

Doka Xpress

The Formwork Magazine

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SPECIAL EDITION

Rebuilding Ground Zero

9/11 Memorial

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doka
The Formwork Experts



► The WTC plan includes five new skyscrapers (1 World Trade Center – the Freedom Tower; Towers 2, 3, 4 and 5); the National September 11 Memorial & Museum; the World Trade Center Transportation Hub; a retail complex; and a performing arts center. The new WTC site will not only commemorate the events of September 11, 2001, it will also symbolize the rebirth of Lower Manhattan. *(Photo courtesy of Silverstein Properties)*



World Trade Center Construction

As the 10th anniversary of 9/11 is upon us, it is hard not to take a moment and reflect on that tragedy.

While that day will never be forgotten, the enthusiasm that surrounds the World Trade Center project is something that has inspired the entire Doka USA, Ltd. team. Doka is very proud to be providing reliable, high-performing formwork solutions and services on Tower 2, Tower 4 and the 9/11 Memorial project.

The new World Trade Center (WTC) will bring a brighter, more vibrant future for downtown New York City, with a new skyline, luxury commercial space and a moving memorial. It will provide a significant economic boost for the area while enhancing the quality of life for the people who live, work and visit downtown.

The projects will be built incorporating the highest standards of sustainable design and safety systems, utilizing the latest in concrete formwork technology along with supportive services. The WTC is an unprecedented merging of architectural minds, firms, and talents, all working toward the goal of creating



a revitalized urban center for New York City. In this special issue of Doka Xpress, see how innovative formwork solutions are rebuilding Ground Zero and inspiring innovation. [▶](#)



▲ Doka management visit with contractors at the World Trade Center site. From left: Andrew Mair – CEO, Doka North America; Antonio Rodrigues – President Roger & Sons Concrete (Tower 4); J.Jay Martino, Principal, JPC Builders LLC (Tower 2); Josef Kurzmann- Member of Umdasch AG Executive Board & CEO of Doka Division; Andreas J. Ludwig – Chairman of the Board, Umdasch AG; Mike Schermerhorn – Account Manager Doka USA; Rainer Spitzer – Managing Director, Doka Engineering & Sales; Gerd Pechura – Head of Finance, Umdasch AG



▲ Concrete Contractor Navillus Concrete selected Doka's Frami framed formwork system to form the 720 feet of walls on both fountains.

Forming the 9/11 Memorial

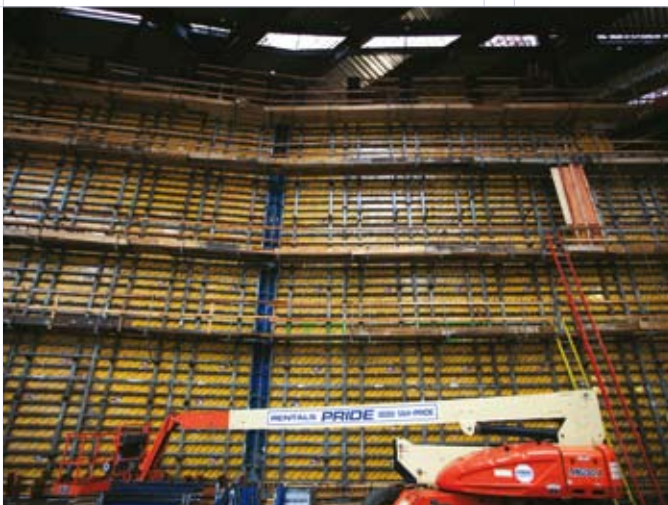
Visitors to the National September 11th Memorial will be greeted by sheets of water cascading 30 feet down into twin reflecting pools set in the footprints of the Twin Towers. These manmade waterfalls have a scale that is unmatched.

The National September 11th Memorial will remember and honor the nearly 3,000 people who died in the horrific attacks of February 26, 1993, and September 11, 2001. The Memorial will consist of two massive pools set within the footprints of the Twin Towers with the largest man-made waterfalls in the country cascading down their sides. They will be a powerful reminder of the Twin Towers and of the un-

precedented loss of life from an attack on U.S. soil. The names of the individuals who were killed in the September 11th attacks in New York City, Pennsylvania, and at the Pentagon, and the February 1993 World Trade Center bombing will be inscribed around the edges of the Memorial pools. The Memorial and Museum, which will cost roughly \$500 million, will be open to the public September 11, 2011. [D](#)



▲ Doka provided detailed engineering drawings to ensure the best possible utilization of formwork was achieved. ▼



(Photo credit: Squared Design Lab Courtesy of National 9/11 Memorial and Museum)

▲ In addition to the memorial fountains, Doka provided over 50,000 square feet of Frami and Framax wall formwork to construct the 9/11 Museum exhibition. The Museum will feature three levels descending below ground and will provide access to the original foundation of the twin towers.

The Professionals



“ Working on the World Trade Center memorial, we had architectural walls and patterns which only Doka’s Framax Xlife could be used. The walls turned out excellent with a very impressive concrete finish.”

Joe Graham, Assistant General Carpenter Foreman, Navillus Concrete



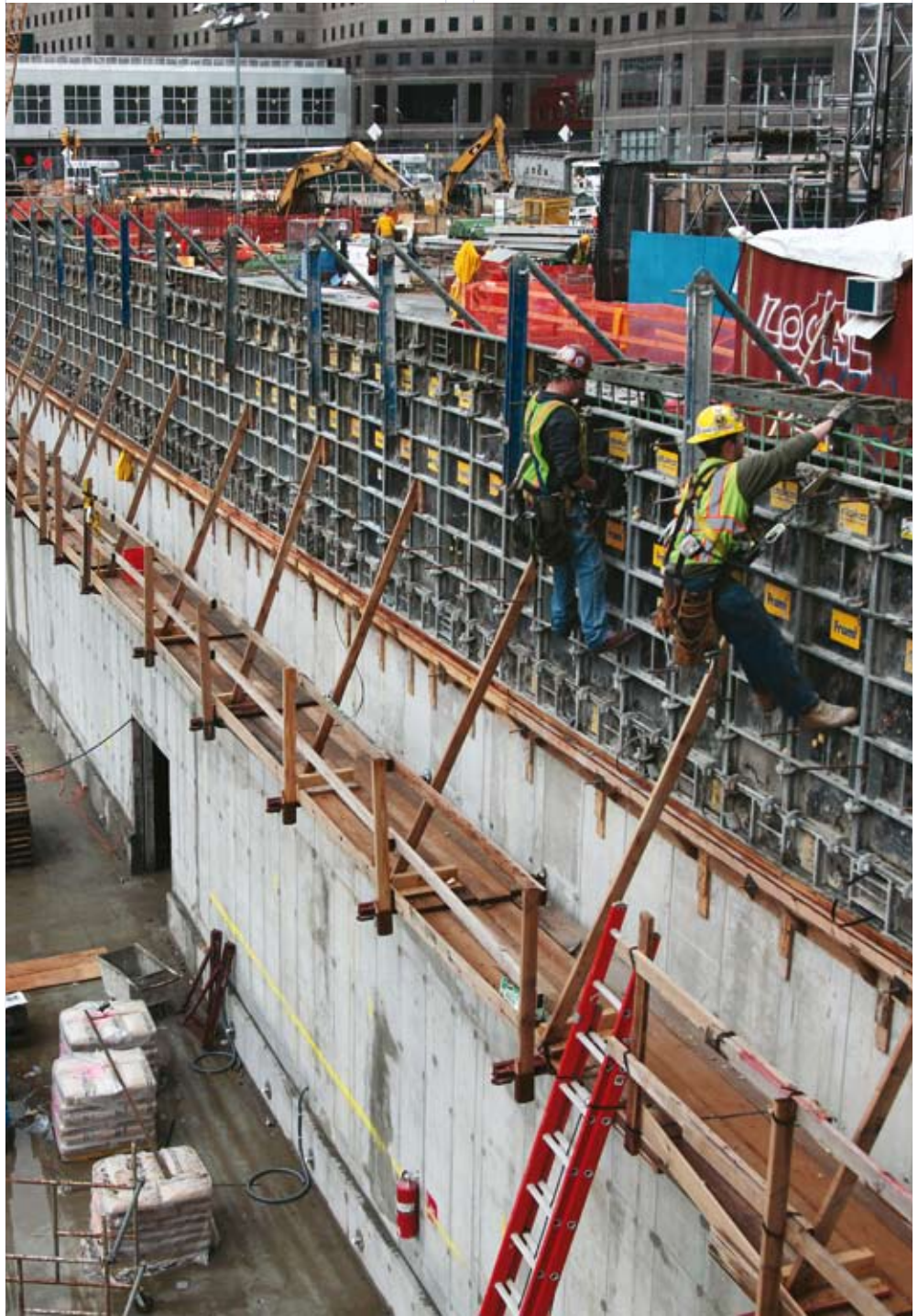
“ Using the Doka system saves you time – time is money, so with the least amount of crew that we have, we save time on the pours.”

Jason Roy, General Carpenter Foreman, Navillus Construction



“ Doka’s pretty versatile, so we have a lot of pieces that we can use in different places. We can use it in almost every situation and we can find pieces to fit whatever part of a puzzle that we have to and limit how much wood we have to use for the framework.”

John Sullivan, Carpenter Foreman, Navillus Construction



▲ Due to existing structural steel and limited crane capacity, Doka’s Frami wall formwork was the optimal choice due to its hand setting capabilities.



◀ The 9/11 memorial fountains will be the nations’ largest man-made waterfall.
(Courtesy of Squared Design Lab)



Doka's attention to detail and safety procedures, along with their extensive product line, make Doka a leading contributor in the construction of Tower 4.


Tower 4 Rises High

Tower 4, also known by its street address, 150 Greenwich Street, will directly face the WTC Memorial Park from the west. Rising 975 feet, it will be the fourth-tallest skyscraper on the WTC site.

The 72-story tower is intended to assume a quiet but dignified presence at the site while also serving to enliven the immediate urban environment, as part of the redevelopment efforts of downtown New York.

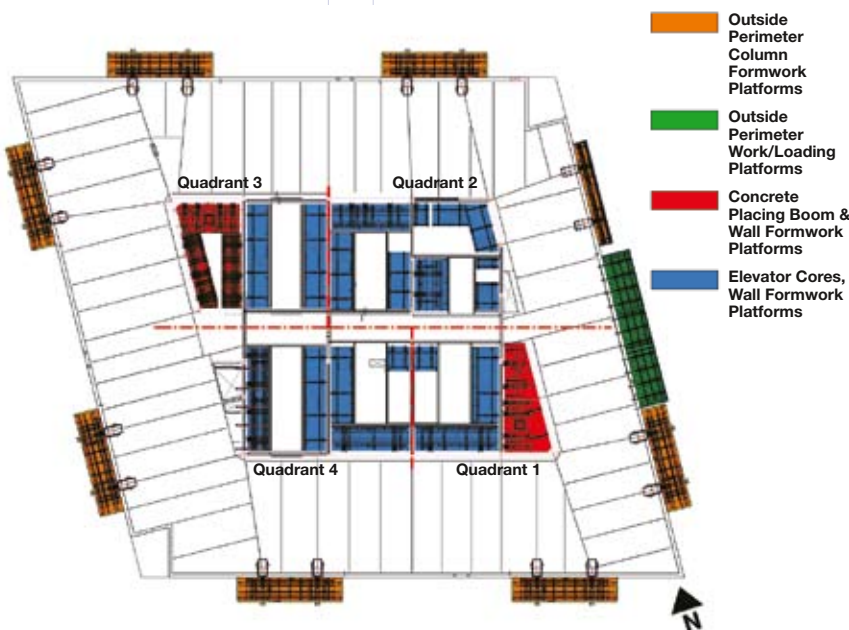
The footprint area for the elevator cores for Tower 4 is approximately 90-feet by 94-feet with structural steel beams tying it to the outside perimeter of the building (extending up to where the columns are located around the perimeter). The outside face of the core walls is being trapped under the slab above, therefore, all the wall formwork is handset. Although the building was designed with a ring beam around the core walls to allow the steel exterior form to climb as a gang, the contractor preferred to pour the slab right up

to the core wall and use handset forms rather than have to come back and fill in the slab afterward. Remaining portions of the elevator cores that are open allow usage of ganged wall forms lifted to the next level with the self-climbing system. The three levels of working platforms move with the core form structure to facilitate the work.

With the concrete work planned for completion by 2012 by Roger and Sons Concrete, Inc., Tower 4 is expected to be finished later that year. Completion of the new World Trade Center will mark a major milestone in the redevelopment of downtown New York. Doka's extensive product line and its attention to detail and safety procedures, make Doka a leading contributor to the construction of Tower 4. 



▲ To climb the inside of the tower's main core, a combination of automatic climbing formwork SKE 100 and Xclimb 60 is being used. Additionally, SKE 100 is in use on the perimeter of the building to climb the concrete mega-columns. The SKE 100 system, which can carry 27,000-pounds per bracket, was ideal for handling the bigger loading platforms that were required for certain areas. Doka's Xclimb 60 uses lightweight hydraulic units, quickly lifting up to four brackets simultaneously.



▲ The Tower 4 footprint area of the elevator cores was broken down into four quadrants in order to achieve the best productivity from the labor force.



▲ Tower 4 is a structural steel-framed building. Framing the steel takes place approximately six-to-eight stories above the pouring of the concrete core and mega-columns. The steel erectors must provide shielding to protect workers below, as crane picks are not allowed directly into the building. To work within these constraints, Doka is hydraulically climbing everything within the core.



▲ With the concrete work planned for completion by 2012, Tower 4 is expected to be finished later that year. Completion of the new World Trade Center will mark a major milestone in the redevelopment of downtown New York.



▲ Frami framed formwork was used to create the architectural “V-columns” on Tower 4 due to its lightweight flexible, hand-setting capabilities.



The Professionals



“ We’ve been using Doka formwork systems for the last 10 years at least, and one of the reasons is because they offer one of the best solutions for the most difficult part of the jobs and makes life easier for the contractors for sure.”

Antonio Rodrigues, President, Roger & Sons Concrete Inc.



“ The primary challenge was the coordination between the concrete structural system and the structural steel system. Doka did a great job and worked with us day in and day out, to make sure this was accomplished in an expedient manner.”

Peter Rodrigues, Executive Project Manager, Roger & Sons Concrete Inc.



“ We’ve chosen to work closely with Doka on Tower 4 because of their service, the products they offer, and the location of Doka.”

Tony Rodrigues, General Superintendent, Roger & Sons Concrete, Inc.

Tower 2 Construction Begins



The Professional

“Doka continues to lead the industry in formwork solutions and creativity. The Tower 2 schedule and logistics demand a formwork supplier that can deliver and support us with the right formwork at the right time. Doka continues to meet that challenge.”

*J. Jay Martino, Principal,
JPC Builders LLC*




▲ The 88 story tower will be the second-tallest skyscraper on the World Trade Center site and in New York City, and will rise to 1,349 feet.

Aerial view of Tower 2 under construction ►



World Trade Center Tower 2 at 200 Greenwich Street features a sparkling glazed crystalline form and diamond-shaped summit that will create a bold addition to the New York skyline. The 88-story tower will rise 1,349 feet upon completion, making it the second-tallest skyscraper on the World Trade Center site and in New York City. It is located east of the proposed Performing Arts Center and north of the WTC Transportation Hub.

The tower underway with Concrete Contractors JPC Builders, LLC and Halmar International, will consist of a central concrete

core — steel encased in reinforced concrete — and an external structural steel frame. Safety systems will exceed New York City building code and Port Authority of New York and New Jersey requirements. Designed to the highest energy efficiency ratings, 200 Greenwich Street will seek to achieve the Gold standard under the Leadership in Energy and Environmental Design (LEED) by the U.S. Green Building Council. Currently below ground level, Tower 2 is utilizing Frami and Framax wall formwork, climbing system MF-240, and pre-assembled Dokamatic Tables. 



The Professional

“Everything we use from Doka is easy to understand, all the carpenters work well with it, it’s a fast system, it’s safe and it gives us the product that we want to give to our owner.”

*Matt Katkocin, Superintendent,
Halmar International*



◀ Pre-assembled Dokamatic Tables were used on lower levels to form approximately 50,000 sq. ft. of heavy structural slab.

Wall Formwork Framax Xlife, utilized on Tower 2, provides extreme flexibility with multiple panel sizes, in addition to built-in safety features, and fast assembly. ▼



Formwork Services at Ground Zero



▲ Pre-assembly services provide a perfect-fit solution ensuring smooth installation, reducing assembly times on site, and reduces strain on manpower resources.


Equipment Delivery, Logistics, & Pre-assembly

The Doka USA Operations team was collectively tasked with the responsibility of procuring specially advanced equipment, coupled with high delivery expectations.

The team was highly motivated and proud to successfully supply such notable projects.

For the Towers, some of the challenges in supplying such a project included ensuring all forms and hydraulic equipment was available in top-notch condition and easily transported off the truck and ready for use upon delivery. Custom items were designed to precision tolerance and logistically coor-

dinated to meet strict deadlines.


The World Trade Center project called upon Doka's expertise to service needs at the highest level with minimal error and swift response times. Doka's reputation for quality and service, along with state-of-the-art facilities and readily available systems were relied upon since these projects carried high exposure and complexity, requiring most of Doka's product lines. 



Account Management — Every Step of the Way

Doka's Account Managers are there from the early bidding stages through project completion.

The highly dedicated team ensures a smooth construction flow, provides insightful engineering solutions, and delivers results. The team of experienced managers

have all the Doka know-how and product knowledge and are backed by Doka's engineering, operations, and support team, to provide solutions every step of the way. 

▲ The Operations Team welcomed the challenges on the WTC projects, pouring its pride of solutions to customers and the USA, as it has and will continue to do so for many of its projects.



◀ WTC Account Management Team. (From left: Michael Schaeffer, Angelo Leale, Mike Lagace, Mike Schermerhorn)




▲ Doka Engineers draw up assembly and erection plans to suit specific requirements and preferences. This optimizes the use of Doka formwork systems provided and helps ensure success on site.

Engineering Expertise — Safety that pays off

Doka's team of experienced, in-house engineers is what makes the World Trade Center an on-going success story.

Their technical preparations communicate all the knowledge needed for a successful project, and include technical support such as statistical calculations, and material lists that allow for the contractor to execute their plans in a timely manner.

"One of the major challenges was to stay ahead of the very demanding schedule for the customer. Being able to adapt to

the many changes during the construction phases and having the engineering drawings PE stamped and done quickly to stay ahead of the submittal process allowed the customer to keep pace with their rigorous schedule. It was certainly a team effort and collaboration between the Doka Engineering staff and the Customer," stated Nick Puccio, Doka Northeast Engineering Manager. 



▲ Ron Moyer and Rich Barton support crews at Ground Zero in handling formwork to maximize safety and increase efficiency.

Forming Know-how in person with Field Service Expertise

Doka trained field service technicians have been on site to explain exactly how the formwork is used to safely maximize benefits.

It starts with field instruction on how to handle the formwork, steps through all the operating routines, and finishes with certified competent site users. The advantages are time savings by effective use of the formwork, along with

higher levels of safety because the systems are being used correctly. The cost savings come with efficient formwork handling. Job closing costs are also reduced because of minimized wear and tear. □

The Formwork Experts

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Mike Lagace
Angelo Leale
Michael Schaeffer
Mike Schermerhorn

Engineering Team

Marvin Aarons
Tom Ammiano
Vic Arceo
Louis Gelo
Rafal Gil
Chris Gonzalez
Tom Halat
Cesar Hernandez
Robert Kent
Frank Mendoza
Dinesh Patel
Nick Puccio

Dawonne Reamer
Gary Seckler
John Scotillo
Nick Zaraza

Field Service

Rich Barton
Ron Moyer

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Carole Calogero
John Nacinovich
Sue Otto
Mike Skawinski
Kevin Stellato
Jackie Winans

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Anthony R. De Leon
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Lazarus Jeffrey
Felix Jimenez
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Joel Jones
Benward Laurance
Gordon P. Leacock
Kenneth Leacock

Forming Efficient Solutions. Formwork Service Advantages

Cost and Time Savings

Consultation and professional support from the beginning will help you to choose the best suited formwork system. You will be able to utilize the formwork efficiently to its full capacity

Safety

Advice and professional support for the correct application ensures a safe working environment.

No Surprise cost

Eliminate unplanned costs and delays by working together with a reliable partner through every step of the project

Lower job closing cost

Rely on professional advice when selecting and using forms to minimize wear and avoid material damages.

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WORLD TRADE CENTER VIDEO

Hear what contractors rebuilding Ground Zero are saying about Doka and see the systems in action.

Scan bar code to visit
our YouTube channel ▶

or visit

www.youtube.com/DokaNorthAmerica



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Become a fan of our page (www.facebook.com/DokaNorthAmerica) and see the latest construction photos from Ground Zero.

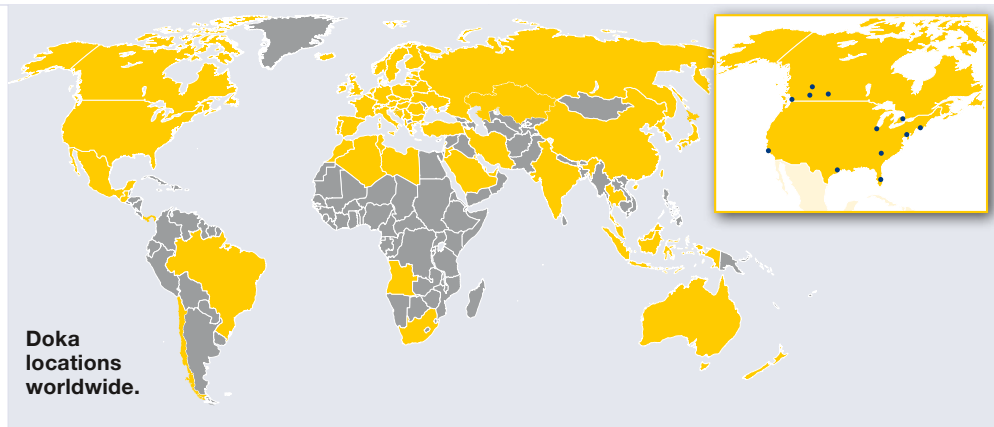


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In some cases the site photos show the situation during formwork assembly and are therefore not always complete from the point of view of safety.

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