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Greenbacks vs. Green Design

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Achieving a balance between first-cost constraints and a sustainable design at Miami's Murray Park Community Center

Today's public sector client continues to demand more and more performance out their buildings, and able to pay less and less to get them built...it's the Mies van der Rohe adage, "less is more", operating in reverse. When conditions like this prevail, designers are challenged to achieve a meaningful balance between first-cost constraints and their commitment to sustainable design.

The City of South Miami's Murray Park Community Center, designed by the Miami architectural firm MCHarry Associates, illustrates that these two agendas are not mutually exclusive; and that they can, in fact, be successfully addressed with quality architecture that is affordable, efficient, and environmentally responsible.

On the first-cost front, the Murray Park architect was able to mitigate an early-on bust between neighborhood development interests and project funding through a series of community workshops. This forum allowed local residents, city staff and the design team to distill the building program to its essence, reducing the program by more than 25% without losing its primary objective; creating a facility that combines athletic and recreational activities with educational opportunities for the city's youth, adult, and senior population.

The result, a 23,000 square foot, two story building constructed for less than \$130/sf, and which incorporates an impressive array of sustainable 'green' design features that do, in deed, advance the cause for environmentally responsible design. Can the architectural and engineering community deliver 'green' on a lean budget...absolutely! Below is the various LEED criteria that Murray Park worked to meet.



Murray Park Community Center. Exterior photo by Dan Forer.

LEED Guide
Cool Roofing
Sustainable Flooring
Concrete
Indoor Air Quality/GREENGUARD

Sustainable Sites

Site selection - An 'asset based' approach to siting the Community Center building has proven successful in initiating revitalization of the city's single most depressed neighborhood, a symptom of which has been exhibited in the underutilized open field public park environment central to the neighborhood.

Urban redevelopment - By channeling development to a predominantly urban environment, the character of which is largely defined by an electrical sub station to the east, and auto repair shops and a vacant warehouse to the south, the project is able to take advantage of existing infrastructure. This, in turn, precludes encroachment on the city's limited open green space, and the loss of valuable tree canopy.

Alternative transportation – The Murray Park Community Center is located within easy walking distance of the South Miami Metrorail Station which, in conjunction with dedicated carpool parking and a secure bicycle parking area, assists in encouraging public use of alternative modes of transportation.

Reduced site disturbance – During the design phase of the project, the building program was reduced by more than 25% without sacrificing user needs. This, in turn, reduced the building footprint with a corresponding reduction in on-site surface parking.

Energy and Atmosphere

Optimize energy performance – Computer modeling and analysis techniques were used to establish a base case that meets the minimum prerequisites of the ASHRAE/IESNA 90.1-1999 standard. Interactive energy use analysis of selected base building systems resulted in an overall systems design that generates a measured reduction in energy consumption.

Measurement and Verification - the building incorporates both an automatic exterior lighting control system, and variable frequency drive controls on the exhaust fan system to reduce overall energy consumption.

Additional commissioning – Through a variety of predesign and design phase 'commissioning workshops' with the owner/user, maintenance and engineering, and the design team, the entire building was successfully constructed and calibrated to operate efficiently and effectively as intended.

Materials and Resources

Storage & collection of recyclables – Space has been reserved for the collection of dry waste recyclable materials within the building and immediately adjacent to the exterior trash pickup area.

Local/regional materials – A majority of the building's structural frame, floor and roof framing, and exterior envelope are constructed of materials manufactured locally, within a 500 mile radius of the site. 100% of this material, which represents approximately 22% of the total construction value of the building, is extracted, recovered, and manufactured locally.

Indoor Environmental Quality

Minimum IAQ performance – The building meets the threshold requirements of the Ventilation for Acceptable Indoor Air Quality standards prescribed by ASHRAE 62-1999.

ETS (environmental tobacco smoke) control – Building occupants and all HVAC systems are precluded from exposure to tobacco smoke by virtue of a smoke free policy imposed by the Florida Clean Air Act enacted July 1, 2003.

CO2 monitoring – With intent to sustain long term occupant health and comfort, the building's HVAC system has been designed with an integral CO2 monitoring system serving those areas with high occupant densities, principally the gymnasium.

Increase ventilation effectiveness – The building's ventilation system was designed to deliver an air change effectiveness (E) greater than 0.9 as defined by ASHRAE 129-1997.

Construction IAQ Management Plan – An indoor air quality management plan was implemented during the construction and pre-occupancy phases of the project that met the threshold requirements of the SMACNA 1995 IAQ Guideline for Occupied Buildings Under Construction. Additionally, absorptive materials stored on-site during construction were protected from moisture damage; and HVAC filter media put into use during construction was replaced immediately preceding building occupancy.

Low-emitting materials – The incorporation of Volatile Organic Compounds (VOC) into the construction were limited by carefully crafting specifications for project sealants, adhesives, paints, and composite wood materials.

Thermal comfort – A thermally comfortable environment was designed to support the productive and healthy performance of the building occupants. This was accomplished by incorporating the results of energy code and A/C load calculations.

Daylight and views – To the greatest extent possible, visual access to outside views and/or daylight was made available from regularly occupied spaces.

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