13TH COMBAT AVIATION BRIGADE (CAB) AIR TRAFFIC CONTROL TOWER (ATCT) FORT CARSON, COLORADO

48.8% reduction in energy costs (LEED)

37.0% reduction in water use

78.3% of construction waste diverted from the landfill

LEED Facts

13th CAB ATCT
Fort Carson, Colorado

LEED for New Construction Version 2009
Certification awarded September 23rd, 2014

Gold	**71**
Sustainable Sites	16/26
Water Efficiency	6/10
Energy & Atmosphere	28/35
Materials & Resources	6/14
Indoor Environmental Quality	9/15
Innovation & Design	3/6
Regional Priority Credits	3/4

*Out of a possible 110 points

Photography Courtesy of: Dressel-Martin Mediaworks

13TH CAB AIR TRAFFIC CONTROL TOWER

Fort Carson Building Awarded LEED Gold

PROJECT BACKGROUND

As part of the relocation of the 4th Infantry Division to Fort Carson, CO, a Combat Aviation Brigade was established at Butts Army Airfield (BAAF). In support of Fort Carson's goal of becoming a Net Zero Energy (NZE) Installation by 2020, the development of BAAF required that all facilities be NetZero Ready by maximizing the use of energy efficient equipment, constructing highly insulated building envelopes, and optimizing building orientation while promoting continuous commissioning and energy monitoring during operation. The BAAF development sustainability goal directed that all new construction achieve a minimum Silver Certification level under LEED for New Construction v2009.

This project consisted of the design and construction of an Air Field Operations Building (AFOB) and Air Traffic Control Tower (ATCT) for the 13th Combat Aviation Brigade (CAB) at Fort Carson, Colorado, providing command, control and management of flight operations, services, and movement control for the entire BAAF . The single story AFOB houses Airfield Command and Operations, Airfield Dispatch, Weather Station, Pilot Briefing Area, and Airfield Services, and the 10-story ATCT serves as the primary FAA or International airspace interface that controls all ground and air movement for the Army Aviation Complex. The project includes an exterior secure storage building and exterior covered storage area adjacent to the Privately Owned Vehicle (POV) parking lot and parking apron. Site improvements include landscaping, site utilities and pavement. The project was designed to achieve NetZero Ready status through the use of co-designed renewable energy sources and the implementation of sustainable strategies.

STRATEGIES AND RESULTS

A unique challenge for energy savings was the high process electrical loads associated with the ATCT/AFOB, approximately 41% of the energy use of the facility as designed. This process load was based on the actual equipment that was being procured by the airfield. To achieve the energy efficiency and sustainability objectives established for BAAF development, the facility was designed and constructed to minimize electric, heating, and cooling demands. The design-build team integrated a high concentration of traditional energy efficiency strategies to achieve extraordinary results: incorporated passive and active renewable energy systems (focusing on maximizing the use of passive systems), provided an energy efficient building envelope design, specified LED lighting and advanced lighting control systems, incorporated daylighting, connected the facility to the district cooling and heating system, employed energy recovery and economizer cycles for HVAC energy savings, designed the building's site using native landscaping to decrease water and energy usage, and selected water efficient plumbing systems. Uniquely, the building envelope includes a roof mounted transpired solar collector system to preheat ventilation air. Furthermore, to achieve energy usage goals and offset the majority of the process electrical load, the project includes a photovoltaic panel array that provides power generation for this building of approximately 48.3 MWh annually. These integrated strategies resulted in a Net-Zero Ready facility achieving a 44.5% reduction in energy usage.

The LEED certification documentation not only tabulates energy efficiencies but also demands that environmentally friendly building materials are selected and socially sustainable operational practices are implemented to achieve a certification award from the Green Building Certification Institute. Strategies such as connection to the campus bus service, providing bicycle storage and changing rooms to encourage decreased POV usage, preferred parking for Low emitting and Fuel efficient vehicles, site design that includes dedicated open space beyond the building envelope, use of recycled and regional materials, promotion of recycling on site, and specification of low Volatile Organic Compound (VOC) containing building materials, are all features that lend value to the certification award. Finally, USGBC has identified local design priorities that are given higher value during the rating process. For the Colorado Springs area, a priority on energy optimization, renewable energy systems and site selection of predeveloped land were defined as the most valued strategies and were accomplished in this design. The construction of this energy efficient facility and its ultimate certification with a Gold rating further aligns with Fort Carson's objective that all new vertical construction be Net Zero Energy Ready. With an initial mandate for the design-build team to incorporate sustainable features and energy efficient systems to qualify for a minimum certification level of LEED® v2009 Silver; the project is an over-achiever. After it was registered with the USGBC and certified by GBCI, it achieved LEED Gold certification at no additional cost to the Government.

"LEED certification identifies 13th CAB Air Traffic Control Tower as a showcase example of sustainable design and demonstrates your leadership in transforming the building industry."

USACE Director of Public Works, Ft. Carson

U.S. Army Engineer District, Omaha

Owner: U.S. Army
Design-Builder: Hensel Phelps
Architects: Jacobs
Structural/HVAC/Civil Engineers: Jacobs
Electrical/Plumbing Engineers: Jacobs
Energy Modeling: Jacobs
Landscape Architect: Hensel Phelps
Interior Designer/Lighting Consultant: Jacobs
Commissioning Agent: Farnsworth
Owner's Representative: Directorate of Public Works, Fort Carson
Construction Manager: Hensel Phelps
Geotechnical: North American Testing, Inc.
Sustainable Design Consultant: Jacobs

Project Size: 22,664 square feet
Total Project Cost: $10,891,000
Cost Per Square Foot: $480

Photographs Courtesy of: Dressel-Martin Mediaworks

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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