

Project has received LEED Platinum certification

FOREST HOUSE DEVELOPMENT

Bronx, New York

Precast Concrete Hollow Core Plank; Wall Panels & Storm Capture[®] Storm Water Harvesting System

As part of Mayor Bloomberg's \$7.5 billion New Housing Marketplace Plan to provide affordable housing for 500,000 New Yorkers, the new Forest House development is designed as a "green" and energy savings precast concrete building, containing 124 affordable units available to households making 60% of the AMI or less. The 109,000 square foot building also contains a landscaped open space, 43 underground parking spaces, under the first level, and features a unique rooftop, commercial greenhouse that will yield 80,000 to 100,000 pounds of fresh produce a year to be distributed to residents and local markets in the Bronx.

CONSTRUCTION OVERVIEW

Oldcastle Infrastructure, using their expertise in precast concrete structures, manufactured 136,162 square feet of precast concrete hollow core plank for the floors and roof, which was specifically designed to handle the unique load of a roof top greenhouse and 70,000 square feet of precast concrete wall panels to construct an energy efficient building envelope for the eight-story Forest House Development building. The exterior precast walls were cast with Glen-Gery thin-brick and sandblast type finish (via form liner) with colored concrete to provide a comprehensive exterior finish.

DESIGN & CONSTRUCTION TEAM

General Contractor

Blue Sea Construction Co., LLC

Owner

Blue Sea Development Company

Architect

ABS Architects, Danois Architects P.C.

Engineer

Ty Lin International

Precaster

Oldcastle Infrastructure
Selkirk, New York and Edgewood,
Maryland, Colorado



Oldcastle Infrastructure Building Systems supplied locally produced precast concrete building components to allow the structure to be built quickly, and with minimal disturbance to surrounding areas. The site is located in a high density area with little space for construction activity. Precast elements will also create a superior energy-efficient building envelope.

SCOPE OF WORK

Precast Building Structure

A. STRUCTURAL ENGINEERING

Detailed engineering:

Drawings: Detailed drawings

- Multi-Family
- 8 story building
- 136,162 SF of precast concrete hollow core plank for foors and roof
- 70,000 SF of precast concrete walls

Break down of Precast Concrete components

- 110,000 sq ft of 8" Elematic planks in building
- 24,500 sq ft of 12" planks at rear courtyard and roof
- 190 pcs of 8" thk exterior bearing walls with thin brick
- 180 pcs of 8" thk interior bearing walls
- 34 pcs of precast parapets
- 49 precast lintel beams
- 37 precast stairs and landings
- Exterior precast walls have Glen-Gery thin brick cast into them
- 3,000 sq ft of solar panels

**OLDCASTLE STORMWATER SOLUTIONS
FOREST HOUSE STORMWATER HARVESTING SYSTEM**

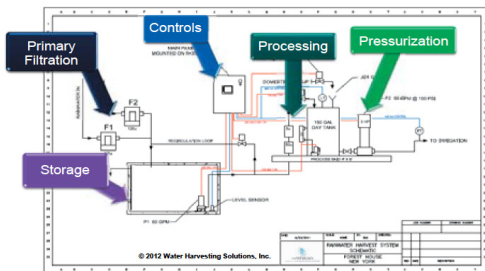
The project has a commercial hydroponics greenhouse built on the roof and incorporates Oldcastle Stormwater Solutions' Storm Capture Storm Water Harvesting System for rainwater harvesting. The Oldcastle storm water system captures and reclaims water to be used to help grow the greenhouse produce. *Solar panels supplied by Oldcastle, on the roof, will supply renewable energy for the greenhouse power needs.

Challenge

The system was sized to maximize water savings, but there was no room to excavate a cistern outside of the building. Water quality needed to be high so that there would no harm to the plants in the greenhouse. And because the building was to be LEED certified, the system needed to gather, store and report data on the rainwater, and make-up water used.

Solution

Oldcastle Stormwater Solutions designed a concrete vault for the system to be integrated into the basement of the modular concrete structure - both of which were supplied by Oldcastle. It was determined that 16,000 gallons was the most efficient cistern size to maximize savings using minimum building space. Wahaso designed and supplied the processing equipment to treat and pressurize needed for most rain events. Water in the cistern was transferred to a processing also served as the location for municipal make-up water to be added when the cistern is empty.



Oldcastle Precast worked closely with Blue Sea and ABS Architects, the project architect, during the design phase to develop a cost effective solution that met all of the project requirements.

**SPECIAL STORM WATER
HARVESTING SYSTEM
CONSTRUCTED**

In addition to the housing structure, Oldcastle Stormwater Solutions manufactured and installed their Storm Capture® Storm Water Harvesting System. The Storm Capture Harvesting System included special Storm Capture retention modules that handle approximately 16,000 gallons of captured water and an equipment package that treats the captured water making it available for irrigation to the roofmounted hydroponic greenhouse, providing another unique feature to this environmentally friendly project.



Wahaso's series 100 custom control system manages all system functions and records tank water levels, rainwater harvested and applied, and the amount of municipal water required during droughts.

Results

The rainwater system should save approximately 60% of the total water demand for the greenhouse each year - representing about 380,000 gallons per year. The UV system ensures that the harvested non-potable water should be safe for exposure to greenhouse workers. In addition to the rainwater harvesting system, the greenhouse will use left-over heat from the residential portion of the building. The farm will be used to provide fresh, perishable vegetables to a local non-profit food cooperative. The rooftop farm will be able to supply enough produce to meet the annual fresh vegetable needs of up to 4,500 people.

“Oldcastle’s unique thin brick inlay saved labor and reduced the construction cycle time for exterior walls”.

Barbara Skarbinski
ABS Architects

About Oldcastle Infrastructure

Oldcastle Infrastructure, A CRH Company, is the leading provider of building materials, products and services for infrastructure projects to several market sectors nationwide, including: Building Structures, Communications, Energy, Transportation and Water.

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