Manhattan Districts 1/2/5 Garage

A new toolbox for three Department of Sanitation garages conceals its operations behind an energy saving operable façade designed to stand up to the neighborhood's architectural dynamism.

HOW CAN A MUNICIPAL GARAGE be a gateway to one of the toniest areas in Manhattan? That was the question posed by the Manhattan Districts 1/2/5 Garage, at the corner of Spring Street and West Street, which now houses three district garages for the New York City Department of Sanitation (DSNY). A project that could have easily been swept under the carpet in another, less visible neighborhood, the building sits prominently on the western edge of SoHo, overlooking Hudson River Park and the river beyond. The positioning is a result of the Bloomberg administration's stance that it's not only economically depressed neighborhoods that should have to deal with the nit and grit of Manhattan's operations.

Ultimately, the challenge of meeting community and functional goals fostered a productive collaboration between the building's architecture team, DSNY, and the Department of Design and Construction (DDC). Designed by Dattner Architects with WXY Architecture + Urban Design, the new 425,000-square-foot building accommodates more than 150 sanitation vehicles, personnel facilities for 200 staff members belonging to the 1, 2, and 5 sanitation districts, as well as centralized fueling, truck wash, and repair facilities.

"The collaboration with the Department of Sanitation and the architects at Dattner and WXY was extraordinary, creating an environmentally progressive building that meets the challenge of being a good neighbor in a vibrant community," said DDC commissioner Feniosky Peña-Mora upon the building's completion in early 2016. The garage was awarded LEED Gold as a benchmark project for New York City's Active Design program, which promotes the use of architectural design to encourage movement and improved fitness among facility users.

The second, exterior skin of the garage's façade wraps the curtain wall with perforated, metal fins, breaking down the mass of the full-block building into smaller, rhythmic elements with the goal of playing on light and perspective to create an ever-changing experience for workers inside as well as for passersby.

Huge truck ramps wind upward from street level through five levels of the building. The third floor has 30-foot ceilings to accommodate truck maintenance, and the fourth and fifth floors, used for parking, have 24-foot ceilings. The generous ceiling heights are meant to account for the worst-case scenario of a sanitation truck breaking in full tipping mode; they also allow for non-vehicular operations including offices, locker rooms, and meeting areas to be stacked at half-height on the building's south side. There, hallways are banded by bright colors that jazz up the space within, and subtly show through to the exterior.

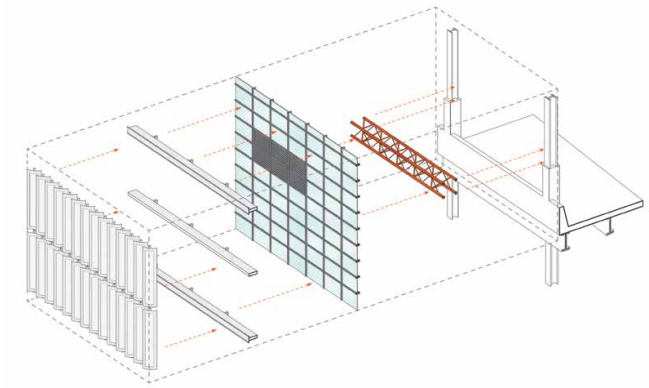
The façade evolved as a comprehensive design solution to multiple driving forces, according to Gia Mainiero, project manager for Dattner. One was the desire to bring abundant natural light into the facility without increasing heat gain, and a second was the concern that vehicular activity within the building be shielded from the surrounding community.

"The issue is the building looking clean and remaining clean," says Mainiero. Choosing a very specific metallic gray for the curtain wall may seem like a tiny decision, but multiplies into a much larger effect because of the façade's 400-foot-long western face.

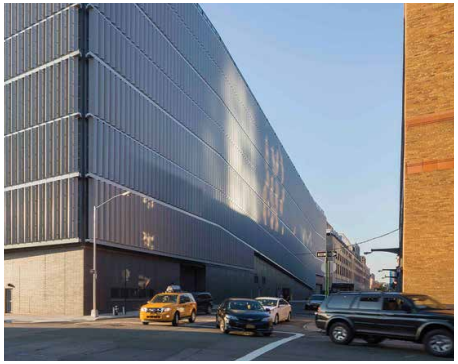
"With the fins and their perforation, the idea was to give the people working here a dignified and pleasant working environment," she adds. The fins allow that façade to take on a dynamic personality, creating a shimmering, lenticular effect if seen from within a passing car.

"That's why we all ached over setting the angle right," says Mainiero. "We wanted it open enough to achieve that sort of shimmery effect, as though the building is moving."

At the south-facing personnel areas and the west-facing repair bays, the façade's operable aluminum 30-inch fins continuously track the sun's location—the building management system sets



Clockwise from left An exploded detail of the operable curtain wall and truss structure from which it hangs. The building's west and south façades showing the curtain wall during fin installation (top) and after installation (below).The building's double-skin façade as seen from street level.



This spread photos: Wade Zimmerman; diagram: Dattner Architects; opening page and following spread: Wade Zimmerman

Right A view of the façade through a conference room window.
Below Painted hallways add a touch of color to the building exterior.

them perpendicular to the sun's azimuth to ensure optimal shading. The solar fins on the north and east elevations are fixed.

"The façade design developed through a series of computer models and solar analyses, followed by detailed investigations of appropriate materials and the creation of full-scale mockups," explains Mainiero. The 30-inch-deep fins vary in height from 12 feet to 15 feet. "The size of the solar fins was studied carefully, to ensure that they stood up to the 400-foot length of the building and maintained visual interest."

The fins' perforation pattern—including the percent of open area, perforation size, and spacing—was also studied extensively through samples and mockups. They are composed of a custom-perforated, shop-coated aluminum with a solid edge band (a product now being sold by the fabricator in a new product line).

These louvers create an organizational composition and a scrim, obscuring some of the messy business inside. They also screen the surrounding neighborhood, cutting down on headlight glare as trucks drive up the ramps inside.

"The right balance was found to allow views out, reduce overall weight, and maintain a robust appearance consistent with the building's design," says Mainiero. "Also, glass reflectivity was minimized to prevent extensive reflections of the sunshades and more patterns from occurring."

As with most complex facades, a high level of coordination and integration was required to support the project. In particular, the dynamic loading of the heavy equipment and vehicles within the building created slab deflections that exceeded those allowable by standard curtain wall systems. To address this condition, the architect, structural engineer The Burns Group, and façade consultant Front Inc. worked together closely to develop inventive structural anchoring details for both vertical and horizontal load supports. The curtain wall system is supported off of bright orange box trusses, an independent system connected to the building's structural columns, so it undergoes none of the live-load vibration or deflection of the structural slab. And "it's another opportunity to bring a pop of color into the space," says Mainiero.

The garage has quickly become an indispensable toolbox for the city's sanitation workers. But while fulfilling its duty to a place relentlessly in need of Sanitation Department resources, the building is also a strong addition to the architectural fabric of its neighborhood, never giving a glimpse of the trucks within. Even from above, the building adds to its surroundings with a 1½-acre green roof that reveals lush vegetation, rather than mechanical equipment, to occupants of taller buildings. The green expanse projects a defining message of the Department of Design and Construction's trailblazing projects for the city: highly visible is sometimes better. □

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Feniosky Peña-Mora, Commissioner, NYC Department of Design and Construction

MANHATTAN DISTRICTS 1/2/5 GARAGE

Location: **Corner of Spring Street and West Street, New York, NY**
Owner: **NYC Department of Sanitation**, *New York, NY*; **NYC Department of Design & Construction**, *New York, NY*
Architects: **Dattner Architects with WXY Architecture + Urban Design**, *New York, NY*
Structural Engineer: **The Burns Group**, *New York, NY*
Design Curtain Wall Consultant: **Front Inc.**, *Brooklyn, NY*
Mechanical Engineer: **Greeley and Hansen**, *New York, NY*
Construction Manager: **Turner Construction**, *New York, NY*
General Contractor: **DeMatteis/Darcon**, **Joint Venture**, *New York, NY*
Structural Steel Fabricator: **Owen Steel**, *Columbia, South Carolina*
Structural Steel Erector: **Stonebridge Steel Erectors**, *Morris Plains, NJ*
Miscellaneous Iron Fabricator and Erector: **FMB, Inc.**, *Harrison, NJ*
Curtain Wall Fabricator: **Gamma USA**, *New Rochelle, NY*
Sunshade Fabricator: **Construction Specialties, Inc.**, *Cranford, NJ*
Curtain Wall & Sunshade Erector: **Gamma USA**, *New Rochelle, NY*
Metal Deck Erector: **Stonebridge Steel Erectors**, *Morris Plains, NJ*