

One World Trade Center

Identification

EBN	201521
Name	One World Trade Center
Alternative Name	1 World Trade Center, Tower One, Freedom Tower
Construction Type	skyscraper
Complex Type	office complex
Complex Name	New World Trade Center
Current Status	existing [completed]




Location

Continent Name	North America	District (2nd level)	Financial District
Country Name	U.S.A.	Block Number	Buy full PDF
State Name	New York	Postcode	10007

Metro Area Name	New York-Newark-Bridgeport Metro Area	Address (as text)	285 Fulton Street
City Name	New York City	Main Address	1 World Trade Center
District (1st level)	Manhattan		

Description

Structural Material	composite structure	Architectural style	modernism
Facade System	curtain wall	Main Usage	commercial office
Facade Material	glass	Side Usage	 restaurant mercantile

Spatial dimensions

Height (structural)	1,776.02 ft	Floors (underground)	5
Height (tip)	1,776.02 ft	Floors (overground)	104
Height (roof)	1,368.11 ft	Escalators	11
Height (main roof)	1,368.11 ft	Elevators	73
Length	200 ft	Gross Floor Area (GFA)	Buy full PDF
Width	200 ft		

Years and costs

Year (construction start)	2006	Building costs	\$ 3,900,000,000
Year (construction end)	2014		

Features & Amenities

- One of the city's famous buildings
- Aircraft warning lights installed
- Observation floor is available

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- Rainwater is recycled
- Transmission antenna on roof
- Tuned mass damper is installed

Facts

- The tallest building in North America. It stands 1,776 ft (541 m) and is a reference to the year when the United States Declaration of Independence was signed.
- The final height of 1,776 ft (541 m) is reached by a cable-supported antenna which rises from a circular support ring and a nod to the torch held aloft by the Statue of Liberty.
- The 408-foot tall decorative spire encases an antenna with a lighting system to make it into a beacon.
- For security reasons, the building is set back approximately 90 ft (27.4 m) from West Street.
- The base is concrete, clad in over 2,000 pieces of prismatic glass. The tower's structure allows for interior spans which are column-free.
- The tower's structure is organized around a strong, redundant steel moment frame which consists of columns and beams linked by a combination of bolting and welding and resists lateral loads through the bending of the frame's elements.
- Freedom Tower's cornerstone was placed during a ceremonial groundbreaking on July 4, 2004.
- Ground for actual construction (different from the cornerstone placing) was broken on April 27, 2006.
- Foundation work started in July 2006.
- The height of the observation decks match the heights of the original World Trade Center's Twin Towers.
- One World Trade Center became the highest building in New York City on April 30, 2012.
- The building has an emergency stairway dedicated to firefighters.
- The tower's footprint is equal to that of each of the original Twin Towers.
- A three-foot thick core houses One World Trade Center's life-safety systems (elevators, risers, communications, stairs and sprinklers), the advanced life safety systems exceed that required by the New York City Building Code.
- The tower has extra strong fireproofing whilst the air supply system incorporates chemical and biological filters, emergency stairs are extra-wide and pressurized.
- Each floor has a refuge area whilst enhanced elevators are housed in a protected central building core which serves all of the tower's floors.
- In conjunction with a concrete-core shear wall, the moment frame endows great rigidity and redundancy to the tower's overall structure.

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- Rising above the base are 69 office floors which reach a height of 1,120 ft (341.3 m), this is further surmounted by mechanical floors (two of which are occupied by the Metropolitan Television Alliance), restaurants and observation decks at 1,368 ft (417 m).
- An 80 ft (24.3 m) high public lobby topped by a succession of mechanical floors rises from the plaza, in conjunction, these constitute the building's blast-resistant base which is 200 ft (61 m) tall.
- The cubic base gives way to an octagonal plan at center whilst the glass parapet is square in plan and rotated 45 degrees from the base. The mid section's octagonal plan is achieved by facade planes which are comprised of eight alternately inverted isosceles triangles with bevelled edges.
- The maximum elevator speed is 540 m/min.

Awards

Name	Category	Rank	Year
Emporis Skyscraper Award		4	2014
CTBUH Skyscraper Award	Best Tall Building Award - America		2015

Certificates

Name	Level	Year	Status
Leadership in Energy and Environmental Design	Gold	2015	Certified

Involved companies

Architect.....

Skidmore, Owings & Merrill

14 Wall Street	Phone	+1 212 298 9300
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Foundation Engineering.....

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