Ninth Annual Education Design Showcase

Managing Environmental, Safety, and Health Issues

Facts on the Hot Tin Roofs

Better Cleaning Through Science
Miami-Dade County Prototype Schools - West Hialeah Elementary School

M. C. Harry and Associates, Inc.
Honorable Mention Winner 2008 Education Design Showcase

Overview

The goal of the 'prototype system' is to achieve a high performance school that delivers meaningful civic presence; responds well to varying site conditions; and creates an inviting educational environment for impressionable young minds. This architectural response involves a collection of 'proto-parts' creating a village-scale campus organized around a central 'Mainstreet' pedestrian environment.

The library, an iconic expression of lifelong learning, is located on the second floor directly over the entry breezeway, and is a key element in the composition of the school's main entrance. School administration offices are located directly off the breezeway to maximize visual control over those entering and exiting the campus.

The interior design of the 'cafetorium' accommodates not only the school's lunch activity, but also the special acoustic and lighting requirements of a 400-seat performance venue for staged productions, musical events, and public address.

The architectural vocabulary for the campus is based on a 'tilt-wall model'. This construction model organizes a system of abstract, yet coherent, visual relationships expressed through the use of asymmetric, geometric, and planar wall elements.

Techniques for achieving student-oriented scale and proportion for the school include the use of wall plane articulation, fenestration, and the controlled use of bold color.
Sustainable design strategies were derived from the California High Performance Schools initiative and the national Leadership in Energy and Environmental Design program.

Aesthetic Use of Tilt-Up

Each ‘proto-part’ of the elementary school campus is designed to take advantage of the inherent characteristics of tilt-wall construction while avoiding the ‘big box’ architectural expression often times associated with this construction technique. Through the use of intersecting planes and plane changes, cast reveals, a controlled color palette, and carefully composed wall fenestration, each campus building articulates a discernable ‘Tab A into Slot B’ construction model.

‘School Within a School’

The student body of our prototype school can range in size from 800 to 1200 students. One of the unique features of the 400 student classroom building ‘proto-part’ is its allusion to a smaller and more personal school environment accommodating grades ranging from pre-k through 5th. In this scenario, the process of elementary matriculation is housed within a single building, and each student’s school experience is shared, in turn, with a more intimate and recognizable group of fellow students. The school campus includes two such classroom buildings expandable to three buildings in the future.

Collaboration Room

Each floor of the 2-story ‘proto-part’ classroom building is divided into two separate classroom wings by a double loaded corridor. Each classroom wing is comprised of five or six individual classrooms organized around a central common entry space dubbed ‘the collaboration room’. Beyond its function as a secondary circulation space, this innovative multi-purpose ‘collaboration room’ performs as a group study/activity space, provides access to ten computer stations, and as a classroom lobby space, promotes a spirit of student union and community. The collaboration room is visually accessed and derives daylighting from each of the surrounding classrooms.

Mainstreet

The ‘mainstreet’ environment is designed as a central campus circulation and landscaped casual gathering space. It is defined by the classroom and core buildings which flank it, and its character is enhanced by the outdoor dining and shaded activity spaces which front on it. Its width to height ratios were calculated to maximize the intimate pedestrian feel of the space, the careful composition of wall planes, fenestration, and color communicate a ‘building block’ aesthetic with young students in mind.

Technologic Provisions

The design of a ‘new generation’ public school environment must take advantage of the rapid advance in technology. Concepts employed on the prototype schools include:

Touch sensitive interactive whiteboards that enable the student/teacher to save notes to a computer and print/email/fax as necessary.

All classrooms, ‘collaboration rooms’ and the media center have power and data connections to multiple computer stations to promote independent learning activities.

A safe and secure school campus is fundamental to a productive learning environment. Not only does the school incorporate the strategies of Crime Prevention Through Environmental Design (CPTED), but also is wired for campus wide CCTV camera monitoring.

Unlike traditional school cafeterias, this ‘proto-part’ cafeterium is designed to perform as an auditorium first and a cafeteria second. Accordingly, special attention was given to the design of both acoustic and lighting controls. Through the combined use of sound absorption panels and curved, sound reflective panels, superior sound diffusion is available with a reverberation time of one second; ideal for the range of activities hosted in this space including theatrical and musical events, public speaking, and enthusiastic lunch hour dining.

The school campus includes a 125-foot instructional television (ITV) tower located at the end of ‘Mainstreet’. The tower supports both a parabolic microwave dish antenna to receive WLRN TV broadcasts, and an AM/FM antenna receiving radio broadcasts which can be played over the school wide intercom system.

The decentralized HVAC design utilizes multiple A/C units, each serving classrooms that share common heat gain characteristics, for more responsive temperature control. This results in enhanced thermal comfort and reduced energy
consumption.

**Flexibility for Community Use**

Community use of campus facilities is a fundamental program objective. The ‘proto-part’ design response has isolated three key campus spaces for convenient community access during after school hours. The media center, an ideal space for book readings, small scale lectures, and computer classes, is located on the second floor and can be accessed via elevator or stair directly from the school’s main entry breezeway; the auditorium, which includes a raised stage, dressing rooms, and operable seating for 400 patrons, is an ideal venue for large scale lectures, little theatre productions, aerobic/dance classes, and musical events; the collaboration spaces in each classroom building can be used as an adult education meeting/classroom space with access to computer terminals, all without compromising classroom security.

**Barrier Free Accessibility**

The limited site acreage available for this collection of prototype elementary schools required both a two-story design solution for the classroom buildings, and the placement of the media center on an upper level. Accordingly, an elevator has been made part of the design, located directly off the main entry breezeway and adjacent to campus administration offices. The elevator’s second floor lobby is common with the media center’s lobby, and offers access to a second level covered walkway system linked to each classroom building.

**Sustainable Design Strategies**

Energy and water conservation strategies, coupled with indoor air quality strategies, have been incorporated into the prototype elementary schools. These concepts include stormwater quantity/quality control; water efficient landscaping and plumbing fixtures; enhanced energy performance; the use of R134A refrigerants and regional materials; an outdoor air delivery monitoring system; low emitting finish materials; zoned HVAC system for thermal comfort control; daylighting in all regularly occupied spaces; and mold prevention measures.

Fourth Grade Student Responses to Survey

First reaction: “Oh, my God!” - Melissa, 4th grade

Favorite part of the school: “The library, because it has a great view and it is a very quiet and peaceful place.” - Karina, 4th grade

First reaction: “My first day at school was like being in heaven.” - Jordan J., 4th grade

Favorite part of the school: “Everything! I don’t have one favorite because it is so beautiful.” - Melissa, 4th grade

Favorite part of school: “The stairs. How many elementary schools have another floor?” - Jefferson, 4th grade

First reaction: “It was great, all these beautiful colors.” - Da’Jour, 4th grade

**Owner Comments**

“They have been very responsive towards the needs of the project in general, and the criteria of the owner in particular....under very difficult restraints of time and budget, and (they) have met, or exceeded the needs of the project throughout the entire process.” - Erick Laventure, Executive Director, Office of Facilities Construction, Miami-Dade County Public Schools

**Project Description:**

1) **Control of Institution**: Public
2) **Type of Institution**: Traditional
3) **Education Model**: School-within-a-School

**Locate:** Suburban

**Methodology & Standards:**

District/Institution Decision; First-Cost; Prototype Design

**Funding Method(s):**

Primary Source: Alternative Source
Alternative Sources: Secondary: Other (Certificates of Participation)

Project Delivery Method(s):
CM At-Risk

Sustainable/Green Design:
Principles Followed: LEED; CHPS
Green Elements Included: Use of Daylighting; Acoustics; Water Conservation; Materials Selection; Building Orientation; Natural Ventilation; IAQ/IEQ; Energy Conservation; Building Automation Systems/Controls

Architect(s):
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Associated Firms and Consultants:
- Landscape Architecture: Laura Llerena & Associates
- General Contractor: Suffolk Construction Company
- Structural Engineer: Bliss & Nyitray, Inc.
- Electrical Engineer: SDM Consulting Engineers
- Mechanical Engineer: SDM Consulting Engineers
- Civil Engineer: EAC Consulting, Inc.
- Acoustical Consultant: Bob Holley, Arts Environments
South Dade Middle School
Silva Architects
Project of Distinction Winner 2008 Education Design Showcase

Building a strong sense of community and identity within a large, state of the art educational facility was one of the driving forces behind the design of South Dade Middle School. The facility is designed for 1662 students, and is sited on a 19.9-acre site in a suburban area at the southwestern edge of Miami-Dade County.

The educational program for the school was conceived as a middle school for grades 5-8. Program requirements included Classrooms, Computer Labs, Vocational Labs, Administration area, Media Center, Science rooms, and Art Labs. PE lockers & support areas, an Agricultural Lab, Music Suite, and Cafetorium were also required.

The site is served by a dedicated bus drop-off, dedicated parent drop-off, and ample parking. Playfields and a Covered PE shelter were also provided as part of the program requirements. The facility is broken up into various component buildings, all arranged around a Courtyard and central circulation spine. The main classroom spaces for the school are arranged in a three story classroom building which intersects with a two story Science and Art wing. All classrooms are provided with instructional smartboards. The intersection of the two buildings are marked by a central “common area” that contains shared spaces such as Computer labs, Language labs, student toilet facilities, and teacher planning areas for supervision. These two buildings contain the majority of instructional spaces in the campus, and their interior circulation spaces use color as a means of enlivening the students’ experience as they move through the building.

The Administration building and Media Center form the eastern edge of the courtyard. This building has an impact resistant glass façade that looks onto the Courtyard to provide for an open connection with the exterior public spaces in the school. The visual connection from the Administration, located on the ground floor of this building, to the courtyard is an important feature from both an operational and conceptual standpoint. From an operational point of view, direct supervision of the courtyard and monitoring of building entrances and outdoor dining and gathering spaces makes for a safer school.

Project Fact Sheet

- **Facility Use:** K-12 Middle
- **Project Type:** New Construction
- **Category:** Whole Building/Campus Design
- **Location:** Miami, FL
- **District/Inst.:** Miami-Dade County Public Schools
  - Mr. Jaime G. Torrens Chief Facilities Officer
- **Completion Date:** May 2007
- **Design Capacity:** 1,662 students
- **Enrollment:** 924 students
- **Gross Area:** 144,000 sq.ft.
- **Space per pupil:** 87 sq.ft.
- **Site size:** 20 acres
- **Cost per student:** $17,726
- **Cost per sq.ft.:** $205.00
- **Building construction cost:** $29,461,000
Conceptually, this connection is also important in allowing students to feel the school administration is connected and engaged in their everyday instruction and well-being.

The Media Center is located on the second floor of this building and is also provided with an impact resistant glass façade facing the courtyard. This also establishes a visual connection from the Media Center to the entire school and fixes the Media Center in position as the heart of the school. The Music building completes the east side of the courtyard. This building houses the Band and Vocal classrooms. It is separated from other instructional spaces in order to provide for improved acoustical isolation and performance. The high ceilings, angled walls, and acoustical treatment on walls and ceilings also provide for an enhanced instructional space.

The Cafetorium building marks the southern edge of the courtyard. This dual function building serves as both a Kitchen/Dining building as well as a performance venue. The space’s high, sloped ceilings, decorative soffits, and dramatic proscenium wall ensure that the space functions well as an Auditorium as well as Dining space. A state of the art stage with full rigging and stage lighting is provided with a control booth.

In Dining mode, the facility has capacity to serve food at four interior serving bays or two exterior serving bays to alleviate wait times. Students can choose to eat either indoors, in the exterior covered dining area (which can also serve as an outdoor lobby when the Cafetorium is in performance mode), or the exterior courtyard.

The main circulation spine is the central design element of the school. The spine organizes the campus, and through its continuity and visual prominence, unites the school buildings while acting as a main street for student access to and from class. The dramatic slope and visual motion of this element is carried through the project with the colored stripes that give the building a dynamic sense of movement. The spine traverses the entire campus and connects the buildings with the main courtyard. This main courtyard is activated by an outdoor stage that can be used for school gatherings, pep rallies, and other events. The courtyard can also be used as exterior dining area with its numerous planter benches during good weather.

The structure of the building consists of tilt-up concrete with steel framing and steel joists with aluminum impact resistant windows. Lightweight insulating concrete over metal deck and a low slope multi-ply modified bitumen roof provide protection from the elements.

Sustainable design features of the project include daylighting at all classroom spaces, and additional, increased daylighting at the Media Center and Cafetorium buildings. The classrooms are also provided with an operable window area for fresh air intake that exceeds mandatory code related requirements. A sophisticated EMS (Energy Management System) controls the HVAC system and all exterior lighting so that they can be programmed for start-up, shut-down, temperature, and are all optimized for energy efficiency. A portion of the site was also maintained as a protected, Natural Forest Community (NFC) in order to preserve existing plant habitat and green open space. Building mechanical systems include state of the art energy efficient components. The building is cooled with two 225-ton centrifugal chillers. Variable air volume air handlers with variable volume box controls are provided at all instructional spaces. All units have outside air pretreatment coils to avoid humidity and mold problems.

The building is an EHPA (Enhanced Hurricane Protection Area), which means it is designed to ensure the facility can remain operational as a public shelter for at least 48 hours during a storm event. As such, it has been designed to ensure provision of emergency power and potable water and sewer storage tanks, as well as mechanical ventilation for the duration of the storm event.

**Project Description:**

1) **Control of Institution:** Public
2) **Type of Institution:** Traditional

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**Locale:**

Suburban

**Methodology & Standards:**

District/Institution Decision; Life-cycle Costs; State Standards PLUS

**Funding Method(s):**

Primary Source: Primary Source: State Appropriations

**Project Delivery Method(s):**

Design-Build
Sustainable/Green Design:

**Green Elements Included:** Site Selection; Use of Daylighting; Building Orientation; Building Automation Systems/Controls

**Architect(s):**

- Silva Architects
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  - http://www.silvaarc.com

**Associated Firms and Consultants:**

- **Landscape Architecture:** Aida Curtis / Curtis + Rogers Design Studio
- **General Contractor:** Ramiro Betancourt / Betancourt, Castellon, & Associates
- **Structural Engineer:** Lawrence J. Essman / Cankat-Essman, Inc.
- **Electrical Engineer:** Cristina Santa-Cruz / Fraga Engineers
- **Mechanical Engineer:** Irene Fraga / Fraga Engineers
- **Civil Engineer:** Hernando Navas / Schwebeke-Shiskin & Associates
- **Food Service/Kitchen Consultant:** Luis Fernandez / LACE Foodservice
- **Other:** Alexander Camps / PBS&J (Design Criteria Professional)
Westland Hialeah High School
PJB Architects
Project of Distinction Winner 2008 Education Design Showcase

Westland Hialeah Senior High School

The goal for Westland Hialeah Senior High was to provide a true “Urban” school for the Miami-Dade County Public School District. This school was conceived to be the flagship for new facilities, freeing the Client from the constraint of acquiring large tracts of land for new school construction. This challenge was given to MCM Corp. as the Design-Build firm contracted to deliver the facility, and the Architectural firm of PJB Associates was selected to provide design services. Both firms were chosen based on their 20+ year history of designing schools and the longstanding relationship between the two companies.

This vision for new urban school facilities is required in South Florida due to the scarcity of available land given the decades of growth and the steadily increasing housing market. Moreover, a demographic shift has taken place in recent years constituting the trend to build more high and mid rise residential buildings in existing urban areas, thereby increasing population density in established communities. Westland Hialeah was born of the need to relieve overcrowding at an existing facility serving one of these burgeoning urban communities.

Miami-Dade County follows the established standard of acquiring a 15-acre site for the construction of a new high school with a student station minimum of 2,000. However, the site was only 6.1 acres and 1,694 student stations still needed to be accommodated by the new facility. The design of Westland Hialeah followed all the basic programmatic requirements of the school district, and it was determined the new facility would require 322,084 sf of new construction to meet the districts standards.

To maximize the use of the site and meet the requirements set forth by the school district, 4 buildings would be constructed: a 4 story classroom and administration wing, a 3 story building consisting of 2 floors of parking with a 3rd floor

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Auditorium would also be provided, connected to the rest of the buildings by cast in place covered walkways. The perimeter of the site was used for bus and student drop off lanes. This allowed for on site stacking of vehicles, assuring the development of the facility in an established neighborhood would have minimal impact to traffic patterns.

The area in which the school is located is of mixed use, primarily industrial and retail facilities adjacent, with 1 side bordered by a zero lot line residential development. The type of neighborhood allowed the use of uncharacteristic approaches in developing the site’s design. The classroom building, parking garage, and arts wing would be developed in a “U” shaped configuration at the property line with minimal setbacks, incorporating the building’s orientation on the site to help secure the campus perimeter.

Central located within the campus is the auditorium, which was situated to accommodate occupants entering primarily from the parking garage, the classroom building, and main entrance. This location was selected because it will allow for controlled access of the auditorium by the community for special events and functions. The tilt wall design is enhanced by sweeping parapets and radiused walls with textures and patterns cast in the panels, adding to the aesthetic appeal of the building. The design is so extraordinary for a public school that the Mayor of Miami-Dade County recently selected this auditorium to deliver his 2008 “State of the County” address.

A large courtyard surrounds the auditorium, allowing students to spill over from the adjacent cafeteria and covered dining areas. This feature will also allow students and visitors to the auditorium to congregate in the courtyard before and after an event, and tropical landscaping and benches are provided to make the area more friendly and inviting.

To achieve a more “open” feel for the facility, the 4 story building housing the classrooms was divided into 2 masses connected by 3 bridges. At ground floor the courtyard extends through the classroom building to the main entrance, and the bridges are open on the 2nd floor, but enclosed with a curtain wall glazing system on the 3rd and 4th floors. The curtain wall maximizes the use of natural lighting at the East-West elevations and is a recurring architectural theme throughout the facility.

Curtain wall is used in the common areas such as the media center, cafeteria, stairwells and corridors to make use of natural lighting and minimize the need for supplemental fluorescent lighting. Impact resistant operable windows are provided in the perimeter classrooms and corridors, again for use of natural lighting and as an available method of using natural ventilation.

The use of various colors, textures, and patterns at the tilt wall construction used throughout the facility was provided to soften the feel of the massive structures on the small site. These included the fluted and “cobblestone" form liners to give the buildings a more organic appeal, and the combination of earth tone colors in various hues also makes the buildings much warmer and pleasing.

One of the greatest challenges of the constrained site was the development of areas to accommodate the athletic programs. Sports like baseball and track and field require larger areas than those available, yet knowing the needs and benefits of athletics and physical education, the design was closely coordinated to prevent the small site from weakening these programs.

To capitalize on the structure of the 2 story parking garage, a 3rd floor gymnasium was designed to host athletic events and provide full size and practice courts for basketball and volleyball. Retractable bleachers were provided to maximize use of the space, and rooftop hard courts for basketball and volleyball were provided adjacent to the enclosed gymnasium. Also adjacent but enclosed in the PE complex are the locker rooms, weight rooms, training rooms, and multipurpose classrooms for PE.

All of these areas connect to the adjacent athletic fields, which include a full size football and soccer field. Access is via a monumental staircase extending from the 3rd floor, allowing students to travel between the fields and upper level PE facilities and elevators for ADA compliance are also provided in these areas. The PE/Gymnasium complex also connects to the classroom building via bridges for travel to and from class.

The design and construction of this unique facility has had a significant impact on the educational community in South Florida to the extent that Miami-Dade County Public Schools has changed its land acquisition requirements for high schools based on the successful delivery of Westland Hialeah. Adjacent counties facing the same land acquisition challenges as Miami-Dade County have also approached the Design Build team in an effort to re-use the design on other constrained sites in the region.

This facility serves as a testament to the Design-Build delivery method - the facility was delivered on time and within budget, and the few Owner requested changes made added less than 1% to the overall cost of the project. Furthermore, the facility’s innovative design and construction will truly have a beneficial impact beyond the single project’s delivery, such as relieving budgetary issues for local school districts associated with acquiring and developing large sites for schools, and...
minimizing environmental impacts to the region based on the efficient design and reduced overall land use.

Project Description:
1) Control of Institution: Public
2) Type of Institution: Traditional
3) Education Model: School-within-a-School
6) Community: Designed for Community Functions

Locale:
Urban

Methodology & Standards:
District/Institution Decision; Life-cycle Costs

Funding Method(s):
Alternative Sources: Secondary: Other (School District Funding)

Project Delivery Method(s):
Design-Build

Sustainable/Green Design:
Green Elements Included: Use of Daylighting; Acoustics; Materials Selection; Building Orientation; Energy Conservation; Building Automation Systems/Controls
Commissioning: Building/systems have been commissioned

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Associated Firms and Consultants:
Landscape Architecture: Rosenberg Gardner Design
Construction/Project Management: MCM Corp
General Contractor: MCM Corp
Structural Engineer: Bliss & Nyitray
Electrical Engineer: SDM Consulting Engineers
Mechanical Engineer: SDM Consulting Engineers
Civil Engineer: C3TS
Acoustical Consultant: Acoustinet Archiacoustics Incorporated

Food Service/Kitchen Consultant: Inman Food Service
Other: Spillis Candela DMJM (Design Criteria Professional)
Early Childhood Center Prototypes
Silva Architects
Project of Distinction Winner 2008 Education Design Showcase

Re-thinking, Re-interpretation, Re-examination, and Renewal are the four principles that guided the Early Childhood Center Prototype project from its conception. The Owner’s directive was to completely re-think the approach taken to educational facility design for early childhood education.

The program for the school was decided early in the process to be a small school for Pre-K through second grade, with a maximum capacity of 396 students. The project was to provide a small administration area, classrooms, and a small Cafeteria. A dedicated parent drop-off, parking, and playfields were also part of the program.

Before work began on the design of the prototype facility, the architect embarked on an intensive research period, in conjunction with three other firms that were tasked with designing prototype schools for other age groups. This research period yielded in-depth knowledge of innovative new educational concepts and the latest trends in school design, both nationwide and worldwide. Sessions also included investigation into sustainable design principles and value analysis. The research period resulted in a document that organized all the research and recommendations into a cohesive set of guidelines that continued to shape and inform the prototype projects through the design phase.

The design process of the Early Childhood Center prototype began by taking all the research regarding innovative educational concepts and applying it to the basic building block of a school; the classroom. A child’s development increases exponentially from Pre-K age to second grade age, and this affects the way a student learns most effectively. Many studies show a project based learning approach is best for children in Pre-K and Kindergarten, which then slowly evolves into a more traditional lecture based approach as the child becomes older.

http://www.educationdesignshowcase.com/view.esiml?pid=172
All types of learning models were reviewed, and the early childhood center classrooms resulted in spaces that suit all types of learning and teaching. Through careful analysis of everyday classroom life in the Pre-K and Kindergarten students, a "Z" shaped classroom was chosen as the best suited instruction space. This classroom shape has more corners, and as such, lends itself to be divided, at the teacher’s option, into numerous smaller areas where students can work on individual projects or in small groups. A “wet area” was developed and contains cabinets and sinks to be used in art projects and small-scale science demonstrations. Each pair of classrooms also shares a small Supplemental Instruction area that functions as a break-out room, where a small group can listen to a story or receive instruction on another subject. Each pair of classrooms also shares an observation room, which can be entered from the main corridor of the building so that student teacher and/or parents can observe classroom instruction while it is underway. Ample natural light is provided in these classrooms, and the supplemental instruction room is itself a transparent glass enclosure.

The first and second grade students in the facility have a slightly more rigid curriculum, and this is reflected in the classroom design. These classrooms have an “L” shape, so that the classrooms are divided into a standard lecture area and a smaller “wet area” for art, science, or small group work.

The organization of these classrooms and the functional flow of students of different ages played a major part in the development of the buildings.

The Early Childhood Center is intended to be a prototype building, and designed in such as way as to provide a “kit of parts” that can be assembled in different ways in reaction to various site conditions and restraints. As such, the project is divided into three distinct buildings that can be arranged in different ways around an exterior courtyard. The massing and scale of the buildings around the courtyard are intended to be broken down into small shapes and areas to avoid a severe institutional effect.

The first of these buildings is a smaller stand-alone classroom building that houses the four Pre-K classrooms. This building is a single story that is intended to have the Pre-K student, who is most likely experiencing a school environment for the first time, recall the small, friendly scale of his or her own home. The building’s massing is divided into two elements to further reduce scale, with half the building’s skin a playful polka dot motif, and the other half recalling a scaled-up child’s block.

The remaining Kindergarten, first, and second grade classrooms are grouped in a two-story building. The first and second grade classrooms are stacked on one side of the building, and open onto an interior, double height corridor with vibrant, circular clerestory windows to admit natural light into the space. A glass railing carries the exterior motif of the circular windows into the building. On the ground floor, the Kindergarten classroom side, which is single story, also opens into the double height interior corridor, with the entrance to each classroom marked by a distinct entry feature, each painted a different color, to aid the younger Kindergarten students with wayfinding. The Kindergarten classrooms are also directly accessible from the exterior courtyard. The two-story classroom building also houses the school’s administration area, which maintains a supervisory and security presence in the building near the main entrance. All classrooms are provided with instructional smartboards. The building’s exterior is marked by a playful motif incorporating waves, circles, and bright colors.

The final building in the project is the Cafeteria building. This iconic building differs in style from the surrounding buildings to mark it as the most public area, where students can congregate for school assemblies, parent teacher meetings, and performances. The cafeteria is equipped with a stage scaled for child performances. A small kitchen and serving line doubles as a backstage / dressing area during performances. A covered area in front of the Cafeteria serves multiple functions as a covered dining area, covered PE shelter, and outdoor lobby.

The structure of the building consists of tilt-up concrete with steel framing and steel joists with aluminum impact resistant windows. Lightweight insulating concrete over metal deck and a low slope multi-ply modified bitumen roof provide protection from the elements.

Sustainable design features of the project include additional daylighting at all school spaces. The classrooms are also provided with an operable window area for fresh air intake that exceeds mandatory code related requirements. Light shelves are provided at all classrooms, and an exposed structure ceiling painted white further reflects natural light deeper into the classrooms. Acoustical ceiling panels are provided to enhance acoustical performance. A sophisticated EMS (Energy Management System) controls the HVAC system and all exterior lighting so that they can be programmed for start-up, shut-down, temperature, and area all being optimized for energy efficiency. Variable air volume air handlers with variable volume box controls are provided at all instructional spaces. All units have outside air pretreatment coils to avoid humidity and mold problems.

Project Description:
N/A

Locale:
N/A

Methodology & Standards:
N/A

Funding Method(s):
N/A

Project Delivery Method(s):
N/A

Sustainable/Green Design:
N/A

Architect(s):
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  http://www.silvaarc.com

Associated Firms and Consultants:
- Educational Planning: Lawrence J. Essman / Cankat-Essman, Inc.
- Landscape Architecture: Aida Curtis / Curtis + Rogers Design Studio
- General Contractor: Al Brizuela / JASCO Construction Company
- Electrical Engineer: Cristina Santa-Cruz / Fraga Engineers
- Mechanical Engineer: Irene Fraga / Fraga Engineers
- Civil Engineer: Hernando Navas / Schwebke-Shiskin & Associates

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Aventura Waterways K-8 Center
Zyscovich Architects, Inc.
Honorable Mention Winner 2008 Education Design Showcase

This K-8 prototype was created for Miami-Dade County Public Schools as a response to the District’s need to alleviate overcrowding in rapidly expanding, land-starved urban communities. The schools currently under development include Aventura Waterways K-8 Center, Coconut Palm K-8 Academy, Mandarin Lakes K-8 Academy, Arch Creek Elementary-Middle School, Dr. Rolando Espinosa K-8 Center, State School AA-2 and State School TT-1 (currently unnamed). Flexibility and adaptability to various sites and community contexts were key requirements in the development of the design. The compact, vertical solution is a “kit-of-parts” and can be configured in a variety of ways.

The design delivers a school comprised of a series of “proto-parts” which can respond to varying site conditions and configuration. The modules are composed of modular classroom buildings, a Fine Arts/Dining assembly building, an Administration/Media building and a P.E. building/shelter linked by “connectors” containing staircases, mechanical rooms, toilets and other support spaces. For example, at the Aventura Waterways K-8 Center, the classroom modules were sited and rotated around preserves of historic trees on the 9-acre site. This not only protects the environment and creates a wonderful outdoor learning area, but actually saves money for the District by reducing environmental mitigation fees. In addition, this concept allows the greatest flexibility in siting the buildings for the most efficient exposure as well as providing all classroom spaces with proper daylighting and views.

Since each module of the school is complete unto itself, it has facilitated a groundbreaking advancement in school development. To accelerate construction, Miami-Dade County Public Schools’ building department has allowed the building parts to be pre-permitted, which expedites the design and construction processes. The prototype can be site-adapted in just 30-60 days. Another key feature of the design’s adaptability is the ease with which it can be expanded. Originally designed for 1200 student stations, the addition of a link “connector” and a 400-student classroom module easily increases...
the school’s capacity to 1600+ student stations. (Please note that there is such a need for classroom space that all prototypes currently being built are designed for 1600-2000 student stations).

To avoid the “cookie-cutter syndrome” that many prototypes fall into, the plan is set to allow a wide variety of site configurations, materials, colors and fenestrations. These “choice menus” feature interchangeable materials and façades, allowing each school to blend with the environmental context and community in which it is located. For example, the schools currently under construction now have exteriors that range from Florida Vernacular and Mediterranean to Modern and Traditional.

This unique learning environment will house students from four to 14 years of age, the premium years in a child’s social and intellectual development. To facilitate a positive learning environment with appropriate social interaction, the K-8 is broken up into 400-student station learning communities, or “neighborhoods.” The neighborhoods are more personal, offering a sense of “smallness within largeness.” The neighborhoods are stacked vertically, with grades K-2 accommodated on the ground floor, 3-5 on the second floor and 6-8 on the third. Students advance within these learning communities, literally “growing up” within the school. Teachers and children can personalize their areas of the building through the use of gallerywalls, tackboards and display cases, creating a sense of ownership and pride among students. Each grade level’s area of the building has been designed to meet the specific needs of their educational curriculum goals while providing a place of safety, identity and ownership.

To support the District’s pedagogical movement towards project-based learning and cross-age group interaction, each school is sprinkled with break-out project rooms and alcoves, story-telling areas and wet areas, located for joint use by multiple classrooms. These spaces provide for serendipitous learning through project-based learning, collaboration and student-teacher interaction, which cater to various learning styles and enrich each student’s experience.

One of the goals for this prototype design was to use the entire school campus as an interactive learning tool, stimulating the students in an engaging manner. As such, a major design concept incorporated into the building is the school’s relationship with the external environment. As open green space is at a premium in these highly urban communities, the school's design both forces students into the outdoors and brings the “outside in.” Natural light is provided in all student-occupied spaces. Vinyl floor tiles featuring photographic images of grass, pebbles and water are installed in the different collaboration areas to reinforce this concept. To expand the size of the facility, the entire campus can be used as an interactive learning tool, with exterior “Back Porch” spaces and patios that can be used to expand the classrooms and to stimulate the students. In addition, due to the design’s flexibility in siting the building modules, courtyards featuring wide open green space are easily created and natural “outdoor classrooms”, such as tree preserves and wetlands can be maintained during construction.

The Prototype K-8 is designed to be a high-performance learning environment, as well as a community resource. The signature elements of the design are composed around safety and security and are developed as an iconic civic building. The administration area, media center, school commons and Parents’ Academy lobby make up the main entry, which is designed to provide a defined entry point and clear sense of organization to the site. “Funnel entry” access through the main administration area creates natural access control and increased security and safety. The state-of-the-art media center is custom designed to provide exceptional experiences for all ages and to create lifelong learners: from a small learning library and tiered story-telling area that will appeal to the youngest children to a more sophisticated and technologically-rich space that matches the needs of a 14-year-old 8th grader preparing for high school.

The Fine Arts and Dining module components include an Avenue of the Arts—a black box theater, two and three dimensional art rooms, and the band and chorus departments. The hallway or Avenue has gallery walls and is flooded with light to celebrate the students’ work. Huge garage doors open from the fine arts classrooms to show the exhibit space, to combine the learning spaces, corridor and the out of doors, and to allow these spaces to be shared with the community. The cafetorium is essentially a performing arts space to accommodate school performances and community events. Food service is provided as a “cyber café” with al fresco dining that extends the café to the outside, engaging the outdoor environment. The assembly areas of the building can be opened to the surrounding community for after-hours andweekend use while securely maintaining the rest of the school facility, and the playfields and parking lots are located to encourage off-hour community use.

The school’s design captures the essence of the relationship between the physical environment, the school’s users and the community. Designed to inspire, excite and educate students, parents and teachers in the science and art of preserving and restoring the natural landscape, these buildings help promote our role as responsible citizens in safeguarding the planet’s natural resources. The prototype was designed utilizing LEED metrics to include: a compact footprint to minimize site disturbance; the ability to adjust building orientation to maximize daylighting, minimize solar heat gain and preserve native habitats such as wetlands and historic tree preserves; a high-efficiency central chiller facility; mold preventative HVAC and materials; low flow restrooms; individual customized lighting & thermal controls; natural ventilation, enhanced acoustics, daylighting and views at all student spaces; lightshelves; regional material use; secure bike racks to promote alternative transportation; a recycling area; photovoltaic power, high albedo roofing material; light pollution reduction; and water-efficient landscaping. Building systems are exposed to educate and further accentuate the connection between natural resource use, energy and material conservation and the application of renewable energy systems. Each school has...
the flexibility and opportunity to create its own identity, which is reflected in the colors, graphics, patterns and images that make up the interior design motif.

In order to arrive at a design solution that not only met but exceeded the educational specifications for Miami-Dade County Public Schools, the team did extensive research and development for best practices in K-8 pedagogy. For the first time in M-DCPS history, 120 days of research and development was done to learn about the status of best practices of education worldwide. As the research was completed, a series of charrettes was conducted which included architects, engineers, facilities staff, teachers and administrators to develop a distillation of the lessons learned and to develop ways to apply those results to the creation of the new Prototype K-8. During this phase, the facilities list and program for the new K-8 were developed in conjunction with District staff. High performance school design and LEED principles have been incorporated into the facility design to reduce first-time costs and operating expenses, preserve the environment and improve student performance, comfort, and safety.

Project Description:

1) Control of Institution: Public
2) Type of Institution: Traditional
3) Education Model: School-within-a-School
6) Community: Designed for Community Functions

Locale:
Suburban

Methodology & Standards:
First-Cost; Life-cycle Costs; Prototype Design; State Standards PLUS

Funding Method(s):
N/A

Project Delivery Method(s):
CM At-Risk

Sustainable/Green Design:
Principles Followed: LEED
Green Elements Included: Site Selection; Use of Daylighting; Acoustics; Water Conservation; Materials Selection; Building Orientation; Natural Ventilation; IAQ/IEQ; Energy Conservation; Building Automation Systems/Controls
Alternative Energy Sources: Solar

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Associated Firms and Consultants:
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- Interior Design: Zyscovich Architects
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- Food Service/Kitchen Consultant: Joseph Merlino / Merlino Associates
- Cost Consultant: Gary Weinstein / CMS Construction Management Services
- Code Consultant: Sarah Maman / Fire, Life Safety & Security Institute, Inc.