PROJECT PROFILE

ARMED FORCES RESERVE CENTER - ORGANIZATIONAL MAINTENANCE SHOP (OMS) – UNHEATED STORAGE (UNH STR), JUANA DIAZ, PR

30.5% reduction in energy costs (LEED)

49.9% reduction in water use

98.5% of construction waste diverted from the landfill

LEED Facts

Armed Forces Reserve Center-OMS-Unh Str, Juana Diaz, PR

[redacted]

LEED for New Construction Version 2.2
Certification awarded March 31, 2011

Gold 39

Sustainable Sites	8/14
Water Efficiency	3/5
Energy & Atmosphere	8/17
Materials & Resources	7/13
Indoor Environmental Quality	8/15
Innovation & Design	5/5

*Out of a possible 69 points

Photography Courtesy of: Michael Baker Jr., Inc. & Denmarsh Photography

ORGANIZATIONAL MAINTENANCE SHOP – UNHEATED STORAGE, JUANA DIAZ, PR

Armed Forces Reserve Center Earns LEED Gold

BACKGROUND INFORMATION

The Armed Forces Reserve Center (AFRC) is a joint project serving a 150-member for the U.S. Army Reserve (USAR) on approximately 8.5 acres of Puerto Rico Army National Guard (PRARNG) property within Fort Allen, near Juana Diaz, Puerto Rico. The primary facilities include a two-story 49,320-square-foot AFRC and a 150-square-foot unheated storage building. The AFRC provides critical training, administrative offices, educational facilities, an assembly area, a library, a learning center, an arms vault, physical fitness areas, and a weapons simulator and storage facility for USAR and PRARNG units in the Juana Diaz area. The AFRC surrounds a central palm tree-lined courtyard, which provides an abundance of natural light on both floors of the reserve center. The AFRC is named after Major General Salvador Padilla.

"As a new and environmentally friendly facility, this building sets the standard for future construction here in Puerto Rico. Thanks to the efforts of the Corps of Engineers and contractors we were able to accomplish all the requirements for LEED Gold certification. We look forward to more construction projects of this type that bring a real solution to the environmental concerns of our island."

Lt. Col. Carlos Caez, Puerto Rico National Guard Construction and Facilities Manager

STRATEGIES AND RESULTS

The project achieved Gold LEED® certification for new construction from the U.S. Green Building Council. The design reduced potable water use by 49.9% from a calculated baseline design through the energy saving fixtures including low flush toilets and urinals. In addition, drip irrigation was installed to reduce water loss by evapotranspiration and bubblers were installed for trees delivering water below the surface, reducing evapotranspiration effect. Through irrigation systems, potable water consumption was reduced by 81.3% from a calculated baseline.

Through energy modeling, this design achieved energy cost savings of 30.5% using the ASHRAE 90.1-2004 Appendix G methodology. Energy efficient measures include an improved thermal envelope, high efficiency glazing, reduced lighting power density, occupancy sensors, and energy efficient HVAC system. This project incorporated enhanced commissioning, a step beyond fundamental commissioning, which incorporates early involvement in the project's development to verify that the designed systems perform as intended.

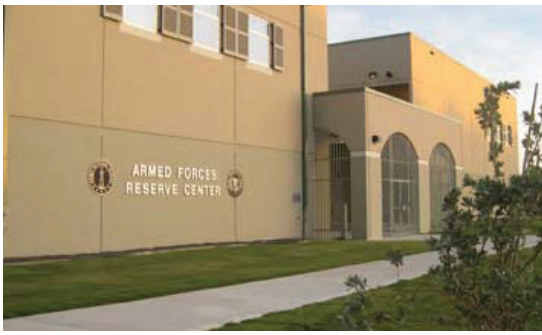
LEED credits were also awarded in terms of materials used and recycled. Twenty-three percent of the project materials are extracted, processed, and manufactured regionally within 500 miles of the project site and thirty-four percent of the total building materials content have been manufactured using recycled materials. Seventy-eight percent of the total wood based building materials were harvested from FSC certified forests. During construction, approximately ninety-eight percent (or 18,690 cubic yards) of on-site generated construction waste was diverted from landfill. This project purchased 70% of the building's electricity from renewable sources by engaging in at least a two-year renewable energy contract, which met an extra credit for exemplary performance requirement.

FEATURED INNOVATION

This project was awarded with an Innovation and Design Process credit for demonstrating exemplary performance in reducing heat island effect to minimize impacts on microclimates and human and wildlife habitats. The guideline for exemplary performance is to incorporate a combination of site hardscape for 100% of nonroof impervious surfaces. This project used high albedo materials on 100% of nonroof impervious surfaces meeting the exemplary performance requirements.

NOTABLE LEED FEATURES

- 81.3% reduced potable water consumption with installed irrigation systems
- 49.9% reduction of potable water use
- 30.5% energy cost savings based on ASHRAE 90.1-2004
- 70% of the predicted annual electrical consumption over a two-year period purchased via Green-e accredited tradable Renewable Certificates (RECs)
- 98.52% (18,690.18 cubic yards) of on-site generated construction waste diverted from landfill
- 23.60% total building materials, by value, is comprised of building materials and/or products that have been extracted, harvested, or recovered
- 78.84% of total wood based building materials is harvested from FCS certified forests



U.S. Army Engineer District, Louisville

Architect: Michael Baker Jr., Inc.
Civil Engineer: Michael Baker Jr., Inc.
Commissioning Agent: Solutions AEC
Contractor: The Korte Company
General Contractor: San Juan Construction
Electrical Engineer: Engineering Consultants, Inc.
Interior Designer: Michael Baker Jr., Inc.
Landscape Architect: Michael Baker Jr., Inc.
LEED Consultant: Michael Baker Jr., Inc.
Lighting Designer: Engineering Consultants, Inc.
Mechanical Engineer: C.E. Jarrell
Plumbing Engineer: C.E. Jarrell
Structural Engineer: Michael Baker Jr., Inc.

Project Size: 49,470 square feet
Total Project Cost: $14,749,145
Cost Per Square Foot: $298

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ABOUT LEED

The LEED green building certification program is the national benchmark for the design, construction, and operations of green buildings. Visit the U.S. Green Building Council's Web site at www.usgbc.org to learn more about LEED and green buildings.

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