121st Police Precinct Station House

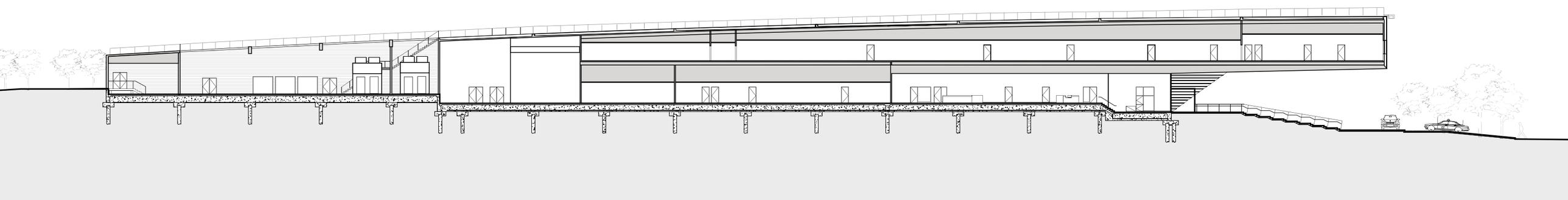
A cantilevered structural steel design allows Staten Island's new police station to sit on a challenging site—and become a new model for civic buildings in the city.

Completed in 2013, NYPD's 121st Police Precinct Station House on Staten Island is the first new stationhouse constructed in the borough in 50 years, accommodating the nearly 400 officers that serve in this rapidly growing borough. It is also the first police station in the city to be certified LEED Silver under former Mayor Michael Bloomberg's PlaNYC 2030.

Designed by Rafael Viñoly Architects (RVA), the 47,000-square-foot station's massing and design are boldly forward thinking for such a specific program. Sited on a long, narrow lot that was formerly a millings yard for the New York City Department of Transportation, the new building had to adapt to several challenging constraints: a block-long, sloping site that is smaller in the front of the building (facing east) than the back, a residential neighborhood to the north and a cemetery to the south. In response, RVA composed a 500-feet-long, gently arcing, two-story bar volume. The building's shape conforms to the narrow, irregular site, with smaller frontage (140 feet) at the bottom of the hill to the east, and the longest elevation facing north.

Bands of glazing accentuate the horizontality of the building's form and provide glimpses of the muscular trusses that support a massive second-story cantilever. Because of the slope of the site, the station is only one story on its western end, at the highest point of the hill. The cantilever makes a second story possible, and pushes the public face of the building close to busy Richmond Avenue: it gives the illusion that the lobby is closer to the street than it is, projecting a welcoming presence, but also maintaining security.

The impressive 95-foot overhang shelters broad concrete steps, creating a protected public entrance.

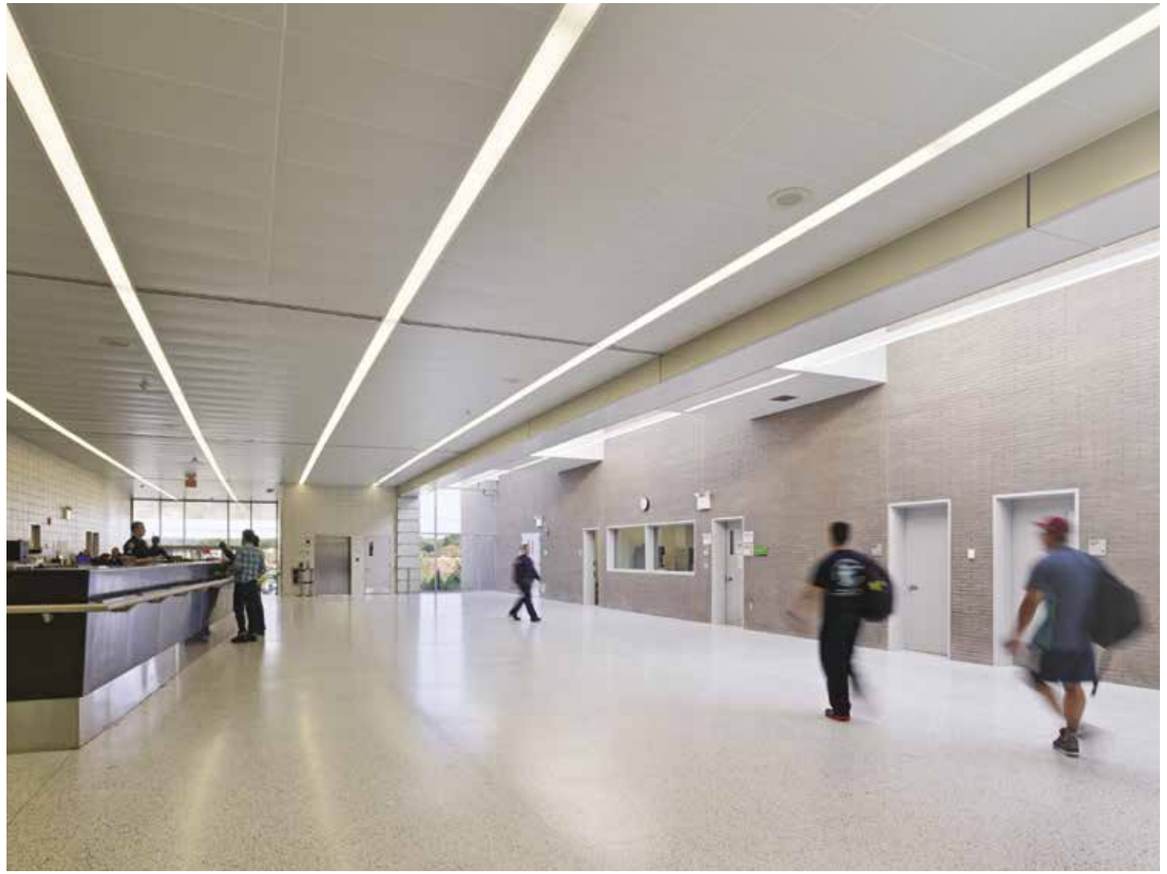


This spread Massive steel trusses allow the building's 95-foot cantilever, which creates a protective overhang above the main entrance and maximizes the long, narrow site.

This page top: Rafael Viñoly Architects; bottom and facing: United Structural Works; opening page photo: © Bruce Damonte; diagram: Rafael Viñoly Architects

The station's cantilever isn't just a grand civic gesture—it also allows for a column-free lobby and front desk area, preserving sightlines for safety and an open, airy atmosphere. Offices and storage areas line the perimeter of the ground floor behind the lobby. More offices and staff locker rooms on the second floor receive ample daylight from the bands of windows and have views out (the building's narrow footprint means that 80 percent of the spaces receive daylight and 95 percent have views). A single-story grey brick wing extends from the south houses a muster room for community meetings. It also holds a detainee processing area and the detective unit; their proximity to each other makes officers more efficient—as does a building that is only two stories. The rear third of the station, to the west, contains the building's mechanical systems and covered parking for smaller police vehicles.

As Wilmers explained, officers didn't want mechanicals located in a hard-to-reach basement, but it turned out a lower level would have nearly been impossible to construct. The architects and engineers discovered extensive amounts of granite running through the site, much of which needed to be drilled and removed. In order to create the required rock sockets, 108 caissons of 32- and 18-inches were drilled into the granite. Additional granite removal was required for the installation of grade beams,



This spread The station's cantilever creates a column-free lobby and front desk area and supports second-floor offices and staff locker rooms.

pile caps, underground utilities, and a storm detention vault.

The building's cantilever was the other big construction challenge. The design required the installation of two 95-foot-long transfer trusses featuring 120-foot back spans to counter the deflection forces of the extreme cantilever. In total four 18-foot-high steel trusses needed to be fabricated off site, disassembled, then shipped to Staten Island and reassembled laid on their sides. After reassembly, a crane operator delicately raised the truss upright, lifted and rotated them 180 degrees to land them onto previously installed steel braced frames and temporary steel shoring. Due to their composite structure, the trusses were not complete until all infill beams, metal decking, shear studs, and concrete slabs had been fully installed. The curve of the building, with a 3,800-foot radius of the building plan and a 40-foot curved increase in roof height, required careful fabrication and installation of intricate steel frame connections. The bottom courses have sections as large as W30x235, with W14x398 diagonal supports at the base of the cantilever.

In order to achieve a LEED Silver rating, "we were able to break out of some of [the client's] standards," said Wilmers, including an energy-efficient building envelope, low-E glazing on all exterior windows and the skylight above the lobby, brownfield reclamation of the site, stormwater management, bio-retention areas, and drought-resistant landscaping. "The building orientation is also advantageous for heat gain, with the short sides facing east and west," said Wilmers. The 121st Police Precinct Station House should also set a precedent for the City's station houses of the future—both in the way it solves the quandary of a challenging site with sophisticated steel construction, and with its sleek, modern design. It serves its users efficiently and is a gracious presence in a borough poised for change. □

Above left and facing: © Bruce Damonte; Above: Brad Feinknopf

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121st POLICE PRECINCT STATION HOUSE

Location: **970 Richmond Avenue, Staten Island, NY**
Owner: **New York City Police Department**, *New York, NY*
Architect: **Rafael Viñoly Architects**, *New York, NY*
Structural Engineer: **Ysrael A. Seinuk, PC**, *New York, NY*
Mechanical Engineer: **Joseph R. Loring and Associates, Inc.**, *New York NY*
Construction Manager: **The LiRo Group**, *New York, NY*
Structural Steel and Miscellaneous Iron Fabricator and Erector: **United Structural Works**, *Congers, NY*
Architectural Metal Fabricator and Erector: **RISA Management Corp.**, *Westbury, NY*
Ornamental Metal Fabricator and Erector: **RISA Management Corp.**, *Westbury, NY*