



FORT IRWIN BARRACKS, FORT IRWIN, CA

30.8% reduction in energy costs
(LEED)

48.1% reduction in water use

97.9% of construction waste
diverted from the landfill

LEED Facts

Fort Irwin Barracks,
Fort Irwin, CA

LEED for New Construction Version 2.2
Certification awarded January 6, 2012

Silver 35

Sustainable Sites	5/15
Water Efficiency	3/5
Energy & Atmosphere	10/17
Materials & Resources	5/13
Indoor Environmental Quality	9/15
Innovation & Design	3/5

*Out of a possible 69 points

FORT IRWIN BARRACKS, FORT IRWIN, CA

New Barracks Receives LEED Silver

PROJECT BACKGROUND

In response to the President's 2007 transformation initiative to "Grow the Force," Fort Irwin began making preparations to build a 32,208 gross square foot barracks complex. Construction of a barracks on the Fort Irwin Garrison was needed to meet the mission related housing needs of Fort Irwin. The two story project consists of an 88 personnel barracks. There are 44 two-bedroom, one-bath units with accompanying kitchen modules. The project includes a central recreational area.

In 2006, the Office of the Assistant Secretary of the Army issued a memorandum requiring that all military vertical building construction projects be LEED Silver certifiable. The Fort Irwin Barracks demonstrates that LEED Silver is an excellent strategy for military barracks facilities to achieve and helps puts the Army another step closer to realizing its sustainability goals.

PROJECT COORDINATION

The project required a two-pipe water system because the domestic water does not meet California Health Standards. One pipe system provides reverse osmosis water supply to serve cold water at the kitchen sink and the drinking fountains. The other piping system provides domestic water service to the remainder of the building. The site location of the barracks was determined from the existing Fort Irwin Master Plan, which includes sites for future barracks on the property.

STRATEGIES AND RESULTS

Located in a remote location in the arid Mojave Desert, the long term sustainability of Fort Irwin depends on water conservation, energy independence and waste elimination management. The Barracks incorporated strategies to address many of these important objectives. The project exterior finish consisted of an Exterior Insulation and Finish System with low wainscoting of block veneer. A solar thermal system was located on top of the courtyard canopy to provide 30% of the building's hot water energy usage. This on-site renewable energy system will provide about 3.44% of the barracks energy needs through this clean energy source. A window shading strategy was included in the project design. Solar shading devices were installed on the first floor sleeping room windows. In addition, the roof overhangs are wide enough to shade the 2nd story sleeping room windows. The project team emphasized achieving a very high construction waste diversion (97.86%) which avoided utilizing the limited capacity garrison landfill. The Barracks design achieved a 49.4% reduction in potable water use through the use of low flow plumbing fixtures. The bathrooms include dual flush toilets which further reduce water use between full flush and low flush uses. Some features have been included in the Barracks that provide important environmental and health benefits for the troops. These include outdoor air delivery monitoring, increased ventilation, low VOC emitting materials, thermal comfort design and controllability of lighting and temperature systems.

NOTABLE LEED FEATURES

- 100% of Roof Material has a minimum Solar Reflectivity Index of 75%
- 80% Potable Water Use Reduction for Landscaping
- 48.1% Exemplary Potable Water use Reduction in the Barracks
- 30.8% Energy Efficiency Performance Improvement Reduction
- 3.44% On-Site Renewable Energy Generation
- 97.86% Exemplary Construction Waste Diversion from Landfills
- 28.06% of all building materials are from regional sources
- 19.7% Recycled Material Content
- 30% increased ventilation rates
- Controllability of Systems for Lighting and Thermal Comfort
- Outdoor Air Delivery Monitoring

"Nice configuration and everything is great. Overall the quality is nice and the design is great. Day room and the BBQ area make the barracks very nice and livable. Comfortable to live in and is a great improvement from other barracks I have lived in."

Quoted from SPC Rofail of the 51st TICO



U.S. Army Engineer District, Los Angeles

Owner: U.S. Army Garrison, Fort Irwin
Contractor/Design-Build Manager: Mortenson Construction
Architects: Tran System
Structural Engineers: Tran System
HVAC/Plumbing Electrical Engineers: MKK Engineers
Civil Engineer: Tran System
Landscape Architect: Tran System
Commissioning Agent: Precision Air Balance
Owner's Representative: U.S. Army Corps of Engineers
Geotechnical: Zeiser King Consultant
Sustainable Design Consultant: Mortenson Construction

Project Size: 35,274 square feet
Total Project Cost: \$7,191,000
Cost Per Square Foot: \$204

Photographs Courtesy of: U.S. Army Engineer District, Los Angeles

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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U.S. ARMY