JACOB K. JAVITS FEDERAL BUILDING PAVILION

Security Detail

Waiting in long lines is not only aggravating and time consuming, in a service facility the experience can affect our perception of the quality of service provided. This was a concern for the 41-story, 2.4 million-square-foot Jacob K. Javits Federal Building in Manhattan's Civic Plaza, a facility housing 20 federal agencies, including the Immigration and Naturalization Service, which receives over 1,000 visitors per day. With the tightened security measures put in place after 1995, before entering the building each one of these visitors must undergo a rigorous security screening process that can take up to two minutes per person, leaving long queues at the mercy of the weather. To solve this problem, and improve the overall security of the building, the GSA commissioned architecture firm Lehman Smith McLeish and structural engineering firm Weidlinger to design a pavilion on the Broadway side of the building. Wanting to maintain the open, glassy aspect of the original 1967 Kahn & Jacobs-designed lobby, the team chose structural steel to frame the pavilion, which provided the rigidity needed to support a cable net curtain wall with slim column profiles for an airy, light-filled environment.

The choice of material offered other benefits for the project as well. "Structural steel was chosen because it is lightweight and the structure is supported on top of an existing underground garage," explains Weidlinger's Paul Hobblemann. "It was desirable to keep the loads at a minimum."

While the existing lobby was accessed via a sunken plaza, the new pavilion raises the building's entrance to street level, creating direct views from inside, through an expansive cable-net curtain wall, to pedestrians going up and down Broadway, a design decision that both improves security and imbues a welcoming air to the facility. The long, low, horizontal form of the pavilion also creates a human-scaled juxtaposition to the massive structure beyond, which dominates the immediate skyline. But in spite of these augmentations, the steel-and-glass articulation of the addition speaks directly to the 60s modernism of the Javits Federal Building, while at the same time introducing the advances of 21st-century technology.

The pavilion is a self-supporting structure for lateral and vertical loads. Its framing system is a mix of rigid frames and diagonal bracing that rests on the slab of the parking garage below, which was reinforced as necessary. The system is composed of a mix of ASTM A992 Grade 50 wide flange members, ASTM A500 Grade B HSS, ASTM A36 bars and plates, and ASTM A53 pipe sections. Wide flange members were used primarily to frame the roof, which spans 22 feet, while HSS were used for most of the columns. Left exposed and treated with Cafco Spray Film intumescent paint, the HSS cut a slim profile behind the cable net wall, allowing unimpeded sightlines into the pavilion and across the public plaza. Most of the connections between members were bolted on site, but the rigid (moment) connections were field welded. The bolts used were generally ASTM A325, and the entire assembly was erected piece by piece by one crawler crane.

The structural steel framing system provided the rigidity needed to support the jewel of the pavilion—its cable net curtain wall. The system actually combines a mullioned curtain wall with vertically strung cables for additional lateral support. The combination of these systems created a higher level of visual transparency as it allowed the mullion sizes to be kept at a minimum. The cables run vertically behind the curtain wall's aluminum framing system, connecting either to a wide flange beam in the roof or to plates that were shop welded to the HSS columns. "They prefabricated as much as they could," explains Hobblemann. Stainless steel clamps secure the cable system to the curtain wall's aluminum mullions. The wall is glazed with low iron, low-e coated glass panels, 5 feet wide and in varying heights. Manufactured by Guardian Architectural Glass, the panels feature an air gap for insulation.

Like many of the existing stock of federal buildings, the Javits exemplifies 1960s modern architecture, a typology whose open-planned lobbies were designed for free entry and movement. Introducing controlled access to these buildings, so necessary in our current political climate, without sacrificing the high-minded ideals of the original designers creates a real architectural challenge. With their pavilion, LSM has shown that it is possible to maintain mid-century modernist openness while at the same time improving security, a job that would have been all the more difficult without structural steel. **M**

Facing and above The pavilion provides a space for sheltered queuing while increasing the quality of the federal building's security.

Facing Structural steel HSS columns back the pavilion's cable net glass facade, providing strength and narrow profiles that maintain openness and views.
Above The pavilion raises the original sunken entrance to street level.

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Paul Hobbleman, Weidlinger

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Location: **26 Federal Plaza, New York, NY**
Owner: **General Services Administration, Public Building Services**, *New York, NY*
Architect: **Lehman-Smith + Mcleish PLLC**, *Washington, DC*
Structural Engineer: **Weidlinger Associates**, *New York, NY*
Mechanical Engineer: **WSP Flack + Kurtz**, *New York, NY*
General Contractor: **Volmar Construction, Inc.**, *Brooklyn, NY*
Curtain Wall Consultant: **Advance Structures Inc.**, *Los Angeles, CA*
Structural Steel Erector: **Global Iron Works**, *New York, NY*
Miscellaneous Iron Fabricator and Erector: **Global Iron Works,** *The Bronx, NY*
Architectural Metal Fabricator and Erector: **Action Bullet Resistant Inc.**, *West Islip, NY*
Ornamental Metal Fabricator and Erector: **Global Iron Works**, *The Bronx, NY*
Curtain Wall Fabricator: **United States Aluminum**, *Waxahachie, TX*
Curtain Wall Erector: **Action Bullet Resistant Inc.**, *West Islip, NY*
Metal Deck Erector: **Integrated Construction Inc.**, *Hicksville, NY*