Andrew H. Wilson School 3617 General Pershing St. New Orleans, LA

Andrew H. Wilson Elementary School is a model high performance school for the New Orleans Recovery School District’s $1.8 billion school construction program. This school construction is a joint effort of the Recovery School District and the New Orleans Parish School Board that began as a response to the devastating impact of Hurricane Katrina.

In 2006, at the request of the New Orleans Recovery School District, Global Green offered guidance and technical assistance during the School Facilities Master Plan. The Master Plan will guide future school renovation and construction to right-size the public schools of New Orleans, thereby reducing the number of permanent facilities from 128 poorly maintained pre-Katrina schools to approximately 85 permanent green schools that will be designed for 21st century learning. In addition, all significantly renovated or newly constructed schools within the Master Plan will be renovated or built to LEED Silver standards.

**PROJECT INFORMATION**

<table>
<thead>
<tr>
<th>Completion Date</th>
<th>Architect</th>
<th>Green Building Technical Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2010</td>
<td>HMS Architects</td>
<td>Global Green USA</td>
</tr>
<tr>
<td>Project Size</td>
<td>Associate Architect</td>
<td>Structural Engineer</td>
</tr>
<tr>
<td>96,122 sq.ft.</td>
<td>Innovative Design</td>
<td>Morphy Makofsky, Inc</td>
</tr>
<tr>
<td>Project / Construction Cost</td>
<td>General Contractor</td>
<td>Mechanical/Electrical Engineer:</td>
</tr>
<tr>
<td>$25.8 million ($268 / s.f.)</td>
<td>Walton Construction</td>
<td>Moses Engineers</td>
</tr>
</tbody>
</table>

**BUILDING OVERVIEW**

Andrew H. Wilson is a school for approximately 540 students ranging from pre-kindergarten to 8th grade. The campus includes: 26 classrooms, a cafeteria, a gymnasium, an art studio, a music room, a computer lab, a library, and administration facilities. The school features an environmentally friendly site design, which includes a high performance building envelope, enhanced classroom acoustics, daylighting designs, and green construction materials while including many elements that function as teaching tools. The project was designed to meet LEED for Schools 2007 standards and is anticipated to achieve LEED for Schools Gold certification by the United States Green Building Council (USGBC).

The original Andrew H. Wilson School building was designed by local architect E. A. Christy in 1909. In 1912 a classroom wing was added on the north side of the existing building. In the 1940’s, an accessory building was added on the corner of S. Miro St. and Milan St. The school remained operational until 2005, when Hurricane Katrina flooded the Broadmoor neighborhood and the school received approximately 2 feet of water on the first floor and sustained substantial roof damage.

In 2007 Andrew H. Wilson School was chosen as one of five Quick Start Schools in the New Orleans Recovery School district, which put them on an aggressive time schedule for building and renovation. The school program included a complete renovation of the existing school building, demolition of the heavily damaged accessory building and adding approximately 50,000 square feet to the school. The project revitalizes a significant local historic structure into a 21st century high performance school and signifies the commitment of the Broadmoor neighborhood to rebuild and be revitalized.
Daylighting is a key energy saving strategy as well as a significant factor in improving student performance. There are six strategies to achieve maximum energy-savings through daylighting: 1) design buildings to provide daylighting to all possible zones; 2) provide for glare and mitigation techniques in the initial design phase; 3) provide automatic dimming daylighting controls for all daylit zones; 4) ensure that interior designs compliment the daylighting; 5) integrate the electrical lights with the daylighting system; and, 6) commission and verify post-occupancy energy savings.

Several daylighting design approaches are used to address the existing building conditions, multi-story construction, and wide variety of spaces at the school. These strategies include: exterior lightshelves and optimized overhangs on south walls; curved, translucent, interior lightshelves in south-facing deep spaces; glazing types that are based on window orientation; and, interior lightshelves at east-and-west facing classrooms in the existing building. Additionally, indirect fluorescent lighting is installed throughout the school. The fluorescent lighting is controlled by occupancy and photocell sensors that dim the electric light when daylight is sufficient or the rooms are unoccupied.

**Energy and Atmosphere**
- Lighting design that responds to and capitalizes on available daylight
- 5.0 KW Solar electric system
- High-efficiency T8 fluorescent dimming lamps controlled by occupancy and photocell sensors
- Solar hot water system that serves 90% of the hot water demand for the kitchen
- Reflective white roofing that reduces the solar heat gain
- A combination of spray foam and polyisocyanurate on the roof and walls creates a 30 R-value

**Materials and Resources**
- Recycled rubber gym flooring and plastic benches
- Site-wide recycled concrete

**Sustainable Site**
- Over 90% of the existing building was reused
- 6 live Oak Trees were restored to a healthy state
- 80% of construction waste was recycled

**Water**
- Rainwater collection tank
- Rain gardens throughout the site
- Permeable pavers
- Underground water percolation systems and retention areas.

**Indoor Environmental Quality**
- Classrooms are acoustically insulated from adjacent classrooms
- Low-VOC paint, adhesives, and sealants

**GREEN FEATURES**
- Bamboo and linoleum flooring
- SMART board and cork bulletin boards

**Daylighting**

Lightshelves combined with properly oriented lighting in the cafeteria

Classroom after the renovation

Classroom post-Hurricane Katrina
INTEGRATED DESIGN

One of the distinctive features of Andrew H. Wilson School is its use of the integrated design approach. Integrated Design requires multidisciplinary collaboration in order to meet the overall goal of creating a “whole building design,” where all components of the building are interdependent. The three core features of the design are thermal envelope, daylighting and acoustics.

One of the key features to creating an energy efficient building is to create an efficient thermal envelope through optimized building and window orientation, insulation, and roofing selection. The design team minimized heat gain through use of high performance window systems and sun control devices on the West and East elevations. The orientation of the new building’s windows are predominantly South, thus effectively using the sun to enhance daylighting through interior and exterior light shelves and solar shading devices.

Good daylighting design can maximize energy savings if it is properly integrated with an efficient thermal envelope and heating ventilation and air conditioning system. The design team targeted ambitious energy goals. Through energy modeling, Andrew H. Wilson School was able to exceed RSD’s requirements of 35.8 KBTu/sf/yr. In fact, the school has a 40% improvement over ASHRAE and a 13% improvement over RSD’s goals. On the other hand, the school’s energy use is still greater than the 2030 challenge of 30.7 KBTu/sf/yr.

Natural daylight stimulates students biological systems and moods. Studies show that students with the most classroom daylight progressed 20% faster in one year on math tests and 26% faster on reading tests compared to students in classrooms with minimal natural light.

The design team has also taken into consideration the benefits of acoustic design in the school. A number of studies show a positive correlation between appropriate acoustic conditions and student achievement. A recent case study demonstrates a 10%-29% increase on reading and math tests in quieter classrooms during a two year period. In addition, the No Child Left Behind student population improved 31% on test scores when they could hear effectively (McCarty, 2004).

SCHOOL BUILDING AS A TEACHING TOOL

The experiential learning elements that are integrated into the building and site are distinguishing features of Andrew H. Wilson. This approach provides students with a space to explore and understand the benefits of sustainable design on a daily basis. Interpretive signs explain sustainable systems and strategies.

The future wetland is a space to learn about rainwater processes and native vegetation. A real-time internet based monitoring system for the solar hot water and photovoltaic systems provides multiple interfaces for students and internet users.

The sundial will be a learning tool for students and reinforces the building’s important relationship with the sun. A mural was created for the main staircase which chronicles New Orleans’ history and the development of the Broadmoor community through a series of maps and timelines. The goal is to not only create a wonderful environment for students, but to enable them to learn about their role in the environment.
Energy Performance
Whole-building energy simulations were a great help in goal setting, the design process, and evaluating the impact of design and construction decisions. For example, these simulations led to designing a building envelope that is as efficient as possible, and then designing the heating, ventilation, and air-conditioning (HVAC) equipment to meet the remaining energy loads. Successful daylighting was then vital to further reduce artificial lighting and HVAC loads.

Training
With these new high performance schools training the project design team is generally the extent of training. However, this project revealed that it is equally important to provide training for those involved in construction and operations. Specialized training and a checklist with common issues and corrective actions is recommended for building inspectors working on high performance buildings. Furthermore, training and briefing for contractors can also help avoid mistakes or misinterpretations of high performance specifications. Common issues include substitution of non-green materials and inadequate record-keeping.

Design Process
Commissioning is the comprehensive process used to guarantee that all design criteria are successfully met. It includes assumptions, planning, delivery, verification, and risk management. It is essential to document the commissioning process throughout the project. Whether the latest automated process, or a finely engineered passive system, it is critically important to prepare detailed documentation of the operating sequences, so it can be reviewed and understood by others in the future. When making functional adjustments to the building, it is necessary to continually update a Commissioning Process Progress Report that details the specific changes made during the design process.

Design Standards
Based on the experience from other Quickstart schools, The New Orleans Recovery District created a High Performance Schools Design Guide. This guide includes both mandatory and optional standards for new school construction and major rehabilitations. It also lays out a detailed process for design, energy modeling, construction oversight, and measurement and verification of results. This Design guide will inform the greening of future charter schools and build on the lessons that the pioneering projects manifested.

CONTACTS

HMS Architects, Architect
Charles B. Montgomery
(504) 636-3434
montgomery@hms-pa.com

Global Green USA, Green Building Technical Assistance
Ted Bardacke
(310) 581-2700
tbardacke@globalgreen.org

Prepared by Global Green USA with funding from Bush-Clinton Katrina Fund
June 2010  www.globalgreen.org  Printed on Recycled Paper