

Doka Xpress

The Formwork Magazine

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Infrastructure & Formwork Technology

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doka
The Formwork Experts

Editorial



Dear Customers and Colleagues,

In recent months we have experienced the election season and throughout this season one thing that was a common theme across all party lines was the fixing of the economy. Most agree that there is likely to continue to be an influx of funds available for the repairing of America's infrastructure, as it not only enhances the public health and welfare of our citizens, but it also ensures commercial enterprise and business growth.

At Doka, we have had the opportunity to work on many civil, industrial and transportation projects that play a role in improving America's infrastructure. We believe some of the lessons learned on these projects have enabled us to improve our commercial construction practice and solution developments to better serve our customers. Key to our success is our ability to continually find better solutions that improve safety, productivity and cost efficiency.

We hope you will join us at the World of Concrete where we will showcase Frami Xlife: a complete smooth concrete finish forming system for walls, columns and foundations. Be sure to vote for Frami as the most innovative product in the MIP contest at the show.

Finally, I pass to you my best wishes for a successful business year in 2011 and beyond.

Andrew Mair
Chief Executive Officer
Doka USA, Ltd. /
Doka Canada, Ltee

Doka news

New Canada Location Offers Toronto Pre-Assembly Service

Toronto – Already preassembling formwork systems for the Shangri-La project, a 65-story hotel tower in Toronto, this new facility with engineering experts and professional formwork services, is ready to serve Eastern Canada.



▲ Components Catalog Now Available At Your Fingertips

All of our formwork accessories — ranging from formwork beams, supporting props, plywood, taper ties, she bolts and oil — can be easily found within Doka's components brochure. Contact your local Doka sales representative today for a copy.



▲ Mississippi River Bridge Construction Underway

Illinois – A new 1,500 ft. cable-stayed bridge will cross the Mississippi River, connecting downtown St. Louis and southwestern Illinois, becoming the third longest bridge in the U.S.

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Cooling Towers



Shangri-La Hotel



Alexander Hamilton Bridge

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Keeping The Bay Cool

The Brayton Point Power Plant, New England's largest fossil-fueled generating facility, flushes 1.3 billion gallons of water a day into Mount Hope Bay. That's the equivalent of 20 football field-sized swimming pools filled to a depth of 150 ft.

▲ First U.S. cooling tower constructed in more than 15 years was built with Doka's SK 175 automatic climbing formwork system.

The Facts

JOBSITE
Brayton Point Cooling
Towers, Somerset,
Massachusetts

CUSTOMER
Kiewit Infrastructure Group

PRODUCTS USED
SK 175 self-climbing cooling
tower formwork system

TOTAL FORMWORK USED
Approximately 26,000 sq. ft.

The Solution!

Doka's SK 175 cooling tower formwork system consists of adjustable steel formwork panels connected to a fully mechanized automatic climbing system that is anchored to the previously cast concrete rings of the tower.



The Brayton Point Cooling Towers are two natural draft cooling towers designed to reduce the amount of heated water that discharges into Mount Hope Bay. Each cooling tower will be 500 ft. tall and will be about 370 ft. wide at the bottom with concrete walls 20 in. thick.

The cooling tower's varying shape required a flexible formwork system that could easily be configured to the changing diameters of the tower. The SK 175 self-climbing cooling tower formwork system adjusts to the dimensions of the hyperbolic concrete shape to meet this geometry. The system consists of adjustable steel formwork panels


connected to a fully mechanized automatic climbing system that is anchored to the previously cast concrete ring of the tower. Each element is designed to be electromechanically lifted and then the formwork will be raised to the next vertical position on the tower, making the system completely independent of the crane. Wide walkway work platforms are integrated into each climbing frame unit around the entire circumference of the tower. The system is designed to cast an entire tower section in one day with maximum safety considerations, while minimizing manual labor and providing fast forming times.



More than 80 containers of equipment were shipped from the Austrian Doka headquarters in Amstetten to Port Newark / Elizabeth Terminal in N.J., and then by truck to the project site in Massachusetts. Approximately 26,000 sq. ft. of formwork was supplied to the project and 228 SK 175 climbing frame units. In total, the amount of formwork material supplied was equivalent to two football fields.

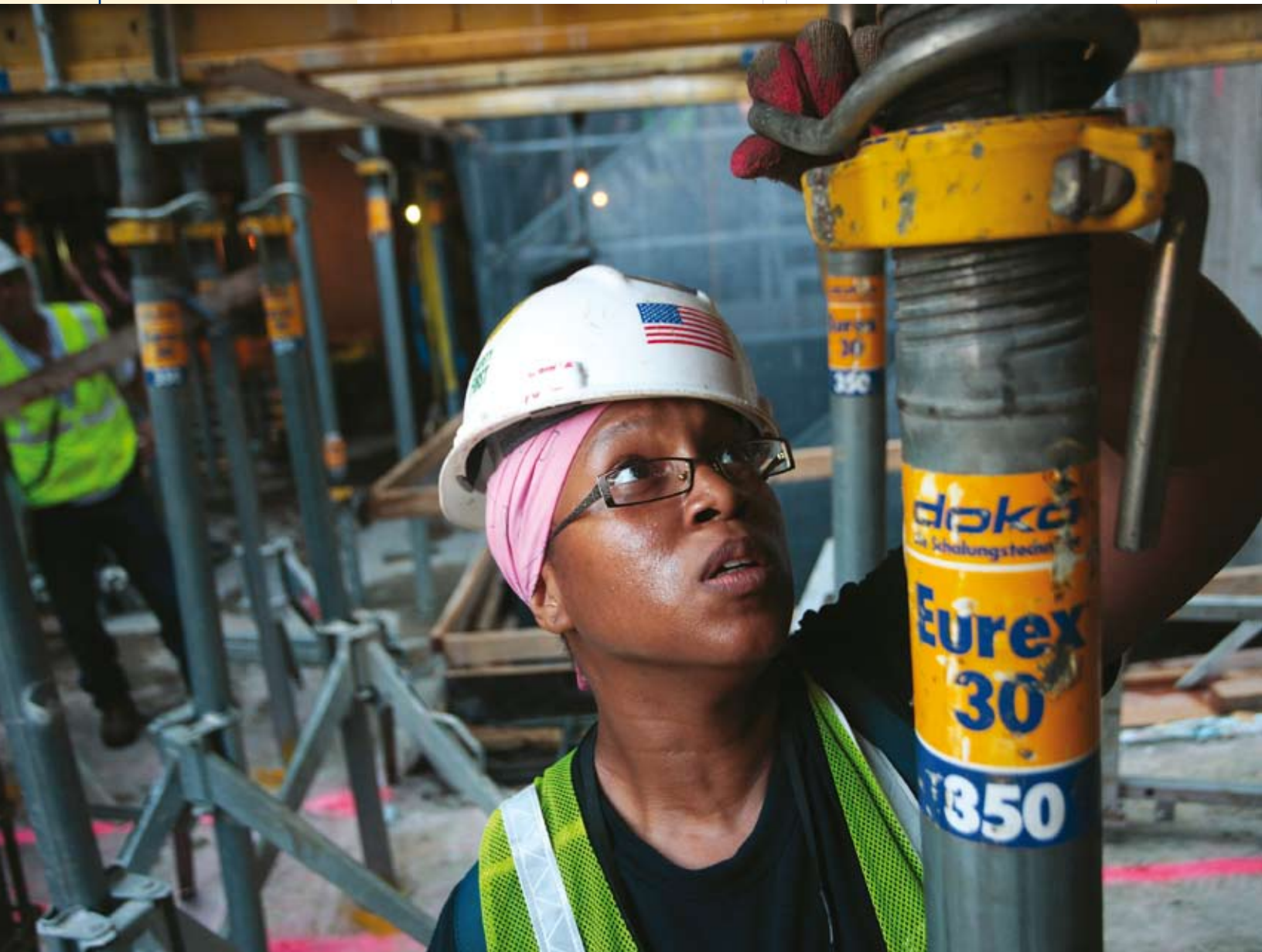
Workers were needed on the working deck up to 10 hours a day, so Doka designed platforms that included winter heating, portable bathrooms and clean areas for tool boxes. Working from the platform system, which

can be tilted by turning just one central spindle, the crew can easily adjust the formwork to a 22-degree angle of inclination.

When complete, four 4,900 hp pumps will drive 360,000 gallons of water per minute into each of the towers. The towers should be operational by May 2012. 

▲ Top: The permanently mounted working platforms are integrated into each climbing frame unit around the entire circumference of the tower. This detail makes a crucial contribution toward safe forming and efficient work flow.

Bottom: The cooling tower's varying shape required a flexible formwork system that could easily be configured to the changing diameters of the tower.



The Facts

JOBSITE

World Trade Center Tower 4,
New York City

CUSTOMER

Roger and Sons Concrete

PRODUCTS USED

Xclimb 60 self-climbing, SKE 100 automatic climbing, MF 240 climbing, framed formwork Frami, pre-assembled Dokamatic Tables, Dokaflex slab formwork, 10k shoring, Top 50 gang forms, folding Platform K

Rebuilding Ground Zero

Under construction in New York City: a new 64-story, 975 ft. skyscraper. The first five floors house retail space and the remaining are devoted to offices.

Its distinctive façade will feature floor-to-ceiling windows of composite glass with multiple layers of coatings that provide a matte metallic quality with a luminous sheen. This building is Tower 4 of the new World Trade Center.

Although the intricate design of Tower 4 poses many challenges for the concrete contractor, Roger and Sons Concrete, Inc., they are being readily met by Doka USA.

“The challenges include meeting the design for the slab and wall thicknesses, working with different elevations on every floor, locating cranes, and coordinating all equipment at the work site,” said Mike Schermerhorn, Senior Account Manager for Doka.

To provide the best service for this project, Doka combined the efforts of two departments – the SKE Department and the Shoring Department. The SKE Engineering Team



▲ From left: Wilson Sousa, Superintendent, Roger & Sons Concrete; Ron Moyer, Doka Field Service Technician

is working on the tower's 90 ft. x 90 ft. main core; Doka's shoring team is involved with the design aspect of the slab formwork.

SKE 100 is being used at the perimeter of the building to climb the concrete mega-columns. To climb the inside of the tower's main core, a combination of SKE 100 and Xclimb 60 is used.

Tower 4 is a structural steel-framed building above street level. Doka's Frami is being used to hand set the outside formwork. Framing the steel takes place approximately 6 to 8 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 in the building. To work within these constraints, Doka is hydraulically climbing everything within the core. To move materials to interior portions of the structure, Doka is providing a series of Xclimb 60

material-loading platforms and Doka's Table Lifting System (TLS) will be utilized on the outside of the building.

The Shoring Dept. designed a combination of Dokamatic tables, 10K shoring and Dokaflex for the concrete slabs and beams. One of the major challenges is meeting the different shoring heights, which can reach up to 24 ft. high. To solve this, the Dokamatic tables are being used in combination with the table extension frame. Because the construction method/design requires using a placing boom that can be climbed, Doka integrated a requirement into the design of the formwork to allow for two placing booms to be installed on top of the SKE 100 climbing platforms.

The concrete work is planned for completion by 2011 and Tower 4 is slated to be finished in 2012. Completion of the new World Trade Center will mark a major milestone in the redevelopment of downtown New York. □

The Solution!

Doka's engineering experts and on-site field support are providing formwork and climbing solutions needed to work around the project complexities, including working around existing structural steel and various core sizes, wall thicknesses, constraints, shoring heights, and building designs.

▼ Frami framed formwork was the optimal choice for creating the architectural "V-columns" on Tower 4, due to its lightweight, flexible, hand-setting capabilities.



This new Super Climber System consists of 5 hydraulic cylinders capable of lifting 500,000 lbs., including the entire working floor, as well as a Putzmeister concrete placing boom and 3,200 sq. ft. of formwork, from lift to lift.



The Facts

JOBSITE

Lincoln Park 2520, Chicago, IL

CUSTOMER

Walsh Construction Company

PRODUCTS USED

5 Super Climber hydraulic units, Top 50 gang formwork, Xclimb 60 self-climbing system, framed formwork Frami, MF 240 working platforms

Super Climber, The Next Generation In Climbing Formwork Technology

With over 2.8 million residents and a constant influx of people, the need for housing in Chicago is never ending.

To meet this growing need, new residential condominiums are now being built at 2520 North Lakeview. The 800,000 sq. ft. condo development is built on a standard flat slab. The square column concrete-framed building has two large cores, which are uniquely shaped and have floor-to-ceiling heights that vary throughout.

For this particular building design, it is necessary to cycle the vertical formwork at the same speed as the horizontal formwork. Walsh Construction Company wanted to pour the slab and floors monolithically and needed a forming system that could easily meet those challenges. Additionally, the formwork system had to be capable of carrying a concrete placing boom, provide support for heavy loads (rebar) and be an easy-to-handle system that could keep them on a one-day cycle. For these reasons, Walsh chose Doka's Super Climber self-climbing form system with a working platform for high-rise cores. The Super Climber system, Doka's newest member of their multiple climbing formwork systems, meets the tough requirements of extreme dynamic loadability with swift, smooth climbing. Also, Doka's Xclimb 60 automatic climbing formwork is being used on the north core.

Using two self-climbing core systems would allow Walsh to cycle the cores as fast as the slabs. Doka's systems allow for prefabrication of panels and platforms, which help limit the amount of onsite work. By using Doka's formwork, it allows Walsh to meet

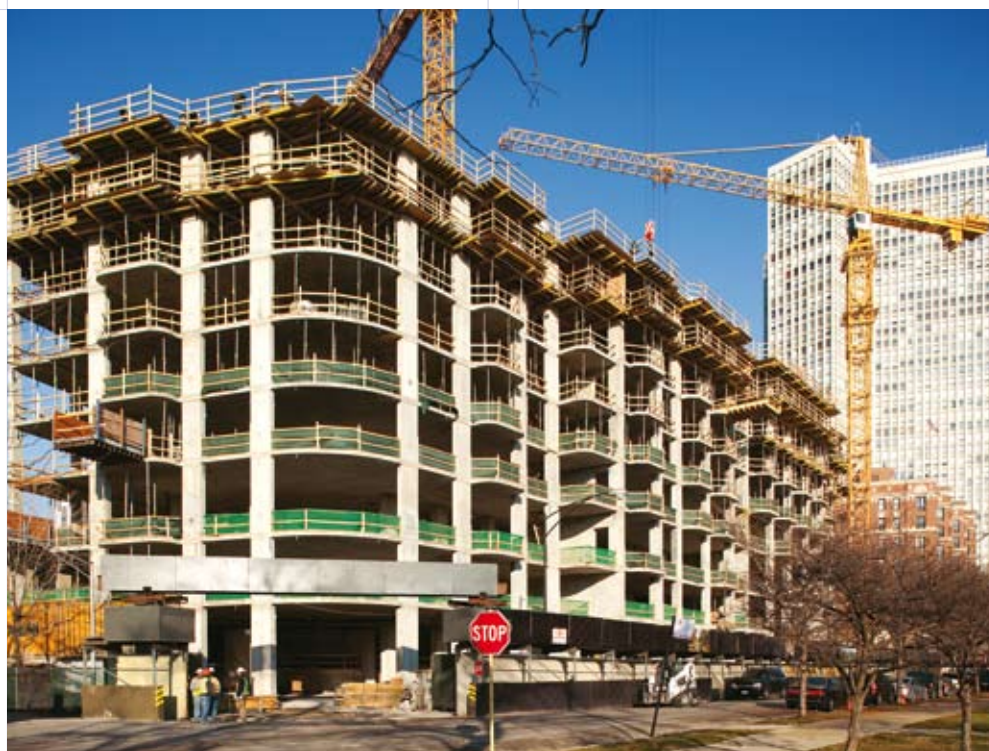
their schedule and minimize the amount of man-hours on the project.

The 39-story structure needs approximately 2,300 sq. ft. of formwork. There are varying floor-to-floor heights with two double jumps. A total of five Super Climber hydraulic cylinders are used to climb a fully decked Level +1 and Level 0. Custom beams support a concrete placing boom and Framax stripping corners are incorporated into the Top 50 wall formwork for easy stripping relief. The formwork used includes: the new Doka Super Climber system with Top 50, self-climbing Xclimb 60 with Top 50, Frami lightweight formwork for columns, MF 240 platforms, 54,000 sq. ft. of Doka-flex hand-set system and 72,000 sq. ft. of reshoring materials.

The Super Climber self-climbing core system offers faster cycle times. The system allows the inside and outside forms to be hung from the gantry, which allows the contractor to roll forms, while erecting and stripping. All of the formwork for an entire story is raised independently of the crane. Minimum clearance is required for installation and minimum stripping required for climbing. A placing boom with a working platform can be attached to the gantry to provide access. Forms, platforms, and the placing boom are all cycled at the same time with minimal climbing time. Climbing can be completed in one singular smooth movement. Service loads can stay on the platforms while they are being raised.

The Solution!

A single stroke cylinder on the Super Climber system moves the forms, placing boom, and all level work platforms onto the next level. Formwork for an entire story is raised completely independent of the crane, allowing climbing to be completed in one single smooth movement and enabling the contractor to keep a one-day cycle.



Steve Likens,
Superintendent,
Walsh

The Professional

The Super Climber was chosen because of its simple anchoring application and the ease of a component bracket base set-up. The high load-bearing rigid super structure is engineered for a mounted concrete placing boom, and the impressive hydraulic climbing cylinders and pump provide us with a safe, fast and efficient lift from floor to floor."

Raising all wall formwork ► from one section to the next, with a push of a button, the Doka Super Climber is a modular, all-in-one system for high-rise structures. Together with the working platforms, timberbeam or framed formworks are raised to the next casting section in a single lift by powerful hydraulic cylinders — completely eliminating the crane.



Because the climbing formwork system is anchored to the concrete at all times, all operations can be carried out safely and quickly on Doka's Super Climber's large, fully enclosed workspace. All wall forms are repositioned hydraulically with just one lift. The Super Climber is a safe and efficient way to construct high-rise cores. It has room for all of the site equipment needed and is enclosed on all sides for a safe, weather-shielded work area at any height. The live loads on the platform mean that less storage space is needed on the ground. After pouring, the formwork for an entire next story is raised by powerful hydraulic cylinders from one casting section to the next.

Walsh has been extremely pleased with the Super Climber system and has already committed to use this effective solution on their next concrete core project.

The project was delivered at a competitive price because the formwork lowered the man-hour cost. Also, the project will be completed on schedule due to the ability to cycle the formwork floor to floor. Work on 2520 North Lakeview began in August 2010 and is scheduled for completion in July 2011. ◻



▲ A concrete placing boom can be integrated into the formwork and raised with the Doka Super Climber.



*Matt Code,
Carpenter
Foreman,
Walsh*

The Professional

“The system is great to work with and climbs in less than 20 minutes, meeting our demands.”

Keeping Toronto Safe Using A Foldable Protection Screen

Displaying modern opulence in the midst of the business district, the Shangri-La Hotel in Toronto will offer lavish accommodations for discerning guests.

The 200-room extravagant hotel will occupy the first 17 floors of this development, while luxury condominium residences will be located on the upper levels of the 65-story tower.

To keep the work area safe and protected from any weather, a foldable Xclimb 60 protection screen is used. Just as important, the screen protects the people in the busy Toronto area below from debris falling from the work site. The protection screen is wrapped around the entire perimeter of the building for four levels, and will climb up the 65 stories with hydraulics — no crane is needed. The top part of the screen was designed to fold down, which makes resetting of the slab formwork easier. The hinged top part of the protection screen is a big safety advantage in all stages of the project. The slab edges are protected with the screen as soon as the hinged part is set back in place after lifting up the slab formwork.

In addition to the protection, Doka engineering designed loading platforms built into the screens to allow storage for the vertical formwork close to where the actual work is happening to reduce crane time.

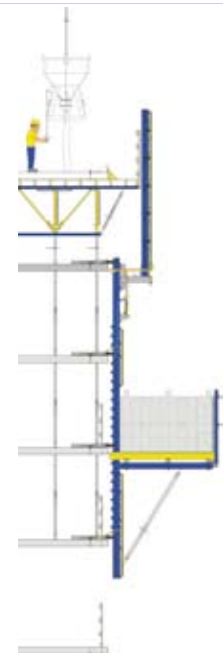
One of the major challenges is the change on the slab edges. In the building's design, the outside perimeter of the east side changes at every level. The edge of the building waves in and out irregularly. Then, starting on level 50, the slab edge in the center of the west side steps in and out every other level, approximately 19 ft.

Doka provided Framax wall formwork for the building core, stair cores, shear walls and columns.



The contractor, Hardwall Construction Ltd., was pleased that Doka provided a complete protection screen solution, which can take the changes in the building, hinge down, and has loading platforms around the entire building.

The Shangri-La Hotel is scheduled to open in Spring 2012. [D](#)



▲ The foldable protection screen provides all-around perimeter protection for the working floor and for as many as 4 floors below.



▲ The top part of Doka's new protection screen is designed to fold down, making resetting of the slab formwork easy.

Frami Xlife is available in ► 6 different panel widths and 4 different panel height options, making it suitable for a wide range of supporting dimensions.



Smooth Finish With New Frami Xlife

The complete system for forming walls, columns and foundations is light enough to be man-handled, yet strong enough for crane-assisted forming, while producing a smooth concrete finish.

Frami Xlife is ideal for fast, cost-saving forming both with and without a crane, and sets a benchmark for overall cost efficiency. The system is an ideal solution for foundations, high-rise shear walls and cores, high-rise columns, as well as low walls and footing portions of heavy construction projects.

“Frami Xlife was designed to enhance the existing Frami formwork system and provide a smooth concrete surface,” said Michael Schaeffer, National Sales Manager for Doka. “The new Frami Xlife plywood facing provides a great concrete finish. The concrete side of the panel is extremely rugged and can be nailed effortlessly without impairing the clean face of the concrete.”

Key attributes of the system:

High Speed Forming

The Frami Xlife system assembles quickly – all you need is a hammer. The labor savings are tremendous with 70 percent less pieces and accessories to handle when compared to hand-set systems. Built-in alignment ribs and a reusable taper tie design eliminate all consumable lumber and tie costs associated with traditional hand-set forming. Addi-

tionally, costs are reduced with the option of switching to gang forming at any time with no additional hardware.

Extreme Durability

The system is extremely durable and will provide a high number of re-uses with its revolutionary design, making it three times more durable than other ply or birch plywood sheets on the market. Frami Xlife has a high-grade wooden core made of layers that make it weather-proof, which provides strength and major structural stability. The Xlife special surface sheet provides a high number of re-use cycles with great concreting results for cost efficiency and fewer changes of form-facing. Further, there is no burst-off plywood chips and no water absorbed through nail-holes, which results in longer service life. The Xlife sheet ensures a clean concrete finish. The hot-dipped galvanized frames are made of hard-wearing hollow steel profiles and are torsion-proof with no need for any extra stiffening. Their premium hot-dip galvanized finish ensures an extremely long lifespan and eliminates all concerns about rust or strength reduction. The tie pocket protector is now an exchangeable plastic ring that is held in place



▲ The new Frami Xlife system will be featured and demonstrated in Doka's booth, C5824, at the 2011 World of Concrete show in Vegas.



◀ Used for residential, commercial or heavy civil construction, Frami Xlife uses revolutionary Xlife plywood facing that delivers a high number of re-use cycles with high quality results.

and supported within the new face sheet, totally independent of the frame, allowing a reconditioning of the system over many generations at basically zero cost.

Logical System Grid

Frami Xlife is available in six different panel widths and four different panel height options, making it suitable for a wide range of supporting dimensions. The logical system grid offers heights ranging from 3 to 9 ft. and widths from 6 in. to 3 ft., enabling optimum adaptability to any structure. In addition, 80 percent fewer connections are necessary since only three clamps are needed per 9-foot panel joint. Further, it uses the least amount of ties in the industry with only two ties per 9-foot high pour and a flexible pour pressure (up to 1,650 psf). The system grid is completed with a set of steel fillers, eliminating the need for job built wood fillers and therefore cutting labor and material cost.

Easy-to-Use

Using the lightest and fastest clamp in the industry, weighing in at only 2.6 pounds, only one swing of a hammer on the Frami clamp is needed to pull the panels together and achieve a flush, correctly aligned panel joint. The continuous frame side rail means that the Frami can be clamped anywhere on the frame. Therefore, the panels can be continuously mismatched from a height standpoint, without any pre-defined grids and the formwork can easily be accommodated to steps, slopes and uneven ground with no extra work.

High Speed Shaft Formwork


Frami Xlife panels can easily be combined with Doka's stripping corner to make an extraordinarily fast shaft formwork. Only four adjustments are necessary and all the work

can be completed by one worker at the top of the core. The built-in ratchet design makes the operations safe and fast. No crane is required to expand for a typical setting process or to extract as part of a stripping process for the core forms. The unit repositions in a single lift to save crane time, and the stripping corner is also suitable for pilasters and as an inside corner for wall formwork. A simple reverse option with the ratchet places the core back in shape to its original dimension, thereby reducing labor.

Pilasters/Columns

Frami pilaster forms allow forming between two inside corners without the need to add special stripping bars. The pilaster form hinges open with a special offset hinge to provide a stripping relief that allows the formwork between two inside corners to be easily setup and stripped as a gang unit. In addition, pilasters up to 24 in. deep can be formed completely tieless. Further, the Frami outside corner is an easy and problem-free way of forming corners in narrow trench situations or where large wall thicknesses are specified. Universal panels form up to 36-inch square columns and only one size panel width is required for the whole job. This eliminates the need for various filler sizes and saves considerable time and labor storing, sorting, and finding various width panels.

Maximum Safety

Frami Xlife safety tie-off handles meet OSHA requirements, are pre-engineered and built right into every panel, taking the guess work or risk away from not using tie-offs. Other systems require attachments in the field and there is always risk they won't be used. With three built-in tie off handles per 9-foot panel, Frami is a safe system that always allows for a 100 percent tie off. 



▲ Vote Frami Xlife for MIP award by visiting www.worldofconcrete.com.



▲ The Alexander Hamilton Bridge project features the reconstruction of 8 piers utilizing high-load bearing tower, Staxo 100.

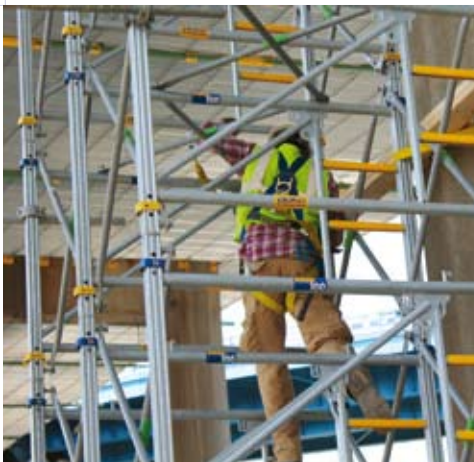
New York's Largest Bridge Renovation Project

Carrying approximately 188,000 vehicles per day over the Harlem River in New York City, the Alexander Hamilton Bridge, a 1,485 ft., eight-lane passageway, connects the Trans-Manhattan Expressway in Manhattan and the Cross-Bronx Expressway as part of Interstate 95.

Rehabilitation includes replacing the existing bridge deck with a new concrete deck. The project involves strengthening the steel arch span and steel support beams that make up the substructure of the bridge. To protect it from the weather, the steel will be painted and the support piers and foundation will be replaced or repaired.

The bridge will be jacked up temporarily using steel structures to remove the existing support structure and while the new concrete structures are formed. When finished, the bridge will be dropped back down. Raising the bridge during the jacking process will occur without interrupting traffic on the bridge.

Eight pier caps will be restored on the bridge. Three are being formed from the ground up with Staxo 100, ranging from 20 ft. to 90 ft. in supporting height, 100 ft. to 125 ft. in pier cap length, and 7.5 ft. to 12.5 ft. of concrete depth. On top of the Staxo 100, Doka designed custom pre-assembled tables to form the soffit for the pier caps. The other five pier caps will incorporate Staxo 100 towers with a custom suspended deck solution, because of the extreme height. The suspended deck will be supported from a steel jacking system, which will relieve the load of the roadway from the columns. From this deck, smaller Staxo 100 towers will be



▲ Slip resistant rungs are integrated into the built-in ladder

fixed to support a form system similar to the previous three caps.

"This major intersection of I-87 and I-95 with its many levels of ramps, along with the fact that we are also adjacent to the Metro North live tracks, really creates a logistical challenge for this site. Multiple deliveries of several Doka product lines have been crucial to the success of this project thus far," said Michael Schermerhorn, Senior Account Manager, Doka.

The \$407 million project is anticipated to finish in December 2013. [o](#)

The Facts

JOBSITE

Alexander Hamilton Bridge, New York City, New York

CUSTOMER

CCA Civil Halmar International

PRODUCTS USED

load bearing tower Staxo 100

TOTAL FORMWORK USED

12,700 sq. ft. of formwork and platforms, all supported by Staxo 100 for 8 piers.

The Solution!

When it came to rehabilitating the Alexander Hamilton Bridge, the Staxo 100 load-bearing tower was chosen because of its sturdy galvanized steel frames and it provides an optimal load capacity of up to 22.5 kips per leg.

◀ The bridge will be jacked up temporarily using steel structures to remove the existing support structure, and while new concrete structures are formed.



John Conlin,
Concrete
Superintendent,
CCA Civil Halmar
International

The Professional

“ We chose Doka’s Staxo 100 for several reasons: it’s easy to assemble, there are no loose parts and it has a built-in ladder with tie-off points in every frame, making it very safe.”





The Facts

JOBSITE

Georgia BioMass Wood Pellet Plant, Waycross, Ga.

CUSTOMER

Precision Concrete Construction

PRODUCTS USED

Pre-assembled Dokamatic Tables, Dokaflex S tables, Framax Xlife large area wall forms, MF 240 working platforms

Quick Construction Of Buttress Walls Using Framax Xlife

Industrial manufacturing plants can bring a range of challenges.

The Solution !

Doka incorporated multiple design options for each structure, which assisted the concrete contractor, Precision Concrete Construction, in the design-build process.


For the Georgia BioMass Wood Pellet Plant, the most distinctive and notable features were the multiple structures and their complexities.

The purpose of the company is to make wood pellets from Southern Yellow Pine. The most remarkable structures were the Bark Storage and Chip Storage buildings. They both had large, multiple 24 in. thick cantilevered buttress walls with approximately 35 ft. x 35 ft. dimension overall. Underneath the cantilever was the 12 in. thick elevated tunnel roof that was held up by the cantilever buttress walls. On top of the buttresses were 20 ft. high, 12 in. thick 39-degree battered walls that required MF 240 supports. An incredible amount of complex work needed to be completed for the scheduled deadline.

To meet the demands for the structures, the formwork design of the buttress walls incorporated “dummy panels” designed to allow for easy and fast re-use and cycling of the buttress walls. Also, the buttress had

Eurex props inside to create the cantilever portion, which was later tied into the elevated roof slab. The elevated roof slab had an edge drop beam of 24 in. To accomplish this, standard Dokamatic tables were used with spandrel beam connection plates and preassembled custom Dokaflex S Table — fitting perfectly into the layout. Doka's Platform K was installed on site to provide wide pre-assembled walkways and to meet overall jobsite safety requirements.

The requirements were very exact. Buttresses had to be within an exact tolerance of ½ in. due to the steel building framework to be erected and the elevated roof slab in the tunnel area under the buttresses had to be within ¼ in. Doka helped to achieve these exacting standards with their engineering assistance, expert onsite supervision, and ability to supply the amount of equipment needed.

Over 200 large format 135 x 270 Framax panels, with accompanied hardware, fillers and ties were used. 



Infrastructure Solutions

Formwork Technology, a crucial element in concrete construction, has greatly developed over the past decades.

These advancements have developed from a need to increase jobsite production, reduce labor costs, and produce a better finished product, as well as provide a safer solution.

Doka strives to be at the forefront of developing such advanced technology. Such innovations are derived from our vast worldwide network of construction project experience. This network allows us to pool information gathered from concrete construction contractors around the globe, taking into account local construction practices, and continually innovating the fastest, safest, and most economical modern day solutions.

Much of the latest technology has been specifically engineered or customized for concrete construction in the infrastructure sector. A few examples of this formwork technologies in use and available today include:

Cooling Towers



▲ **Cooling Tower Formwork SK 175** is a fully mechanized, self-climbing large-area formwork system. The system is perfectly

adaptable to changing the inclination. Working from the platform system, which can be tilted by turning just one central spindle, the crew can easily adjust the formwork up to a 22-degree angle of inclination.

Case in point is the construction of the Brayton Point Cooling towers in Massachusetts. Creating a safe and workable environment was critical. Doka designed bathroom platforms, using the SK175 self climbing cooling tower formwork system, that hung off of the working platforms on each of the towers at quarter points around the circumference. These details developed in the overall design, proved to be a key aspect to completing the project on time as planned.

Tunneling



▲ Doka's **Structural Support System SL-1** is a heavy duty system, highly adaptable for tunneling. The system consists of structural steel members that adapt efficiently to any geometry and any load. The versatile system has only a small number of individual parts. Whenever heavy loads have to be carried in cut-and-cover tunneling projects, in tunnel drilling, or in galleries or similar applications, the system offers versatility with high load-bearing strength. Simple repositioning is possible with hydraulic chain traveling units, moving the traveller within 15 minutes, and only one operator is needed for each repositioning operation.

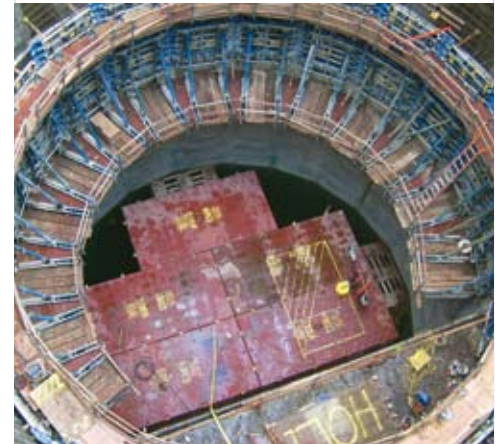


*Michael Schaeffer,
National Sales
Manager, Doka
USA*

The Professional

“To help determine the most efficient solution for a project, a contractor will evaluate several forming systems. Simply stated, a contractor has two choices: an inexpensive forming material that is labor-intensive or a forming system that while costing more, provides high productivity, built-in safety features and is more labor efficient.”

formwork (Frami, Framax or Top 50), allowing contractors to cast walls and an elevated deck as a single-pour concrete shell. On the Florida Everglades, a cast-in-place culvert was implemented to allow water to flow underneath elevated roads and berms from a man-made canal to the open landscape. Using the box culvert system, to cast lengths of 50 ft. per pour, the system was easy to set up and moved in less than a minute, allowing contractor Southwest Construction Services, to get in, set rebar, and prepare for the next pour.



▲ For constructing tunnel shafts on the six-mile-long, 26 ft. diameter East Side CSO tunnel, serving as a tunnel connection for water overflow, Doka's D22 cantilever system together with **Frami Wall Formwork** was the key solution. Doka's engineering team worked closely with the contractor to devise a sequencing plan that made each lift easier to climb and also allowed on-field operators to quickly move panels with a consistent final finish pattern from the bottom of the shaft up to the surface. In addition, 13 ft. high forms with D22 cantilever rollback system provided an optimum design that allowed the forms to be easily retracted for cleaning, oiling, and installation of cast in anchors to support the next lift.

Bridges

When it came to building the 1,168 ft. long bridge over the River Danube, near Vienna, Doka's highly efficient **Cantilever Forming Traveller (CFT)**, was the optimal solution. The CFT, with its fully railed-in platforms on all work-deck levels, ladder ways and build-in ladder cages does more than meeting any safety requirements. With the system, crews are able to form, reinforce, and cast 16.4 ft. high typical section in a four-day cycle. This comprehensive formwork solution is comprised of large area formwork Top 50, automatic climbing formwork SKE 50, and special pier-head formwork.



▲ The **Frami Box Culvert Traveller Form** can be constructed out of any Doka wall



◀ The Cantilever Forming Traveller (CFT) is a completely rentable, all-in-one system offering an optimum construction workflow.



▲ The construction of the Hoover Dam Bypass Bridge involved a series of inventive solutions to provide efficiency on the jobsite. Doka supplied **Framax Framed Formwork** to pour large anchor footings for the massive cranes. This equipment then was moved over the canyon's edge and reused to pour the pier footings and abutments. The innovative design layout saved the contractor the cost of multiple sets of forms.

extreme angle of the bridge and pressure of the concrete, significant support was needed to form the pylon. Doka created a customized formwork system to meet the project's unique demands. Top 50, which provides easy and efficient forming sequences for large-area projects, was used on the outside face of the bridge pylon, which is inclined at a 20-degree slope with four outside faces. **MF 240 Support Brackets** created an 8 ft. working surface and were used on each side of the pylon. On the sloping side of the bridge pylon, **Self-Climbing SKE 100** in conjunction with Top 50 was used to support the vertical dead weight of the concrete.



▲ Doka was selected to provide the engineering solutions and formwork for the top half of the bridge pylon on the 260-ft. high Paseo Bridge in Kansas City. Because of the



▲ **Staxo 100**, a new revolutionary shoring system, is capable of supporting high loads, up to 22.5 kip per leg. Adaptable to any layout, floor shape, and load, the system offers a high level of stability, built-in ladder system, and tie-off points for harness or arrest equipment. The product, winner of the 2010 Most Innovative Product at World of Concrete, is in use on the Alexander Hamilton Bridge in N.Y., supporting pier cap restoration and reaching up to 100 ft. in support height. ◻

Doka in the US and Canada

news, dates, media, awards



▲ Visit Doka's Booth C5823 at the World of Concrete



▲ Vote Frami Xlife for MIP at World of Concrete

DOKA OPENS PRESENCE IN EASTERN CANADA

Doka Canada continues to expand its geographical coverage to make products and services available to more customers. In order to better service the Eastern Canadian market with a focus on the Greater Toronto area, a new branch has opened in Bolton, Ontario. While the initial set-up of the branch operations is well underway, the first projects have been signed and Doka forms have already been shipped to several jobsites. Supported by experts from U.S. Operations and Field Service, the first major pre-assembly project in the new branch — windscreen panels for the prestigious Shangri-La project in downtown Toronto — has been completed in time.

WORLD OF CONCRETE 2011 Doka USA and Doka Canada will be participating in the World of Concrete Show, held January 18 – 21 in Las Vegas, NV. Unveiling new products and showcasing wall, slab and climbing solutions, Doka will demonstrate their safe, productive and cost-efficient solutions for 2011. Stop by Booth C5824 and learn how to form efficient solutions.

VOTE FRAMI XLIFE FOR MOST INNOVATIVE PRODUCT

Frami Xlife, a complete system for forming walls, columns and foundations, will be unveiled at World of Concrete 2011. Frami Xlife is light enough to be man-handled, yet strong enough for crane-assisted forming, while producing a smooth concrete finish. Vote Frami Xlife for MIP award at www.worldofconcrete.com.

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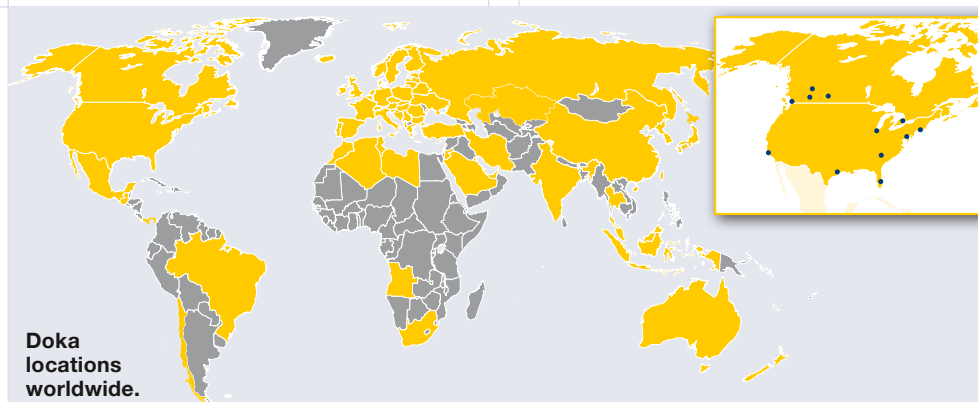
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In some cases the site photos show the situation during formwork assembly and are therefore not always complete from the point of view of safety.

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