

NEW ENGLAND **CONSTRUCTION**



**Shea Concrete's New Office Construction
Expedited Using Own Products**

Saurman Construction Speeds Building of **Shea Concrete's** Amesbury Headquarters Using Manufacturer's Precast Wall Panels

By Paul Fournier



Independent Concrete Pumping conveys ready mix to Bammco crew placing concrete in foundation wall forms for new Shea Concrete headquarters in Amesbury, Massachusetts.

New England precast manufacturer Shea Concrete Products expedited the recent construction of its new headquarters building using load-bearing wall panels fabricated at one of its own plants.

For a company accustomed to shipping precast products to construction sites throughout the region, this project called for the shortest haul in its nearly 70-year history – just 200 yards. That’s the distance 30 massive panels traveled from the company’s precast plant in Amesbury, Massachusetts, to its new headquarters on Haverhill Road (Route 110), located next door.

The proximity of the production facility to the new headquarters added to the efficiencies inherent in precast modular construction, shaving time spent erecting the building shell by the general contractor, Saurman Construction of Pelham, New Hampshire.

“We had never worked with the precast panels before, but they went up fast – we erected the entire first floor in just one day,” said George Saurman, Owner and a 30-year construction veteran.

Meeting LEED

Designed by O’Sullivan Architects Inc., with structural engineering provided by Boulay Consulting, the new building replaces the old Wilmington headquarters that had become inadequate in serving the company’s expanding operations.

“This new facility provides about three times as much space as our old headquarters,” said Greg Stratis, President of Shea Concrete Products. “It houses administration, accounting, engineering, and other important offices, and also has conference rooms and employee training rooms. In addition to providing needed space, the new structure has many sustainable properties,” Stratis said.

He indicated the company’s new headquarters building was designed to meet certain standards and strategies of the sustainable building rating systems of Leadership in Energy and Environmental Design (LEED).

Developed by the non-profit U.S. Green Building Council (USGBC) LEED includes a set of rating systems for the design, construction, operation, and maintenance of sustainable buildings. In broad terms, sustainability refers to the creation and maintenance of conditions and structures that are durable and ensure harmonious present and future co-existence of humans and the environment. With regard to building



Site photo shows stone bed for building’s basement slab-on-grade, and footing forms for six structurally isolated HSS columns, with Unit Construction’s Caterpillar 315 working in background.

design and construction, sustainability calls for such strategies as reducing energy and water consumption, managing waste, improving the quality of indoor environment, and employing non-toxic construction and maintenance products that help prevent or reduce pollution.

Sustainable and Comfortable

The fact that a new building incorporates precast concrete walls can augment its sustainability rating, according to the National Precast Concrete Association (NPCA), which long-time member Stratis headed as president in 2016. A non-profit trade association with 900 company members from 50 states, 11 Canadian provinces and several other nations, NPCA represents manufacturers of plant-produced precast concrete products and companies that provide equipment, supplies and services to the industry. According to NPCA, precast products are manufactured in plants under strictly controlled conditions to precise fabrication standards, arrive at a jobsite ready to be lifted directly into place, are quickly erected with small crews, and allow other trades to begin work sooner, saving construction time.



Locke’s 250-ton Grove crane steadies precast panel as Saurman crew guides it onto floor slab’s shiplap recess. Thirty panels were erected to form the shell of the new building.



Shea Concrete cast the panels with facades simulating brick work over granite blocks and solid lintels over doors and windows.



A pre-engineered light gage metal roof truss is ready to support the standing seam metal roof deck. Note the braced precast wall panels. Thirty panels were erected to form the shell of the new building.



Inside Shea Concrete's NPCA-certified plant, steel connecting plates are placed on wall panel forms before concrete is cast.

Stratis pointed out that while sustainable features were not required by the town, they were incorporated in the design to reduce unnecessary water usage, minimize construction waste, implement renewable energy sources and improve air quality.

"We wanted to do this to provide comfortable working conditions for our employees as well as help protect the environment," Stratis explained.

He said each department within the building has its own highly efficient heating, ventilating and air conditioning systems that produce excellent air quality, plus superior dust removal capabilities and acoustical design to dampen the sound of plant operations.

Concrete and Steel Shell

Shea Concrete's new headquarters building has a 4,600-square-foot, L-shaped footprint, with a 100-foot by 40-foot long leg and 30-foot by 20-foot short leg. It has a 12-foot-tall basement plus two 12-foot floors, providing a total usable space of roughly 13,800 square feet.

The structure utilizes 8-inch-thick load-bearing 5,000 psi concrete panels for three of its side walls. These three sides are supported by a 12-foot, 14-inch-thick cast-in-place foundation wall. The fourth foundation wall, an enormous 100-foot by 24-foot-tall by 14-inch-thick, cast-in-place structure, also serves as the fourth side of the basement and first floor. Precast panels fashion the fourth wall of the second floor. The panels were cast with facades simulating brick work over granite blocks and solid lintels over doors and windows.

The basement has a 4-inch-thick, cast-in-place concrete slab on grade, while the first and second floors utilize 6-1/4-inch composite slab consisting of 4-1/4 inches of lightweight concrete on 2-inch, 18-gage galvanized steel deck. Floors are supported by a grid of wide-flange steel beams, which in turn bear on beam pockets in perimeter foundation walls and on steel channel ledgers on the wall panels. For the building's

interior, steel 6x6 HSS (Hollow Structural Sections) columns help bolster the floor loads. Six foot square, 16-inch-thick concrete footings support the columns.

A pre-engineered light gage metal roof truss and standing seam metal roof deck complete the building shell.

Short Journey, Fast Lift

Work began at the headquarters site in 2016. General site work including utility and building excavation was performed by Unit Construction of Groveland, Massachusetts, in accordance with the civil engineering design of Millenium Engineering. Subcontractor Bammco Concrete Construction of North Billerica, Massachusetts, formed and placed concrete for the foundation walls, using Steel Dog forms made by Titcomb Bros. Manufacturing and supplied by A.H. Harris. Bammco installed about 430 linear feet of 12-foot-tall foundation walls – this included 100 linear feet of 12-foot forms stacked on top of the bottom row of original forms to produce the 24-foot-tall back wall.

Ready mixed concrete was supplied by McLellan Concrete and conveyed to the forms by Independent Concrete Pumping of Wakefield, Massachusetts, using a Schwing pump.

Saurman crews employed a 275-ton Grove GMK5275 All-Terrain Hydraulic Crane sup-

plied by Locke Crane Service of Tewksbury, Massachusetts, to offload precast panels from flatbed trucks after their brief journey from the Shea Concrete plant just yards away. After wall panels were put in place by the crane, and temporarily braced, AWS-certified welders joined the panels to each other and to the floor slab. This was done by welding steel plates that had been cast into the panels at the plant, to steel plates that had been placed in floor slabs at the jobsite.

Steel framing for the first and second floors including WF beams and HSS columns was fabricated and erected by Georgetown (Massachusetts) Steel Co.

Ready for Occupancy

The new headquarters building was ready for occupancy in December 2017. Family owned and operated, Shea Concrete Products was started in 1949 in Wilmington, Massachusetts, and now has locations in Amesbury and Rochester, Massachusetts, and Nottingham, New Hampshire. A member of the NPCA since 1974, the company produces many precast concrete products, from septic tanks, manholes and drainage structures, to steps and bulkheads, Easi-Set Modular Buildings and ReCon Retaining Wall Blocks. Stratis became President in 2016.



Crane lifts a section of prefabricated roof truss in place on top of wall panels.