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WORLD TRADE CENTER TOWER ONE FREEDOM TOWER

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Location	Freedom Tower is located in the northwest corner of the 16-acre World Trade Center site, bounded by Vesey Street, West Street, Washington Street and Fulton Street.
Program	<p>Freedom Tower's program is 2.6 million square feet of office space, plus tenant amenity spaces, observation decks, world-class restaurants, and the Manhattan Television Alliance (MTVA) broadcast and antennae facilities, all supported by both above and below-grade mechanical infrastructure for the building and its adjacent public spaces. Below-grade shopping and access to the PATH and subway trains and the World Financial Center are also provided.</p> <p>The program is organized as follows: Rising from the plaza level, an 80-foot-high public lobby is topped by a series of mechanical floors; together these form the 200-foot-high building base. Sixty-nine office floors rise above the base to 1120 feet elevation. Mechanical floors, two floors to be occupied by the Metropolitan Television Alliance, restaurants and observation decks culminate in an observation deck and glass parapet that mark 1362' and 1368' respectively – the heights of the original Twin Towers. An antenna supported by a cable structure rises to a final height of 1776'.</p>
Design	<p>As the first office tower to rise on the actual World Trade Center site, Freedom Tower recaptures the New York skyline, reasserts Lower Manhattan's preeminence as a business center and establishes a new civic icon for our country. It is a memorable architectural landmark for our city and our nation; a building whose simplicity and clarity of form will remain fresh and timeless in its design. Extending the long tradition of American ingenuity in high-rise construction, the design solution is an innovative mix of architecture, structure, urban design, safety and sustainability.</p> <p>Freedom Tower is a bold and simple icon in the sky that acknowledges the memorial below. While the memorial, carved out of the earth, speaks of the past and of remembrance, Freedom Tower speaks about the future and hope as it rises into the sky in a faceted, crystalline form filled with, and reflecting light. This tall, point</p>

tower, in the tradition of great New York City icons such as the Chrysler Building and Empire State Building, evokes the slender, tapering triangular forms of these two great landmarks of midtown and replaces more than one quarter of all the office space that was lost on September 11, 2001.

The tower rises from a simple, subdued, robust base that is a cube whose square plan – 200' by 200' – is the same size as the footprints of the original Twin Towers. Generous open spaces, filled with trees, water and places of respite that enliven the surrounding streets, connect the tower with the adjacent neighborhoods and allow views and access into the memorial. Entrances on all four sides of the building further connect the building to its surroundings and activate it at street level: from West Street for the observation deck (with areas for ticketing, security, bag check and shopping); for the restaurant from Washington Place and for the offices from Fulton and Vesey Streets. While incorporating enhanced security requirements, the building remains open and accessible.

The design of the base draws upon the restrained monumentality of the historic commercial buildings of New York City such as the Empire State Building, the Chrysler Building and the Woolworth Building; a shimmering metal surface drapes the tower's base and imparts a dynamic fluidity of form whose appearance will reflect changes in the light, weather and seasons.

As the tower itself rises from this cubic base, its square edges are chamfered back, transforming the square into eight tall isosceles triangles in elevation. At its middle, the tower forms a perfect octagon in plan and then culminates in a glass parapet (elevation 1362' and 1368') whose plan is a square, rotated 45 degrees from the base. A mast containing an antenna for the MTVA, being designed by a collaboration of architects, artists, lighting designers and engineers, and secured by a system of cables, rises from a circular support ring, similar to the Statue of Liberty's torch, to a height of 1776'.

Structure

The robust, redundant steel moment frame, consisting of beams and columns connected by a combination of welding and bolting, resists lateral loads through bending of the frame elements. Paired with a concrete-core shear wall, the moment frame lends substantial rigidity and redundancy to the overall building structure while providing column-free interior spans for maximum flexibility.

Safety

To satisfy security concerns, the building's setback distance from West Street (Route 9a) has been increased from 25 feet to an average of 90 feet. Freedom Tower's cubic base will be clad in luminous materials – perhaps a mixture of stainless steel and titanium – that is simultaneously shimmering, light-reflective, and blast-resistant.

The building incorporates advanced life safety systems that exceed the requirements of the New York City Building Code and that will lead the way in developing new highrise building standards. In addition to structural redundancy and extra strong fireproofing, the building includes biological and chemical filters in the air supply system. To assume optimum egress and firefighting capacity, extra-wide pressurized stairs, low-level emergency lighting and concrete protection for all sprinklers and emergency risers are being provided, in addition to interconnected redundant exits, additional stair exit locations at all adjacent streets and direct exits to the street from tower stairs. All of the building's life-safety systems – stairs, communications, risers, sprinklers, elevators – are encased in a core wall that is three feet thick in most places.

This building is being designed to facilitate emergency response with enhanced emergency communication cables, together with a dedicated stair for use by firefighters. These are used in conjunction with enhanced elevators housed in a protected central building core that serve every floor of the building. In addition, “areas of refuge” are located on each floor.

Sustainable Design

Freedom Tower uses new technologies and methods to maximize efficiency, minimize waste and pollution and reduce the impacts of the development for all concerned. Our team is pursuing unprecedented collaborations with technology and energy leaders throughout the world to take advantage of the next generation of innovative energy sources, such as cogeneration and fuel cells as well as both on-site and off-site renewable energy sources such as wind energy.

Freedom Tower is being built according to World Trade Center *Sustainable Design Guidelines* that are unprecedented in their scope and depth. Drafted in consultation with leading environmental groups and community advocates, these guidelines for commercial development at the World Trade Center go well beyond standards for other office buildings. They call for cutting-edge innovation in air quality, energy efficiency, daylighting, water conservation, materials conservation and clean construction.

In order to achieve a world class model of energy efficiency and environmental sustainability, Freedom Tower will include: state-of-the-art energy conservation technology to reduce energy demand; better interior “daylighting” and views of the outside for occupants due to ultra-clear glass technology that also saves energy; improved indoor air quality due to outside-air ventilation and use of building materials without toxic materials such as volatile organic compounds (VOCs); water conservation due to reuse of rainwater for building cooling and irrigation; reduction of vehicular traffic via proximity to public transportation and provision of facilities for bicycle commuters; waste reduction through recycling of construction debris and use of recycled-content building materials; natural resource protection via use of sustainably harvested wood; and cleaner air in the community due to use of ultra-low sulfur diesel fuels and particulate filters on construction vehicles, for which the EPA has already given Silverstein Properties a 2004 Environmental Quality Award. Additionally, a 5000-square-foot tenant ‘exemplar’ space will be built to demonstrate the Freedom Tower’s cutting edge design technologies and philosophies that maximize energy savings and enhance the interior quality of life for workers in the building.

Project Schedule

Construction on below-grade utility relocations, footings, and foundations for the Freedom Tower is expected to begin in the first quarter of 2006. It is projected that steel for the building will be visible above grade in 2007, with a topping out in 2009. The building is projected to be ready for occupancy in 2010.

Owner/Developer

World Trade Center Properties, LLC
(An affiliate of Silverstein Properties Inc.)
Larry A. Silverstein President
John (Janno) N. Lieber Senior VP/Project Director
David Worsley Director of Construction
Edmund A. Narbutas Vice President/Design

Ground Lessor

Port Authority of New York and New Jersey
Anthony R. Coscia Chairman

	Kenneth J. Ringler Jr. Joseph J. Seymour	Executive Director Special Director
Planning for WTC Site and Lower Manhattan Redevelopment	Lower Manhattan Development Corporation John C. Whitehead Stefan Pryor	Chairman President
Broadcast Facility	Metropolitan Television Alliance/WCBS, WNBC, WNYW, WABC, WWOR, WPIX, WNET, WPXN, WNJU Paul Bissonette Altan Stalker	President Senior Technical Officer
Architect	Skidmore, Owings & Merrill, LLP David M. Childs, FAIA T.J. Gottesdiener, FAIA Carl Galioto, FAIA Kenneth A. Lewis, RA Jeffrey D. Holmes, AIA Reiner Bagnato, AIA	Design Partner Managing Partner Technical Partner Project Manager Senior Designer Senior Technical Architect
Construction Managers	Tishman Construction Corporation Daniel R. Tishman	Chairman & CEO
Structural Engineers	Cantor Seinuk Group Schlaich Bergermann und Partner GbR	
MEP Engineer	Jaros Baum & Bolles, Inc.	
Sustainability Consultants	Jaros Baum & Bolles, Inc. GreenOrder	
Lighting Designer	Claude R. Engle	
Civil & Transportation Engineer	Philip Habib & Associates	
Security	Ducibella, Venter & Santore Weidlinger Associates	
Acoustic	Cerami & Associates	
Vertical Transportation	Jaros Baum & Bolles, Inc.	
Geotechnical Engineer	Mueser Rutledge Consulting Engineers	
Wind Tunnel Testing	Rowan Williams Davies & Irwin Inc.	
Restaurant Consultant	Cini-Little, International, Inc.	
Exhibition and Observation Deck	Ralph Applebaum and Associates	
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Models	Radii	