



PRECAST CONCRETE & LEED

MELROSE COMMONS, SITE 5

- Project Type: Housing
- Location: Bronx, NY
- Architect: Equus Design Group, Belmont, MA
- Engineer: William Atlas Associates, New York, NY
- Owner/Contractor: Blue Sea Construction, New York, NY
- Precaster: Oldcastle Precast Building Systems, Edgewood, MD

OVERVIEW

One of the most important things a building can do is help revitalize a neighborhood and bring with it a sense of community. Include environmentally friendly building materials and equipment, resulting in cost savings and comfort benefits for the tenants; and the result is a winning project.

This total precast affordable housing project is constructed in an urban neighborhood on a tight site. It provides its tenants with a safe, quiet living environment, including an outdoor garden and patio area with room for children to play and families to relax. The project is awaiting final LEED Platinum certification. Once approved, it will be the first total precast, affordable housing development in New York State to receive a LEED Platinum rating for Homes.

Originally designed as a masonry building, the owner chose to have the project redesigned using precast concrete to take advantage of precast concrete's inherent green building properties including recycled content, local availability, thermal mass, minimal air infiltration, durability and less material waste.

Speed of erection was another big advantage. In fact, within the first eight months earthwork and foundation issues caused the project to quickly get behind schedule. However, the entire structure was designed with precast concrete, which was erected in just five weeks. By the twelfth month the project was back on schedule.

TOTAL PRECAST STRUCTURE

The five story building superstructure is built entirely of precast concrete components, utilizing load bearing exterior wall panels and an interior load bearing corridor wall. The floors and roof are eight inch hollow-core plank and the stairwells, stairs, landings, roof penthouses and elevator shaft are all precast concrete.

The first floor panels are designed with reveals and finished with a light sandblast to emulate a stone base while the middle floor panels are finished with embedded thin-brick and inset medallions. A color additive was used for all exterior concrete panels to complement the two brick colors used on the project.

10 PERCENT

Amount of recycled content contained in precast concrete.

85 PERCENT

Amount of precast concrete regionally produced.

30 PERCENT

Amount the construction time was reduced.

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PRECAST CONCRETE'S CONTRIBUTION TO SUSTAINABLE CONSTRUCTION PRACTICES

Materials & Resources:

Precast Concrete was produced within 500 mile radius of the jobsite.

Precast concrete contained 10% recycled material content.

The use of a precast parapet at the roof allowed for pitching of the roof plank, eliminating the need for expensive tapered roof insulation.

Energy & Atmosphere:

Concrete's inherent thermal mass, resulting in less temperature fluctuations reduces HVAC loads, lowers overall energy consumption, and reduces heating and cooling costs.

Precast wall panels reduced the number of exterior joints, greatly reducing air and moisture infiltration creating a more energy efficient envelope.

In the urban setting, the acoustical properties of concrete greatly reduce outside noise.

Precast also allowed for large window openings to bring in more daylight than would typically be found on masonry constructed projects.

Ten specially designed wind-powered turbine engines are mounted on the precast roof parapet to generate electricity for the common areas, greatly reducing the building's energy consumption. A basement co-generation system, high efficiency fixtures and 100% ENERGY STAR® appliances further reduce energy consumption.

Sustainable Sites:

With the building envelope on the property line there was no room for staging or lay-down. The total precast building system and embedded thin-brick veneer in the exterior wall panels enabled the project to be quickly erected with limited disturbance or impact to adjacent properties and neighbors.

The precaster installed all the window and door headers and sills at their plant, saving time and the need for an on-site scissor lift on the project.

Indoor Environmental Quality:

The floors and roof are constructed using 4-foot wide hollow-core plank. Each housing unit has an individual ventilation system that exhausts air horizontally through the hollow-core plank. This system compartmentalizes each unit and removes the need for vertical exhaust chases to the roof, saving valuable floor space.

Formaldehyde free kitchen cabinets and low- or no-VOC finishes, sealants and adhesives were used. Precast concrete reduced overall construction time by 30%.

The project is currently awaiting final Platinum LEED certification. 



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