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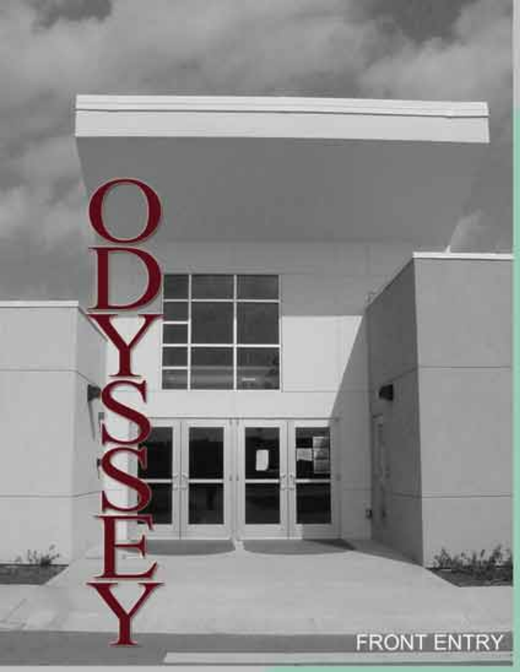
ODYSSEY CHARTER SCHOOL



FRONT ENTRY

SOUTH CLERESTORY

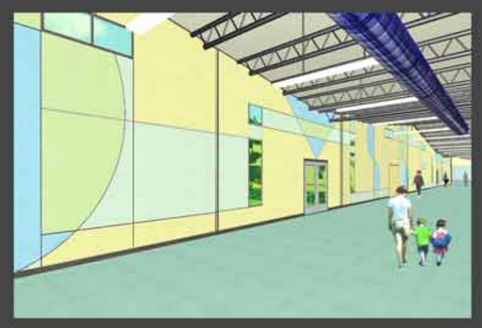
MAIN CORRIDOR

Odyssey Charter School is a 47,000 s.f. Pre-K through 8th grade charter school designed by Spacecoast Architects P.A. of Indialantic, Florida. The original prototype design for the charter school was implemented in Palm Bay, Florida. Odyssey achieves its energy efficiency through siting, daylighting, mass, proper material selection, HVAC design and Demand Management Strategies. Prototype-2 is the second project of the design, and achieves its even higher energy efficiency through on-site renewable energy utilizing thin film photovoltaics, as well as automated lighting control systems. Spacecoast Architect's goal for schools continues to be healthy environments and the highest level of sustainability.

PROTOTYPE-2
Orlando, Florida

SOUTH (FRONT) ELEVATION

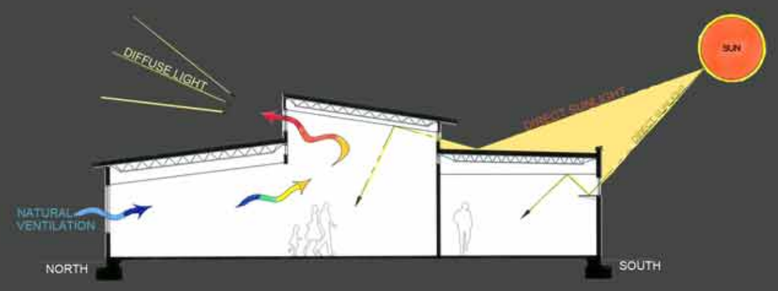
IMAGES FROM PREVIOUSLY BUILT VERSION OF THIS PROTOTYPE SCHOOL



VIEW DOWN MAIN CORRIDOR

SCHOOL LIBRARY

NORTH CLASSROOM



SECTION THROUGH CLASSROOM WING

North

FLOOR PLAN

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)

ENERGY PERFORMANCE RESULTS:

*** ENERGY STAR RATING: 100** * ENERGY USE INTENSITY (EUI) : 21.5 kBtu/sf/yr * ENERGY SAVINGS: 6,212,241 kBtu * CO2 SAVINGS: 361.6 tons CO2

* Total Annual Site Energy: 357,441 kBtu *Total Annual Energy Cost: $6,971

Annual Savings Statistics (compared to an average building EPA rating of 50)

DESIGNED TO EARN THE ENERGY STAR

The estimated energy performance for this design meets US EPA criteria. The building will be eligible for ENERGY STAR after maintaining superior performance for one year.

WEST ELEVATION

SPACECOAST ARCHITECTS, P.A.

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DESIGN CONCEPTS INCORPORATED INTO ODYSSEY CHARTER SCHOOL

- Building energy use reduced to less than 29% of conventional school. Site renewable power (PV) reduces balance of energy use to less than 6% of conventional school.
- Thin film photovoltaics integrated on south facing sloped metal roofing areas, and on flat built-up roofs. On-site renewable power generation can provide over 80% of balance of electrical power needs of school (including plug loads (computers, copiers, printers, etc)).
- Building orientation and glazing systems location maximizes daylighting while minimizing potential A/C loads; all classrooms view the natural conditions on the site.
- Daylighting for all occupied spaces, with highest emphasis in student occupied areas. All daylit spaces controlled with automated lighting control systems to operate lighting based on occupancy and lighting requirements within the space.
- Thermally efficient envelope incorporates white colored reflective metal roofing, maximum levels of roof insulation, and thermally efficient exterior walls utilizing high mass (reinforced tilt-up concrete) and exterior insulation (EIFS) to moderate interior temperatures while avoiding direct solar heat gains.
- Natural ventilation available in all occupied spaces utilizing appropriate location of windows and thermal chimney effect, with highest levels available in student occupied areas.
- High efficiency HVAC systems utilizing low temperature chilled water system, high efficiency variable speed circulation pumps and fan motors. Pre-dehumidification and pre-conditioning of outside makeup air, full HEPA filtration and CO2 sensors for outside air quality/quantity control.
- Thermal storage system (TES) installed as demand management strategy to utilize off peak "throw away" energy from night time produced power.
- Fully automated digital Energy Management System (EMS) with remote site access capabilities to control and monitor HVAC and automated lighting systems.
- Careful selection of materials and finishes to minimize embodied energy, maximize recycled and renewable materials, and to maximize best IAQ standards.