

An upcoming mixed-use complex on Long Island provides a new shopping and living option to the far-eastern reaches of New York City.



# Shopping Around

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**W**HILE CONSTRUCTION OF RETAIL SPACE has slowed down across the country, there are some positive signs. One of them—and not a small one—is located in Flushing, N.Y. on the east side of Queens, where a \$1 billion mixed-use project remains on schedule to be completed this fall.

Sky View Parc boasts 3.3 million sq. ft of space including 800,000 sq. ft of retail floor area, 1,100 residential condominium units, and sufficient parking for both shoppers and residents. The final piece of structural steel—there are approximately 17,000 in all, comprising 16,000 tons—was erected in February.

The complex consists of two steel-framed podium buildings, each with three levels. Above the east podium retail base, an 11-story steel-framed residential building and two additional 11-story concrete-framed residential towers were constructed on top of story-high transfer trusses. At the steel-framed tower, three rows of columns were arranged along the building length, allowing column bay sizes of 34 ft by 26 ft. Along with the use of

18-in.-deep girders and shallow 16-in. filler beams, large column-free bays were created to allow maximum flexibility for residential unit layouts as well as generous clear heights of 9 ft below the framing members. Transfer trusses were also used on the roof level of the west podium building, where they will support three future 14-story concrete residential buildings. The retail podium buildings flank a 900,000-sq.-ft precast concrete garage with space for 2,600 cars.

## Mixed-Use, Mixed Requirements

The design of large mixed-use projects presents several challenges due to the different tenant requirements within one building. Since the project was conceived as a retail project with residential buildings constructed on top, retail column bays of 36 ft by 32 ft controlled the layout of the steel framing.

Since retail column grids cannot be modified due to merchandising fixture layouts and the stores' aisle plans, the columns from



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The project is expected to increase commerce in Flushing, N.Y., which is also home to the New York Mets' new Citi Field Stadium.

Full-story transfer trusses support residential towers above retail space.



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In all, the mixed-use complex is comprised of 3.3 million sq. ft of space, including 800,000 sq. ft of retail floor area and 1,100 residential condominium units.



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The complex's three-story retail podium transitions to multiple residential towers above.

the residential towers could not penetrate into retail spaces. Welded steel transfer trusses and girders were used to transfer residential tower columns out to retail column grid locations below, thereby preserving the regular, long-span retail merchandising bays. This structural transfer was accomplished at a full-floor-height interstitial level directly below the residential towers, space that was eventually allocated to mechanical rooms and residential storage.

During the early stages of the project, the developer wished to build retail space that would attract national retailers and produce an upscale shopping environment in the Flushing area. With that in mind, a higher-than-code-required live load was used for the structural design of the floor framing systems. In addition, the developer wanted to offer floor plates that could be retrofitted easily as leases expired and new ones were signed. The use of structural steel and a composite concrete on metal deck floor system provided the structural capacity to not only support the heavy loads but also maintain the large retail bay dimensions, while at the same time maintaining an absolute minimum floor-to-floor height, keeping the overall building height to a minimum; one of the flight paths for LaGuardia Airport passes directly over the project, and thus the overall height of the rooftops of the residential towers was restricted.

### Less Piling Pressure

Yet another challenge faced on the project was the poor geotechnical conditions found across the complex's 14-acre site. Since Sky View Parc is located adjacent to the Flushing River, the subsurface conditions are a combination of soft clays and sands with little if any bearing capacity. Because of such conditions, the building foundation systems consist of approximately 5,500 driven H-piles and Monotubes varying in length from 60 to 120 ft. In order to minimize the building weight and the corresponding pile count and pile driving time, structural steel framing offered the best and lightest solution.

It also afforded the design architect the greatest degree of flexibility in the design of exterior canopies and sidewalk overhangs at the retail entrances. The large, monumental, curved glass structure at the main entrance to the retail plaza cantilevers 14 ft beyond the building's column lines and provides a three-story atrium behind the glass wall system. Cantilevered structural elements, moment connected to the roof framing, provide the structural system from which the hanging glass wall system will be supported. The stringent deflection requirements of the glass wall were achieved through the use of stiff cantilever elements, and the curved wall edges were formed with the use of curved steel edge members.

Although the current economic conditions may be daunting, Sky View Parc is a step in the right direction, as new, high-profile retail spaces tend to generate interest and activity. In a city of options, people are always looking for new ones. Beyond offering a new shopping and residential opportunity, the complex also offers a bright spot in the current downward trend in both of these markets—and perhaps hopes of a not-too-far-off economic recovery.

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### Structural Engineer

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### Steel Fabricator

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