

Oak Park Public Works Building Striving for LEED Silver

There are always unexpected challenges when designing buildings. Oftentimes the wants and needs of the owner change, and one project transforms into another that is completely different, full of its own new challenges. In the case of the Village of Oak Park Public Works building, plans changed overnight due to a devastating fire that destroyed the existing facility. The project changed from the renovation of and addition to

the existing buildings to starting fresh by designing one large facility that would encompass all the needs of Oak Park, with an appearance that fit in the historic community. Holabird & Root was ready for the challenge.

Since the site is located in the middle of a residential neighborhood, outreach meetings were held with members of the community to discuss issues concerning the project. Not only were storage and maintenance facilities needed, but also offices for the 85 to 90 individuals necessary to keep the community up and running. Those who had been living near the public works building before the fire expressed concerns about safety, noise, light spill, exhaust fumes, and unsightly industrial functions. Residents also voiced concerns about the building's aesthetics, suggesting that the new design should reflect the 1920s style of homes in the neighborhood. Many residents spoke about sustainable building practices, encouraging the Village of Oak Park to construct a "green" building capable of achieving LEED® certification. The Department of Public Works was already interested in building a more energy-friendly building, having previously conducted research on financial aid and grants that were available to offset the cost of designing and constructing an energy-efficient building. The Village was awarded a \$100,000 grant from the Illinois Clean Energy Community Foundation, with the stipulation that the project must apply for LEED certification, while also achieving a 25%

increase in its energy efficiency. There were many requirements the building had to meet in order to achieve a LEED Silver rating, including a restored brownfield site, recycled content and low-VOC construction material, and a reflective roof with green roof portions. The new 155,000-square-foot facility also needed to achieve energy optimization at 32.7% better than ASHRAE Standard 90.1-1999, as well as keep more than 87% of construction waste from landfills. Holabird & Root gathered their in-house team of LEED-accredited design professionals and studied the initial concepts for the building. The team then considered each component of the LEED checklist to determine which points were attainable, and then continued to use the checklist as a guide for the duration of the project. It was determined that the building's design would meet the requirements for LEED Silver certification under LEED-NC version 2.1. If awarded the Silver certification, it will be the first municipal public works facility in Illinois to earn this level of LEED certification.

After the goal was set for the project to achieve at least 33 of 69 possible LEED points, environmental consultants were on site to aid with demolition and site preparation, ensuring the contaminated soils were removed to a remediation site. This project qualifies for a brownfield redevelopment point under the Sustainable Sites category of LEED NC.

Energy conservation was the main focus as the building systems began to take shape, and



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The new 155,000-square-foot Public Works facility for the Village of Oak Park will likely become a model for future projects in the region.

Photos courtesy of Holabird & Root



Among the building's green features is the living roof, 10,000 square feet of vegetated space with white membrane covering the remainder.

it became clear that a simple 100% outside air system would use vast amounts of energy. To reduce the amount of airflow, Holabird & Root designed a system capable of reducing the amount of air that circulated through the space based on containment levels. The ventilation system was designed to monitor the amounts of carbon dioxide, carbon monoxide, and nitrogen dioxide, as well as reduce the airflow so the indoor air quality remained safe for workers. Incorporating heat recovery into the system also proved to be key in reducing the amount of energy used, with

energy recovery units designed to extract heat from the exhaust airstream and then transfer that heat indoor. Holabird & Root worked with the custom air handling unit manufacturer, Johnson-Marcraft, to design custom energy recovery units for the building. These units proved to be the main factor in energy savings for the facility.

The cavity wall's R-value, meaning the ability to resist heat, is over 1000% higher than required by ASHRAE; with its U-value, the rate of heat loss, it is almost 10% more efficient than the ASHRAE requirement. A 10,000-square-foot GreenGrid®

roof garden installed by Weston Solutions reduced storm water run off and provides window glazing, inventive light design, and heat recovery units, which resulted in a new facility that performs 15% better than was required by the Illinois Clean Energy Community Foundation grant. Six LEED points were earned in the Energy and Atmosphere category as a result.

Occupancy sensors were installed throughout the facility to continue the conservation of energy. Sensors were installed to turn off the lights after a space is vacant for fifteen minutes, and sensors in the administration offices were connected to the Building Automation System to limit the amount of airflow to unoccupied spaces. Energy conservation was a concern when lighting was designed, so linear fluorescent, compact fluorescent, and metal halide lighting fixtures were installed. The building's energy use from lighting, occupancy sensors included, resulted in a 35% reduction from that of an identical building designed to meet the energy code, saving the Oak Park Public Works an estimated \$144,000 on energy bills each year.

There was little-to-no cost increase in design services of LEED items. Holabird & Root has been providing sustainable designs as a standard for high-quality projects long before LEED became popular. Holabird & Root had meetings each month to discuss the cost versus potential LEED impact and to keep on track with the requirements of LEED, including paperwork and various design issues. Oftentimes the construction manager would inform the team of a cost that could be reduced if something were eliminated from the project. Holabird & Root would then give the Village of Oak Park the option, and typically they chose to maintain the value offered, electing to keep the item instead of lowering the overall cost of the project. There were costs for assembling the documentation, reports, and various forms for the LEED application, but no real additional fees were charged for the design or administrative work.

Not only was the facility designed to be energy efficient and environmentally friendly, but also practical for the workers and appealing to the community. Holabird & Root designed a facility that best utilizes the two-acre space, while still appealing to the aesthetic of the neighborhood. Everything, including up to 1,000 tons of winter road salt, is housed within the building. In keeping with the proportions of neighboring buildings, the second level is not the width of the building, and it is equipped with a Snow Command and Backup Emergency Operations with a 911 Center. Service space for the fleet of vehicles is located at street level, complete with an indoor parking space. Only the top two floors are visible, making the design fit within existing zoning height regulations.

The needs of the people of Oak Park were always the first consideration when designing the specifics of the facility. Additional features in the

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building, not part of the design, have prompted points to be applied for in the Innovation and Design category. This includes the public solar-powered trash container, which includes a self-monitoring compacter that uses solar panels to measure the volume of trash. The building is both attractive and beneficial for its workers, having used low-emission paints, adhesives, and carpeting throughout. Sustainability of the building will be measured not at the grand opening, but during its life and operation, since the Owner has committed to operate the facility in a sustainable fashion.

The Village of Oak Park Public Works building opened in September 2007 to a welcoming community. The new facility brought back the Public Works members displaced by the fire and integrated the various departments into a unique, high-tech facility that houses all the needs of the community under one roof, while saving enormous amounts of energy. This cutting-edge project has been featured in various magazines and honored with several awards, including Project of the Year by the Chicago Metropolitan Chapter of the American Public Works Association. If awarded the Silver certification, the Oak Park Public Works building will be the first public works facility to earn any level of LEED certification.

About the Author: *Founded in 1880, Holabird & Root's 128-year history reflects the evolution of American architecture. Since its founding, the firm has continually responded to new technologies, changing tastes, and shifts in the economy. From the early "Chicago School" skyscrapers, to the most recent award-winning designs, Holabird & Root is known for refined structures that endure. Today, the firm maintains a staff of over 115 professional architects, engineers, interior designers, graphic illustrators, and support personnel. Holabird & Root's main office is located in downtown Chicago, Illinois, with a second office in Rochester, Minnesota. For more information about the firm, please go to <http://www.holabird.com>.*

*Efficient Resolution of Construction Disputes
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Role of the American Arbitration Association (AAA)

The AAA does not mediate nor arbitrate disputes. Its main functions are to administer these processes and to maintain panels of neutral mediators and arbitrators in all fields of business endeavor. The AAA conducts educational activities for the training of mediators and arbitrators. AAA arbitrators and mediators attend training seminars and abide by the AAA's Code of Ethics requiring confidentiality and impartiality.

To initiate a mediation or arbitration, one or both parties can contact the AAA for full information and instructions.

All architects, engineers, and contractors who administer, prepare, review, or enter into construction or design agreements should have as a desk reference the Construction Industry Mediation Rules and Construction Industry Arbitration Rules. These two booklets are available at no cost from the American Arbitration Association, 140 West 51st Street, New York, NY 10021-1203 or from the local AAA office nearest you.

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In recent years, considerable study and experimentation has been applied to the prevention of disputes in the construction industry. The technique of partnering aims to eliminate disputes by promoting communication among the parties and their key employees.

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