Unique Challenges. Exceptional Solutions.
The current state of today’s infrastructure continues to be the topic of discussion not only in our construction marketplace, but also political and end-user circles as well. According to one of the most respected reports on the topic, the American Society of Civil Engineers’ Report Card for America’s Infrastructure, U.S. infrastructure overall received a D+, with our nation’s bridges earning only a C+. With almost 40% of bridges in U.S. having already reached their design lifespan, another 15% are within a decade of that milestone. Add to that a summer season of floods and fires, which have made news with photos of crumbling roads and bridges, and there is much to discuss about finding safe and cost-effective solutions to repair our aging infrastructure.

Although we continue to innovate in the commercial construction markets as well, it is key to showcase our efforts to meet the needs of the public with regard to infrastructure projects. One example is the unique application of steel cover plates used on the top and bottom of the sides of the girder panels on the pier caps to reinforce their strength as they spanned from one column to the next on the Kosciuszko Bridge. Another time-saving innovation is the use of our ParaTop Ganged Overhang bracket formwork system on the Wekiva Parkway Bridge. With the ParaTop Ganged Overhang system, the contractor can set 20-ft. sections of fully set ParaTop with three men (one operating the crane and two guiding and setting) in just 15 minutes. These innovations and many more ensure safe construction in a timely manner for our contractor community.

This issue of Doka Express also highlights some of our proud contractor partners using Frami panels. We honor these companies as our Doka VIPs and hope to see your team featured in a future issue. Welcome to the Frami family!

Stay tuned for future changes, including a new North American president and plans for a new North American headquarters.

Robert G. Kent, PE
CEO, Doka USA, Ltd.
No stranger to supertall structures, the city of Chicago soon will welcome its third tallest building – the Vista Tower. The 1,190 ft. high structure incorporates three inter-connected towers – an east, middle and west tower, with 47, 71 and 93 stories respectively.
Vista Tower’s unique design features a series of 19 alternating frustums, in which the towers angle outward nearly 5 ft.3 in. for 13 floors and then angle inward for the next 13 floors, creating a flowing design of rhythmic movement.

Vista Tower’s distinctive geometry presents one of the most challenging aspects for the concrete subcontractor on the project, McHugh Concrete of Chicago. McHugh consulted with Doka early in the process to plan formwork solutions to meet the project’s demands.

To form the building’s core structure, McHugh relies on Doka’s Super Climber SCP system. Four hydraulic cylinders lift the inside and outside forms from one level to the next. A platform anchored to the top of the forms holds a concrete placing boom which automatically lifts when the forms are raised. Workers can store rebar on the formwork, too, close to where ironworkers need it for placement.

McHugh is using Doka’s SKE 50 and 100 self-climbing form systems for the shear-wall forms. However, the contractor is lifting the forms to the next level with building cranes instead of hydraulically for this project. The shear walls follow the building’s angle.

Doka’s climbing system Xclimb 60 with protection screen system provides perimeter protection and a safe working climate for installing curtain walls and detailing. It also prevents tools and materials from accidentally falling to the ground and provides shelter from the wind at the highest level where concrete is being placed. It can be used to enclose floors for temporary heating.

The Facts

Project name: Vista Tower
Location: Chicago, IL
Size: 1.8 million sq. ft.
Architect: Studio Gang Architects, Chicago
Engineer: Magnuson Klemencic Associates, Seattle
General contractor: James McHugh Construction Company, Chicago
Concrete subcontractor: McHugh Concrete, Chicago
Type of structure: New high-rise construction
Scheduled completion: 2019

Doka equipment used: Super Climber SCP, SKE 50 and 100 self-climbing form systems, Xclimb 60 with protection screen system
The Formwork Experts | 5

The Challenge
- Vista Tower’s distinctive geometry presents one of the most challenging aspects, with a series of 19 alternating frustums, in which the towers angle outward nearly 5 ft. 3 in. for 13 floors and then angle inward for the next 13 floors.

The Solution
- To form the building’s core structure, McHugh relies on Doka’s Super Climber SCP system. Doka’s SKE 50 and 100 self-climbing form systems are used for the shear-wall forms. Both systems allow the option of lifting hydraulically or with building cranes. Xclimb with protection screen system provides perimeter protection.
Central Park Tower:
World's Tallest Residential Building

Tall, taller, tallest – in New York’s district of Manhattan, work on a super high-rise is well underway. At 1,549 ft., the Central Park Tower will rank as the world’s tallest residential building. This structure will also be the second tallest skyscraper in the United States, with One World Trade Center standing taller at 1,776 ft.

When completed, the tower will offer more than 1.2 million sq. ft. of prime real-estate floorspace, most of which will be residential. Apart from its amazing height, the Central Park Tower is special in another way - it only has 95 floors. This is due to the extraordinary ceiling heights of the ground floor space. The store's façade height will be 279 ft., which is enough space for twenty-eight floors, however, the architects have specified only seven.

The steel and concrete structure is complex, the room heights are unusual and the concrete core advances ahead of the floor slabs, a feature uncommon in construction of skyscrapers in New York City. These are some of the biggest challenges involved in building the Central Park Tower. Furthermore, lead contractor, Lend Lease, insists on the highest levels of site safety on all its construction projects.

Doka’s self-climbing formwork and working platforms are the perfect solution for this project. The Super Climber SCP is being used for the interior core and Xclimb 60 climbs the building’s façade. The speed and simplicity of the Super Climber SCP enables the crew to focus on other aspects of the project, such as the steel supports for connecting the steel girders of the skeleton to the core. At the touch of a button, the hydraulic system climbs the platform with all the formwork, the material containers and the concrete placing boom to the next concreting section. For this project, the Super Climber has a suspended stair tower for two levels, permitting unobstructed exit from the work area.

Doka’s preassembly, engineering services and site support, allowed this project to progress smoothly from day one.

"The Super Climber SCP is a great system", says Justin Meyer, foreman for Pinnacle Industries on this build. "But it's not just the formwork engineering from Doka that's so good, it's also the support and the engineering services. Everyone is really helpful. Doka is always right there when you need something."
Doka's self-climbing projects
Milestones in high-rise construction

Regalia, FL
2014

World Trade Center 4, NY
2011

City Center, NV
2010

Hudson Yards, NY
2017

432 Park Ave, NY
2013

Lincoln Park, IL
2011

400 5th Ave, NY
2009

Borgota Hotel, NJ
2008

Hudson Yards, NY
2014

Vista Tower, IL
2014

Hard Rock Hotel, FL
2014

Central Park Tower, NY
2014

432 Park Ave, NY
2014

City Center, NV
2014

Borgota Atlantic City, NJ
2014

2520 Lincoln Park, IL
2014

Regalia, FL
2014

The Formwork Experts.
The Frami Family Just Got Bigger: Say Hello to the New 8x9-ft. Panel

Designed to span an entire city block, 50 Hudson Yards will be New York City’s fourth largest commercial office tower when completed in 2022. With a stunning view of the Hudson River, the LEED Gold-designed, 2.9-million-gross-sq.-ft. building will stand at a prominent 985 ft. tall.

Why was Doka selected as a supplier?
- New Leaf Development was searching for a large formwork panel that also provided a handset option. Doka’s new 8x9-ft. Frami panel along with the full range of hand-setting size panels proved to be the optimal choice in both labor and time savings.
The Challenge

- Constant reconfiguration of the formwork was necessary due to the wall geometry.

The Solution

- The new Frami 8x9-ft. panel large gang-form panel being used has the ability to also reconfigure adjacent smaller Frami panels by hand.

The Facts

Project name: 50 Hudson Yards
Location: New York, NY
Construction work performed by: New Leaf Development
Architect: Foster + Partners
Developer: Related Companies, Oxford Properties
Type of structure: Commercial office tower
Height: 985 ft. tall, 58 stories
Sq. ft.: 2.9 million gross sq. ft.
Scheduled completion: 2022

Doka equipment used: Frami 8x9-ft. panels, smaller Frami panels, Staxo Stair Tower

▲ The stair tower can be put together quickly from frames and pre-assembled stairway elements.
The contractor, New Leaf Development, is working on the foundation walls at 50 Hudson Yards. One of their challenges is the constant reconfiguration of the formwork due to the wall geometry. Doka’s new Frami 8x9-ft. panel provides a large gang-form panel with the ability to reconfigure adjacent smaller Frami panels by hand.

The new Frami 8x9-ft. panel gives clients a larger size panel with less hardware and ties that is easily compatible with the full Frami family range.

At 50 Hudson Yards, the large panel is set by crane and all the filler panels around it are set by hand. In addition, supporting A-frames are used in this one-faced wall application.

**Facts on the new Frami 8x9-ft. large, lightweight panel:**

- Increased versatility – Allows for building and cycling large gangs with small crane capacity. Formwork is crane-set where possible and handset with traditional Frami panels for add-on areas.
- Concrete finish – Using fewer form joints produces a better concrete finish.
- Reduced labor – Less labor is needed with larger tie spacing. Only three lightweight clamps are needed for a 9 ft.-form joint.
- Durability – Hot dipped galvanized frames and X-life plywood provide an extremely long lifespan.

Additionally, the long list of benefits in the standard handset Frami panel system are part of the Frami 8x9-ft. panel. This includes safety tie-off handles that meet OSHA requirements with fewer panel connections required. No additional hardware is needed to change from handset to gang forming and the Frami 8x9-ft. panel can be used in combination with all Frami accessories.

Safe and easy access up and down is provided with the combination of Frami 8x9-ft. panels and Doka’s Staxo Stair Tower. The combination provides the ability to gang and fly the stair tower in place. The stair tower is 48 ft. high on this project and was able to be repositioned as one unit.
Doka’s Frame Brings Successful Partnerships

Doka is proud to partner with several contractors who are making a difference on their projects by using Frame panels. We honor these companies as our Doka VIPs.

Lithko Contracting, LLC and Doka started their first project together in Jan. 2011 and the relationship has shown continued growth. Successfully completing 33 projects and with 10 more projects ongoing, Frame has been a large part of their success. From foundations, retaining walls and columns to stair / elevator cores, they have become very proficient. Based on its versatility, Frame has been used on projects varying from small dock walls to large stair / elevator cores with climbing platforms for 20 to 30 story buildings. We thank Lithko for their continued commitment to Doka and wish them success in everything they do.

Sundt Construction, Inc. has been using Frame wall formwork for the last five years. They have used Frame for numerous projects and many different applications from 36-ft. high walls to foundation forms.

Urban Foundations has previously used Frame wall formwork in a gang application on the City Point project in Brooklyn on 20-ft. high, one-sided wall applications. Currently, they are hand setting it on the Queens Plaza Park project in Long Island City.
Kent Companies, Inc. has been using Frami for over 10 years on their concrete projects. Kent owns a few thousand sq. ft. of Frami and uses it on various structures, especially in their core formwork applications. The most recent success they have had with Frami includes projects in Michigan: 140 Ottawa, 601 Bond, and the Exchange.

B.L. Harbert specializes in Federal government construction, State Department and DOD work worldwide. They have used Frami wall formwork on various projects including the University of Mississippi North Parking deck for Tieless pile caps and 18-ft. foundation walls; HDS expansion at Redstone Arsenal for test bunker buildings; GE Aviation in Huntsville for test bunkers.

Brasfield & Gorrie have used Frami for pile caps at Kemper County power plant, mass foundations and one-sided walls at Miller Steam Plant, in addition to Tunnels and Pits at Continental Tire.

National Frami Day 2019 is June 4th!
Save the Date and celebrate the #1 handset system on the market with us throughout June.
World’s Most Acoustically Sophisticated Performance Hall

Steinmetz Hall at the Dr. Phillips Performing Arts Center, located in downtown Orlando, FL, will be the venue for performance art ranging from symphonies to rock concerts.

Proper acoustics within the space are critical... so critical that each of the 1,700 seats will have individualized acoustics that do not rely on amplification systems but can be accomplished through the structural design itself. Known as the "floating building," the hall is designed with minimal positive concrete connections, allowing the structure to "float" and generating natural amplification.

The design involved several features that were challenging to construct. There are multiple 80-ft. tall free-standing walls, with bases 70 ft. off the ground. Architectural walls with pilasters and scallops, not to mention sloped radius seating on the balconies and an existing structure that stands 4 inches from the performance hall, made for complicated geometries.

Fortunately, Doka’s Top 50 wall formwork can be adapted to suit a variety of shapes, sizes, tie hole patterns and pour pressure requirements. A total of 28,000 sq. ft. of preassembled Top 50 formwork was used to construct Steinmetz Hall. This includes 1,900 sq. ft. of custom radius steel formwork used to help construct the balcony seating and façade and 135 preassembled MF240 rollback climbing platforms for tall areas of the structure. For loadbearing applications, Staxo towers and 10k shoring systems were used in conjunction with Dokaflex floor slab formwork. Worker access to all work-deck levels was facilitated by Staxo stair towers.

Formwork-related work was supervised by a full-time, onsite Doka engineer, as well as field service and project management.

The project is receiving praise in Orlando’s local press for being “on track [and] on time.”
The Challenge
- There are multiple 80-ft. tall free-standing walls, with bases 70 ft. off the ground that create difficulties. Architectural walls with pilasters and scallops, not to mention sloped radius seating on the balconies and an existing structure that stands 4 inches from the performance hall, made for complicated geometries.

The Solution
- Top 50 wall formwork could be adapted to meet the requirements. For loadbearing applications, Staxo towers and 10K shoring systems were used in conjunction with DokaFlex floor slab formwork. Worker access to all work-deck levels was facilitated by Staxo stair towers.
The Facts

Project name: Kosciuszko Bridge Phase II  
Location: New York City, NY  
Contractor: Granite Construction  
Scheduled completion: End of 2018  

Doka equipment used: Frami for footings and abutments, steel column forms, girder panels and Framax for pier caps, Staxo and 100k/200k shoring towers

The Challenge

- Phase II of this project faced several schedule increases and had a set completion date of the end of 2018. Additionally, it required the cycling of large material from one side of the river to the other as well as requiring formwork to span the typical pier cap distance of 50 ft. between columns.

The Solution

- The use of 300k brackets/spreader beams in the columns allowed the formwork to span over the required distance, while the girder panel assembly could be cycled from one cap to another in two segments. Using consumable anchor material in the caps made stripping the formwork much easier and safer. The adaptability and use of so many different systems allowed the customer to meet any increases in schedule, such as utilizing Staxo shoring with Framax panels to form a pier cap as a quick alternative.
Constructing Kosciuszko Bridge Phase II

When the original Kosciuszko Bridge was constructed between Brooklyn and Queens in 1939, it was built to serve only 10,000 vehicles per day.

When the bridge became part of the Interstate Highway System, its daily traffic skyrocketed to unsustainable numbers, sometimes reaching up to 18 times its original planned capacity. The old truss bridge was eventually demolished in 2017, after Phase I of its replacement – one of two cable-stayed bridges, the first of their kind in New York City – was completed ahead of schedule in April of that year.

Phase II of this project involves the construction of a second cable-stayed bridge for westbound traffic. The first bridge, which currently serves both east- and westbound traffic, will become eastbound-only upon completion of the second bridge.

Doka was brought onto both phases of the Kosciuszko Bridge project due to past successes with the general contractor and our ability to provide material for all aspects and areas of the project. In Phase II, Doka has provided multiple solutions, including Frami, steel column forms, girder panels, Framax, Staxo and 100k/200k shoring towers.

Crews used Doka’s 300k brackets/spreader beams, Staxo shoring, 100k shoring and 200k shoring to form various pier caps. Steel cover plates were then used on the top and bottom of the sides of the girder panels on the pier caps to reinforce their strength as they spanned from one column to the next.

Together, the two bridges will improve traffic safety, reduce congestion and improve travel speeds thanks to the design of wider driving lanes and shoulder widths, auxiliary lanes in both directions, and a reduced incline that allows trucks to more easily maintain a consistent speed when crossing. These improvements are projected to reduce delays by more than 65 percent during peak hours.
Doka is proud to partner with FormTech on this project.
FormTech in conjunction with Doka provided Dugan & Meyers with Top-50 gangs which could be preassembled to the radius needed. D-22 Platforms could strip and cycle easily, as well as withstand the pour pressure of a one-sided pour.

Rainwater can enter the sewer system during rain events and cause a mixture of sewage and rainwater to flow untreated into our waterways.

To prevent this from happening, the Portland CSO project is part of a grand plan set in motion by the Louisville and Jefferson County Metropolitan Sewer District to reduce flooding. A covered underground Portland Storage Basin will offer the Ohio River protection from sewer overflows. The combined sewer overflow system would be capable of alleviating pressure of the cities’ sewer systems to ensure that residential areas don’t experience flooding when rivers run high. The Portland CSO, located in the Portland neighborhood of Louisville, will collect overflow storm water from the Ohio River and gradually reintroduce the overflow water back into the sewer systems. It was necessary that the system could hold 6.7 million gallons of sewer overflow and had a 230-ft. inside diameter.

To achieve these results, multiple lifts of one-sided wall pours were done. Due to the complexity, one lift a day was completed. Radial forms were used with the ability to roll back.

The contractor, Dugan & Meyers, chose FormTech to supply Doka equipment because they believed it was the best product for the application. Doka’s tieless cantilevering system was desired, and Doka provided project insight and value engineering that made the choice not just about equipment selection, but rather about adding another partner to the job.

Guys were new to the system, but once we got the hang of it and started using it moves fast. We were able to move pretty good with it and got our cycles up to pouring every day. It’s a good system.

-Shane Scott, Project Superintendent
Customer: Dugan and Meyers

The Facts

- **Project name:** Portland CSO
- **Location:** Louisville, KY
- **Contractor:** Dugan & Meyers
- **Developer:** Louisville and Jefferson County Metropolitan Sewer District
- **Type of structure:** Combined Sewer Overflow
- **Height:** 45 ft.
- **Sq. ft:** 4,608
- **Construction time:** 6 Months
- **Doka equipment used:** Top-50, D-22 platforms
- **Doka formwork supplier:** FormTech

The Professional

The Challenge

- On this project, one-sided walls, radial walls and multiple lifts were integral parts of the job.

The Solution

- FormTech in conjunction with Doka provided Dugan & Meyers with Top-50 gangs which could be preassembled to the radius needed. D-22 Platforms could strip and cycle easily, as well as withstand the pour pressure of a one-sided pour.
Dwight D. Eisenhower Memorial’s Changing Appearance

Located within a four-acre urban park at the base of Capitol Hill in Washington, DC, the Eisenhower Memorial honors Dwight D. Eisenhower, the 34th President of the United States. Designed by the world’s most celebrated architect Frank Gehry, the memorial will target educational messaging to K-12 students through the e-memorial.

Doka was chosen by Clark Construction due to their full scope of formwork.

The most prominent feature of the memorial is a transparent stainless-steel woven tapestry that frames the entire memorial. Mounted on six 90-ft. tall round columns, the tapestry is designed to change dramatically throughout the day and night, as natural and artificial lighting bounce on the metal image.

Six of the eight 9-ft. diameter columns are hollow with an inside diameter of 6 ft. Doka’s solution features custom steel exterior formwork mounted on Xclimb60 formwork platforms and custom steel interior formwork supported on a custom shaft platform. Clark specified that the columns be poured in 15-ft. lifts with the formwork designed to be tieless and with the inside formwork capable of being stripped without the need for workers to access the inside of the form.

The Facts

Project name: Dwight D. Eisenhower Memorial
Location: Washington, DC
Architect: Frank Gehry
Contractor: Clark Construction
Scheduled completion: 2019

Doka equipment used: Framax wall formwork, Xclimb 60 crane-climbing formwork platforms, custom steel column formwork and DokaScaff stair towers

The Challenge

- One of the challenges is that eight of the 9-ft. diameter columns are hollow with an inside diameter of 6 ft. Clark specified that the columns be poured in 15-ft. lifts with the formwork designed to be tieless and with the inside formwork capable of being stripped without the need for workers to access the inside of the form.

The Solution

- Doka’s solution features custom steel exterior formwork mounted on Xclimb 60 formwork platforms and custom steel interior formwork supported on a custom shaft platform. Additionally, the solution for the interior formwork features a center mast with horizontal arms that brace the formwork to resist the pour pressure.
being stripped without the need for workers to access the inside of the form. Doka’s solution for the interior formwork features a center mast with horizontal arms that brace the formwork to resist the pour pressure. The design of the horizontal arms includes a lever mechanism to strip the interior formwork by raising the center mast with the crane.

This project not only features a wide range of Doka products, but also highlights Doka’s market-leading engineering capability to supply unique technical solutions to satisfy our customers’ challenging requirements. To develop and design the unique custom solutions for this project, Doka’s mid-Atlantic office was also supported by the national engineering offices in both Little Ferry and Chicago.
Like many areas of the United States, Central Florida has seen increased traffic congestion. Current construction north of Orlando on the Wekiva Parkway will complete the beltway around the multi-town area, relieving traffic on several surrounding highways.

Wekiva Parkway Section 6, a 6-mile design-build project. Timely completion of the bridge structure will facilitate the overall project schedule and best serve the needs of local travelers.

A new multi-span bridge over the Wekiva River near Sorrento, FL represents a major portion of

Wekiva Parkway Section 6.
Doka’s ParaTop Ganged Overhang bracket formwork system is being used. Some portions of the bridge - which is located in an environmentally sensitive area - have limited working area. Using a traditional bracket system would have entailed excessive labor costs associated with setting the jack and building the decking with each use. With the ParaTop Ganged Overhang system, the contractor, Florida-based Superior Construction Southeast, can set 20-ft. sections of fully set ParaTop with three men (one operating the crane and two guiding and setting) in 15 minutes. The ground-support-free cantilever arm formwork can be completely set and adjusted from the top of the bridge; there are no platforms or scaffolds beneath the superstructure, so formwork set-up, alignment, reinforcing, pouring and stripping are all done from above. For work on the Wekiva 6 bridge, formwork sections are preassembled in units that can be trucked to the site, leaving only lower legs and bracing to be assembled on-site with simple pin connections. This reduces on-site labor costs.

Further benefits of the ParaTop Ganged Overhang system are that Doka offers a rental option and it uses standard parts that can be employed in a range of applications. With its modular system concept, ParaTop can be adapted to different cross-sections of cantilever slab.

Wekiva Parkway Section 6 is expected to open in 2021.
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.