

ACT

are the crane, lifting and transport industry
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Interview:
Debbie Dickinson

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Stars, stripes and a spire

Oh say can you see!

Official domestic
magazine of the
SC&RA





Crowning

While it looked seamless, the effort to lift and place the final spire atop the One World Trade Center building in New York City was an incredible feat of engineering and expertise.

It was a crowning moment on a beautiful morning in May when the final spire for One World Trade Center was set in place on top of the building known as Freedom Tower. With the spire in place, the building is now the tallest structure in the western hemisphere at 1,776 feet, according to the Port Authority of New York. The spire itself will serve as a broadcasting antenna.

Placing the spire and its pedestal required a huge effort that encompassed a cadre of designers, engineers, crane operators, riggers and workers, all of whom were said to be proud and honored to take part in this sentimental, yet monumental effort.

Two diesel-powered M760 Favco tower cranes, which have been on-site since the jobsite was a hole in the ground, played a huge role in the successful project, says James Lomma of J.F. Lomma Inc., and whose company owned the cranes.

From the time they were erected about seven years ago and until they set the final piece of the spire, the cranes had been performing steel and siding work on the building.

In March and April, the first truckloads

The top section of the 408-foot spire brought the building to its final height of 1,776 feet, a symbolic elevation that memorializes the year in which the Declaration of Independence was signed.

of the spire sections were hauled into New York City in the wee hours of the morning. They had been barged from Canada and then trucked to the site. A 600-ton capacity Terex Demag AC500 owned by New York Crane lifted the sections off the transporters to a staging area.

As the final touches were put on the lift and erection plan, the tower cranes had to be re-rigged and prepared for their final job on the project. DCM Erectors prepared the lift plan for General Contractor Tishman Construction Corp.

"DCM had to purchase a new winch drum, which was made in Australia, from TES, the North American Favco dealer for the Favco M760 that would lift the final spire sections," explains Lomma. "They had to have a winch that could handle 3,500 feet of cable. It had to go from single to two-part."

Freestanding crane

New York Crane supplied the 14 tower sections and climbing frames to freestand the crane 180 feet, the height needed to erect the spire.

"This was a really tough job, if you can imagine freestanding a tower crane 180 feet on the top of a 1,600-foot high building," says Lomma. "It was a very challenging project."

Lomma says wind was an issue the entire time. Weather and rain caused a few delays.

The Favco M760 hoisted the spire foundation and sections to the top of building. Once the pieces were stored on top of the building, the second freestanding Favco M760 began tedious process of erecting the spire sections, Lomma says.

Many entities played a role in the spire erection, including ASC Industries/Python America and its New York City distribution center The Bilco Group, which supplied the high performance wire rope used on the tower cranes. Slingmax designed the high performance Twin-Path slings used to lift the spire section, according to Tony Fastuca, vice president, Python America and High Performance Products.

"The combination of 3,600 feet of 42 mm Python Compac 35 RLL 2160 grade true non-rotating rope was required and specified for the Favco M760 to lift the spire," Fastuca says. "The rigging dealt with the SlingMax Twin-path slings that are comprised of a blend of high performance fibers with Dyneema. These

There are hundreds of videos on the Internet of the placing of the spire on One World Trade Center. Among our favorites is this one: <http://www.usatoday.com/story/news/nation/2013/05/10/world-trade-center-spire/2149449/>.



The rigging crew gathered for a picture, proud of their history-making roles.

moment

Rigging specifics

- The Favco tower canes supplied by J. F. Lomma Inc. were rigged with high strength ropes designed and specified using Python Wire Rope and made in Germany.
- Hoist ropes were both 32 mm and 42 mm using the Python Compac 35 2160 RLL. The hoist ropes were a true non-rotating construction that stabilized the loads as they were lifted several thousand feet in the air.
- The luffing boom rope was a construction of a fatigue-resistant, eight-strand compacted rope with a plastic coated core which helps prevent inner wire breaking and a permanent lubrication.
- Twin Path High Performance slings provided a light-weight sling that was 1/10th weight of a wire rope sling and yet had the high capacities to make the lifts.

Twin-path slings were fabricated by ASC industries, a Slingmax fabricator, and could lift capacities up to 250,000 pounds.”

Rigged to the top section of the spire was an American flag, one of many patriotic acts associated with this project.

Once the top spire section was bolted in place, workers on top of the building cheered, celebrated and even dried

their eyes, as did millions of Americans watching it unfold on live television.

Soon after the spectacle of the spire erection, the tower cranes will be taken down. Lomma says the first crane will be taken down by second one, and then the second one will be taken down in August using a specially designed derrick winch from Timberland.

Below the Freedom Tower is a memorial



The final spire section was lifted to the roof of the building on May 2 and was erected to its final height on May 10.

to the almost 3,000 people who were killed when terrorists flew hi-jacked commercial airliners into the World Trade Center's twin towers, causing their collapse.

When complete, One World Trade Center will encompass 2.6 million square feet of commercial office space, and will include observation decks, restaurants and other public facilities. ■