Milstein Family Heart Center
the latest in medical advances, the hospital leadership and key donors, including the Milsteins, wanted a building that would buoy its patients’ morale—giving the gift of hope to those facing the threatening illness. Ian Bader, the project’s lead designer for architects Pei Cobb Freed & Partners, knew immediately how to deliver this kind of reassurance in the form of architecture: The site, a cramped plot at the south edge of the hospital’s upper campus, overlooked the Hudson River and Palisades. Bader intended to bring this view to the interior, opening up the facility to the soothing effects of unfettered daylight in the process. The problem was how to do so without also causing wild swings in temperature. His solution was to enclose the building in a four-story-high glass climate wall—a dynamic double curtain wall that tracks the diurnal course of the sun, controlling incoming daylight while keeping the hospital’s occupants in immediate touch with the glory of the natural world. “Looking outwards becomes an event of hope,” explains Bader. Lessons learned from thermal performance and unrivaled craftsmanship, the facade system also helped the project to earn a LEED Gold rating. More than just an expansion of the hospital’s facilities, the addition creates a new entry sequence to the Milstein Heart Center, ushering visitors in from Fort Washington Avenue along a curving passageway that opens into a naturally illuminated four-story atrium. Glass-floored bridges cross the atrium, spanning between the addition and the existing Irving Pavilion and linking directly to corridor waiting areas that abut the curving climate wall. Constructed of custom steel box beams, the bridges support a structural glazing floor system that allows daylight to pass freely through the space’s water white glass curtain wall and skylight. A single, mid-span vertical cable suspended from the atrium roof above is used only to control deflections and vibrations. The bridges connect the neighboring Irving Cancer Center with the floors of the new building, facilitating continuity between medical departments. The four-story atrium is constructed with both a glass ceiling and an approximately 45-by-70-foot glass facade. The paramount aesthetic goal was that the structural support of the atrium facade be as weightless as possible in order to leave views of the Hudson River and beyond unobstructed. An efficient single-plate steel gridier system spanning between the new addition and the existing Irving Pavilion supports the atrium roof. The gravity load of the atrium wall is supported by small diameter bright drawn stainless steel 316 SS x9 strand cables hung from the atrium trusses above. The lateral support of the vertical wall is provided by prestressed, Vierendeel horizontal trusses, constructed of a thin plate and prestressed horizontal cable. The glazing is supported from these systems with Pilkington Optimate insulated glass units, meaning that the light that comes through is undissipated by high-performance coatings, which tend to tint the sun’s full-spectrum rays. “We live in a filtered world,” muses Bader. “I tried to avoid that here.” The trade-off, of course, is that the glazing offers little in the way of shading. To make up for this, Bader and his team designed a system of computer-controlled fabric louvers, essentially motorized vertical blinds that track the trajectory of the sun. In the evening, the system is completely open, at midday it is closed, and between these two extremes the panels adjust accordingly, optimizing the amount of light passing through at any given time. Typically, a computer-controlled louvers track daylight throughout the day, optimizing the amount of light entering the building. Above right: Prestressed, Vierendeel trusses, constructed of stainless steel 316 SS x9 strand cables hung from the atrium trusses above. The lateral support of the vertical wall is provided by prestressed, Vierendeel horizontal trusses, constructed of a thin plate and prestessed horizontal cable. The glazing is supported from these systems with Pilkington Optimate insulated glass units, meaning that the light that comes through is undissipated by high-performance coatings, which tend to tint the sun’s full-spectrum rays. “We live in a filtered world,” muses Bader. “I tried to avoid that here.” The trade-off, of course, is that the glazing offers little in the way of shading. To make up for this, Bader and his team designed a system of computer-controlled fabric louvers, essentially motorized vertical blinds that track the trajectory of the sun. In the evening, the system is completely open, at midday it is closed, and between these two extremes the panels adjust accordingly, optimizing the amount of light passing through at any given time. Typically, a
high performance glass would have a shading coefficient of .6 to .45,” says Bader. “The shading coefficient of this system is very low—.1 or .05. You would have to have a virtually opaque wall to get that.” In addition to the blinds, the airspace features a stainless steel catwalk system, a custom grating supported by small-diameter pipe members integrated into the climate wall support structure, that allows easy access for maintenance.

The wall’s double laminated glass panels are a variety of sizes, though they are generally 5 feet wide and 16 or 17 feet high depending on floor-to-floor heights. The wall does not rely on a mullioned framing system, but upon structural glazing and custom-designed point supports.

The point supports attach to a system of crisscrossing post-tensioned fine ground brush drawn 304 stainless steel rods that hang from the ceiling and are drawn down by coil springs at the wall’s base. This system kept the 3/8-inch diameter rods as slim as possible, as the structures in tension require significantly less material to handle the applicable loads. Rods also tie the tensioned system back to the floor plates to absorb lateral forces, primarily wind loads. W&W Glass erected the wall with stainless steel components milled by TriPyramid Structures.

Behind its sophisticated steel and glass core, The Milstein Family Heart Center now stands as a hopeful refuge for patients and their families, with enlarged details of Hudson River School painters’ landscapes on the walls of the waiting areas and lobby imbuing a natural vibrancy and depth to the center’s interior and reiterating the addition’s strong ties with the natural world. Luminous between NewYorkPresbyterian’s older masonry structures, “All the elements of the center were carefully engineered like pieces of jewelry—each item has its own special identity and purpose,” says Bader. “And while the existing buildings are not architecturally distinguished, they are of archaeological value, allowing a layering of stories to happen. The dialogue is alive and well here.”

**Facing page**

Glass-point supports attached to unstranded post-tensioned steel rods drawn by coil springs in the wall’s base.