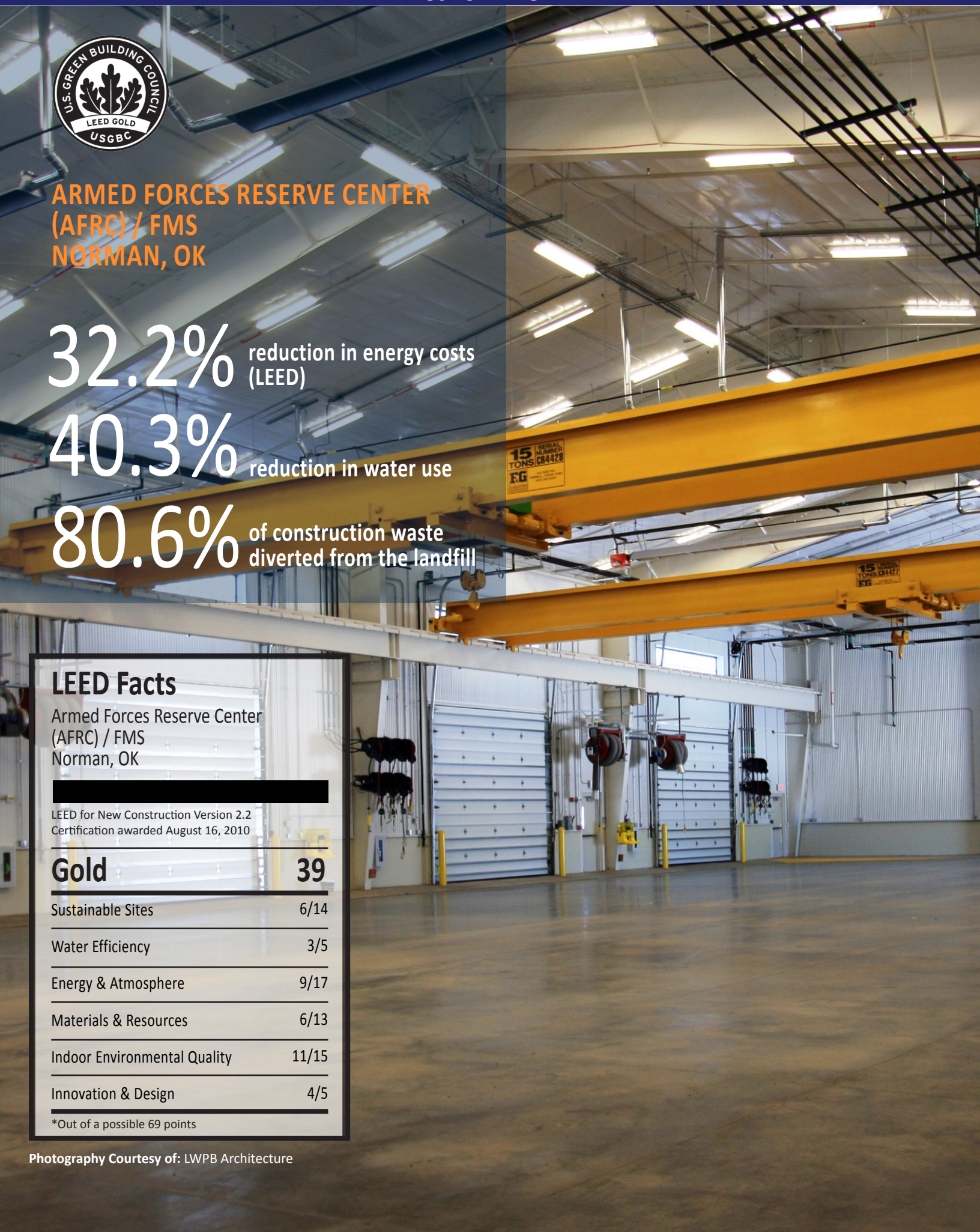
PROJECT PROFILE



ARMED FORCES RESERVE CENTER (AFRC) / FMS NORMAN, OK

32.2% reduction in energy costs (LEED)

40.3% reduction in water use

80.6% of construction waste diverted from the landfill

LEED Facts

Armed Forces Reserve Center
(AFRC) / FMS
Norman, OK

[redacted]

LEED for New Construction Version 2.2
Certification awarded August 16, 2010

Gold	39
Sustainable Sites	6/14
Water Efficiency	3/5
Energy & Atmosphere	9/17
Materials & Resources	6/13
Indoor Environmental Quality	11/15
Innovation & Design	4/5

*Out of a possible 69 points

Photography Courtesy of: LWPB Architecture

ARMED FORCES RESERVE CENTER (AFRC) / FMS

AFRC/ FMS Receives LEED Gold Certification

NOTABLE LEED FEATURES FOR NORMAN AFRC /FMS

- Complete Stormwater Detention on site
- 100% Cool/Reflective Roofing
- 82% Water Use Reduction (Landscaping)
- Full Building Commissioning (all energy/water consumptive systems, Acoustics, Life Safety)
- Enhanced Refrigerant Management
- Enhanced Indoor Air Quality during Construction Full Building Flushout prior to occupancy
- Outdoor Air Delivery Monitoring
- Automated and addressable Lighting Control Systems
- 38% Recycled Material Use
- 100% Buy America Compliant

The project also won national awards with the Design Build Institute of America and the Tilt-up Concrete Association.

PROJECT BACKGROUND

Following a facility needs assessment precipitated by the March 2008 Base Realignment and Closure Act (BRAC), the Oklahoma Military Department (OMD) determined that a new Armed Forces Reserve Center/FMS (AFRC) complex was required. The new AFRC was to provide facilities to be used for units during both drill weekends and full time occupancy, including space for administration and procurement functions, chaplain services, mess services, human resource services, physical training, classroom training, arms vault/storage and museum display. In addition, a new Facility Maintenance shop (FMS) on the campus was planned to serve as a main motor pool and service center for Army Reserve Vehicles and fleet maintenance logistics.

As a State of Oklahoma funded project, the AFRC had to comply with both state and federal regulations including the Energy Policy Act of 2005 which designates minimum energy savings targets required in the facility. In addition, the OMD requested that the AFRC be a LEED certified facility at the Silver level and have signature elements to distinguish the facility as a facility that upholds the looks and feel of a military facility and to extend the traditions of academy and armory combined. The new facility provides an economy of scale by sharing common spaces, energy management techniques of new construction and facility management, and more efficient utilization of training space; incorporates the latest anti-terrorism and force protection requirements; and incorporates internal flexibility to accommodate change over the life of the facility without undue expense of funds or material.

STRATEGIES AND RESULTS

The Armed Forces Reserve Center/FMS (AFRC) presents a unique opportunity to introduce a sustainably designed facility to various units that will utilize the building. The site features large water detention facilities to mitigate storm water runoff not to exceed pre-development quantity and rates. Porous surfaces at vehicle storage areas were introduced to limit the impervious surface and facilitate ground water recharge. Preferred parking spaces for fuel efficient POV vehicles and car pooling vehicles are placed near building entries, along with bicycle racks to encourage alternative modes of transportation to and from the site. Low water using native landscaping and turf areas, along with drip irrigation of trees and shrubs, accomplishes approximately 82% water irrigation savings. These features, coupled with further water savings by the use of water efficient plumbing fixtures inside the building, prompted the City of Norman to waive several permitting fees in recognition of the facility water reducing conveyance impact on local infrastructure.

The project utilizes a high thermal performance envelope using site cast tilt-up concrete panels, thermally broken low E glazed windows, and a reflective metal panel roof. The facilities high efficiency heating and cooling system are anticipated to reduce energy consumption by 32% over a standard constructed facility. Low water use plumbing fixtures account for a savings of 41% over standard fixtures. Working closely with a building commissioning agent, the building users have been trained to operate and tune the buildings systems for maximum efficiency and operations going forward.

To reduce the impact on landfills, approximately 81% of unused materials were diverted from the waste stream using a comprehensive waste management plan. The project team favored materials containing high recycled contents that were regionally sourced within the sites immediate region. Enhanced filtration of air systems and increased natural ventilation bolstered project's indoor air quality for building occupants. Finish materials such as paints, coatings, adhesives and flooring that emit low amounts or zero volatile organic compounds were specified as well.

"These projects were 100% Federally funded, but executed under a Military Construction Cooperative Agreement with the State of Oklahoma using State procurement procedures. The Design-Builder was required to achieve LEED Silver Certification as part of the performance specifications; and delivered LEED Gold Certification as a no cost betterment to the Government. "

COL Curtis Arnold, Oklahoma National Guard, Directorate of Installation Management

National Guard Bureau/ Oklahoma National Guard/ Oklahoma Department of Central Services

Architect: LWPB Architecture
Civil Engineer: MacArthur Associated Consultants
Commissioning Agent: Solutions AEC
Contractor: The Korte Company
Electrical Engineer: Electrical Design Associates
Interior Designer: LWPB Architecture
Landscape Architect: Howard and Fairbairn Site Design
LEED Consultant: LWPB Architecture
Lighting Designer: LWPB Architecture
Mechanical Engineer: C.E. Jarrell
Owner: Oklahoma Army National Guard
Plumbing Engineer: C.E. Jarrell
Structural Engineer: KPFF Engineering

Project Size: 216,000 square feet
Total Project Cost: $43 million
Cost per square foot: $199

Photography Courtesy of: LWPB Architecture

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.

Directorate of Installation Management
405.228.5647
Oklahoma National Guard