SOM/CHICAGO
Sustainability Review

RECENT & UPCOMING PROJECTS | ISSUE 1

SKIDMORE, OWINGS & MERRILL LLP
224 SOUTH MICHIGAN AVENUE
CHICAGO, ILLINOIS 60604

SOM/CHICAGO
Sustainability Review

“Civilizations leave marks on the earth by which they are known and judged. In large measure the nature of their immortality is gauged by how well their builders made peace with the environment.”

Nathaniel Owings

THE AMERICAN AESTHETIC (1969)

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SOM/Chicago Sustainable History

1958

Warren Petroleum Headquarters
Tulsa, Oklahoma, USA

To provide protection from Tulsa’s extreme sun conditions, this eleven-story corporate headquarters was designed so that building edges cantilever five feet, providing continuous sunscreen balconies of grey heat-resistant glass for building occupants.

1979

Banco de Occidente
Guatemala City, Guatemala

Local materials such as stucco, mahogany and volcanic stone pavers, and local architectural concepts of open courtyards, terraces, walled-in-gardens, fountains and trellises were used throughout to reinforce the relationship of the Banco de Occidente headquarters and branch banking facilities to their Guatemalan context and to minimize material and energy waste. Furniture and fabrics designed by SOM were manufactured in Guatemala City for use in the bank buildings.

1981

King Abdulaziz International Airport - Haj Terminal
Jeddah, Saudi Arabia

Using indigenous archetypes and case studies, SOM developed a series of vast, suspended tent-like structures that utilized minimal energy to keep the space cool in the hot, arid desert. Made of a teflon-coated fiberglass membrane, the translucent fabric of the tents diffuses soft light throughout the naturally ventilated space below.

Awards:
International President’s Award of Merit, 1982, Industrial Fabrics Association

1986

The Terraces at Perimeter Center
Atlanta, Georgia, USA

The 11-story twin atrium office buildings were designed with upper portions of the frame stepped-back, creating a series of terraces from the seventh to the tenth floors. The buildings are glazed with clear vision and insulated spandrel glass. Recessed from the façade, the glazing is protected from the sun’s rays by aluminum sunshades. The articulated building surface maximizes both energy efficiency and views of the surrounding landscape.

Awards:
Energy Conservation Award, Honorable Mention, New Construction/Office, 1983, ASHRAE - Illinois Chapter

Honor Award, 1988, American Society of Landscape Architects

1997

Apollo Office Building
Amsterdam, The Netherlands

The five-story Apollo Office Building is located in the historic center of Amsterdam. Located on a very tight site with a limited number of sunlit days in the year, designers used unconventional shading devices both “off-the-shelf” and “Leading Edge” to maximize daylight, reduce operational costs and increase indoor environmental quality for its employees.

2002

Millennium Park Master Plan
Chicago, Illinois, USA

The Millennium Park Master Plan completes Daniel Burnham’s vision of Grant Park to provide a range of activities, environments and performance facilities for Chicago. The park is built over rail lines, bus lanes and a 2-level parking garage making it the world’s largest “Green Roof” and a fully functional multi-modal transit center. The new park is a tribute to the City’s motto “Urbs in Horto” (“City in a Garden”).

Awards:
Honor Award for Regional and Urban Design, 2006, American Institute of Architects

Award for Outstanding Large Project, 2006, American Society of Civil Engineers,

Engineering Award of Excellence Merit Award, 2005, AISC

Sustainable Projects

REGION

Chongming Island

SHANGHAI, CHINA

Long considered Shanghai's "rice bowl," Chongming Island is one of the largest alluvial islands in the world and is known for its rich and fertile land. The economy of the 750 square mile island is driven by agriculture. SOM's development plan repositions Chongming as a "green island," focusing on promoting agricultural output and the preservation of natural wetlands that serve Asia's primary Avian flyways.

In rapidly urbanizing China, SOM's plan calls for the urban development of eight new cities, which cover only 15% of the island. Each community will consist of walkable and accessible districts that will accommodate 800,000 people to live and work. Proposed transportation infrastructure will bring rail connections to the center of each city. A sustainable approach to energy and water treatment will also be implemented.

Chongming will be a reflection of "best practices" in urban design and planning. The Chongming planning themes are as follows:

1 Wilderness Areas / Eco- Systems

Restore wetland wilderness areas; they form strong natural habitats for a broad community of wildlife.

2 Organic Farms

Maintain farming as core business, shifting the focus to organic products and direct sales to Shanghai restaurants. Higher quality produce will increase farmers' income.

3 Green Systems

Tie all cities to green filtration-lake system. Introduce an island-wide lake system.

4 Inland Street Grid

Preserve historic farm grid of narrow streets throughout the island. Minimize overscaled highways.

5 Rail

Connect all cities by rail to Shanghai.

6 Green Villages

Define 40 farm villages organized around lakes within close proximity to the farmlands.

7 Coastal Cities

Organize 8 cities along the south coast focused on rail transit.

AWARDS:

AIA HONOR AWARD, OUTSTANDING REGIONAL AND URBAN DESIGN, 2005

CONGRESS FOR THE NEW URBANISM, NEW URBANISM CHARTER AWARD, 2005

AIA CHICAGO, SUSTAINABLE DESIGN AWARD, 2007

Bahrain National Planning and Development Strategy

KINGDOM OF BAHRAIN

The Bahrain National Plan is the first of its kind in the Persian Gulf, and will help the Kingdom of Bahrain move into the forefront of modern nations planning for an era of stable, sustainable growth.

The National Plan seeks to transform Bahrain into a prosperous and innovative city-state of the 21st Century. Government officials called on SOM to create a Master Plan that will serve the government and economy of Bahrain when the country's petroleum resources become depleted.

The plan addresses issues such as natural resources, inadequate housing, lack of zoning, weak transport infrastructure, insufficient public open space and the need for improved education and comprehensive employment. The National Plan of Bahrain lays out ten key strategies that coordinate and focus development, control land speculation, protect resources, preserve historic and ecologically important sites, integrate transport and ensure public access to open space and the waterfront. By confronting these issues today, Bahrain will be prepared to meet future challenges with confidence.

Bahrain Planning Principles

- Create one plan enabling an intelligent, sustainable national planning effort under a focused, centralized and predictable vision
- Achieve a market economy specialized in global and regional markets to increase trade, improve productivity, develop higher-profit jobs and create new commercial wealth
- Preserve and strengthen environmental resources

- Establish an interconnected, intermodal transportation strategy incorporating dedicated bus, rail and water-based transit
- Build distinct communities that reduce sprawl, efficiently utilize land and transit, help maintain Bahrain's traditional way of life and preserve historic landmarks
- Define the public waterfront
- Protect the country's cultural and archeological heritage
- Meet future military needs by ensuring protection of access to training and staging areas and integrated military land-use strategies
- Green the country
- Promote a sustainable future

Sustainable Projects

DISTRICT

Fort Belvoir

FORT BELVOIR, VIRGINIA, USA

SOM's team identified three possible alternative strategies for redevelopment of the 9,100 acre site. The selected "City Center" approach allows for future opportunities to develop transit initiatives, mitigates impact on the land and encourages walking and sharing of facilities.

Sustainable measures include incorporating LEED® for Neighborhood Development sustainable principles into the Master Plan, striving for the highest certification. The plan calls for restoration of a brownfield site and also focuses on building compactly, which promotes sharing, reduces sprawl, optimizes transit and development opportunities while respecting and restoring the natural environment. The Master Plan is scheduled to be fully implemented by 2011.

Smart Location And Linkage

- Fort Belvoir is an infill site, part of a metropolitan planning region and located near regional public transit
- Fort Belvoir will utilize existing water and wastewater infrastructure
- In keeping with the Chesapeake Bay Preservation Plan, the Master Plan formulates a preservation/enhancement plan to protect imperiled species, ecological communities, wetlands and waterbodies. A biologist and an ecologist will be added to the team to help harness and implement these ideas
- The project protects the natural watersheds and avoids development in the 100 year flood plain

Neighborhood Pattern And Design

- As a military installation, security is essential, however the project is designed for as much transparency as possible. Within the 9,000 acres, there are open and connected neighborhoods and communities
- Developments on site are dense, on compact parcels, proximal to transportation and sited within walkable streets; FAR goals are based on land use and will guide sub-area programming and development

Green Construction And Technology

- Consistent with the client's goals, all buildings on site will be LEED® Certified. Development will consider phasing, energy renewal, minimal impact on existing facilities/programs, stormwater management, building re-use, among others and will strive for minimal pollution and impact

The plan for Fort Belvoir preserves expanses of natural landscape and ecologic features by developing on previously developed land.

Lakeside Master Plan

CHICAGO, ILLINOIS, USA

Lakeside will be a model for future development within the City of Chicago, and will be part of the LEED® for Neighborhood Development Pilot Program.

The redevelopment of the abandoned South Works steel mill, a 518-acre brownfield site, emerged from a vision that began with planners, developers and community leaders in 1998. Planners were guided by a sustainable ethic which incorporates LEED® for Neighborhood Development standards with the goal of attaining a platinum rating, creating a sustainable development with a mix of new housing, services, economic activities and parks. Lakeside will be served by the city's comprehensive rail and bus transit and the extension of ped-bike commuter paths to downtown.

Social

- A compact, complete and connected neighborhood
- New park completes the lakefront
- Every home within a three minute walk to a park
- Collaborative design with public process
- Celebration of the heritage of the site and the neighborhood
- Connect existing neighborhoods to Lake Michigan for the first time

Environment

- A brownfield becomes a thriving community
- Reduced dependency on automobiles: transit, walk, bike, car share
- Protect water resources, treat stormwater with natural systems, incorporate grey water recycling and use native landscaping
- Harvest energy from solar and wind
- High-performance buildings

Economic

- A vibrant mix of uses on site
- Economic diversity
- A fiscally viable plan
- Reinvigorate a struggling community

BLOCK

United States Census Bureau Headquarters

SUITLAND, MARYLAND, USA

The 2.5 million sf Census Bureau complex is a study in designing a very large corporate campus with minimal impact to its site by adopting sustainable measures and principles. Comprised of 1,500,000 sf of offices for 6,000 employees, with associated support programs, the Census Bureau incorporates water reclamation, recycled building materials, solar collection systems, underfloor air distribution and naturally daylit building interiors into its design.

In addition, the building's shape, massing, cladding and roofing materials were all selected to explore the architectural expression of sustainable architecture. The building takes full advantage of its natural surroundings, maximizing views of the adjacent Nature Preserve and Community Gardens. With its wood-clad offices and ivy-draped parking structures, the Census Bureau blurs the distinction between the building and its landscape, making it a truly 21st-century landmark.

The US Census Bureau Headquarters is the first federal government office building that was designed and constructed to achieve a LEED® Silver rating.

AWARDS:
GSA HONOR AWARD FOR SUSTAINABILITY, 2006
AIA NEW YORK CHAPTER HONOR AWARD, 2005
MIAMI ARCHITECTURAL BIENAL GOLD AWARD, 2005
GSA FEDERAL DESIGN EXCELLENCE AWARD, 2003

Zhongshan International Exhibition Center and Trade Mart

ZHONGSHAN, CHINA

Located in sub-tropical China, Zhongshan International Exhibition Center and Trade Mart provides a new town center that is well-suited for public assembly and community space.

SOM's initial design incorporated a wind trellis to provide shade for the plazas and pavilions below and generate energy to power a significant portion of the lighting demand for the complex. The trellis, constructed with efficient cable systems, was intended to house a series of wind turbines which generate the power supply, potentially reducing energy demand by 25-50%. Due to environmental and budgetary limitations, a different scheme was selected.

In the final design, the entire complex is sheltered by an enormous undulating roof structure, inspired by the forms of ancient Chinese armor and the rolling hills surrounding the site. The trellised structure extends beyond the building to provide shade for the plazas and pavilions. The "breathable" roof system has openings designed for ventilation and radiant sky cooling. The roof is constructed of highly efficient and lightweight trusses that support the metal roofing systems of the individual pavilions and operable louvers that shade selected areas of the plazas. In addition, the skylights in the trade mart and exhibit halls are made of a unique material which minimizes unwanted solar radiation while allowing natural daylight to flow into the building.

Considerations were also given to the following: natural ventilation in tall spaces utilizing the stack effect; a natural smoke exhaust design; variable primary pumping; a high-efficiency lighting system; heat wheel heat recovery; a carbon monoxide/indoor air quality based ventilation system; and variable speed chiller and ground source cooling options.

The "breathable" roof system has openings designed for ventilation and radiant sky cooling.

Competition design

Final Design

Sustainable Projects

BUILDING

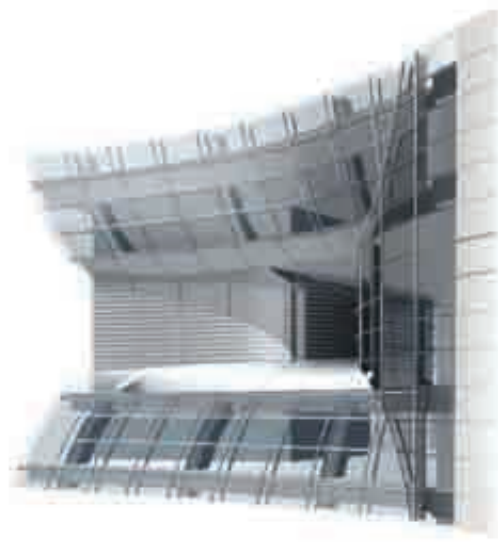
Pearl River Tower

GUANGZHOU, CHINA

The 71-story, 2.3 million sf Pearl River Tower is expected to be the world's most energy-efficient supertall office tower upon completion, and a milestone along the way to energy independence.

In 2005, SOM presented plans for a new headquarters tower in Guangzhou that would incorporate the latest sustainable technology and engineering know-how in an attempt to create the world's most energy efficient high-rise structure – a tower that would significantly reduce its dependency on the city's infrastructure. The design of the 'zero-energy' concept Pearl River Tower reflects the principle of humankind in harmony with the environment. Pearl River's sleek, aerodynamic form was developed through a careful understanding of solar and wind patterns around the site. The building optimizes the solar path and utilizes the sun to its advantage. The building also minimizes the interference of wind forces and uses them to relieve the structural burdens imposed by high-wind pressures.

Pearl River's sculpted body directs wind to a pair of openings at its mechanical floors. Traveling winds push turbines which generate energy for the building's heating, ventilation and air conditioning systems. Energy consumption is reduced by maximizing natural day-lighting, reducing solar gain in air conditioned spaces, retaining rainwater for gray-water usage, and by utilizing solar gain for attaining the building's hot water supply. The office tower is chilled by a combination of displacement ventilation, radiant panel cooling and chilled beams and incorporates optimized air and water delivery systems and optimized building management systems.. Solar collectors integrated into the façades transform the sun's energy to usable AC current.

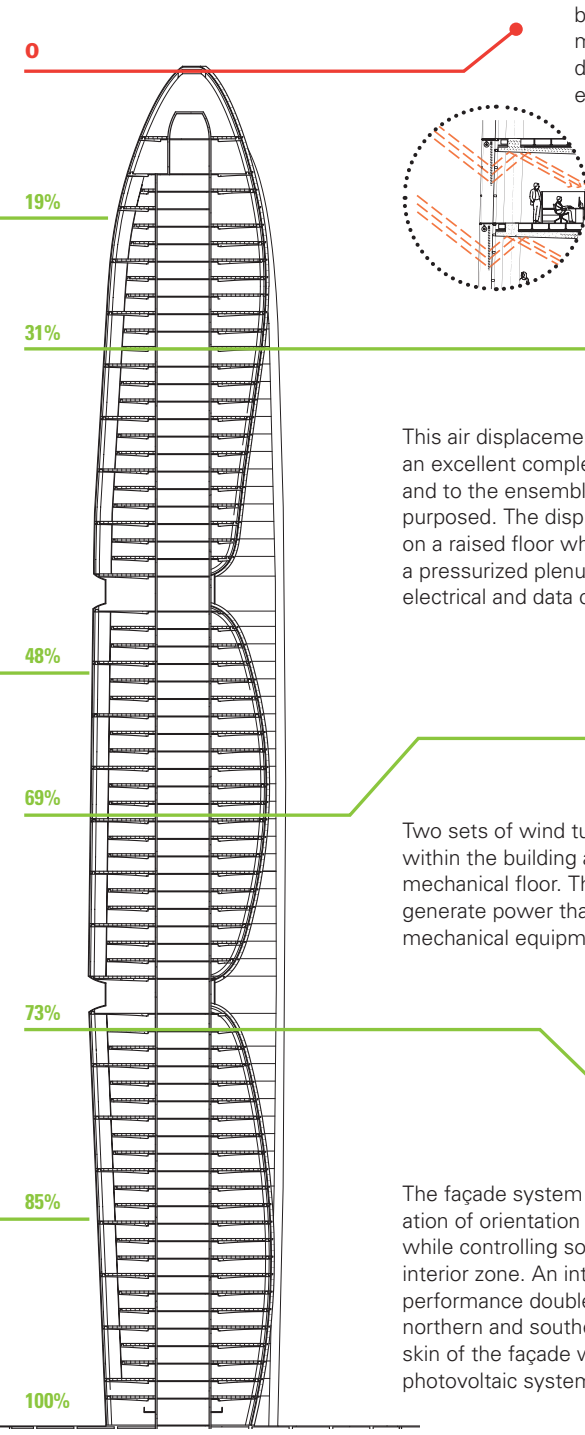


'Zero-energy' Concept Competition Design

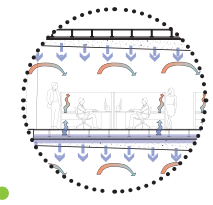
With the proposed system, the HVAC equipment would pass the cooling tower water through embedded tubes within the building's caissons prior to being delivered to the cooling towers.

A dynamic high-performance building envelope is incorporated into the design.

High temperature fuel cells would complement the sustainable systems purposed for Pearl River Tower.



In evolving the relationship between building and environment, a twofold strategy was developed to target a net-zero energy building.



This air displacement system is chosen as both an excellent complement to building's usage and to the ensemble of sustainable systems purposed. The displacement system will rely on a raised floor which will dually serve as a pressurized plenum and space for routing electrical and data cabling.

Two sets of wind turbines will be integrated within the building and are to be located at each mechanical floor. These turbines will serve to generate power that can be directly fed to the mechanical equipment with minimal losses.

The façade system is optimized with consideration of orientation for the utilization of daylight while controlling solar loads and glare to the interior zone. An internally ventilated high-performance double wall façade is used for the northern and southern orientation. The outer skin of the façade will feature an integrated photovoltaic system.

BUILDING

Pearl River Innovations

GUANGZHOU, CHINA

Pearl River Tower weaves together a number of highly innovative technologies, which work together to significantly reduce the amount of energy required to operate the building's infrastructure and ensure the highest levels of human comfort and indoor air quality.

Wind Turbines

The most innovative of Pearl River's elements, the two vertical axes integrated wind turbines harness prevailing winds from the south and the north with minor efficiency loss. The tower's curvilinear form further enhances performance by helping to funnel air through turbine inlets in the façade. Wind studies have predicted the turbines will speed up the wind's velocity two-and-a-half times. The power is then converted to energy and used to dehumidify the building.

High-Performance Building Envelope

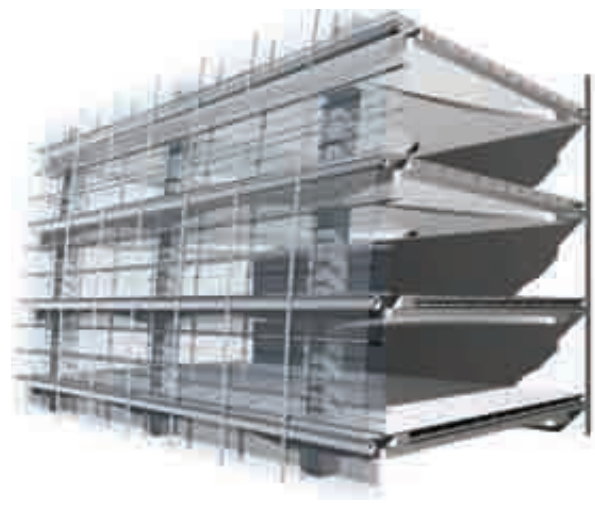
The design incorporates a dynamic high-performance building envelope. The façade system is oriented to optimize the use of daylight while controlling solar loads:

- An internally ventilated high-performance double skin façade with automated blinds is used for the northern and southern orientation.

- A triple-glazed façade with external shades and automated blinds within the glazing cavity is used for the east and west elevations.

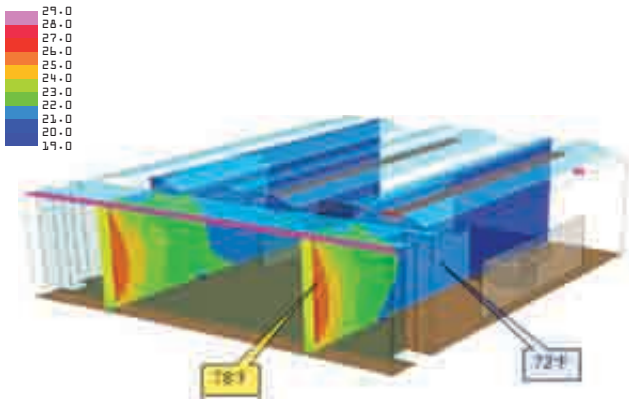
- A photovoltaic system is integrated into the building's external shading system and glass outer skin.

In addition, exhaust air is routed through the cavity of the double-layer curtain-wall, heating up as it travels upward to the mechanical floor. The ventilation and dehumification system uses this hot, dry air from the double-wall as an energy source.



Radiant Cooling/Chilled Beams with Displacement Ventilation

The chilled beams and radiant cooling system delivers sensible cooling directly to the space by incorporating chilled water piping that cools the room by natural convection and radiation heat transfer. It is used in combination with direct outdoor air systems (DOAC) to allow for exceptional environmental comfort while addressing ventilation issues.



CFD Modeling Perimeter Comfort Conditions

601 Congress Street

BOSTON, MASSACHUSETTS, USA

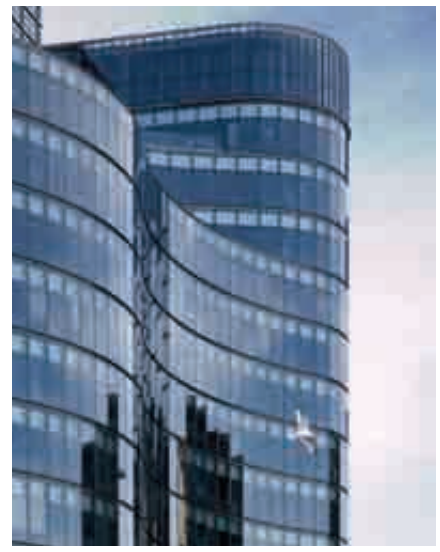
601 Congress Street is the corporate headquarters for a leading global services group. The LEED® certified mid-rise office building is located on a redevelopment brownfield site in South Boston.

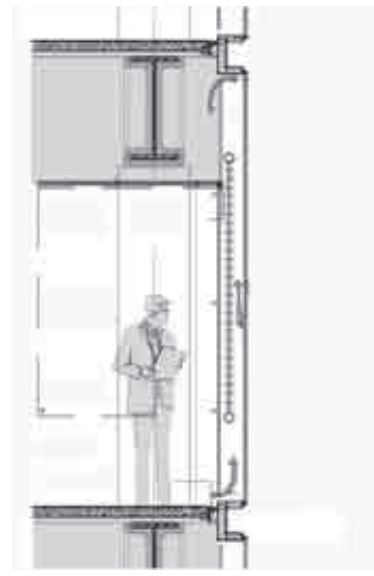
SOM began the building performance rating process early in the design with the intent of reducing first cost for green initiatives. The building is in the 95th percentile, or the top 5%, of performance based on predicted annual energy costs and metrics found using the EPA Energy Star target finder.

The design for the exterior skin of the building utilizes a double-skin façade which facilitates dynamic flow of air to enhance the curtain wall's energy performance. The six-story glass atrium provides workers with an interior landscaped space, increases daylight into interior occupied floor areas and provides added energy benefits.

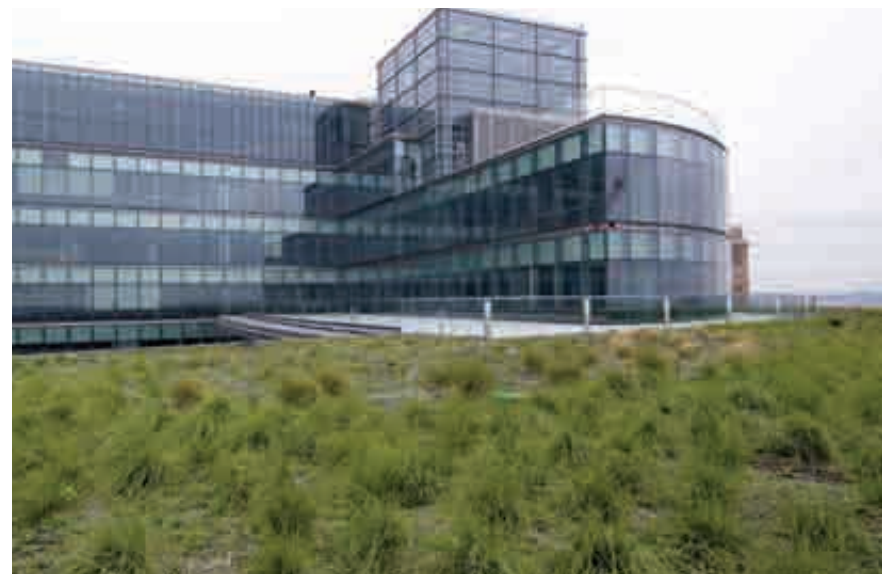
Additional sustainable strategies include drip irrigation for landscaping, sensors on faucets to achieve significant water conservation and a landscaped green roof adjacent to the outdoor terrace on the 12th floor.

The design for the exterior skin of the building utilizes a double-skin façade which facilitates dynamic flow of air to enhance the curtain wall's energy performance.





▲ *Clear glass double wall*
▼ *Green Roof*



Sustainable Projects

BUILDING

Zhengzhou Greenland Plaza

ZHENGZHOU, CHINA

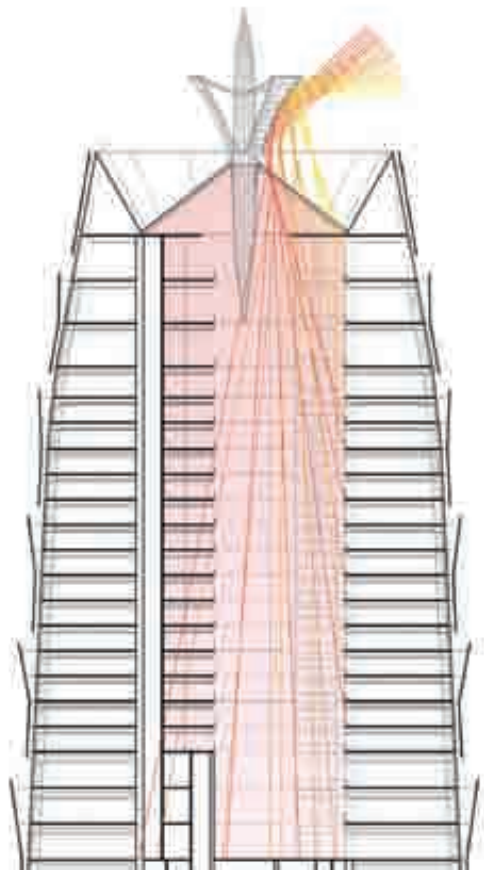
SOM secured the commission for a new mixed-use development in Zhengzhou, China, through an international competition. At 280 meters in height it will be the tallest building in western China. Advanced environmental technology, such as a building envelope that reduces solar heat gain and allows the tower to breathe, will make it appropriate to the climate of Zhengzhou.

The atrium in the Zhengzhou hotel is accentuated by a solar reflector that was specifically designed for the atrium through an intensive series of daylighting studies to maximize the amount of natural light. The surfaces of the atrium are finished to help drive light deep within. The atrium is thereby equipped to modulate the light level based on the available light provided by the reflector through a series of light sensing dimmer switches. This feature will enable the atrium to consume less energy and generate less heat throughout the year.

The hotel atrium also features a unique, smart control system that utilizes an internal stack effect and external wind pressure to achieve a well-ventilated environment. The smart control system operates in different modes to move large volumes of fresh air through the indoor environment using natural forces.

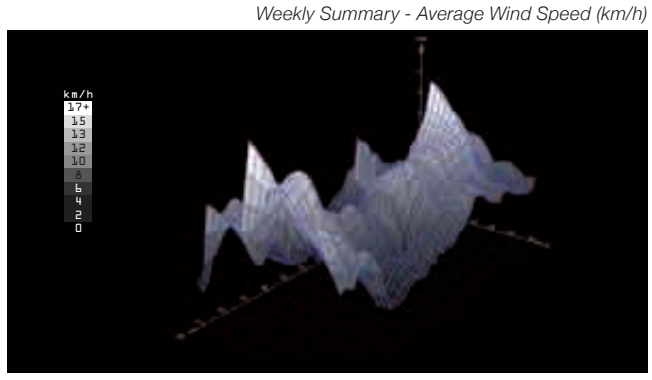
The atrium in the Zhengzhou hotel is accentuated by a solar reflector which increases the overall quality of the hotel space and saves energy.

Hotel Atrium Plan

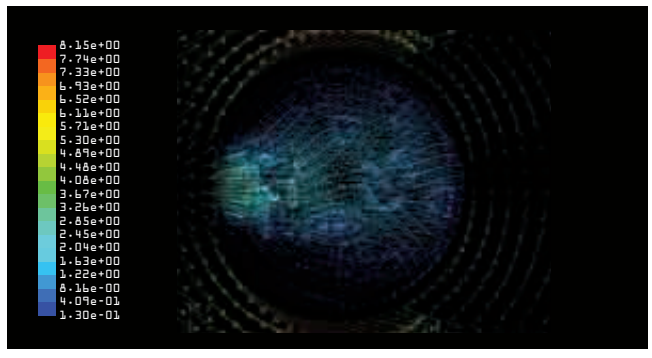


Hotel Atrium Section

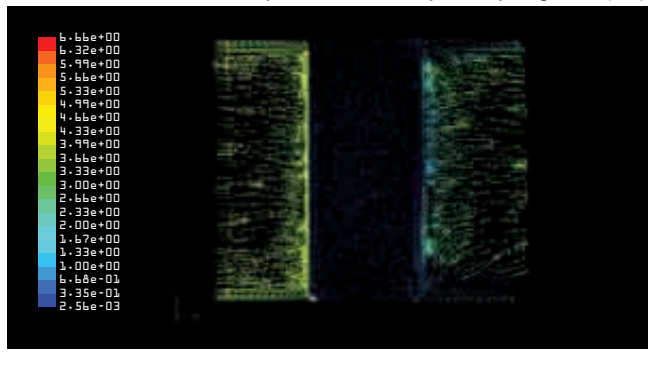
Weekly Summary - Average Wind Speed (km/h)



Velocity Vectors Colored by Velocity Magnitude (m/s)



Velocity Vectors Colored by Velocity Magnitude (m/s)



Sustainable Projects

BUILDING

University of North Carolina Genome Science Laboratory Building

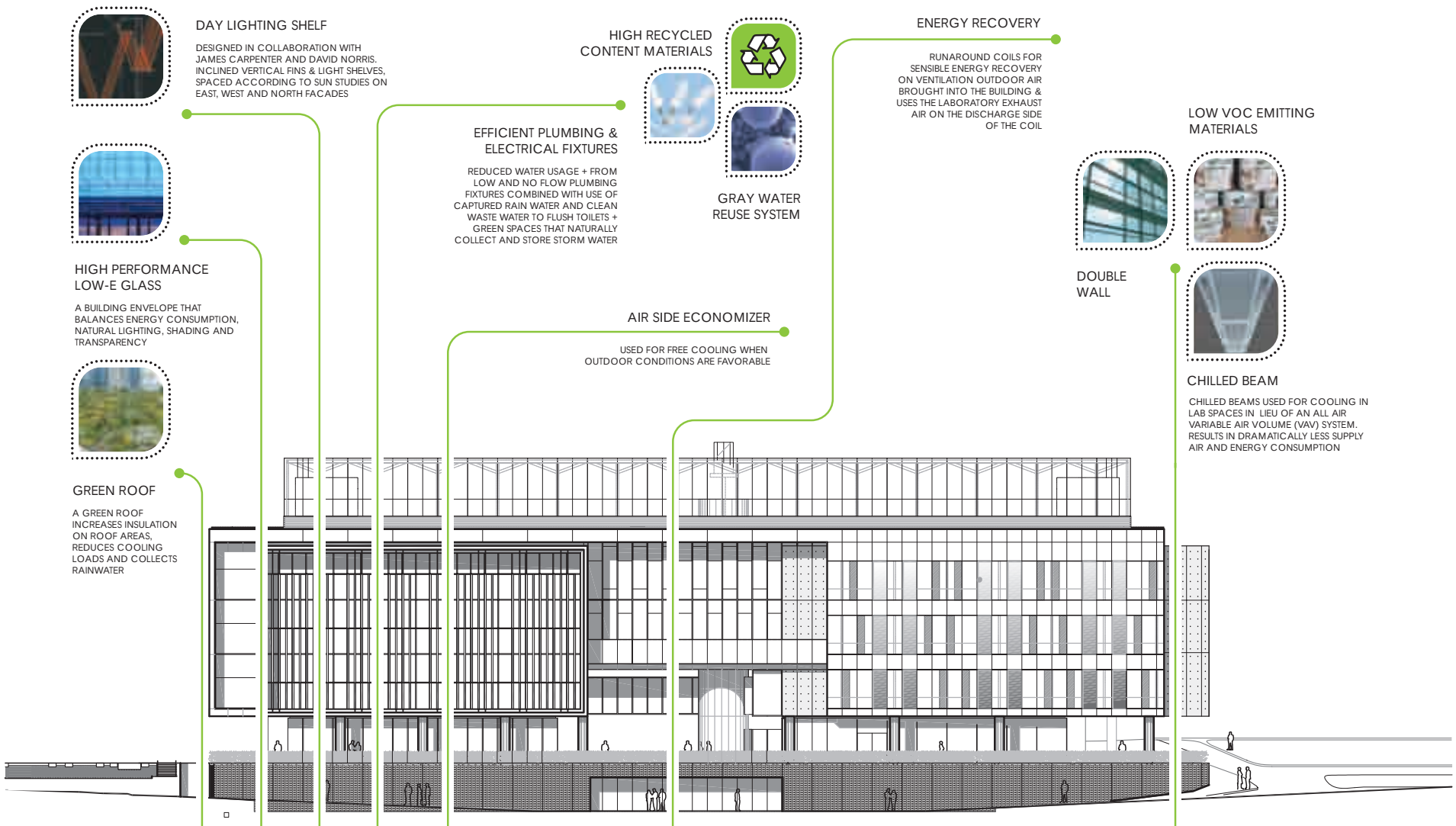
CHAPEL HILL, NORTH CAROLINA, USA

The University of North Carolina Bell Tower development project transforms the central Chapel Hill campus, establishing a vital link between the historic north campus and the medical school to the south. This project is part of a land reclamation effort, transforming the central portion of campus from a surface parking lot and back alley service area into a series of new science quadrangles and an expansion of the park. The buildings and planning grids of the University of North Carolina Chapel Hill campus respond to the region's topography.

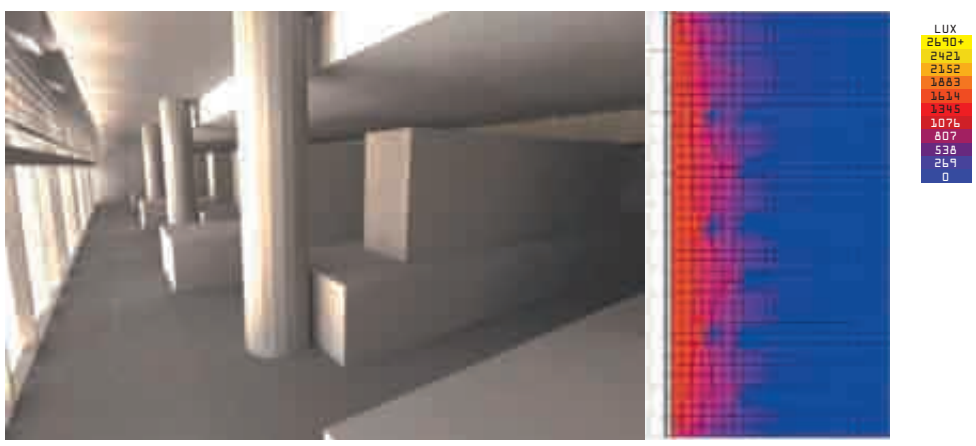
The new 190,000 sf genome science research laboratory consists of research facilities, office and classroom space. The lab features a green roof, high-performance glazing, integrated shading devices, chilled beams in the lab and the use of special concrete for high thermal efficiency. Together, the various sustainable engineering strategies result in a 25% reduction in energy consumption based on ASHRAE standard 90.1 2004. The structural design offered further opportunities for sustainability: much of the exterior structure is exposed, eliminating the need for a finish application – and reducing the cost of materials and labor. Additionally, slag will be used as partial relacement for portland cement in the mix design for the exposed concrete.

The project also includes renovations of a 16,000 ton chiller plant with new cooling towers; new access roads; above and below-ground storm-water retention system of 50,000 gallons and a new central park. The program is designed to achieve a LEED® Silver rating and is scheduled for completion in 2010.

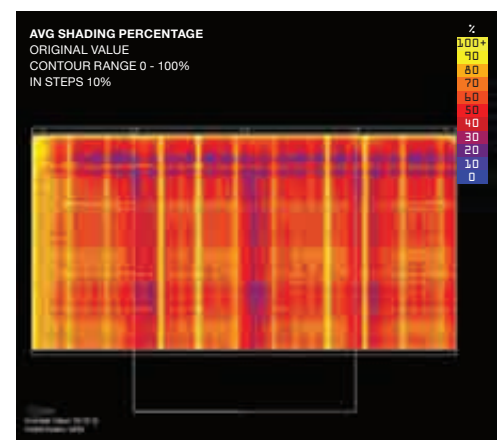
The lab features a green roof, high-performance glazing and the use of special concrete for high thermal efficiency.



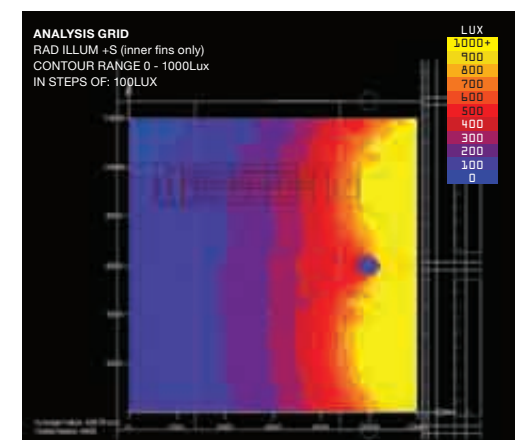
Reduced Annual Energy Consumption



Initial Daylighting Scheme
Daylighting - 06.21



Final Daylighting Scheme
Annual Shading Percentage - 64%



Daylighting - 09.21 @ 12:00 Sunny

Sustainable Projects

BUILDING

Jesse Brown Medical Center

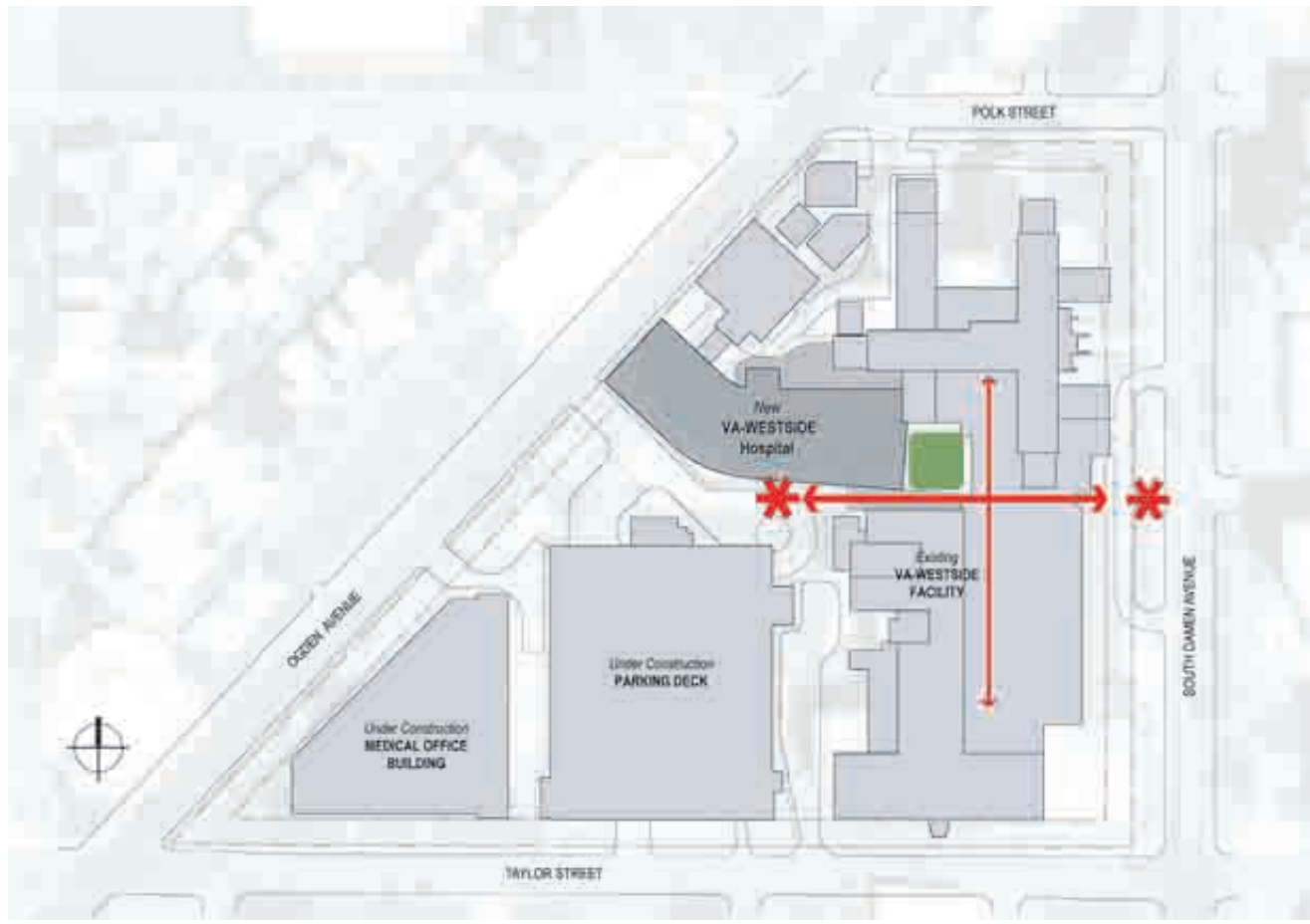
CHICAGO, ILLINOIS

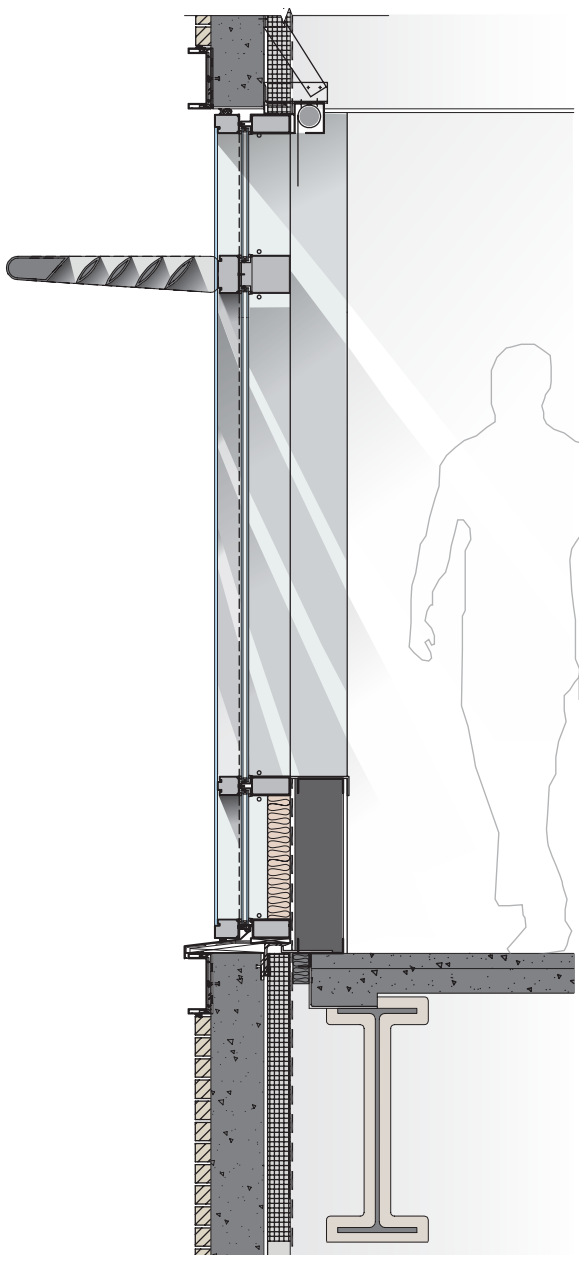
SOM in association with Ellerbe/Becket designed the Jesse Brown Medical Center, a 240,000 sf, 200-bed patient tower for the Veterans Administration (VA) at the Illinois Medical District. The primary sustainable design focus was to shape and orient the building to maximize exposure to sunlight. The principles outlined additional sustainable design elements as well as a plan to centralize numerous regional in- and outpatient VA services, including a new high security mental health unit and emergency and surgical suites.

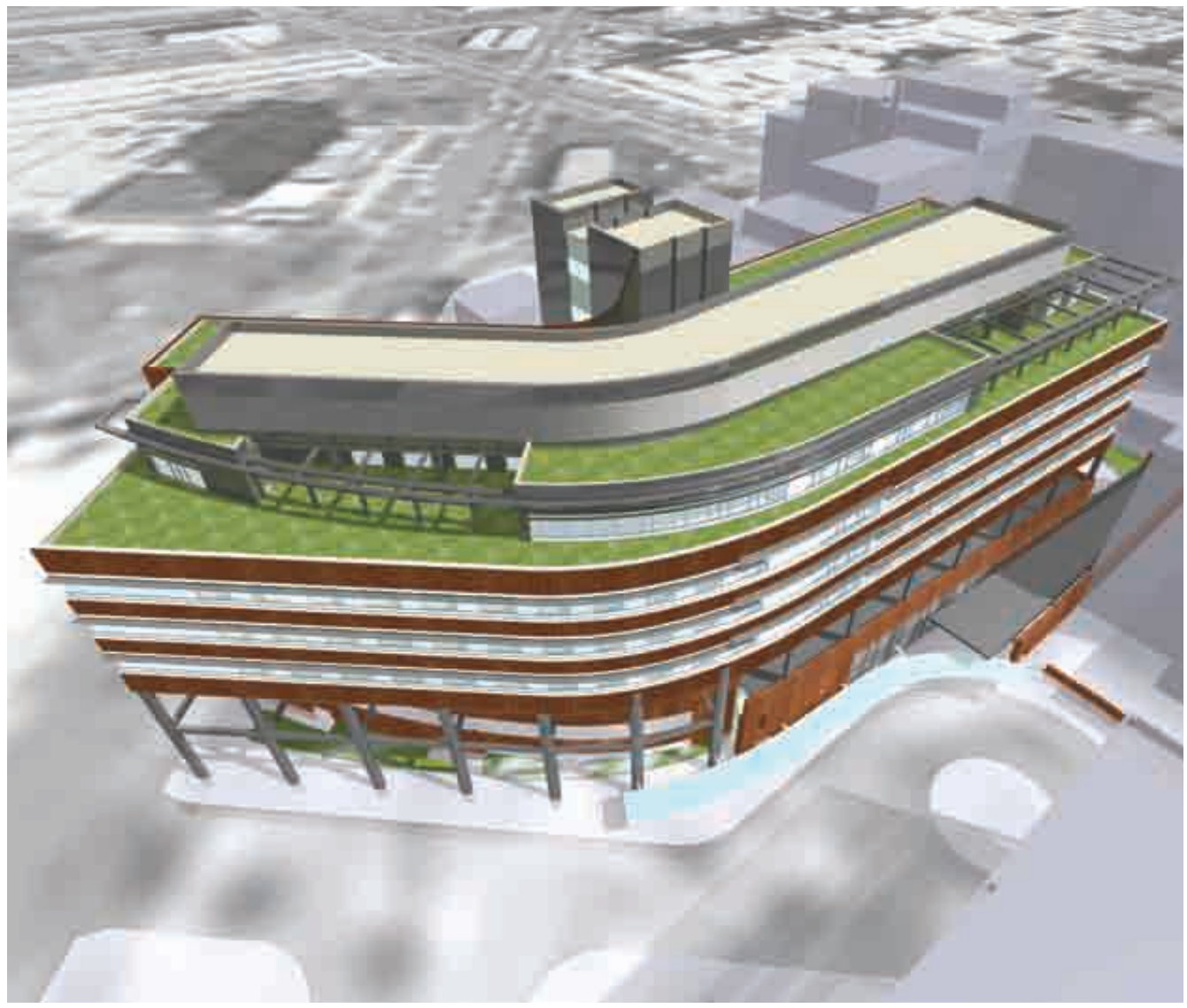
The Master Plan creatively juxtaposed the on-site hospital buildings to preserve an existing outdoor courtyard and transform it into the social heart of the campus, strengthening the community for Veterans. To effectively conserve energy and improve the healing environment, the building takes full advantage of the southern sun. The entrance lobby, all public circulation elements, waiting rooms and chapel are concentrated on the building's south side in order to maximize daylighting, while all service functions are located on the north side.

The building façades vary according to their orientation, with continuous horizontal sunscreens on the south side, to a solid brick mass on the north side, punctuated by deeply punched window openings. A variegated horizontal frit pattern on high-performance dual glazing further moderates solar gain and reduces glare.

The design also includes a green roof that insulates the building and improves storm water retention. Additionally, all materials were evaluated for their local and recycled content and their contribution to the healing environment.







Sustainable Projects

BUILDING

Burj Dubai

DUBAI, UAE

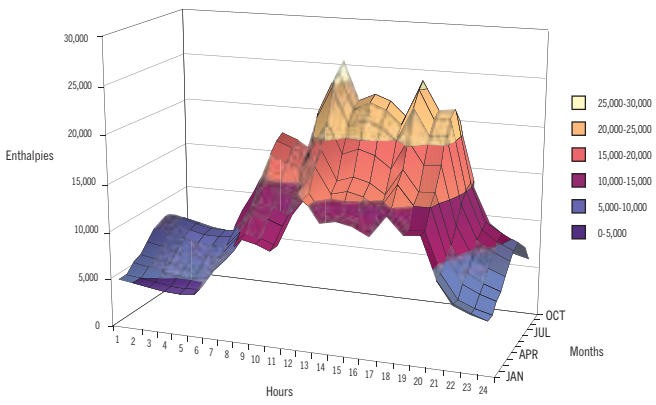
The Burj Dubai, currently the world's tallest building, is the centerpiece of a large scale mixed-use development comprised of residential, commercial, hotel, entertainment, shopping and leisure outlets with open green spaces, water features, pedestrian boulevards, a shopping mall and a tourist-oriented old town.

The design for the 270,000 sm tower combines historical and cultural influences with cutting edge technology to achieve a high-performance building that will set the new standard for development in the Middle East and become the model for the future of Dubai.

When designing the Burj Dubai, the design team looked to the sky for sustainable elements. In the extreme hot and humid climate of Dubai, the temperature between the ground (46.1ºC or 115 ºF) and the top of the building (38ºC or 100ºF) can vary up to 8 ºC (or 15º F). Satellite data was used to predict the humidity drop with altitude (up to 30% reduction in humidity between the top and bottom of the building), and analysis was performed to study the air density drop up the building (up to 10%). SOM's "sky sourced" sustainability innovations will result in substantial energy savings.

The Burj Dubai also has one of the largest condensate recovery systems in the world, capturing up to fourteen Olympic size swimming pools of water per year, and one of the highest chilled water pressures ever used in a building to maximize efficiency. The tower is one of the first to utilize an active stack effect control in a super tall building to minimize energy loss.

The Burj Dubai has one of the largest condensate recovery systems in the world, capturing the equivalent of up to fourteen Olympic size swimming pools of water per year.



MATERIALS / OBJECTS

SOM - Chicago Office

CHICAGO, ILLINOIS, USA

When tasked with the renovation of their Chicago office, the SOM design team had the objective of creating a high-performance office space within a historic Daniel Burnham building. Specific design goals included achieving an image of design excellence to reflect the architectural practice that it houses, and to integrate the firm's sustainable ideal into every aspect of the design. The 45,500 sf space is currently targeting LEED® for Commercial Interiors Silver certification.

The renovation team placed strong emphasis on open office planning to promote collaboration between the company's various disciplines. Conference rooms and teaming areas were relocated from previously enclosed spaces to the perimeter to allow for enhanced natural daylight and views of Lake Michigan. Emphasis was given to the creation of a customized and automated lighting system to enhance daylight penetration from both the perimeter glazing and interior atrium of the building, resulting in an elegant and light-filled space which increases the productivity and well-being of staff. The integration of daylight harvesting reduces energy consumption 5% below the energy code (ASHRAE IES 90.1 2004).

Material selection was equally integral to the design and involved thorough life-cycle analysis and indoor environmental quality considerations to ensure a space with reduced embodied energy and improved air quality for staff. Notable aspects of the material selection include: rapidly renewable bamboo flooring, carpet with high-recycled content, low toxicity paint and recyclable furniture. An emphasis on waste reduction was applied throughout design, construction and post-construction.

The objective was to create a high-performance space that would mirror the firm's commitment to sustainable design.

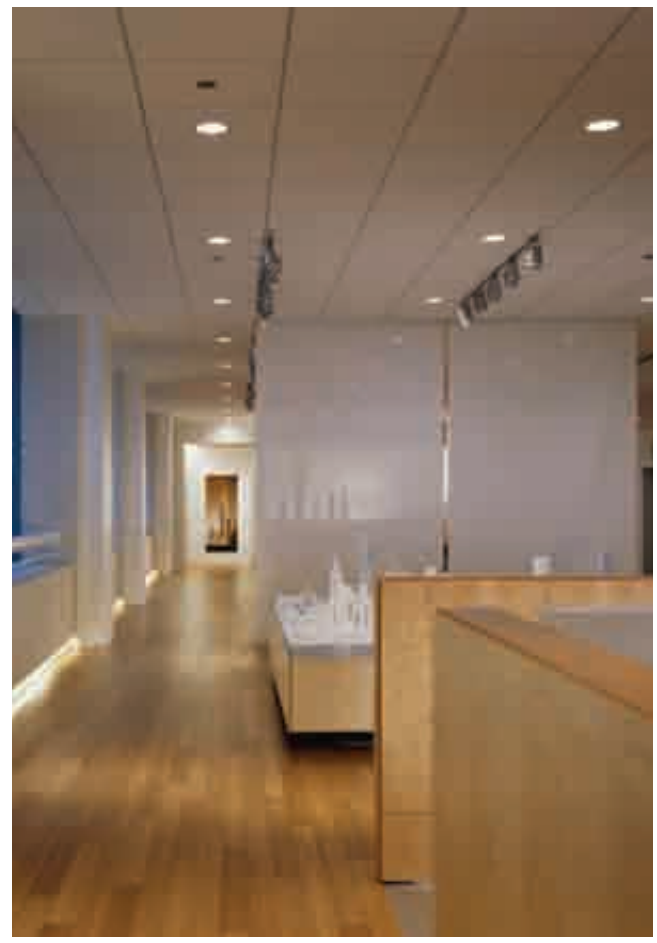
MATERIALS / OBJECTS

SOM Structures

The SOM Structures Studio works in collaboration with the architectural, mechanical, electrical and plumbing engineering studios to increase efficiency in building designs. SOM is an industry leader in structural system optimization. The SOM Structures group has developed specialized software for its material optimization program, utilizing energy based methods to determine the optimal distribution of structural materials and minimize the material solution for a given project.

By optimizing the design of a building's structural system, the amount of materials used for building construction is reduced. The conservation of materials has several benefits: fewer natural resources are used to create the material, less energy is used in manufacturing and fabricating the material and fewer shipments of material to the site are required, thereby producing a cost-effective building.

In addition to implementing the unique optimization program, SOM Structures employs recycled materials such as recycled steel and substitutes fly ash for portions of Portland cement in concrete mixes, to result in high-performance and sustainable buildings.



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