

Construction Logistics at the World Trade Center: These Cranes Keep Us Moving!



Construction cranes at the WTC in October 2011

The World Trade Center (WTC) site continues to transform Lower Manhattan's cityscape as infrastructure takes shape and towers climb in height. Progress on one of the world's largest construction sites, located in densely developed Lower Manhattan, requires tremendous schedule coordination, dedicated personnel, and the mobilization and utilization of specialized construction equipment, including numerous cranes of all sizes and types.

Currently, there are approximately 32 cranes approved for use alongside and atop the rising WTC mega-projects. These cranes consist of electric cranes, mini-crawlers, knuckle booms, mobile cranes, and crawler- and tower-mounted lattice booms, which vary in purpose from steel erection to material delivery and excavation. Tower-mounted lattice booms, such as those at 1 WTC and 4 WTC, are among the most frequently used cranes on the site. These sophisticated machines are "jumped" between floors, meaning the crane is raised while affixed to the building structure, keeping pace with the tower as it rises.

For a portion of the Transportation Hub work, a Manitowac 18,000 crawler-mounted lattice boom was used, which was the largest compact footprint crane activated in the country at that time. The second largest crane – the Manitowac 16,000 crawler-mounted lattice boom – will be active at the Vehicular Security Center (VSC) by the end of the month. The assembly of the 16,000 crane required several tractor trailers to haul all of its components on location, and once erected, it will carry out the heavy lifting needed to keep the VSC project on schedule. But then again, the task of keeping projects moving is a job proudly carried out by all the cranes on site.



Assembly of the Manitowac 16,000 crane, the second largest on site, at the VSC

Fun Facts about Cranes:

- Their name takes its cue from their shape, which is similar to that of the tall, long-necked bird of the same name.
- The first construction cranes were invented by the Ancient Greeks, and were powered by the physical exertion of men or animals.
- Today, cranes can lift material hundreds of feet in the horizontal and vertical direction.
- For example, the Manitowac 18,000 crane that was used for the Transportation Hub construction could extend halfway across the project site, from the west side of Church Street to the 1 Subway Box.

Manitowac 18,000 crawler-mounted lattice boom
Photo Credit: Manitowac Product Guide

CONSTRUCTION PROGRESS AROUND THE WTC SITE

Vehicular Security Center (VSC)



When complete, the VSC will be a state of the art security screening checkpoint for all vehicles entering the future WTC site. Currently, activities on the project site consist of soil and rock excavation and removal, as well as foundation work. In preparation for the installation of structural steel, two large cranes have been mobilized and erected along the western portion of the site, near Liberty Street and West Street/Route 9A.

Transportation Hub



The Transportation Hub will serve as an access point, providing seamless pedestrian connections to the PATH Station, several NYC Transit Subway lines, and major destinations east and west of West Street/Route 9A. This project site has numerous activities taking place, including steel erection and concrete placing operations as well as the delivery of temporary support materials for the Oculus' (or main Transit Hall) east arch truss.

3 World Trade Center



This tower will be the third tallest building on the WTC site when fully complete, reaching 1,140 feet above street-level with 54 floors and over 2.5 million square feet of office space. The tower, designed by Rogers Stirk Harbour + Partners, will have a reinforced concrete core and columns with steel girders and beams. Construction is underway on 3 WTC as below grade rebar and formwork progresses on the structure.

1 World Trade Center



Upon completion, 1 WTC will feature more than three million square feet of leasable space, comprising offices, an observation deck, parking, and broadcast and antennae facilities—all supported by above and below-grade mechanical infrastructure. Soon the building will be the tallest in the country, reaching 104 floors and 1,776 feet above street level, including the spire atop the structure. Already changing the New York City skyline, this rising star's steel progresses, being erected at the pace of one floor per week, and will reach the 90th floor by the end of November. The aluminum and glass curtain wall panels that form the exterior of 1 WTC have already reached the 58th floor.

