



13TH COMBAT AVIATION BRIGADE (CAB) AVIATION SUPPORT BATTALION (ASB) HANGAR FORT CARSON, COLORADO

119.7% reduction in energy costs
(LEED)

39.0% reduction in water use

89.7% of construction waste
diverted from the landfill

LEED Facts

13th CAB ASB Hangar
Fort Carson, Colorado

LEED for New Construction Version 2009
Certification awarded December 14th, 2015

Platinum 81

Sustainable Sites 22/26

Water Efficiency 5/10

Energy & Atmosphere 33/35

Materials & Resources 6/14

Indoor Environmental Quality 8/15

Innovation & Design 4/6

Regional Priority Credits 3/4

*Out of a possible 110 points

13TH CAB ASB HANGAR

Fort Carson Building Awarded LEED Platinum

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 through maximizing the use of energy efficient equipment, constructing highly insulated building envelopes, optimizing building orientation while promoting continuous commissioning and energy monitoring during operation. The BAAF development sustainability goal was that all new construction achieve a minimum Silver Certification level under Leadership in Energy and Environment Design (LEED) for New Construction v2009.

This project consisted of the design and construction of an Aviation Support Battalion (ASB) Hangar for the 13th Combat Aviation Brigade (CAB) at Fort Carson, Colorado. The project was based on the U.S. Army Corps of Engineers (USACE) Center of Standardization (COS) floor plan, but adapted to the project locale. This 136,377 square foot aircraft maintenance facility includes administrative/operations space, maintenance and repair shops, parts and tool storage, over 86,500 square feet of aircraft maintenance bays, 58,000 square yards of airfield pavement, and two exterior rotary wing wash racks. The facility houses up to 14 rotary wing aircraft and supports the maintenance activities of 328 soldiers.

Fort Carson is home to the 4th Infantry Division's 1st Stryker Brigade Combat Team (BCT), 2nd Infantry BCT, 3rd Armored BCT, 4th Sustainment Brigade and the Combat Aviation Brigade. Fort Carson also has tenant units assigned including the 10th Special Forces Group (Airborne) and the 71st Ordnance Group (Explosive Ordnance Disposal). The Installation, located in beautiful Colorado Springs, Colorado, was established in 1942 through land donated by the City of Colorado Springs to the War Department after the attack on Pearl Harbor. The Mountain Post Garrison Team provides units mission support and services including quality of life programs for the Fort Carson Soldiers, Families and the community to enable forces to execute expeditionary operations and to minimize stress on Soldiers and Families in a time of persistent conflict. The Fort Carson vision is to be the "Best Hometown in the Army - Home of America's Best."

STRATEGIES AND RESULTS

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 that incorporate passive and active renewable energy systems (focusing on maximizing the use of passive systems), provide an energy efficient building envelope design, provide Light Emitting Diode (LED) lighting and advanced lighting control systems, incorporate daylighting, connects to a district cooling and heating system, incorporates building site design and native landscaping to decrease water and energy usage, and select water efficient plumbing systems. Uniquely, the building envelope includes in-slab radiant heating and a transpired solar collector to preheat ventilation air. Furthermore, to achieve energy usage goals, the project includes a photovoltaic panel array providing power generation for this building of approximately 2,130 MWh annually. These integrated strategies result in a Net-Zero facility.

The LEED certification not only tabulates efficiencies but also demands that socially sustainable strategies be employed to ensure that environmentally friendly building material selections and designs are preferred to achieve a certification award from the Green Building Certification Institute. Strategies such as preferred parking for Low emitting and Fuel efficient vehicles, use of recycled and regional materials, engaging a building systems commissioning expert as part of the design team, promoting recycling on site, preferring low Volatile Organic Compound (VOC) containing building materials, all lend value to the certification award. Finally, USGBC has identified local design priorities that are given higher value to the rating system. For the Colorado Springs area, a priority on energy optimization, renewable energy and site selection of pre-developed land were defined as the most valued strategies and were accomplished in this design. The strategies and ultimate certification furthermore aligned with Fort Carson's objective to ensure that all new vertical construction be Net-Zero Energy Ready. The design was verified by GBCI, and by mandate the project was to be awarded a LEED® v2009 Silver Certification as a minimum. The project was an over achiever. After it was registered with USGBC and certified by GBCI, it achieved LEED Platinum certification at no additional cost to the Government. This is the first LEED Platinum 'hangar' type facility for the Army, even more significant given that LEED was initially developed to rate office buildings in an urban setting.

"It is only common sense to pursue design and construction elements that will save resources, lower costs and provide an overall better facility for the Soldier. I believe it is our responsibility to lead the way for other government agencies and civilian industries to pursue sustainable construction projects."

MAJ Mark Himes, U.S. Army Engineer District, Omaha



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: Jacobs
Interior Designer/Lighting Consultant: Jacobs
Commissioning Agent: HB&A and Farnsworth
Owner's Representative: USACE Omaha District
Construction Manager: Hensel Phelps
Geotechnical: North American Testing, Inc.
Sustainable Design Consultant: Jacobs

Project Size: 136,337 square feet
Total Project Cost: \$54,531,000
Cost Per Square Foot: \$401.21

Photographs Courtesy of: Jackie Shumaker
 Photography

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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