

Case study

Jack Evans Police Headquarters

Dallas, Texas



Award winning police headquarters sets new standard for city

The city of Dallas, Texas is committed to improving the quality of life for its citizens by providing healthier environments through its Green Building initiative. This commitment is exemplified by the Jack Evans Police Headquarters, which achieved a Silver certification under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) program for new construction. The city adopted Silver LEED certification as a standard for all its new facilities in January 2003.

The Jack Evans Police Headquarters is the new home of the Dallas Police Department. The six story, 350,000-square-foot facility consolidates administrative and investigation divisions of the city's police department, including a physical evidence laboratory and a police museum, which were all previously scattered among 17 different buildings. The facility is designed to accommodate up to 1,350 staff members.

The city challenged its project team, including Johnson Controls, with ambitious goals for the project. The goals included replacing the existing, overcrowded and antiquated headquarters and bringing all administrative divisions together in a professional environment that would optimize functional adjacencies and efficiency of operations. They also wanted to establish what is state-of-the-art for security planning and building technology in a major police facility, while creating an example of civic architecture and spurring the redevelopment of an economically depressed neighborhood, all on an aggressive budget of \$140 per square-foot.



But the city's goals did not stop there. After attending a LEED seminar in May 2000 held by the American Institute of Architects, Robert Van Buren, project manager for the Dallas Department of Public Works recognized an opportunity. "The brownfield site, along with other aspects of our design put us within striking distance of certification," says Van Buren. Upon further review, the city embraced the goal of attaining LEED Silver certification.

Designed for Silver

The 4.3-acre headquarters location is a former brownfield site just outside the city's central business district. An under-utilized parking garage across the street was leased to meet the 1,000-vehicle parking requirement of the new building and reduce the development impact on the site, allowing more open space for public areas. The site is just one block away from a light rail mass transit station, providing greater access, convenience and commuting options to employees and the public. Bicycle racks and shower facilities are provided along with 36 preferred parking spaces for carpools. And, the previously paved site was "restored" with native landscaping. The building itself incorporates numerous environmentally friendly features in four categories.

Water efficiency

- Storm water re-use provides 100% of landscape irrigation needs
- Potable water use was reduced by 21%
- Water conservation measures including waterless urinals, low-flow plumbing fixtures, ionization and filtration systems for cooling tower water treatment

Energy and atmosphere

- Higher insulation values in walls
- Lower U-factor insulating glazing units
- Reflective roofing material
- Electric lighting design to 0.99W/sf
- Continuous dimming day-lighting controls in perimeter spaces
- Occupancy sensors for lighting
- Use of water-side economizer, and plate frame heat exchanger for free cooling in winter
- Optimization of chiller part-load operation
- Enthalpy wheels recover sensible and latent heat from the conditioned exhaust air streams and reduce energy needed to treat the outdoor make-up air streams
- Natural gas generator to shed summer peak electricity and reduce cost
- Continuous measurement and verification of building systems for accountability and optimization of building energy and water consumption

Materials and resources

- Recycling program diverted over 80% of construction waste from landfill
- Over 25% of building materials/products used were manufactured within 500-mile radius

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ROBERT VAN BUREN
PROJECT MANAGER
DALLAS DEPARTMENT OF
PUBLIC WORKS

Indoor environmental quality

- Integrated permanent indoor/outdoor CO₂ sensors
- HEPA grade filtration system
- Indoor air quality management program used during construction
- Use of low VOC adhesives and sealants, paints and carpet products
- All office areas incorporate day-lighting and have views to exterior

The energy efficient design has saved the city of Dallas more than the estimated \$246,000 in energy costs annually. Demonstrating a relatively short-term return on investment was key to the city's approval of pursuing LEED certification according to Van Buren. "Reduced energy costs from things like improved control of HVAC and mechanical equipment and water conservation measures were critical. We were looking for a maximum 10-year return on investment as a result," he says.

Controls, measurement and verification key to certification

To optimize control of the building's HVAC, mechanical and electrical systems and equipment, Johnson Controls installed its Metasys® building management system. But for Jesse Dillard, energy manager for the city, optimizing control was just the first part of the challenge. "Measurement

and verification of energy consumption is a prerequisite for LEED," explains Dillard. "Johnson Controls worked with us early-on to ensure the required metering points were integrated with the Metasys system. The result is a very robust system with more monitoring equipment than a conventional building would have."

The Metasys system monitors consumption of electricity, natural gas, cooling tower make up water and domestic water. This permits detection and tracing of fluctuations in demand to reduce waste consumption. To ensure indoor air quality, exterior and interior CO₂ sensors are integrated with the system. In addition, permanent temperature monitoring and heat recovery systems are integrated with Metasys to provide a more pleasant working environment.

"The Metasys system not only enables us to do the required measurement and verification but also provides our operations personnel with a comprehensive view of all the integrated systems from a single point," says Dillard.

In an effort to further the public's understanding of the project, the city and Johnson Controls developed an education program involving an interactive electronic display in the building's lobby. "Because a lot of the sustainable features of the building are not readily apparent, this display will demonstrate what's been done and the benefit," states Van Buren. The education initiative provided an Innovation & Design credit under the LEED certification program.



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ENERGY MANAGER
CITY OF DALLAS



