



PDHonline Course C685 (2 PDH)

Distinctly Different or Dysfunctional? The San Francisco Federal Building

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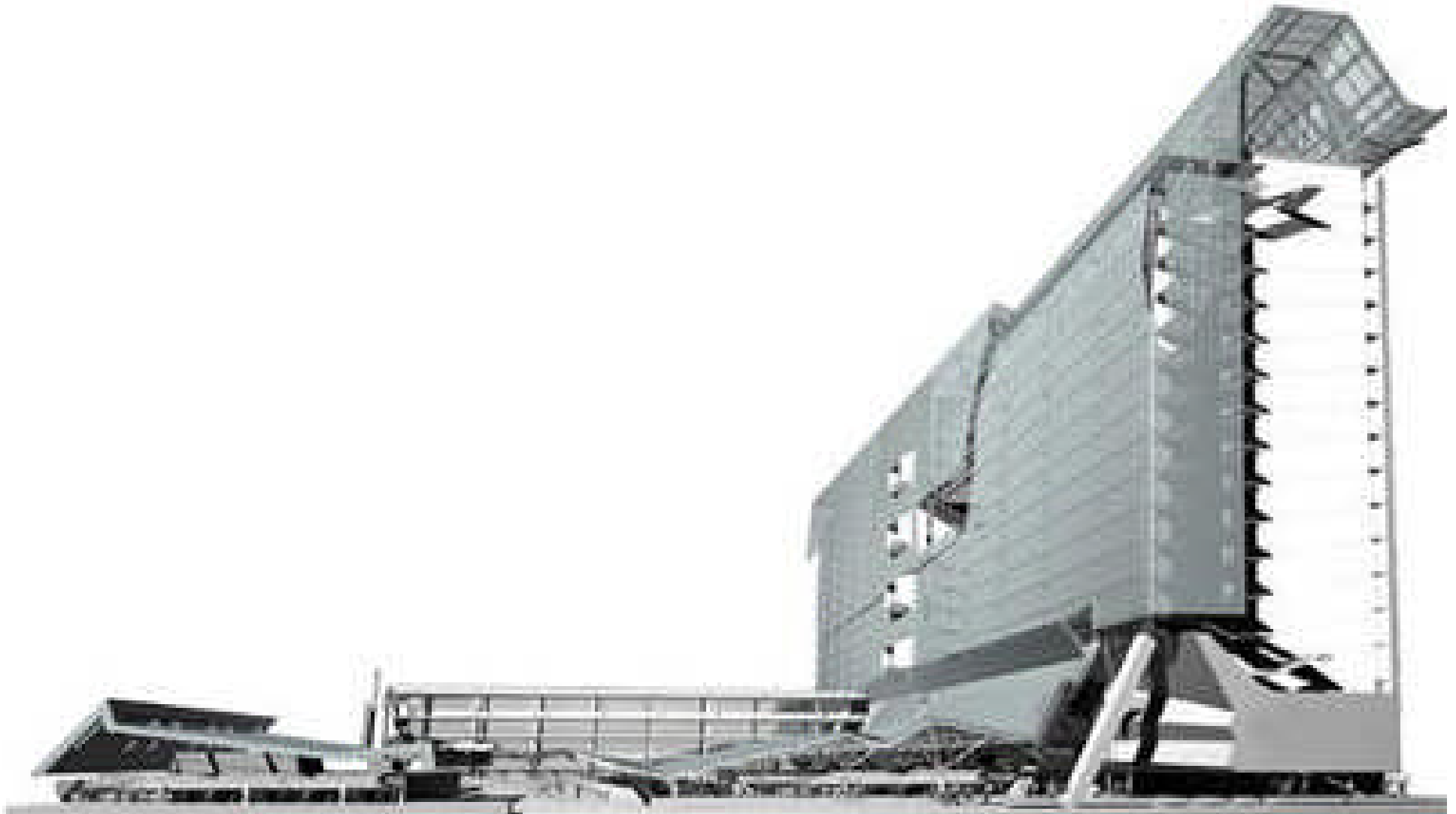
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Distinctly Different or Dysfunctional? ***The San Francisco Federal Building***



“It’s a good time to be Thom Mayne. A founder of the Los Angeles-based firm Morphosis, he has evolved from brash outsider into one of the country’s most celebrated architects in less than a decade by infusing his industrial-machine aesthetic with a slyly idiosyncratic sensibility. And he pulled that off while taking on an improbable mix of clients, including public school administrators and government bureaucrats. His recently completed Federal Building in San Francisco is his most powerful government work to date, its slender form and perforated metal skin a clever play on notions of transparency in an era when the fear of terrorist attacks is prompting government agencies and corporations to turn their offices into armored compounds...”

The New York Times, March 14th 2007





“...Thomas Mayne’s new George H.W. Bush Federal Building now looms over midtown San Francisco. While people have sharply divergent reactions to its unique exterior design...the verdict on the structure’s function as an office space for federal employees is nearly unanimous: it is a disaster. Not that architectural critics care. Bedazzled by unusual design features and its focus on energy conservation, reviews of Mayne’s latest work seem to ignore whether it fulfills its functional role as a federal office building...”

BeyondChron, March 3rd 2008

“Architecture is a confluence of cultural, political, and ethical decisions that occurs in an estuary of broad societal currents; thus, ever-changing, it encompasses the aesthetic, the tectonic, and the functional, the urban and the global - and now the sustainable. The San Francisco Federal Building offers a frank, contemporary response to its context, but more importantly it establishes a benchmark for sustainable design in its use of natural energy sources. During the design process, we learned that the same decisions that maximize energy efficiency could also help create a high-quality workspace that redefines bureaucratic culture. The building physically democratizes the workplace as it enhances health and comfort and empowers its users with a sense of control over their surroundings.”

Morphopedia



Above: caption: “The new San Francisco Federal Building, designed by Thom Mayne: The exterior includes a screen that curls just over the top of the building.”

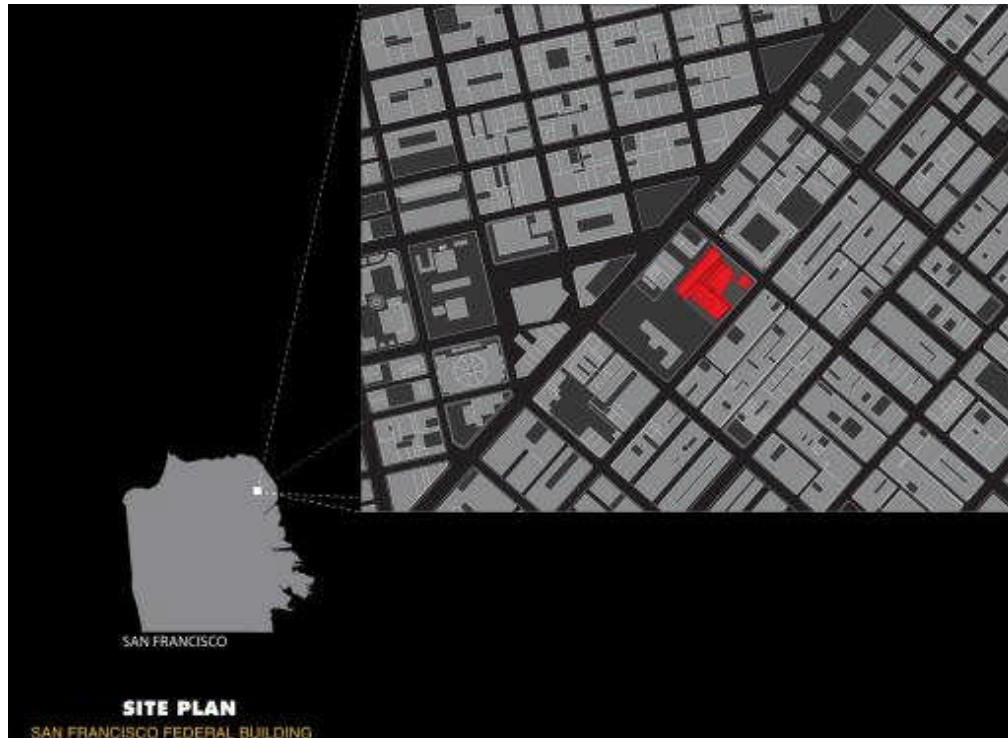
Left: caption: “The lobby of the new San Francisco Federal Building uses leaning columns to help create a sense of airiness”

“The idea of ‘green’ buildings is a terrific marketing concept. In San Francisco, it has helped grease the political roadway for massive, view-blocking luxury condominiums, implying that building these structures is more environmentally sustaining than leaving land vacant. Few seem to care whether green buildings can be a nightmare for those having to work inside high-rise structures lacking heat or air conditioning...”

BeyondChron, March 3rd 2008

“...The building may one day be remembered as the crowning achievement of the General Services Administration’s Design Excellence program, founded more than a decade ago to remedy the atrocious architecture routinely commissioned for government offices. Under the leadership of Edward A. Feiner, the agency’s former chief architect, it has pushed through some of the most important civic buildings since the New Deal, including a stellar courthouse designed by Richard Meier in Islip, N.Y., and Mr. Mayne’s new federal courthouse in Eugene, Ore. Since Mr. Feiner left the agency in 2005, some have fretted that the program may be unable to maintain that level of ambition, raising the prospect that the San Francisco building, which will be formally dedicated in July, might serve as a bookend to a heady phase of government-sponsored architecture...The sad paradox is that this vision may be threatened, unless the Design Excellence program survives intact. The Federal Building was Mr. Feiner’s last major commission as director, and few architects believe that this level of ambition will survive his departure. Let’s hope they’re wrong, and that this project will inspire further daring government commissions.”

The New York Times, March 14th 2007



“...The new Thomas Mayne designed Federal Building at 7th and Mission Streets in San Francisco is a case in point. Lauded by the New York Times as a building that ‘may one day be remembered as the crowning achievement of the General Services Administration’s Design Excellence program,’ what some believe is the greenest federal building in the nation’s history also likely has the worst work environment...”
BeyondChron, March 3rd 2008



“...The play between transparency and opacity plays up the porous relationship between inside and out, as if the federal bureaucracy had been pried open and reconnected to the world around it. Parts of the screen will open and close mechanically to regulate the light, further breaking down the facade’s uniformity and hinting at the busy and varied activity taking place inside. As with all of Mr. Mayne’s work, this formal experimentation serves a heartfelt social agenda. Despite the high level of security the building demands, the architect forged a rich hierarchy of public zones. The concrete cylinder bollards that surround the plaza and protect it from car bombings are scattered in an informal pattern and double as stools; a cafe anchoring the southeast corner of the site will give government workers a chance to mingle with the masses at lunch hour...”

The New York Times, March 14th 2007

Left: caption: “San Francisco Federal Building at Seventh and Mission Streets, a new structure tries to balance security and transparency.”

“...The conflict at the heart of the building has been brewing for some time. After all, while we have lately prized famous architects mostly for their Expressionism, green design is based on a different set of priorities. It is by definition local, relying on attention to site and climate, where celebrity architecture is global, dominated by firms with a proven ability to stamp a repeatable brand on any parcel of land in the world...if architecture, unlike painting or sculpture, is at heart an exercise in balancing purely artistic goals with more prosaic ones - budgets, gravity and so on - then green design shouldn't require extraordinary skills or lamentable compromise...”

Los Angeles Times, March 21st 2007

An Optimistic Architecture



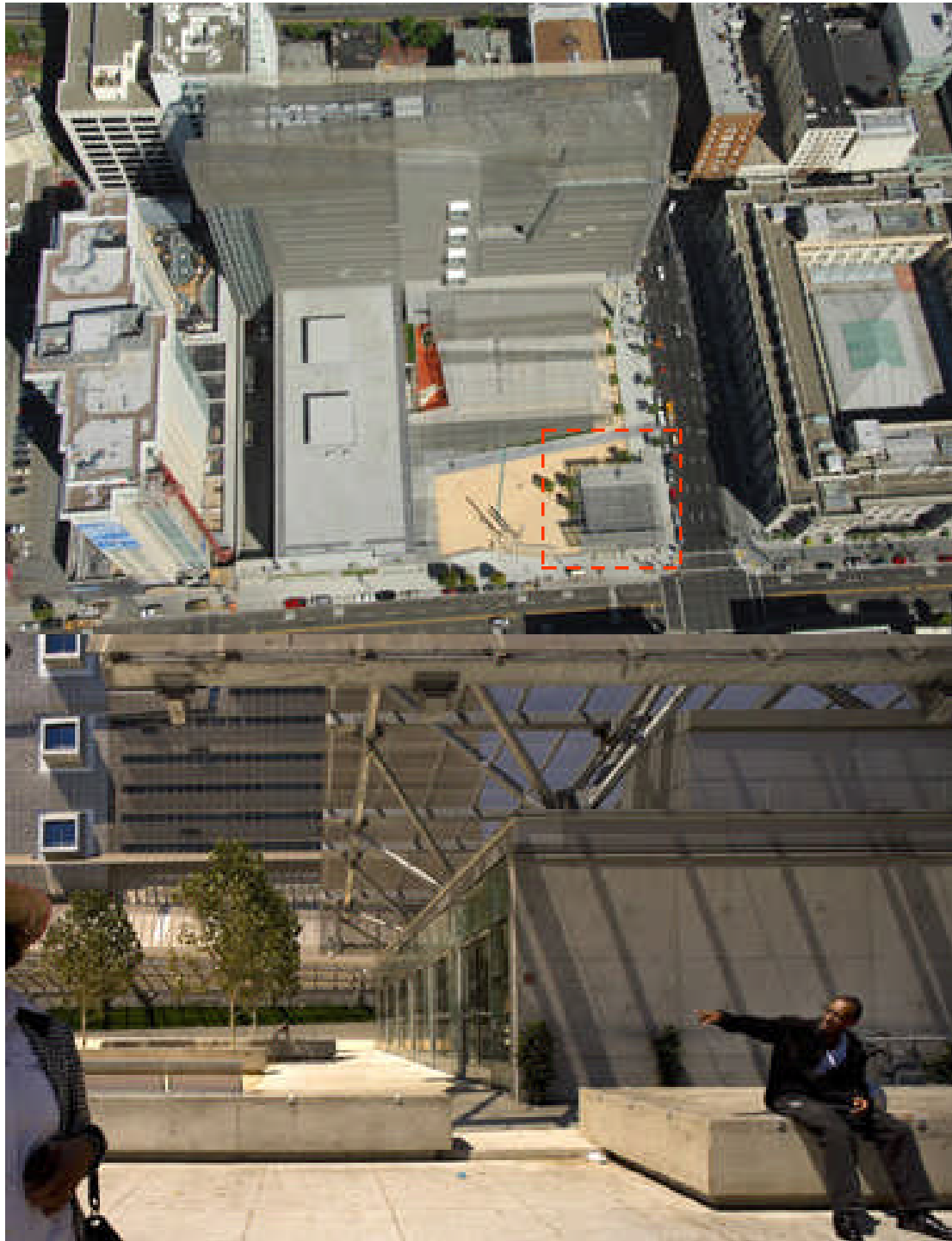
“When architecture engages social, cultural, political, and ethical currents, it has the potential to transform the way we see the world and our place in it. It is from this intersection of broad societal currents that we approached the design for the new Federal Building in San Francisco. Our primary interest was to produce a performance-driven building that would fundamentally transform its urban surroundings, the nature of the workplace, and the experiences of the people who use it while making intelligent use of natural resources. For me, this project represents the epitome of an optimistic architecture; an architecture that synthesizes its complex forces and realities into a coherent whole.”¹³

Thom Mayne

“...Mayne’s desire to get workers walking may have impacted his decision to locate the employee cafeteria across the street from the building. Employees are not happy about having to leave the building just to get a sandwich, and were allegedly told that the building would include an on-site cafe. But as is clear with every aspect of this testament to green buildings, this project was more a science experiment than a place designed to enhance worker productivity...”

BeyondChron, March 3rd 2008

RE: unlike most large government office buildings, the *San Francisco Federal Building* does not have its own internal cafeteria. Rather, the cafeteria function was placed just outside the building on the public plaza. It was Mayne’s belief that this would encourage employees to walk, thus improving worker health. Not all of the 2,400 employees who work in the building agree with his philosophy, preferring an in-house cafeteria.

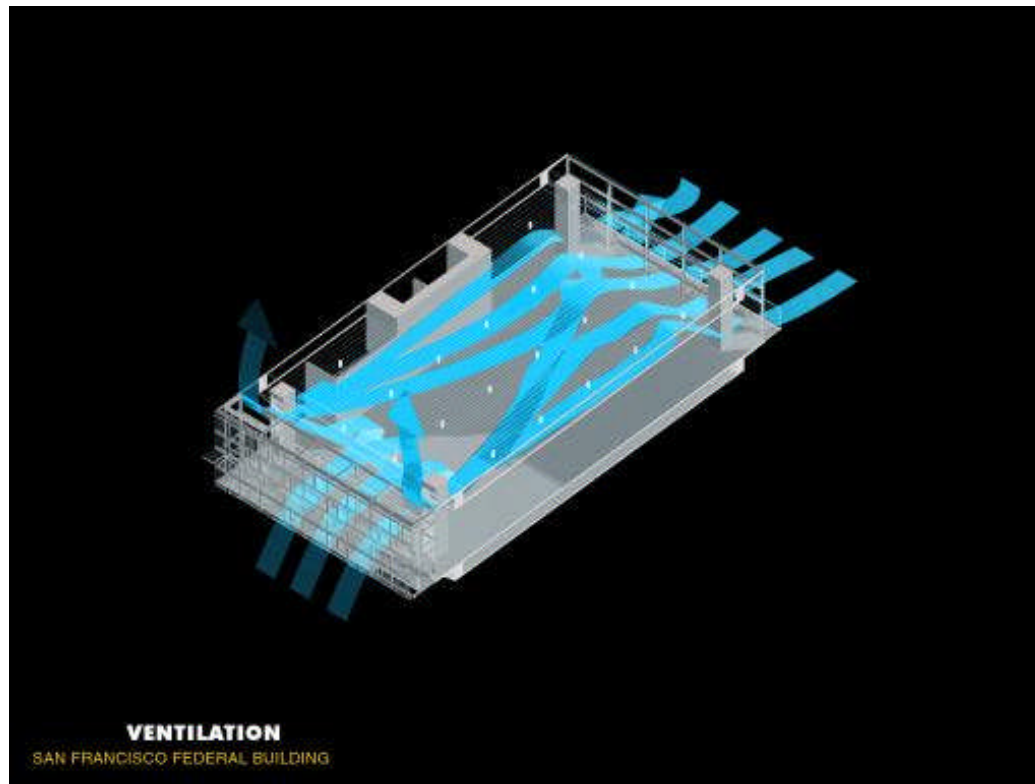


“...For all its architectural showmanship, the design painstakingly coordinates strategies that harvest sun and breezes to replace electric lighting and air-conditioning. The use of the metal panels came out of an emerging discipline called ‘building physics,’ provided here by Ove Arup & Partners, a London-based international engineering giant. Through a building-physics analysis, those panels were designed to retain accumulated solar heat as a thermal blanket over the building’s facade. When that air warms, it floats upward, coaxing cooler air through the building via windows that open automatically when instructed by sensors. The result is free air-conditioning. By carefully controlling unwanted glare on all sides, most people can work using the daylight from the floor-to-ceiling glass instead of electric lights. The north side has its own sunshade system, vertical milky-glass fins angled to protect occupants from late-afternoon summer sun...”

James Russell (Bloomberg)

“...The Federal Building is the first office tower in the U.S. to forgo air-conditioning in favor of natural ventilation. As a result of the tower’s narrow profile and strategic integration of structural, mechanical and electrical systems, the building provides natural ventilation to 70% of the work area in lieu of air conditioning, and affords natural light and operable windows to 90% of the workstations. A folded, perforated metal sunscreen shades the full-height glass window wall system and a mutable skin of computer-controlled panels adjusts to daily and seasonal climate fluctuations. With an energy performance that surpasses the GSA’s criteria by more than 50%, the project sets new standards for applications of passive climate control, while physically democratizing the workplace and enhancing employees’ health, comfort, and sense of control over their environment...”

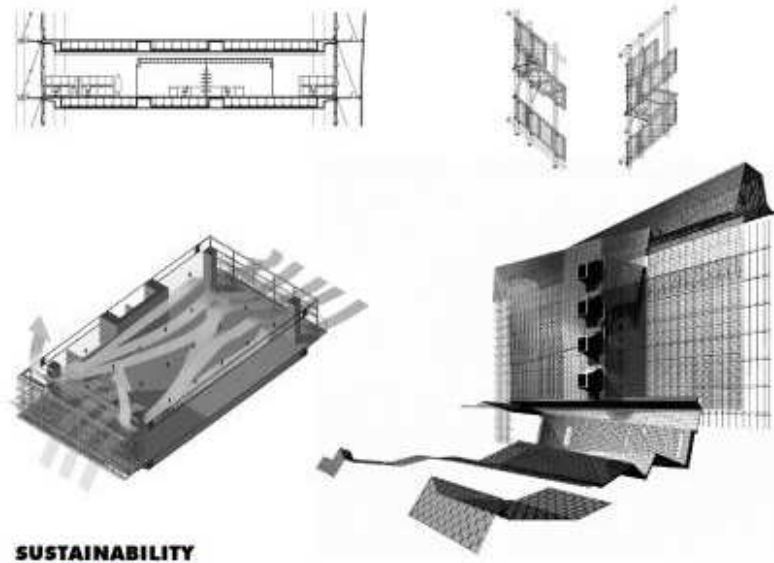
Morphopedia



“...The building takes advantage of the temperate climate in San Francisco to provide a comfortable interior environment while reducing energy consumption. As a whole, the building is best understood as a hybrid that includes different space conditioning strategies appropriate for different locations in the building. The first five levels, with high concentrations of people and equipment, are fully air-conditioned. Above the fifth floor, the windows automatically adjust, allowing fresh air directly into the building for natural ventilation and free cooling. The window system creates a ‘living skin’ that allows the building to breathe. Breezes pass through openings on the windward side and are vented out through the leeward wall, with control based on wind speed and direction...”

“...The sense of airiness is magical. Protected by the perforated steel screen, the windows can be operated from inside, and when they are open, a cool breeze drifts through the space. Beautiful undulating concrete ceilings help channel the air from north to south, sensitizing us to the natural world waiting outside. (Unfortunately, some of this effect has been lost by the erection of a crude system of partitions and office cubicles.) Aside from the compositional inspiration, what the architect is clearly seeking to retrieve from Modernist forebears like Le Corbusier is an unflinching optimism. In a world where commercialism regularly trumps public service, Mr. Mayne seems to be telling us that the values of Old-World Modernism may not be so bad. Rather than obliterate this architectural past, he aims to imbue it with the human element that Modernism forgot, the quirks and odd delights that can root a building in personal and emotional territory...”

The New York Times, March 14th 2007

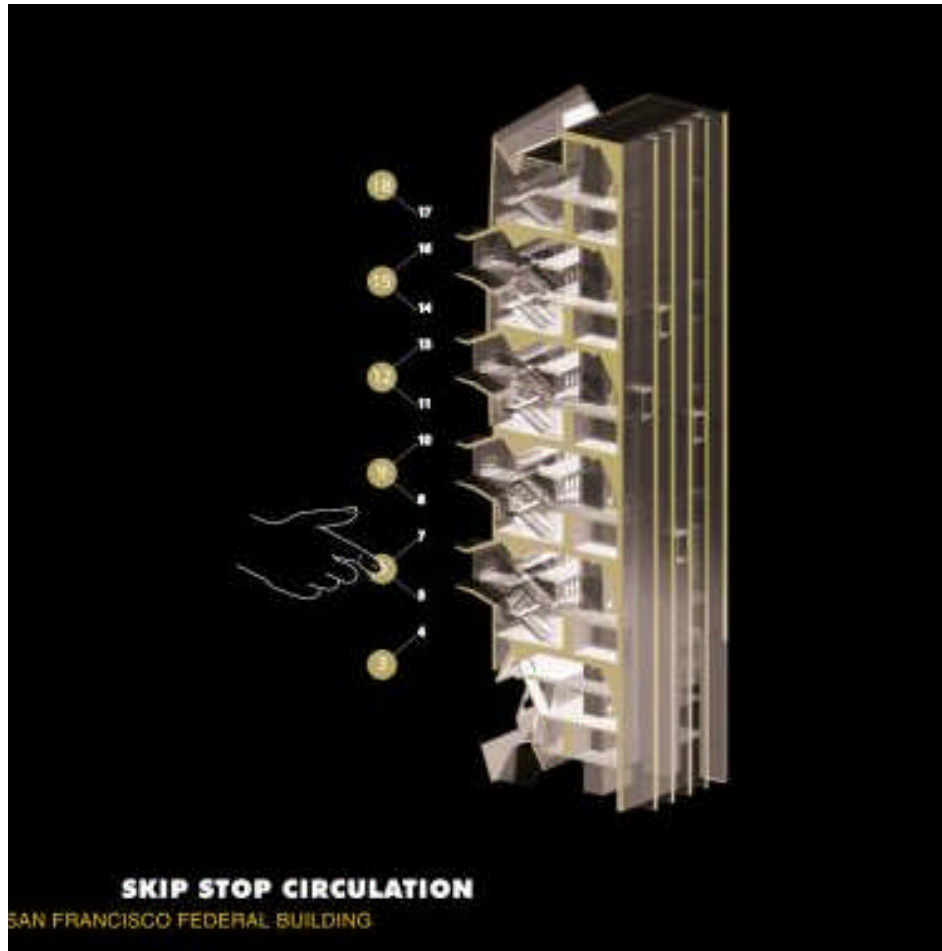


“...While architectural critics describe the building’s ‘sense of airiness’ as ‘magical,’ employees view working in this heat and air-conditioning free building with the wavy concrete floors and ceilings as a nightmare...The first fact about the building that may cause surprise is its lack of air conditioning or heat. According to Mayne, ‘a bike rack and air conditioning get you the same point. I’d much rather see BTU and CO2 requirements and let the professional community solve the problem.’...In the real world on the 15th floor of the Federal Building, workers seek to relieve the heat by opening windows, which not only sends papers flying, but, depending on their proximity to the opening, makes creating a stable temperature for all workers near impossible...”

BeyondChron, March 3rd 2008

“...a Labor Department worker at the building (who noted that she is encountering the type of bad work conditions that her agency is supposed to enforce against) confirmed what might have been an urban legend: that some employees must use umbrellas to keep the sun out of their cubicles. The lack of internal climate controls has left some workers too cold and others too hot. A happy medium has proved elusive. And while the managers’ offices do have heat and air conditioning - a two-tiered approach...the ‘green’ design apparently has messed with the effectiveness of these systems, leaving these top staff as physically uncomfortable as the line workers...”

BeyondChron, March 3rd 2008



“...Mr. Mayne’s nostalgia for Modernism reasserts itself in the elevator ride to the office floors. Modeled on the intricate skip-stop system that Le Corbusier invented for his 1952 Unité d’Habitation building in Marseilles, France, the elevators stop on alternate floors. From there, stairs lead up or down to big, loft-like spaces saturated with light...”
The New York Times, March 14th 2007

“...architect Mayne has stated that federal office workers do not get enough exercise. To address this, he installed elevators in the building that only stop at every third floor. This requires employees to walk up or down one or two flights of metal stairs. Persons with physical disabilities who cannot use stairs can use a separate elevator that stops at every floor. The foreseeable result is that employees seeking to avoid stairs use the disabled access elevator, leaving this car crammed with people and making the ride to the top extremely slow...when the freight elevator is out of service, deliveries must use the disabled access elevator. It seems only a matter of time until a disabled worker sues the General Services Administration for providing inadequate disabled elevator access in the building...”

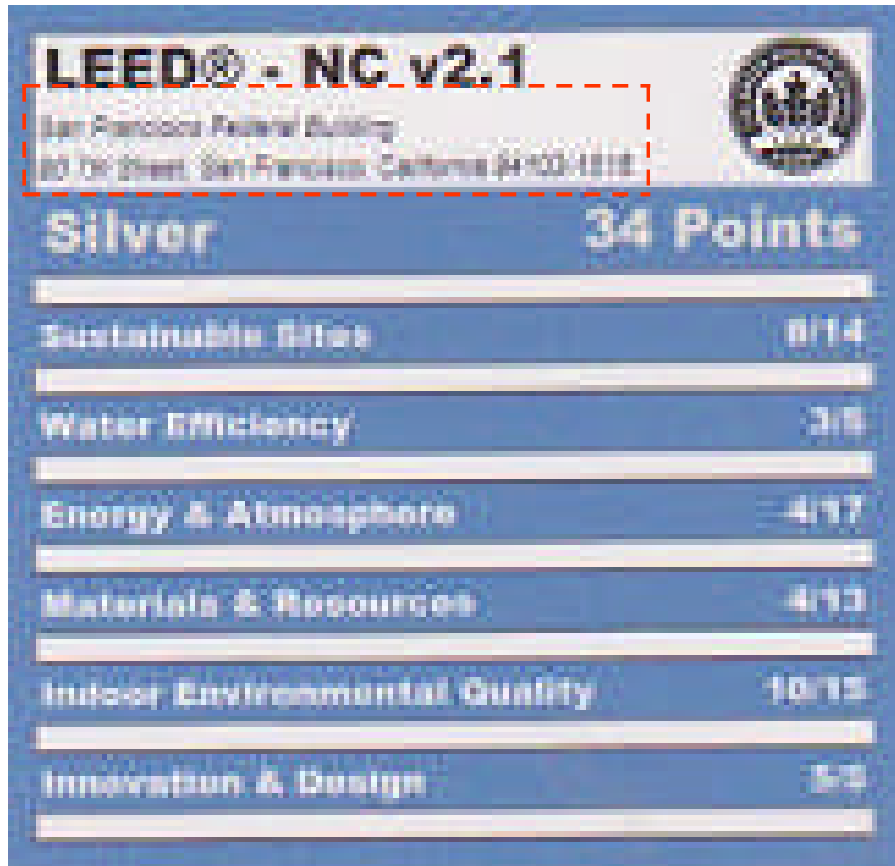
BeyondChron, March 3rd 2008

RE: architect Mayne theorized that the *Federal Government* should be a model in the promotion of worker health via exercise. This led his *Morphosis* design firm to specify passenger elevators that stop only at every third floor, requiring many employees and visitors to traverse one or two flights of stairs to reach their destination. There are also elevators for the disabled that stop at each floor, but it has become commonly used by the able-bodied as well, causing serious overcrowding and distressingly slow service.

“...Green building advocates will no doubt argue that the Federal Building is a bad example, as it failed to secure LEED approval...Mayne noted that ‘I wasn’t arrogant, but I was confident - I just assumed we had the platinum rating. All of a sudden we went through LEED and it wasn't working.’...”

BeyondChron, March 3rd 2008

RE: ultimately, the building would receive a silver LEED rating – two steps below the stated platinum LEED goal of the project. At the time of its design, the GSA did not mandate LEED certification and the building was not evaluated for LEED certification until after construction.



“...The building minimizes pollution by replacing high proportions of Portland cement in its concrete foundations and frame. During the manufacturing process, Portland cement is associated with very high levels of greenhouse gas emissions. In the Federal Building’s concrete mixture, 50% of the pollution-intensive Portland cement is replaced with blast furnace slag, a recycled waste product from the steel industry, significantly reducing greenhouse gas emissions resulting from conventional concrete. This environmentally sound choice also results in higher-strength concrete and has a warm, light-colored tone that contributes to the favorable daylight penetration within the office space...”
 arcspace

“...But the project’s failure to satisfy LEED’s scoring system is not the problem. Rather, it is that the federal government spent millions over budget to create a building that does not provide a minimally satisfactory work environment. And the project’s huge cost overruns and functional inadequacies have apparently been ignored solely due to excitement over its ‘Green’ stature.”

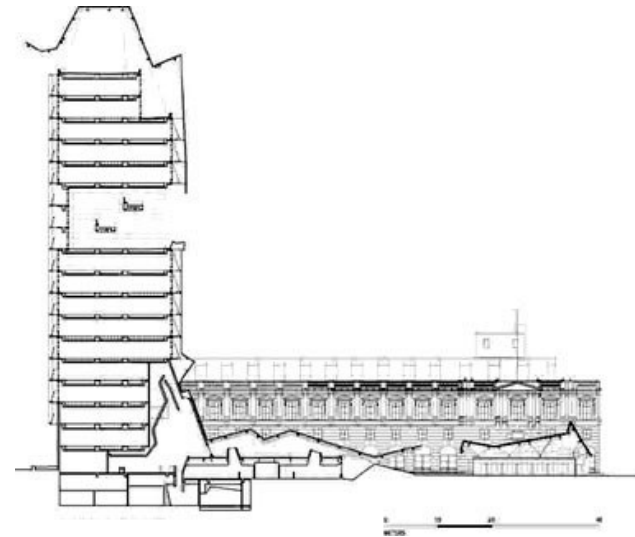
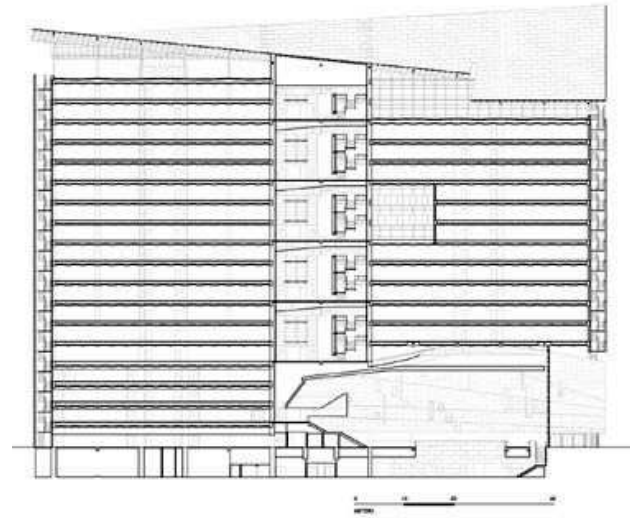
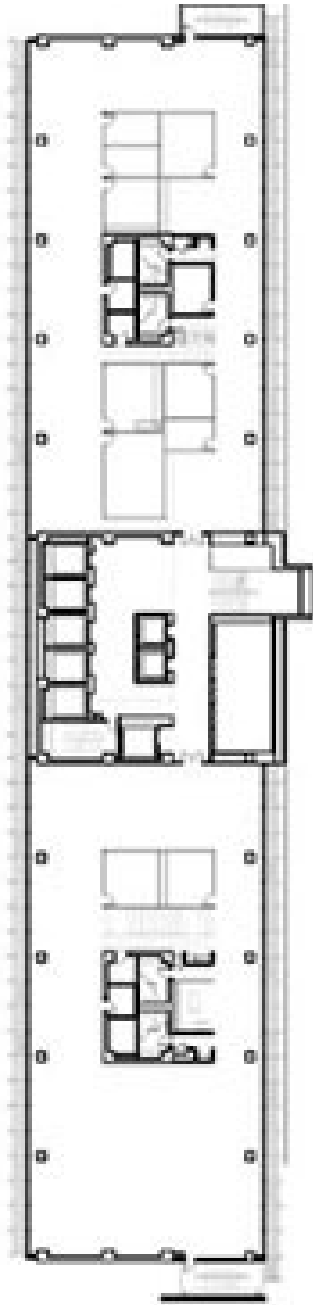
BeyondChron, March 3rd 2008

RE: the cost for the building was \$144 million. Mayne’s decision to eliminate the HVAC system saved \$11 million in construction costs. However, the design’s nonfunctional use of extended, folded metal sunshading at ground level (for aesthetic effect) required extensive steel bracing adding millions to the project’s cost. With energy use reduction a major part of the GSA’s design brief, Mayne’s design was selected in anticipation of its projected energy efficiency.

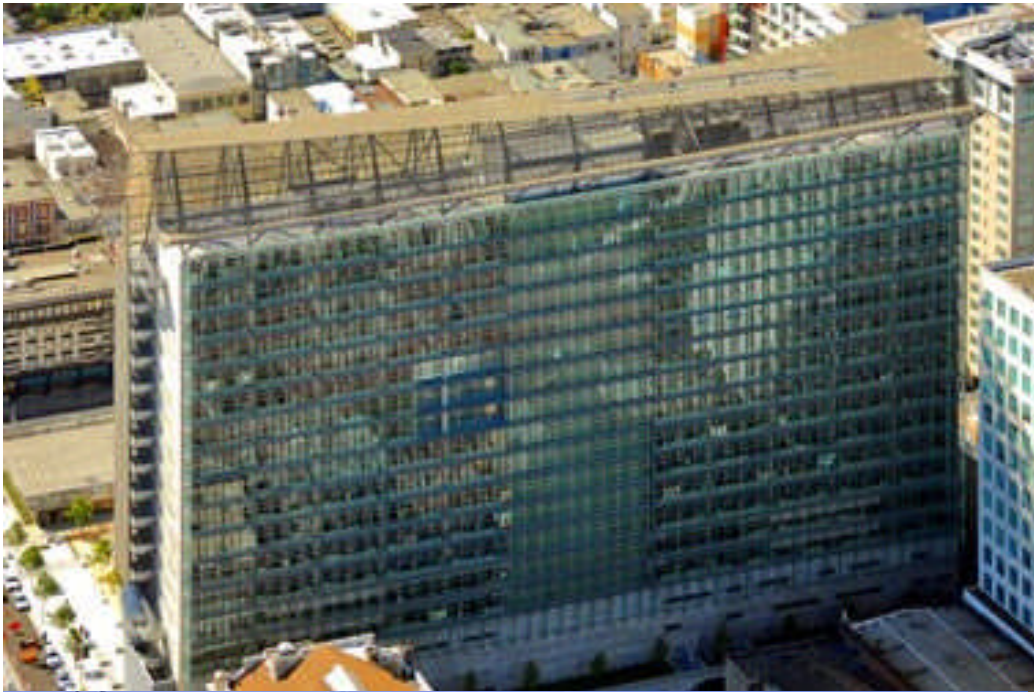
So Far, So Green

“...The building, with its natural ventilation and loft-like, sun-filled offices, includes a long list of green elements to go with some architecturally stunning spaces, notably a lobby that slices upward through the lower floors. But for every architectural decision that makes the building greener, there is another that seems to undercut that goal...The best example of the conflict is probably the system of perforated metal panels that sheathe the tower’s wide southern facade. The panels will be familiar to anyone who’s seen Mayne’s Caltrans building in downtown Los Angeles, where they wrap around the whole building and are deployed mostly to achieve a certain monochromatic visual power. Here Mayne uses them only where they most effectively shade and cool the offices, leaving them off the northern facade altogether. The panels are one reason the main floors require no air conditioning. So far, so green. But when those panels reach the ground, Mayne extends them, in a series of sharply folded planes, out toward the plaza that sits at the tower’s feet. He repeats them on the roof of the tower and atop a free-standing cafe building on the far edge of the plaza. The folded panels, a Morphosis trademark, are visually dramatic. They are also entirely decorative. (Mayne doesn’t even take the simple step of extending the panels over the plaza to shade the cafe’s outdoor tables). And they are supported by huge, V-shaped galvanized metal trusses - a lot of wasted steel for a building aiming for an eco-friendly label...”

Los Angeles Times, March 21st 2007



“...A computerized system, known as the building automated system (BAS), controls and monitors all of the building’s mechanical equipment including those devices that are used to maintain internal environmental conditions and lighting levels. On the naturally ventilated floors, the computer system opens and closes windows, vents and sunscreens in response to temperature within the building as well as external environmental conditions...”



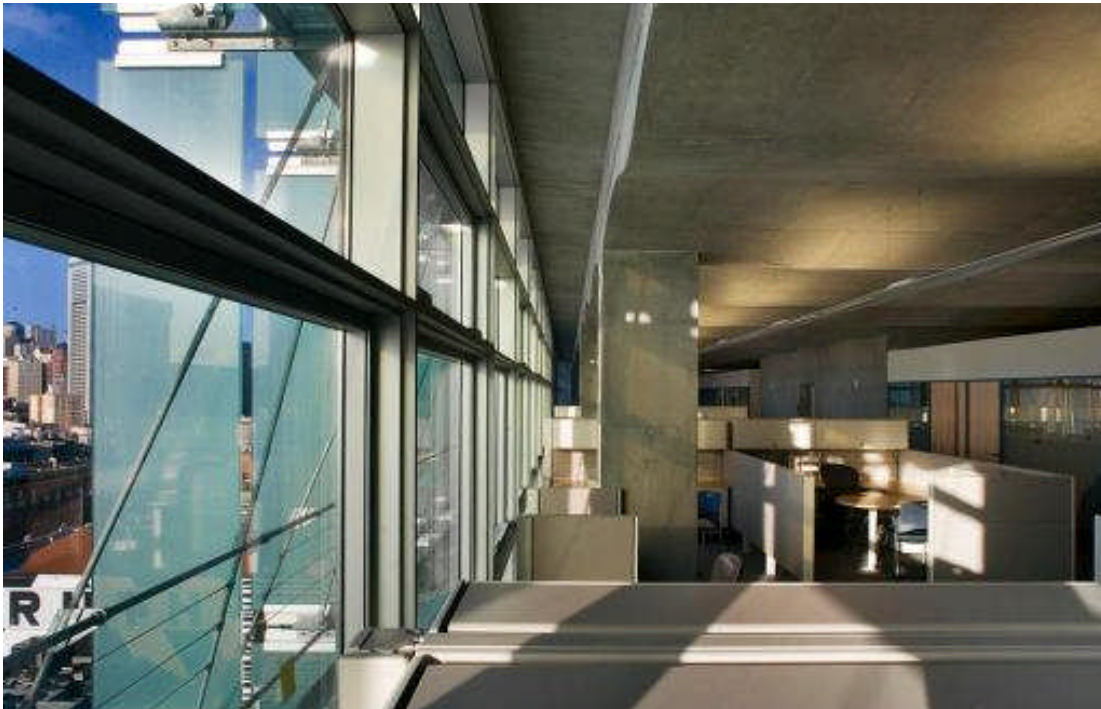
North Elevation Views



“...at the northwest elevation, a series of fixed translucent sunshades are attached to an exterior catwalk, breaking the sun’s path to shade the glass. These climate specific facades give the building its distinctive appearance...”

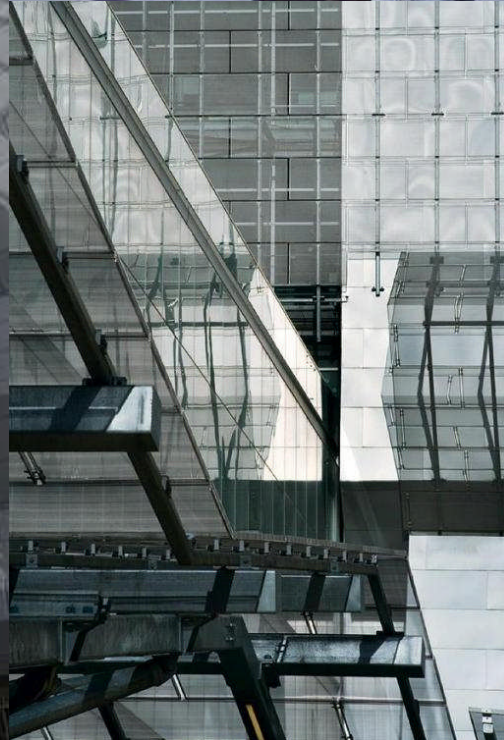
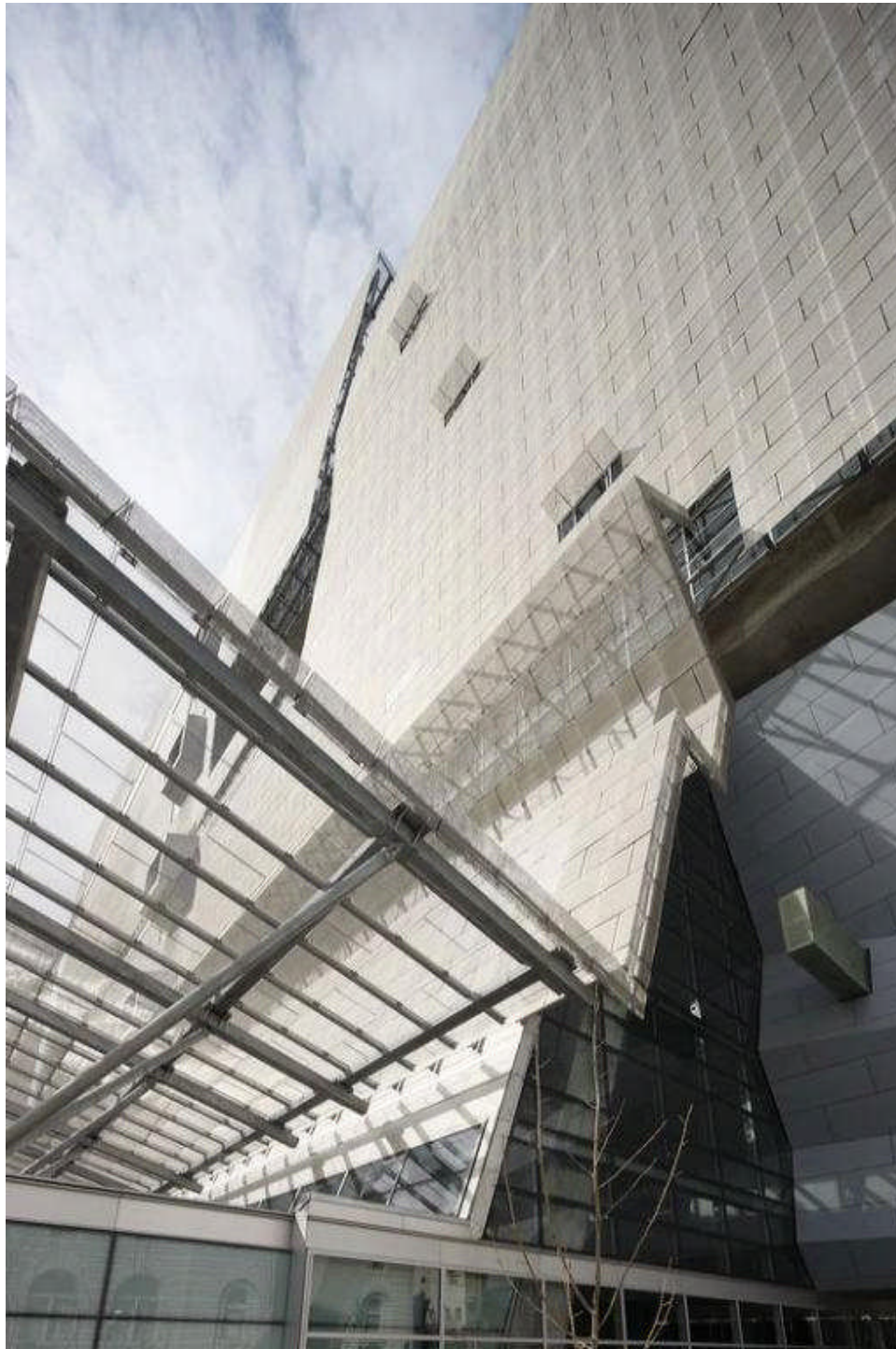
arcspace



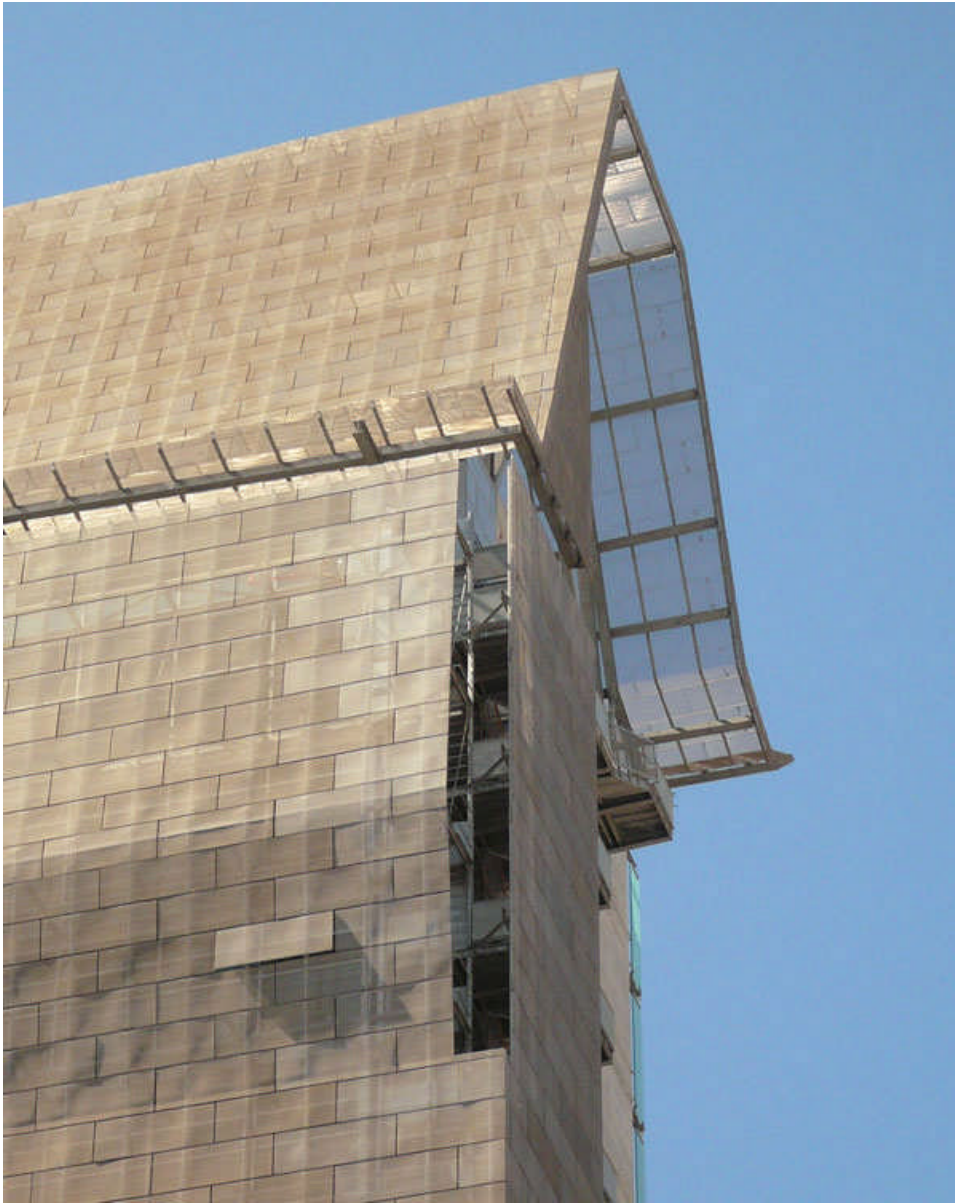


“...The tower’s high ceilings and glass facades provide 85 percent of the building’s tenants with views overlooking the city. The outer perimeter of the tower is configured with open offices and 52-inch-high workstation partitions, maximizing access to natural light. Fritted glass panels that enclose meeting rooms and offices located in the middle ‘spine’ of the tower, provide both privacy and access to natural light. The building’s lighting strategies improve the workplace and are a critical facet of this project’s sustainable design. Approximately 85 percent of the workspace is illuminated with natural light...”

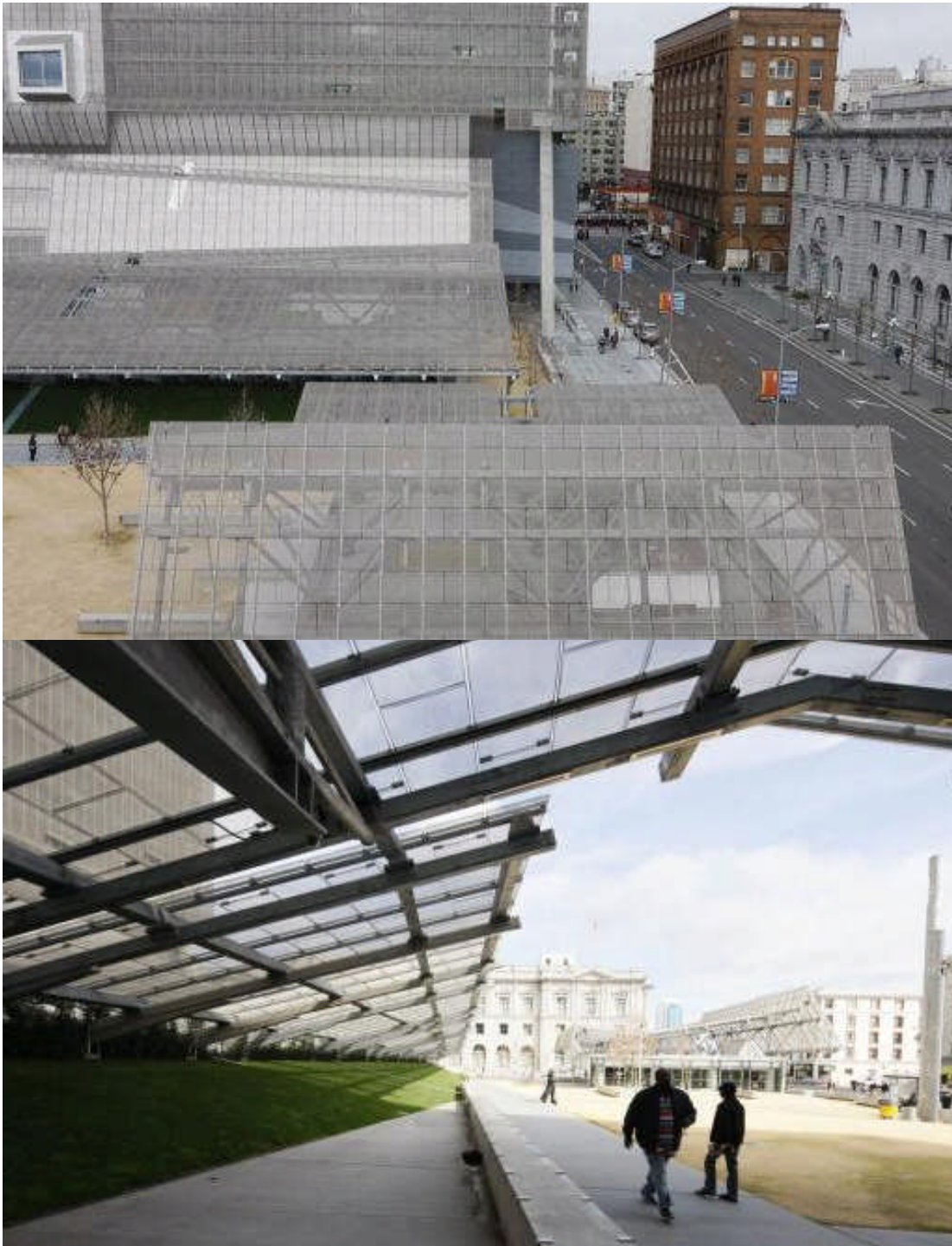
arcSPACE



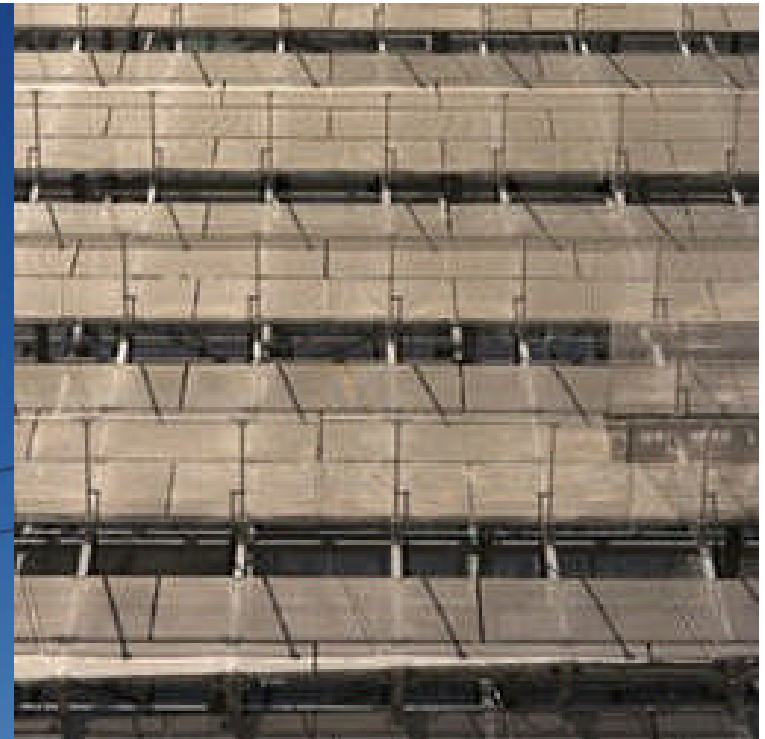
South Elevation Views







“...In the tower, the design of the high-performance facades is critical to the functioning of the natural ventilation. At the southeast elevation, a perforated metal sunscreen protects the glass facade from excess solar heat gain...”
arcspace



“...During the night, the BAS opens the windows to flush out heat build-up and allows the nighttime air to cool the building’s concrete interior. Throughout the day the thermal mass of the exposed concrete columns, shear walls and wave-form ceilings help cool the occupants of the building...”



East Elevation Views

RE-ASSESSING GREEN BUILDING PERFORMANCE

A Post Occupancy Evaluation of 22 GSA Buildings

Kim Fowler
Emily Rauch
Jordan Henderson
Angela Kora

Pacific Northwest
NATIONAL LABORATORY
Formerly Operated by Battelle Since 1961



Left: in 2010, the GSA commissioned a survey of employees in twenty-two federal buildings nationwide in order to determine employee satisfaction with their workplaces. The *San Francisco Federal Building* was included in this study even though commissioning was still underway. The twenty-two buildings included in the study scored in a range between a low of 13% and a high of 98% employee satisfaction. Seventeen of the twenty-two buildings scored above 50% employee satisfaction. The lowest ranked building for employee satisfaction was the San Francisco Federal Building with the lowest rating (13%). The next-lowest was considered twice as satisfactory (26%). The San Francisco building scored well below the median in the categories of thermal comfort, lighting and acoustics.

Thermal Comfort Percentiles

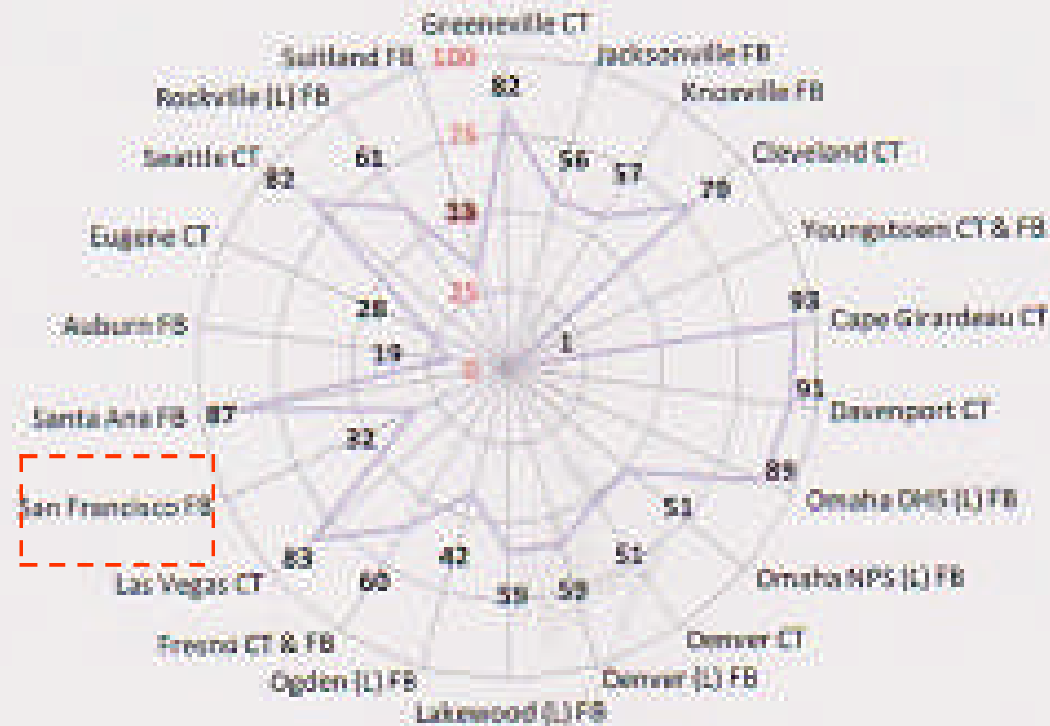


Figure 36. Thermal comfort rating from the occupant survey

Lighting Percentiles

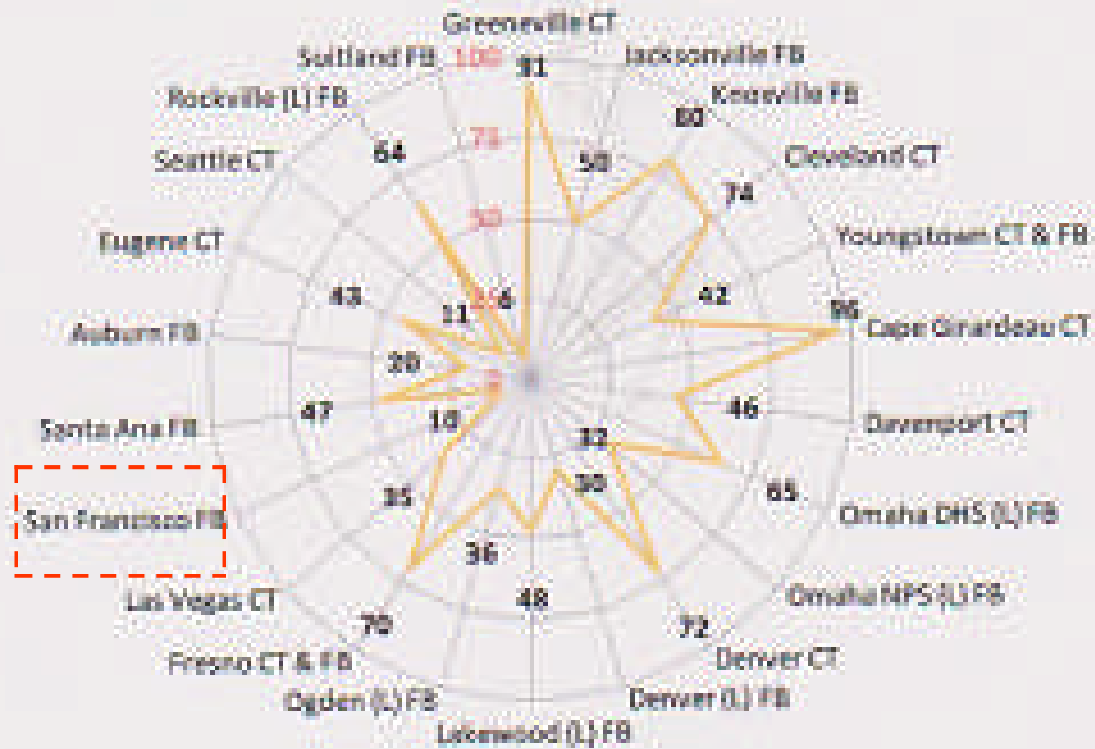


Figure 34. Lighting quality rating from the occupant survey

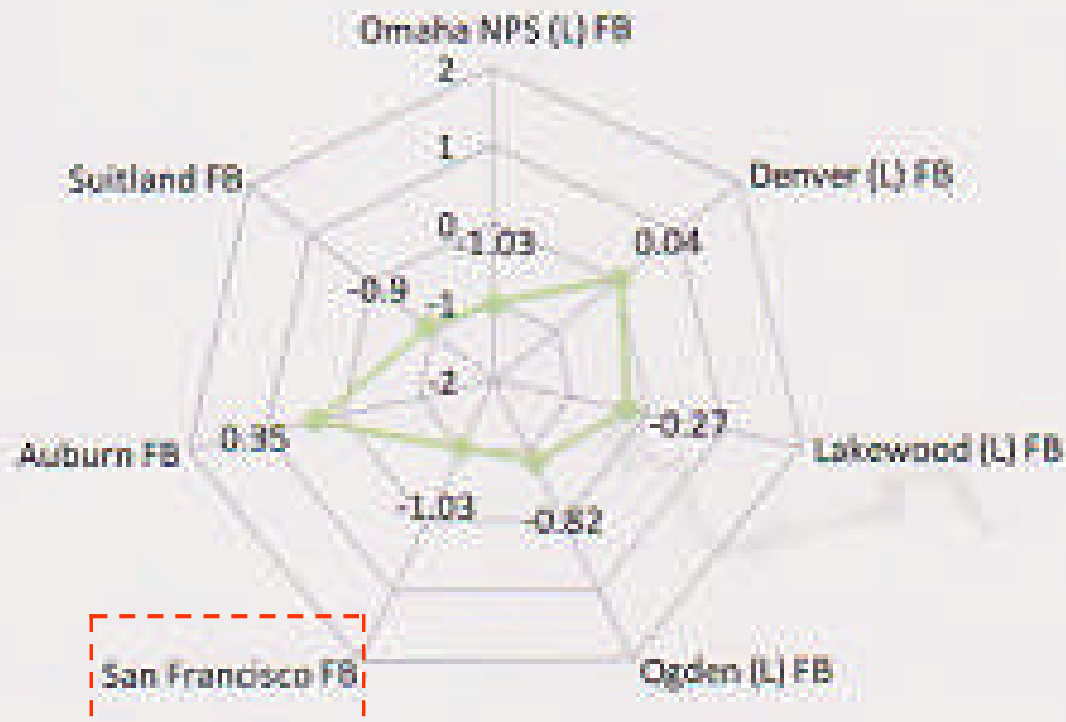


Figure 30. Acoustics quality satisfaction scores for cubicle workspaces

General Satisfaction - Workplace Percentiles

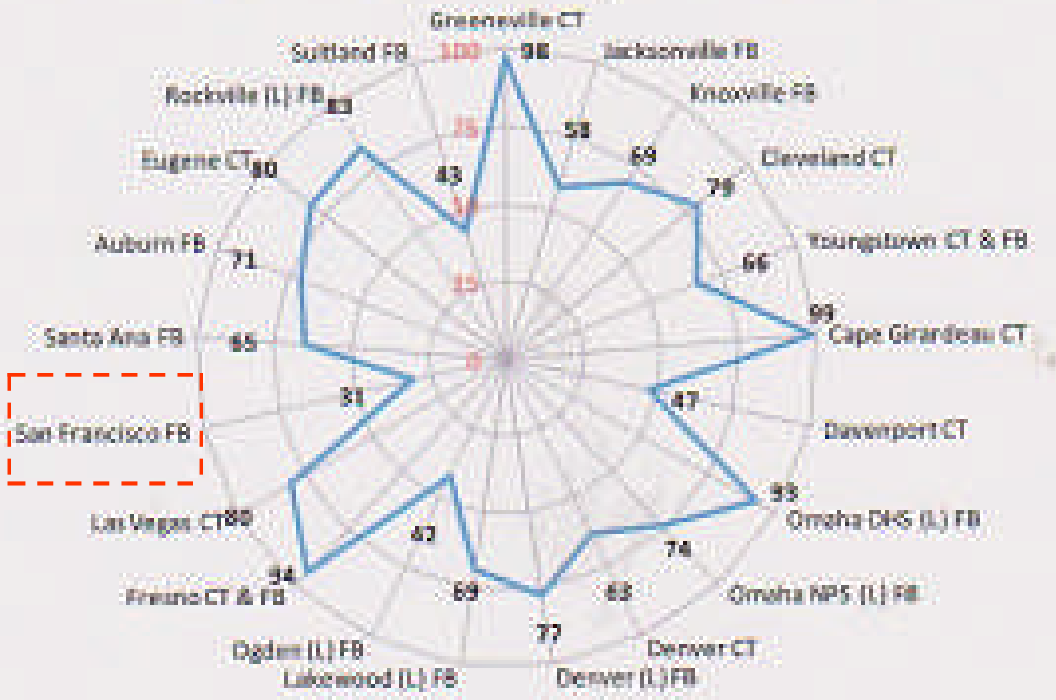


Figure 37. General workplace satisfaction rating from the occupant survey

“...Of the 1,314 occupants at the San Francisco Federal Building, 1,244 were surveyed and 497 responded. In addition to the electronic survey, GSA representatives issued the survey in hardcopy in the lobby of the building. The results indicated that occupants of the San Francisco Federal Building are less satisfied with their building than occupants in the CBE baseline (12th percentile). The acoustic quality, thermal comfort, and lighting all scored below the 50th percentile of the CBE buildings surveyed. The San Francisco Federal Building had cleanliness and maintenance and windows and daylighting scores above the 60th percentile...”

RE: excerpt from *Re-assessing Green Building Performance*







“...GSA buildings are typically built for a 100-year life and follow robust guidelines to enhance their asset value. The federal government owns or leases approximately 725 million square feet of office space and employs 2.7 million workers. GSA houses 1.1 million workers in 354 million square feet of office space (45% of federal government space). Of the more than 4,000 LEED certified projects, 29% are owned by federal, state, or local governments...As of the end of 2009, GSA had 40 LEED-certified buildings that were either leased or owned. At the start of this project in the summer of 2009, there were 34 GSA LEED certified projects with many of those having recently been occupied...”

RE: excerpt from *Re-assessing Green Building Performance*

It's Not Just a River in Egypt

“...The Pacific Rim Region of GSA is proud to announce the San Francisco Federal Building was named the 2011-2012 ‘The Outstanding Building of the Year’ (TOBY), in the government category, at the Building Owner and Managers Association (BOMA) International Conference in Seattle, Washington on June 26...The San Francisco Federal Building, with its slender, 18-story, 240-foot tower, is an architectural landmark in San Francisco while its 4-story annex blends seamlessly into the surrounding neighborhood. A dramatic example of sustainable design principles, the building’s shape and orientation maximize natural airflow for cooling and ventilation and take advantage of natural daylight for the majority of the office interiors. These features, combined with a number of other energy-saving elements, significantly reduce overall energy consumption compared to conventional office buildings in the United States...”

General Services Administration