We're Forming America's Infrastructure
**Editorial**

*Doka. We’re forming America’s Infrastructure.*

Much has been reported about the state of infrastructure in the United States. With 40 percent of our bridges boasting more than 50 years in service, a recent report noted that almost 10% of bridges are labeled as structural deficient. The most recent estimate puts the nation’s backlog of bridge rehabilitation needs at $123 billion. But, major infrastructure projects are true engineering marvels, requiring intricate levels of planning and design. Doka is poised to respond to this need, as well as challenges associated with airport improvements, complex urban structures and intricate high-rise structures and more through the continual refinement of our specialized formwork solutions. Simply browse through this issue to see our formwork in action. Simply put, We’re forming America’s Infrastructure.

How do we excel on such complex projects, ensuring safety is always the number one priority? It begins with our people. In my opinion, the construction sector is one of the most rewarding fields one can choose. And as the new CEO of Doka USA, it is a great honor to lead the fantastic team of experts we have, all of whom are ready to serve you. Although I am new to the United States, I have served Doka since 2010, having held leadership positions managing Portugal/Spain, as well as the UK/Ireland. Seeing the amazing plans that come in our offices across the United States for the challenging projects our customers work on is simply exciting.

Great organizations are made up of great people and our vision at Doka is to be your preferred supplier. Key to achieving this goal is ensuring that Doka is a great place to work and we continue sustainable growth to meet your needs. As our teams grow, so does our continual re-commitment to learning from our customers and responding to your needs. I encourage you to share your ideas with Doka today!

Luis Morral  
CEO, Doka USA, Ltd.

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**News from DOKA**

![Circa Resort and Casino (Las Vegas)]()  
Downtown Las Vegas will see its first casino-resort built from the ground up in more than three decades when Circa Resort and Casino (McCarthy Builders) opens in December 2020, continuing the resurgence of the area’s Fremont Street entertainment district.

![I-64 Bridge (Chesapeake, Va.)](#)  
Doka teams up with GPC Team (Granite-Parsons-Corman jv) on this $410 million high-rise bridge in Chesapeake, Va.  
#LetsFormABridge

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**View it in Augmented Reality!**

View 3D models within this Doka Xpress anywhere you see the AR circle by downloading the DokaAR app on the App Store or on Google Play.
Major infrastructure projects are true engineering marvels. They require intricate levels of planning, specialized formwork and innovative methods to realize the full potential of these awe-inspiring projects.
On the Manahawkin Bay Bridge in New Jersey, Doka’s custom Steel Girder’s design allowed Schiavone construction to span large distances without any additional support or shoring. The forms are modular and can be ganged and picked in large sections, increasing production time.

Formed from the ground up with Load-bearing tower Staxo 100, the Alexander Hamilton Bridge carries approximately 188,000 vehicles per day over the Harlem River in New York City. Staxo’s strength supported heights ranging from 20 to 90 ft., a 100 to 125 ft. in pier cap length with 7.5 to 12.5 ft. of concrete depth.

On the Portland-Milwaukee Light Rail Bridge project, Doka’s Steel Girder form was used to construct the lower “V” shape of the pylon in 30-ft. lifts and Top 50 was used in conjunction with the MF240 climbing platform system to safely construct the changing geometry of the upper lifts. (Photo by Steve Morgan)

A new multi-span bridge over the Wekiva River near Sorrento, FL, represents a major portion of Wekiva Parkway Section 6, a 6-mile design-build project. With the ParaTop Ganged Overhang system, Superior Construction Southeast can set 20-ft. sections of fully set ParaTop with three workers in 15 minutes.

Post your bridge project photos and follow our bridge solutions via hashtag #LetsFormABridge
Doka can transform the trajectory of a project, giving contractors and heavy civil construction companies access to more forming solutions, and more ways to succeed in their most complex infrastructure projects.

When these complex projects are built, it’s the foundational elements that are most critical. They need to be designed, planned and executed perfectly in order to endure and last for generations. The bridges must meet exacting engineering and construction standards and stand up to the stress and loads that come from a lifetime of use. This is no place to take even the slightest shortcut in planning, materials or forming.

Construction companies don’t have to settle for stock forms and systems that don’t precisely fit their unique approach to bridge projects. That’s because the we at Doka are true experts at complex infrastructure projects, providing fully custom-tailored solutions and product options that support precise project plans and ambitious expectations.

Doka can transform the trajectory of a project, giving developers, contractors and construction companies more ways to work and succeed in their most complex infrastructure projects.

**Doka. We’re forming America’s Infrastructure.**
The new Kosciuszko Bridge consists of drilled shafts for the main span pylons that are the deepest shafts ever constructed by the contractor, Skanska, and are among the deepest by any contractor in New York City. The main span pylons will stand approximately 303.5 ft tall – nearly the height of the Statue of Liberty. Formwork solutions in use include large-area formwork Top 50, framed formwork Frami Xlife with inside stripping corners, automatic climbing formwork Xclimb 60.
An architectural concrete finish was a requirement on the Route 47 Missouri River Bridge. Custom Steel Girder Formwork pre-built and delivered to the site ready to use achieved the requirements on this 2,560-ft. bridge.

On the Evergreen Line extension in Vancouver, BC, the general contractor needed a formwork solution that would meet strict safety regulations at the same time as meeting tight time constraints. Doka’s Steel Girder Formwork was used in conjunction with 140 kip support brackets approximately 24 ft. above grade. Assembly work was performed safely at ground level without relying on expensive crane time, keeping the productivity high and costs low.

Located in Virginia, the US 460 connector is the tallest bridge in the state. The owner wanted an innovative solution for the project to improve local and regional connectivity. Doka designed the formwork for the first lift with an overhead gantry-style system to hang the formwork, allowing the base and slab walls to be placed in the same pour. To construct the spans between each pier table, Doka bridge formwork engineers designed and supplied adjustable formwork gangs that were used in conjunction with a form traveler system.
The Challenge
- To stay on pace with the accelerated schedule, six 21-ft. tall vertical concrete pours were required. The large amount of embeds to tie the structural steel building into the cores and MEP openings required precise coordination of the platform anchors and wall ties to support the 21-ft. casting height.

The Solution
- MF240 platforms allowed plenty of room, while in the rolled back position, to set steel embeds without having to fly the panels to the ground after each casting step.

The Facts
- Project name: Greater Orlando Aviation Authority (GOAA) South Terminal C Expansion
- Location: Orlando, FL
- Construction work performed by: Turner-Kiewit / CCK Construction Services (Landside Terminal); Hensel Phelps / T&T Construction (Airside Gates and Baggage Claim)
- Architect: Fentress
- Developer: Greater Orlando Aviation Authority
- Type of structure: Airport Terminal and Boarding Gates
- Height: 110 ft.
- Stories: 6 stories
- Sq. Ft:
  - CCK – GOAA Landside Terminal - 55,000 sq. ft. of Top 50 wall formwork & 248 MF240 rollback brackets
  - T&T – GOAA Airside Terminal – 39,000 sq. ft. of Frami wall formwork & 120 MF240 rollback brackets
- Scheduled completion: 2021
- Doka Equipment Used: Shear Walls: Top 50 / Frami / MF240 / Shaft Platform / Custom Hinged Corners
Phase 1 of an expansion project in which the airport will add 19 gates to its South Terminal, broke ground in 2018. The addition will be a three-floor facility with ground transportation on the first level, departures and security on the second, and arrivals and baggage claim on the third. Arriving passengers at the top level will benefit from “The Boulevard,” a daylit corridor which runs the length of the terminal.

Concrete cores were constructed independently from the structural steel building frame and climbing formwork was fundamental to the erection of those cores. A large number of embeds and openings were installed in the South Terminal C expansion. The steel embeds and other hardware (which create attachment points for the eventual connection of the structural steel members) required careful positioning at the interface between the formwork and poured concrete. Openings for mechanical, electrical and plumbing (MEP) penetrations also required careful alignment. These were a challenge to coordinate, considering the large casting height and amount of weight that consequently needed to be supported by formwork anchor systems. Doka’s MF240 platforms were used to allow plenty of room to set the steel embeds. Fortunately, preconstruction design and planning on the part of Doka and the construction team—as well as careful coordination to accommodate design changes that happened mid-project—enabled quick, accurate placement.

The Professionals

“A lot of preconstruction coordination of steel embeds, anchor and tie locations, finish requirements and logistics to cycle large formwork picks are required on this project. Hurdling constant changes to structural steel members and MEPs provided challenges but Doka was there with us every step of the way.”

Mark Hamilton, Superintendent, CCK Construction Services

“This is the first time I have used Doka and I’m impressed, from the solutions, to delivery coordination of a large amount of forming material, condition of the delivered product, to field service and engineering support. Doka has been a great partner on this project.”

Robert Benson, Superintendent, T&T Construction
The Challenge

■ Changing slab thickness—with depths of up to 4 ft.—on upper level transfer deck created large loads that needed to be transferred safely to the slab-on-grade.

The Solution

■ Load transfer from the 4-ft. deck required extensive reshoring. Additional 10k frames were used underneath the 4-ft. slabs.

The Facts

Project name: Uptown Denver apartments and Tavern
Location: 1633 North Pearl Street, Denver CO
Construction work performed by: General Contractor: Southern Land Company; Contractor: Naylor Concrete & Steel Erectors, LLC
Architect: SA+R Architects
Developer: Southern Land Company and GTIS Partners LP
Type of structure: Cast-in-place; composite floor system
Stories: 10 above-ground; three below-ground
Sq. Ft: 52,000 sq. ft. per level
Construction time: 9 months
Scheduled completion: 2019

Doka Equipment Used:
■ Core: Frami Wall System, 10,000 sq. ft.
■ Reshoring: Doka Eurex props and 10k frames
■ Shoring: Dokaflex and 10k frames
■ Other: Staxo, 100k sq. ft., for rebar tie platform 25 ft. above ground level

Mixed-Use Building Has Mixed Structural Elements

Uptown Denver is a mixed-use building with 316 luxury apartments and three levels of underground parking.

The building features ground-floor retail and a restaurant named after, and hearkening back to, the original Tavern restaurant on the same site. The complex includes a roof-level plaza that is accessible to residents and Tavern patrons.

The parking garage and lower floors are constructed of cast-in-place concrete. Apartment levels are constructed of a composite floor system with a stay-in-place metal deck and thin layer of concrete. Parking garage construction included 12-in. post-tensioned decks, elevator cores and shear walls. Walls also have perimeter pilasters.

Doka’s Frami wall system provided an efficient solution and was used for walls, cores, pilasters and columns. Frami’s versatility meant that panels used initially on columns could be relocated to core wall locations. Stacked 40-ft. tall, the Frami system allowed cores to be constructed quickly, keeping ahead of the steel erectors.

At the building’s transfer deck—fifty-five feet above the slab-on-grade—slab thickness changes. A 22,000-sq.-ft. area of the deck has a slab thickness of 4 ft.; 28,000 sq. ft. of the deck have 2-3-ft.-thick slabs.

Dokaflex accommodated typical deck thicknesses with fast setup and teardown. 10k frames allowed for similar versatility; these frames, which offered stability on sloping ramps of the parking garage, were also used under the 4-ft. thick deck area, making for an efficient material setup and usage plan.

The Professional

“Having Doka’s new Denver location allowed us the flexibility to use different systems for the changing site conditions. Also, we were able to get additional equipment and pieces on short notice versus shipping them in from other offices.”

Eddie Tejeda, Project Manager of Operations, Naylor Concrete & Steel Erectors, LLC
The Emerald Rises Jewel-Like Using Cantilevered Decks

The Pike Place Market neighborhood in Seattle has long been a favorite destination for visitors and residents alike.

The Emerald, a 41-story tower that is the first new construction condominium to be built within a block of the market in over a decade, offers 265 residential units with views of the surrounding city and the waterfront. Glass window wall creates floor-to-ceiling windows within the units. Building amenities include common rooms, outdoor terraces, and five levels of below-grade parking and ground-level retail.

Because the site at ground level is small and irregular, Hewitt Architects designed the tower to be larger toward the top. The floor plates increase in size and cantilever over the neighboring Broadacres Building, to the south. The upper floors take on the shape of the neighborhood’s shifting street grid pattern.

Andersen Construction used Doka’s SCP Core Climber, Xclimb 60 Perimeter Screens and Table Lifting System (TLS) material lift. The project also required a design-build shoring system to carry a cantilevered, post-tensioned deck at the building’s 17th story.

Tower construction had 5-day deck cycle times, so it was critical for formwork jump days to go smoothly. The SCP Climber and Andersen’s core crew jumped and reset the system with ease, banking units from day one. The hydraulic stripping corners and the reliability of the system made the SCP Climber an excellent fit for the project. Xclimb 60 Perimeter Protection, a full-area enclosure around the perimeter of the building, provided safety and weather-protection. To cycle the shoring gear, Andersen used the TLS climber, an electric lifting platform that allows formwork to be cycled between floors without the use of a crane. Using the TLS lift freed up valuable time on the crane hook for other trades, allowing the deck crew to be self-sufficient.

The Emerald is designed to be LEED Silver.

The Facts

Project name: The Emerald
Location: Seattle, Wash.
Construction work performed by: Andersen Construction
Architect: Hewitt Architects
Developer: Daniels Create World Seattle LLC
Type of structure: Residential high-rise
Stories: 41 stories
Cycle time: One floor a week
Scheduled completion: Estimated March 2020

Doka Equipment Used:
- Core: Super Climber; Top 50
- Other: Xclimb 60 Protection Screens, Staxo 100 Towers, custom platforms

The Challenge
- The design-build shoring system, used during construction of the post-tensioned deck, was a large undertaking.

The Solution
- Andersen and Doka coordinated the work associated with the design-build shoring system, allowing table formwork to be pre-fabricated at Doka’s location, delivered and flown into place as a just-in-time delivery. This minimized activity on an already condensed cycle and addressed logistics challenges on the project site.

The Professional
“The partnership and ability to coordinate operational tasks with Doka has been a value, both from a safety and crew efficiency standpoint, of this challenging urban high-rise project,” says Luke Hart of Andersen Construction. The Xclimb 60 Perimeter Protection allows our team to go home at night feeling confident that the project and surrounding community will be safe. In an area of Seattle where 50-65 miles-per-hour winds are a regular occurrence, these screens give our team peace of mind that all the materials on the job will remain on the job.”

Luke Hart, Andersen Construction
The Facts

Project name: RSG Hangar
Location: Utopia, Texas
Construction work performed by: T&D Moravits Concrete Contractors, San Antonio, Texas
Architect: John Grable
Type of structure: Architectural columns for large airplane hangar
Height: 28 ft. 4 in.
Sq. Ft: 2976 sq. ft.
Scheduled completion: Summer 2019

Doka Equipment Used: Frami Xlife

The Challenge

- Each 28-ft. tall column is stepped at three points along the column’s elevation. The columns also required an architectural board finish. Form panels were required to hold a timber liner and also follow the shape of the column’s steps, while maintaining minimal reach-down for finishing.

The Solution

- The Frami S Xlife panel lightweight design allowed for the extra weight of the timber liner, keeping the ganged panels easy to maneuver with the crane. The imperial steel fillers provided a form with the exact dimensions to accommodate the timber liner without the need for job-built fillers.

The Professional

“The versatility of the Doka Frami Xlife system was the key factor in T&D Moravits’ adoption of the formwork for the large buttress columns. The customer service provided by Joe Sandoval was excellent, from assisting with the initial project planning through hands-on field training, as our crews implemented the project plan leading to the successful completion of the hangar.”

Brian Lennard, Vice President, T&D Moravits
RSG Hangar Features Structural Piers with an Architectural Finish

The RSG Airplane Hangar project entailed new construction of a 32,000 sq. ft. private airplane hangar in Utopia, Texas.

The scope of work included 16 stepped concrete buttresses, installed as four column sets, which support the hangar’s roof structure.

The buttresses’ stepped elevations run along the exterior of the building and are a prominent part of its design. Because of this, an architectural finish was desired. Board forms were used to create the finished surface.
The Facts

Project name: Harrison Albany Block Project (or "The Smith")
Location: Boston, Mass.
Architect: CBT
Developer: Leggat McCall Properties and joint venture partner Multi-Employer Property Trust (MEPT). Advisor: Bentall Kennedy, Development Advisor: Bozzuto Development Company
Type of structure: Mid-rise mixed use (with underground parking)
Height: 168 ft
Stories: 18 Stories
Sq. Ft: 790 sq. ft.
Construction time: 10 months

Doka Equipment Used:
- Shear Walls and Columns: Frami Xlife
- Reshoring: Using Eurex 450 for Reshoring
- Shoring: Dokadek with Drop Head XF, and Framimatic Tables

The Challenge
- The contractor needed a solution for the mixed-use design that is a combination of new and renovated space. It also a located in the busy city environment of Boston.

The Solution
- Doka provided Frami Xlife for the shear walls and columns and Eurex 450 for reshoring. Dokadek with Drop Head XF, and Framimatic Tables were also part of the intricate solution.

Bringing New and Renovated Space to Boston

The Harrison Albany block project is a mixed-use complex with approximately 700,000 sq. ft. of new and renovated space.

Located in Boston, Mass., the complex occupies a 3.1-acre site. It will feature 650 new apartment units, high-end retail, cultural space and restaurants. It will also provide open space for the neighborhood. The project derives its name from its boundary streets: Harrison Avenue, Albany Street, East Dedham Street and East Canton Street.

The site’s two buildings have a maximum height of 120 ft.
The project will improve 4.3 miles of I-285 from west of Roswell Rd. to east of Ashford Dunwoody Rd., and 6.2 miles along SR 400 from the Glenridge Connector to Spalding Dr. The improvements include eastbound and westbound collector-distributor lanes on I-285, and northbound and southbound collector-distributor lanes on SR 400. The new lanes will feed into the new interchange and NPC will construct 32 bridges throughout the project. The project also includes pedestrian and bicycle improvements. The transformed interchange will ease travel for more than 400,000 drivers who use the interchange daily.

The work on the interchange will include girder as dance floor (the working area of a bridge deck) support with pre-assembled custom tables and pre-assembled custom soffit boxes. Then, 91-ft.-long Steel Girder straddle cap forms with interior Frami panels for cap shaping will be shipped. Double-faced 4-ft. tall Girder is used to support loads and minimize thru-tube depth from top of column. Frami is used as side forms for multi-span, straddle and hammerhead caps to allow full access for rebar installers. Also, Steel Girder Hammerhead forms will be shipped to the site to support A-frames, Gantry Beams, and Framax solutions for an offset cantilever hammerhead.

The project is conveniently located 35 minutes from Doka’s yard in Lawrenceville, GA and the standard material used is readily available. Access to Doka is easy for any quick site needs. The customer felt Doka went over and above when coming up with schemes and pricing for the bid phase. It was considered an advantage to have in-house Professional Engineering service in Doka. It’s important to point out that initially, Doka was not awarded the hammerhead caps. Later, through the design phase and then delivery, the customer decided that Doka’s design was better, and Doka was awarded the hammerheads with dancefloor support.

The Transform 285/400 Interchange Improvement Project is a design-build-finance project in Atlanta.
The Facts

Project name: Amrit Ocean Resort & Residences
Location: 3100 N Ocean Dr. - Singer Island - West Palm Beach, Fla.
Construction shell work performed by: JA&M Developing
Architect: S&E Architects
Developer: Creative Choice Group
Type of structure: Condo’s & Hotel
Stories: East Tower 19 stories & West Tower 20 stories
Scheduled completion: 10 months

Doka Equipment Used:
- Core: Framax
- Reshoring: Dokaflex post shores
- Shoring: Truss tables, Dokaflex, 10kip shoring
- Other: Frami column forms

The Challenge
- The contractor needed a fast shoring system for the different floor heights to meet the demanding schedule. Additionally, the contractor wanted to use truss tables everywhere possible to reduce labor and required a quick wall system to accommodate the different floor heights.

The Solution
- The contractor chose 10 kip shoring for the high framing areas and Dokaflex shoring. Doka was able to cover 95% of both building slabs with DokaTruss tables, therefore achieving the customer’s request. Doka designed small tables, which were used on the corner balconies.
The Amrit Ocean Resort & Residences are ultra-luxury condos located in Singer Island, FL. The destination offers tranquility, peace, happiness and comfort to the residents and guests.

The development is comprised of two towers, Tower P (Peace) and Tower H (Happiness), totaling 351 units of both hotel suites and residences. A 100,000 sq. ft. area was designated for the building and the amenities, such as a meditation garden and outdoor yoga studios. Additionally, a personalized roadmap to wellness is offered with 24/7 support in the form of a Personal Wellness Assistant.

Doka was involved with the project from the beginning with JA&M Developing. Doka provided the customer with budgeting and pricing along the way, and with preliminary drawings which allowed the customer to sell the project before completion. Doka’s fast and efficient solutions and forming systems produced labor savings for the contractor.
Superdek, The New Superhero of Slab Formwork

The APEX located at 7272 Wisconsin Avenue in the heart of Bethesda sits above the existing Bethesda Metro Rail station and will also include the new Purple Line light rail Bethesda station.

Located at the intersection of Wisconsin Avenue and Elm Street, the APEX includes a 26-story, 358,000-sq.-ft. office tower and two residential towers of 30 and 32 stories with 456 units. Within the total area of 937,000 sq. ft. it will also include 750 parking spaces, ground level retail and outdoor public and private spaces.

The concrete subcontractor Miller & Long has worked with Doka for almost 20 years and this long relationship was key to successfully executing this large and complex project. Miller & Long was confident in Doka’s technical solutions, quality equipment and service. This project is the first use of Superdek, Doka’s new handset drop head grid beam slab formwork system.

Phase one of the project is scheduled to be completed in the third quarter of 2020 and the remainder completed in early 2021.

The Facts

Location: Bethesda MD
Construction work performed by: GC - Clark Construction Concrete - Miller & Long
Type of structure: Concrete frame with three floors below grade, seven level podium and three towers of 26, 30 and 32 stories
Cycle time: Three weeks per floor for the subgrade and podium levels. One week per floor for the towers.
Sq. Ft: 937,000 total
Doka Equipment Used:
- Walls: Framax with D-22 and A-frames
- Cores: Framax and Super Climber
- Façade: Framax and SKE 100
- Shoring: Superdek

The Challenge

- The immediate challenge was to get the contractor to try something new. In addition, the Purple Line area of the project was challenging with walls 30 ft. tall and slabs 3 ft. thick. The schedule was also very tight.

The Solution

- Using the new handset drop head formwork systems worked well for this project. With a large grid/prop spacing, interlocking joists and stringers and a unique slab edge forming solution – the system provided increased productivity with less labor and maximum safety. Doka worked closely with contractor Miller and Long on this first use of Superdek. Both had knowledge and insight they could share to make the project a success.
"The design of the drop head of Doka’s new Superdek system has a huge safety advantage. By using a wedge and placing it diagonal to the beams, it is clear when the head is fully engaged for setting and easy to hit with a hammer when stripping. I’ve had 18 years of solid service, great solutions and their equipment is always top of the line. This time is nothing different."

Phillip Nunes, Superintendent, Miller & Long
We're Forming America's Infrastructure: See our latest YouTube video.