# GreenSite recognizes High's LEED maintenance building

High Concrete Group LLC's LEED silver–certified maintenance building, completed in 2008 to be used by the maintenance department to service heavy trucks, pickup trucks, cars, and other plant equipment, was named the 2009 GreenSite Project of the Year in the Industrial category.

Sponsored by *Concrete Construction* and *The Concrete Producer* magazines, the GreenSite award recognizes concrete buildings that are built using sustainable design practices. Winners were selected based on factors such as innovative techniques, use of innovative materials or products, cost- or time-saving methods, innovative engineering design, workmanship, and creativity.

When precast concrete fabricator High Concrete Group decided to construct the new 16,200 ft$^2$ (1500 m$^2$), $4.1 million building on its campus in Denver, Pa., it wasn't a surprise that the company chose to use precast concrete.

The all–precast concrete facility was built with 40 thermally efficient carbon-fiber-reinforced precast concrete wall panels fabricated by the company's Springboro, Ohio, plant and was topped with 18 carbon-fiber-reinforced double-tee roofing members manufactured by the Denver plant. The double-tees are made with noncorrosive carbon-fiber flange reinforcement and are 10% lighter in weight than traditional double-tees.

Precast concrete components contributed to 15 of the 37 points in the LEED silver submittal prepared by High Construction Co., including two Innovation in Design (ID) credits and one prerequisite (EA Prerequisite 2). Through various techniques, the overall projected energy costs of the building were reduced 24.5% from a typical code-compliant structure.

Wall panels reinforced with carbon fiber provided structurally composite performance in a thinner, lighter wall section. The highly insulated building envelope has an *R*-value of 24. Carbon-fiber-grid-reinforced double-tees are lighter in weight and noncorrosive. Eight inches (200 mm) of insulation on the precast concrete roof double-tees provide an *R*-value of 40.

**This High Concrete Group maintenance building in Denver, Pa., has achieved a LEED silver certification and was named GreenSite Project of the Year in the Industrial category in 2009.** Courtesy of High Concrete Group.

Other sustainability benefits from the use of precast concrete include the light color, which reduces the urban heat-island effect and requires less artificial light to illuminate the building. The thermal mass and reflective properties of precast concrete moderate interior temperature changes and reduce the power needed for heating and cooling. The project also exceeded some of the limits for recycled content and regional materials in general construction and was able to use on-site production and batching of concrete.

One unusual sustainability aspect is that the precast concrete sandwich wall panels can be reused for different applications if the building is ever expanded or repurposed. Because the precasting process is self-contained, finishing materials and formwork are used multiple times.

Project participants included owner and concrete contractor High Concrete Group; architect and designer Greenfield Architects Ltd. of Lancaster, Pa.; and general contractor High Construction Co. of Lancaster, Pa. High Construction and Greenfield Architects are sister companies of High Concrete Group
—Source: High Concrete Group

## New Molin office certified LEED gold

Molin Concrete Products Co., a designer, manufacturer, and installer of precast concrete structural products, recently identified a need for additional office space for engineering, design, drafting, and estimating personnel in order to facilitate market growth.

Because of a growing awareness of sustainable design initiatives, Molin was determined to incorporate sustainable design principles in the new office. While utilizing its own precast concrete products to the fullest extent, Molin set out to demonstrate that precast concrete building products can result in sustainable buildings with aesthetic appeal and environmentally sensitive attributes. At the end of 2009, Molin received the news that it had achieved it goal with a LEED gold certification.

The components of this 7442 ft$^2$ (690 m$^2$) building demonstrate the use of sustainable products and high-performance systems to contribute to improved energy efficiency, resource efficiency, and indoor air quality.

With space available on the existing campus, the ideal location for the engineering and design office was adjacent to the current main administration office. This new building will provide office space for engineers, designers, drafters, and estimators. Fixed-wall offices are provided for seven staff members, with office-system partitions provided for up to 27 staff members. Additional functions include two conference rooms, an employee break room, and a combination plan room, print room, and file room. Employee services include men's and women's restrooms, a mechanical and electrical room, a shower room, and a janitor closet.

**The new Molin Concrete Products Co. engineering and design office in Lino Lakes, Minn., is LEED gold certified.** Courtesy of Erik Molin.

Various initiatives were employed in the design of this building to make it more energy efficient. Concrete contributes to several of these. The Molin precast concrete products used a fly-ash replacement for 36% of the portland cement, which contributed to the recycled-content value of the project. In addition, the *R*-value of 26 for the precast concrete wall systems creates greater thermal efficiency.

The building also has a comprehensive daylighting system. Tubular skylight systems increase interior daylighting. This type of skylight is ideal when used in combination with precast concrete roof slab. The roof openings are small relative to the amount of light entering the space, thereby limiting the effect of the opening on the structural capacity of the slab. Large exterior window openings also enhance daylighting, while high ceilings and side-light windows at interior doors also transmit daylight to interior spaces. Molin's insulated precast concrete wall panels provided flexibility in the sizing of window openings.

In addition to precast concrete's efficiency and the daylighting efforts, sunshades, also manufactured by Molin, are located at exterior south-facing windows to help reduce solar heat gain in the offices with south-facing windows and low volatile organic compound paints and interior finishes were used for a healthier indoor environment.

Molin's campus is situated within the Rice Creek Watershed District in Minnesota. Included in the scope of this project are restoration and enhancement of an existing wetland area, which has been restored using native vegetation as part of this construction project.
—Source: Molin Concrete Products Co.

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