- *Limit and control external stimuli.*
- *School environments should maximize students' strengths, independence and abilities.*
- *Classroom and instructional space design should provide for small and large groups, formal and informal learning opportunities and socialization for groups as well as individuals.*

Log onto www.eiassociates.com to view a copy of NJIT's "A School for Everyone – School Design to Support Inclusion of Students with Disabilities" which references the barrier free design of the Summerfield Elementary School.

York City's New Alternative Education Program

The new Lindbergh Avenue Alternative Education School building, constructed in 1875, was originally known as the Cherry Street School. The Cherry Street School was the first elementary school in the District. The building remained in use as a school until 1949 when it was converted to house the District Administrative Office. After EI Associates designed new larger District Offices, the building was vacant.

The School District of the City of York will now use this historic building as an Alternative Education School for students in grades 9-12. The building has been designed for LEED® Silver Certification. The project adds additional classroom space as well as a renovated interior to meet current standards and codes. Renovations include new windows and doors, repainting of exterior façade, new interior finishes throughout, selected demolition of existing partitions, new partitions, modifications to existing interior door frames, new accessible toilet rooms, new geothermal HVAC system, new plumbing throughout, new fire protection system throughout, and new electrical service, lighting and power.

Lindbergh Avenue Alternative Education School, School District of the City of York.

York Receives Energy Harvest Grant

Rendering of the New Ferguson Elementary School, School District of the City of York.

The School District of the City of York was the recipient of an Energy Harvest Grant from the Pennsylvania Department of Environmental Protection in the amount of $500,000. EI Associates assisted the District in the application process. The new Ferguson Elementary School will meet all of the Commonwealth of Pennsylvania's Keystone Principles for growth, investment, and resource conservation. The grant was awarded based on the School District's commitment to construct a new three-story Ferguson Elementary School for grades K-5 to replace the existing 50+ year old building which was inefficient. The new high-performance building has been designed to obtain LEED® Gold Certification. It will create more green space on the site, maximize daylighting and views for core learning spaces, and significantly reduce water and energy consumption below the present building's usage. Construction is scheduled to be completed in November 2010.

New Elementary School Will Be Used As A Teaching Tool For Students

EI Associates is working with the Exeter Township School District to design an environmentally-friendly elementary school for LEED® Silver Certification. The New K-4 Elementary School is the first building being planned to be located on a 92-acre campus adjacent to Boyertown Pike, Route 562. EI Associates assisted the District in master planning the site.

Given the District's concern for the environment, natural resource conservation and energy use, the building will be a high performance, "green" school. Optimized energy performance will be achieved through the use of energy efficient lighting, a geothermal HVAC system, and a highly insulated building envelope.

EI Associates and the District are jointly developing portions of the curriculum to make use of the LEED® School as a Teaching Tool. The kindergarten curriculum will incorporate a "Garden-of-Senses" along the east and south sides of their court where plants have been selected to engage the five senses: sight, hearing, touch, smell, and taste. The first grade curriculum will incorporate a butterfly garden at the edge of the amphitheater and the ecological area near the pond for students when they study insects.

The second grade curriculum will incorporate the vegetated wall at the east entrance for students to study plants, air, and weather. A vegetated wall cools the microclimate which lowers temperatures by using heat from the air to evaporate water. A thermometer introduced into the wall will measure temperature differentials between the green construction and a traditional masonry wall.

The third grade curriculum will use the amphitheater when students study physics of sound and the pond when studying water.

The fourth grade curriculum that focuses on the human body also addresses the school's building systems. Certain areas in the school remain open or exposed to highlight these systems allowing students a view of systems typically concealed. Their curriculum also focuses on electricity. Students will be able to study energy uses of the lighting system through the software program and metering devices installed in their classrooms. Finally, when studying the Solar System, fourth graders will utilize the sundial located on the hard surface play area. Stations in the amphitheater will allow the viewing of stellar constellations at night.

Rendering illustrating the vegetative wall at the main entrance

Rendering of Spring-Ford Area High School's Additions, Spring-Ford Area School District

Expanding The Spring-Ford Senior High School

After our firm completed an update to a recent Feasibility Study, Spring-Ford Area School District selected an option to expand the high school. The project's scope involves several additions and interior alterations within Spring-Ford Senior High School which will be completed in November of 2010. The high school will ultimately accommodate 2,400 students.

The project will permit the arrangement of students into smaller grade level "house units". This will reduce student movement and travel time. The tenth and eleventh grades will remain in the existing building and twelfth graders will relocate to the new addition. Each "House" will create small learning communities within the overall larger school to improve student performance. Students will have significantly increased connections to teachers and positive peer groups to support their learning process. All students will have access to the new 180 seat lecture hall which will also be used for staff training and community needs.

EI Associates designed the original high school, which opened in 1998, for 1,600 students. The entire building will maintain a uniform appearance by extending the existing interior and exterior materials and finishes to the new additions.

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programs. The second and third floor levels will accommodate the Leaguers administrative functions. The building is reminiscent of early Newark architecture, making use of white brick creating a strong presence on University Avenue. Blue and multi-colored tinted glass as well as a primary color palette of accent brick forms the Head Start entrance. This primary color coding is further introduced within the classroom interiors to provide visual distinctions between each of the areas. These classroom "color ways" are then woven together in the hallways and common areas to create a rich, child-friendly interior environment.

News, Notes & Events

USGBC LEED®

Seeking LEED® Silver Certification
Exeter Township SD, PA – New Elementary School
PSEG, NJ – Linden Administration Building (LEED®-EB)
School District of the City of York, PA –
McKinley & Jackson Elementary Schools & Lindbergh Avenue Educational School

NEW PROJECTS

Bedford Area SD, PA – Bedford Middle School – Alterations and Additions
Green Brook BOE, NJ – Auditorium Renovation
Hackettstown BOE, NJ – Window, Roof, Flooring & Ceiling Replacements & Site Repaving
Hasbrouck Heights BOE, NJ – Roof & Window Replacement & Emergency Generator – Multiple Schools
Jefferson Township BOE, NJ – High School & Middle School Renovations, Elementary School Expansions & Boiler Replacement
Lower Dauphin SD, PA – Conewago Elementary School – Alterations and Additions
Penns Valley Area SD, PA – Biomass Heating System
Summit BOE, NJ – District-wide Roof, Window & Boiler Replacement
Tewksbury BOE, NJ – Middle School Renovations & Emergency Generator
Wayne BOE, NJ – Track Renovations
West Amwell/Lambertville BOE, NJ – Roof Replacement, ADA Toilet Room, Playground & Temporary Classrooms

EVENTS

- NJSBA Fall Workshop 2009 – 28-30 October in Atlantic City, NJ. Visit us at our Booth #1241 & 1243.
- PASBO Facilities Management Conference – 30 September – 2 October. Visit us at our booth.
- PSBA School Leadership Conference – 13-16 October. Visit us at our booth.
- Design on the Delaware Regional Conference – 16 October. Visit us at our booth.
- PASBO Annual Conference & Exhibits – 9-12 March, 2010. Visit us at our booth.

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