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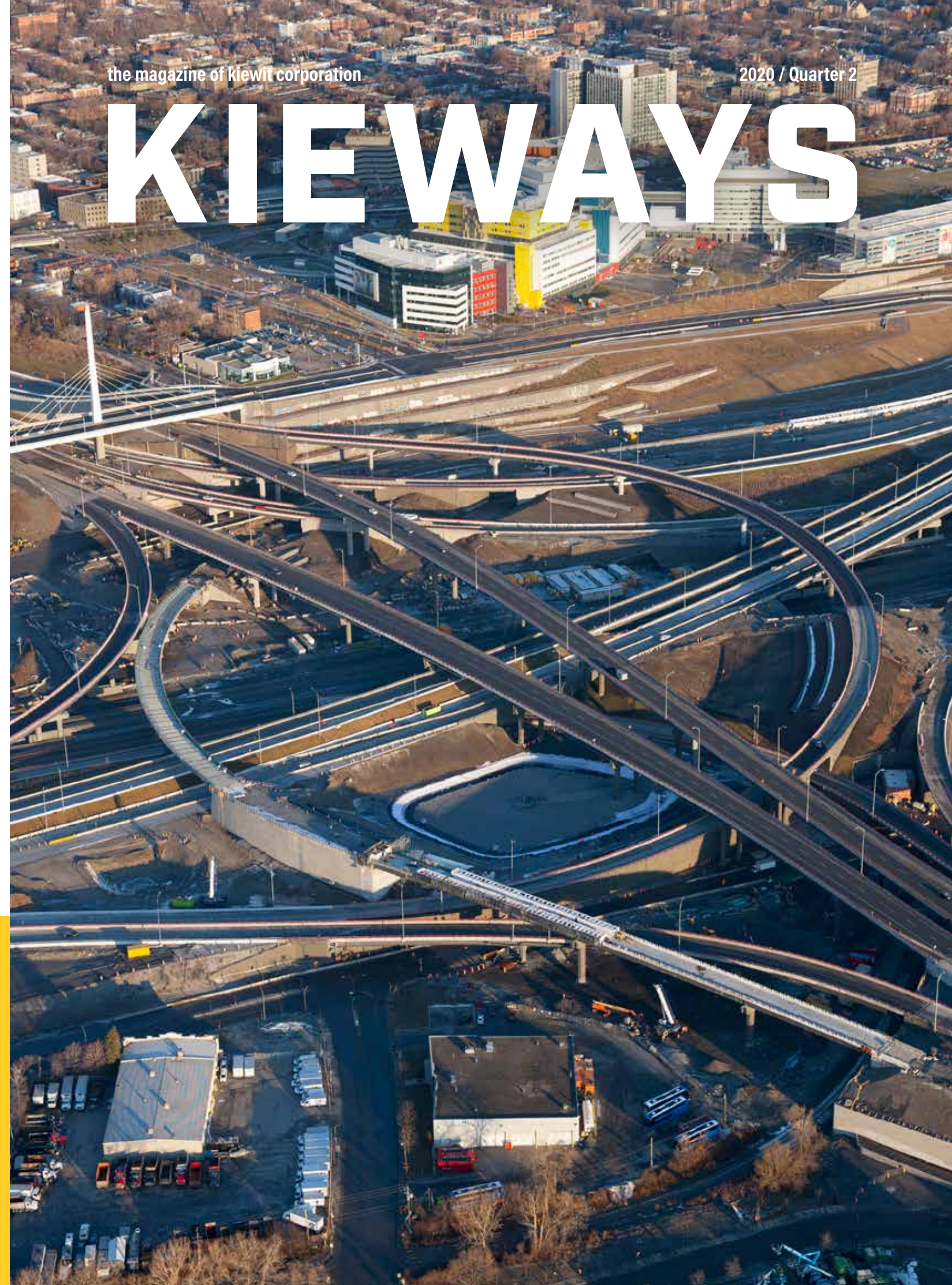


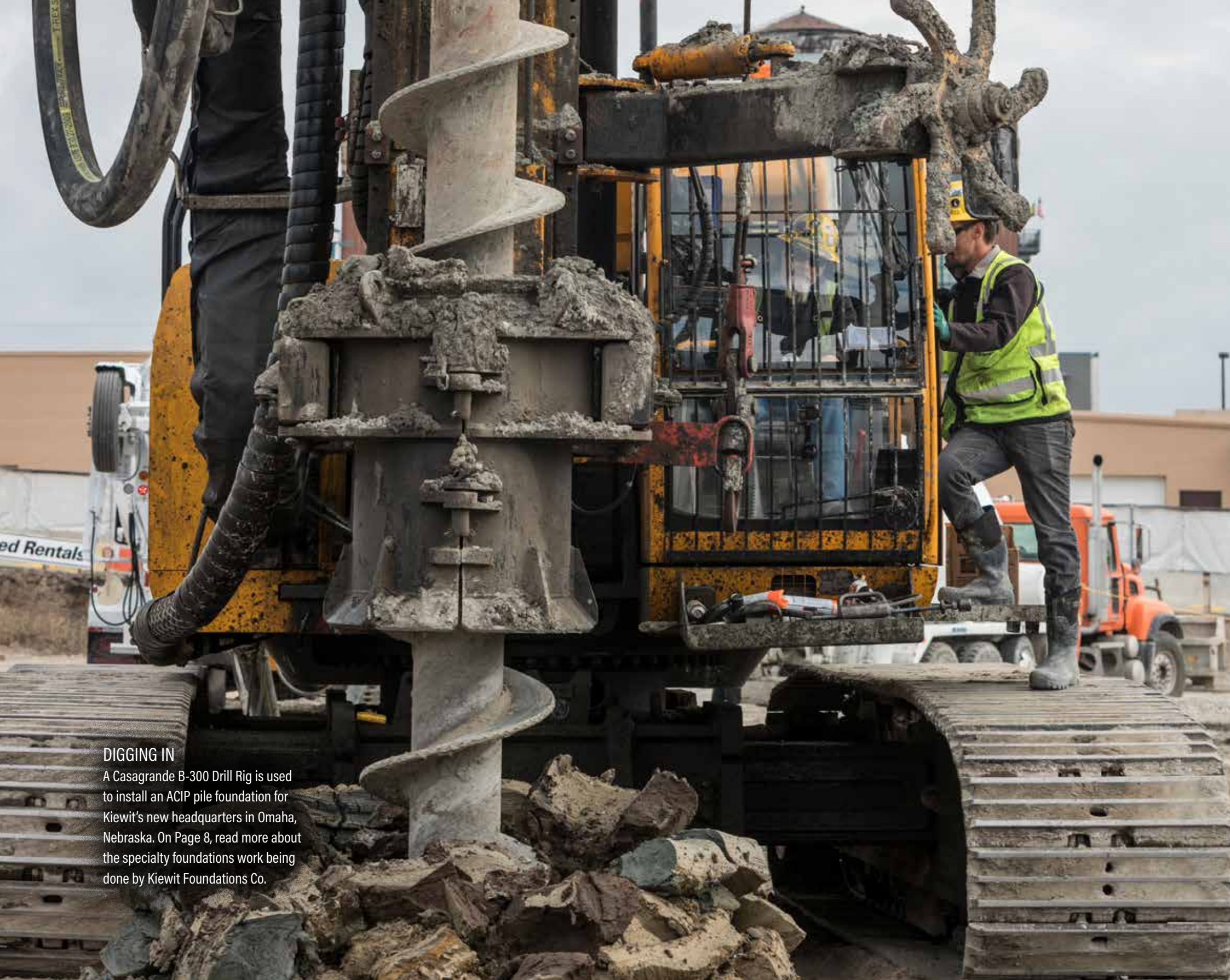
SINCE 1884

the magazine of kiewit corporation

2020 / Quarter 2

KIEWAYS





DIGGING IN

A Casagrande B-300 Drill Rig is used to install an ACIP pile foundation for Kiewit's new headquarters in Omaha, Nebraska. On Page 8, read more about the specialty foundations work being done by Kiewit Foundations Co.



Kiewit is one of North America's largest and most respected construction and engineering organizations. With its roots dating back to 1884, the employee-owned organization operates through a network of subsidiaries in the United States, Canada and Mexico. Kiewit offers construction and engineering services in a variety of markets including transportation; oil, gas and chemical; power; building; water/wastewater; industrial; and mining. Kiewit had 2019 revenues of \$10.3 billion and employs 23,000 staff and craft employees.

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KIEWAYS

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MANAGING THROUGH DIFFICULT TIMES

The first several months of 2020 certainly have been anything but typical. No one could have ever predicted the impact COVID-19 would have worldwide, let alone on our industry.

Despite the many challenges and unexpected turns, I could not be prouder to be part of an organization that has stepped up and that continues to deliver for our partners, clients and each other.

As we wrap up this latest issue of Kieways, virtually all of our projects are operating at full capacity, having been designated as essential operations. With that incredible responsibility, we've adapted how we plan and work, and implemented new, better protocols to help keep each other and the communities in which we operate safe. So far, we're doing well — a testament to our people and their commitment to safety and quality. Read more about Kiewit's COVID-19 response on Page 6.

Through it all, projects continued to hit major milestones on time. On Page 14, read about a few of these, including successful delivery of the first module at the Calcasieu Pass LNG export project.

Also included in this issue is a story about the Turcot project. Talk about complex! Built in the 1960s, Turcot is the largest interchange in Montreal, Quebec. Read about this amazing project on Page 16.

Finally, learn about Kiewit Foundations, a dedicated team of specialty foundations experts focused on geotechnical services and equipment for nearly every environment and industry market. Read about it on Page 8.

In closing, I'd like to extend my gratitude to all our Kieways readers and wish you all the best as we continue to persevere through these challenging times. Stay healthy and safe.

RICK LANOHA
Chief Executive Officer



BIG WIN IN MEXICO

Kiewit Energy de Mexico is celebrating a major milestone that brings its Los Ramones Energy Center project one step closer to completion. Read about it and other big project wins on Pages 14 and 15.

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A Kiewit-led team is finishing up construction on a major transportation hub, one of the largest in Canada.

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14 PROJECTS CELEBRATE BIG WINS

Kiewit projects have a lot to celebrate after achieving major milestones.


KIEWIT NEWS

What began in 1884 with two hard-working brothers has grown into a construction and engineering industry leader. As a multi-billion dollar organization, Kiewit can tackle projects of all sizes, in any market. Here's a brief collection of recent news and information from around the company.

OUR MARKETS:

-  BUILDING
-  INDUSTRIAL
-  MINING
-  OIL, GAS & CHEMICAL
-  POWER
-  TRANSPORTATION
-  WATER/WASTEWATER

OUR VALUES:

-  PEOPLE
-  INTEGRITY
-  EXCELLENCE
-  STEWARDSHIP

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KIEWIT MOVES UP ON ENR'S TOP CONTRACTOR AND TOP DESIGNER LISTS

Kiewit Corporation was ranked No. 5 overall in Engineering News-Record's 2020 Top Contractors rankings, up one spot from last year's No. 6 ranking. On ENR's list of Top 500 Design Firms, Kiewit Corporation was ranked No. 23, up eight spots from 2019 rankings. Additional rankings include:

NO. 1

Transportation
Domestic Heavy

NO. 2

Power

NO. 4

Petroleum
New Contracts



AN ENTIRE DECADE ON ONE TOP EMPLOYER LIST

In April, Kiewit was named to the Best Workplaces in Canada list for the 10th year in a row. Kiewit ranked No. 13 on the list of companies with 1,000 or more employees.

The Best Workplaces in Canada list is compiled by Great Place to Work Canada. This year's list received over 400 registrations and over 80,000 employees participated in the 2020 Best Workplaces in Canada survey.

TOP FORTY UNDER 40

Kiewit's Megan Armstrong was named to Ingram's Kansas City's 2020 Forty Under 40 list. Armstrong is an executive vice president of Kiewit Engineering Group Inc. and oversees the industrial engineering business.



"As a female leader, I'm passionate about empowering and mentoring women with the goal of increased representation at all levels," Armstrong said in an Ingram's article recognizing honorees. "Through my achievements, I have been able to advocate for, and help advance, the women of Kiewit."

LENDING A HAND

The Nashville Connector project team knew they needed to help after a deadly tornado struck central Tennessee, killing 24 people and leaving a path of destruction and downed power lines. Kiewit Infrastructure South Co. along with project partners, Thompson CAT Machinery and J&D Hauling, pooled resources and sent forces with heavy equipment to help remove large, heavy debris after the storm.

The crew members volunteered their time and donated pallets of bottled water to first responders. Employees also started a fund-raising effort that raised \$5,400 out of their own pockets to help those impacted.

KIEWIT KIDS' ACTIVITIES

Looking for activities to keep your family busy? Check out the Kiewit Kids' Activities library for coloring pages, scavenger hunts and more at newsroom.kiewit.com/kiewit-kids-activities.





PERSEVERANCE IN A PANDEMIC

Increased toilet paper production capacity at a tissue plant. Larger, cleaner power generation for urban and rural communities. A plant to manufacture large-scale plastic pellets to make billions of consumer goods. Increased capacity and capabilities at a leading children's hospital.

These are just a sampling of Kiewit's construction projects across North America designated as essential by government orders during the COVID-19 pandemic. To fulfill this important obligation to clients and communities, the company has implemented protocols and practices to protect the health and safety of employees and maintain business continuity.

No one could have predicted the size and scale of this global crisis. However, unprecedented times call for strong, swift measures. And that's exactly what the company has done.

FLEXIBLE, FAST RESPONSE

As the COVID-19 threat became more real in North America, Kiewit established a cross-disciplinary group

of 30-plus internal subject matter experts to form its COVID-19 response team. From that, a fully dedicated 10-person task force mobilized to lead the company's overall pandemic response.

The response team actively monitors every facet of the pandemic, including disease progression; federal, state, provincial and local government actions; CDC, Public Health Agency of Canada and WHO responses; supplier and supply chain risks; and prevention and containment measures to maintain business operations.

Kiewit also has ongoing communications with leading health experts and public officials. That starts with ongoing discussions with the University of Nebraska Medical Center's chief of the Division of Infectious Diseases, and medical director of Infection Control & Epidemiology. UNMC is a world-renowned institution known for its work with infectious diseases. Input from these consultations is incorporated into all company guidance.

In addition to Kiewit's existing site crisis management

plans, business units and projects also expanded and implemented customized pandemic response plans to ensure a consistent, comprehensive response to COVID-19 scenarios.

CONTROL WHAT'S CONTROLLABLE

From the start, Kiewit has worked closely with employees, subcontractors, suppliers, clients and others to ensure that anyone who is ill or believes they have been exposed to COVID-19 refrain from entering offices and projects. This includes, in some locations, requiring pre-and post-access health questions and pre-access and periodic temperature screenings. Kiewit also tightly restricted visitor access and required most office personnel to work remotely.

The company also established dedicated processes and personnel, trained to use detailed exposure intake questionnaires, to track all confirmed and presumptive positive COVID-19 cases, and implement strict cleaning, quarantine and return-to-work protocols.

CLEAN AND DISTANCED

Good hygiene habits remain one of the best defenses from COVID-19. Early on, projects increased access to handwashing stations, hand sanitizers and disinfectant wipes. Increased signage serves as visual reminders for people to wash hands frequently and refrain from touching their faces. Projects also have instituted new end-of-shift glove sanitization and storage procedures.

With the guidance and direct involvement of experienced industrial hygienists, Kiewit also implemented more stringent office and project site cleaning and hygiene protocols in all locations and developed specific viral contamination protocols to address COVID-19 exposures.

Kiewit has developed procedures and best practices to ensure employees practice social distancing (separation of 6 feet or 2 meters), including protocols for transporting personnel on job sites, using busing/shuttles and driving/riding in company trucks, vans and buses. On projects, the company is providing appropriate masks for specific operations that may require closer proximity to ensure the safety of personnel, and other face protection tools for daily operations.

In many cases, Kiewit's health and safety protocols on essential operations are more stringent than those shared by the CDC and government agencies.

Kiewit also rolled out, and updates daily, its robust COVID-19 resource center with dozens of important communications, regularly updated protocols, business

planning tools, best practices, signage/flyers and other important resources.

TECHNOLOGY CONNECTIONS

To help protect employee health, the company restricted domestic and international travel unless approved by executive management. Kiewit also postponed social gatherings and in-person training, including at its Kiewit University in Omaha, Nebraska, and Craft Training Center in Denver.

To fill the void, the company has maintained connectivity through a wide array of technologies – many the company had in place but are now maximizing for virtual meetings, trainings and events. The team is learning new ways to connect without travel – and establishing a variety of new, better practices it believes will make it even stronger and more efficient when the pandemic subsides.

Kiewit understands that what its outstanding people do is important, even critical to sustaining the needs of society. As long as it can operate safely and deliver high-quality work, Kiewit will continue to support its clients and people across North America. COVID-19's impact will be felt for years to come, especially across the construction and engineering space. But every challenge brings opportunity, and Kiewit will be better for it. **K**



Kiewit employees send a heartfelt thank-you message to the men and women working on essential projects.



DIGGING IN

Kiewit pioneers a deeper path down the specialty foundations market.

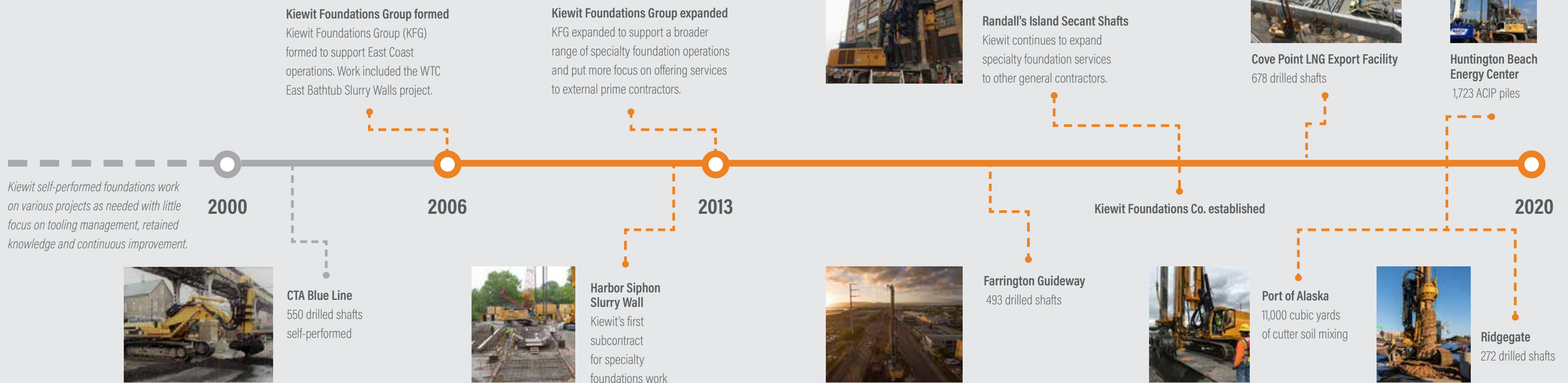
It's easy to spot one of Kiewit's iconic construction projects. They're often large, complicated and important to our communities, the economy and even our day-to-day lives. What you don't see is the complexity of the work happening below grade — the specialized techniques used to improve the sub-soils or to transfer the weight of a structure deeper below ground for better stability and safety. Kiewit now has a dedicated team of specialty foundations experts focused

on geotechnical services and equipment for nearly every environment and industry market.

"The more diverse our capabilities and techniques, the better suited we are to react to the unexpected," said Project Manager Chris Parinella.

That experience is important because soil differs from region to region and, sometimes, within a matter of feet

A history of specialty foundations at Kiewit



Kiewit Foundations installed 1,022 non-vibratory stone columns at the new Kiewit Headquarters in Omaha, Nebraska. Each is 24 inches in diameter with a depth ranging from 20 to 30 feet. Kiewit is the only contractor that has installed non-vibratory stone columns in North America.

across a single jobsite. That means there can be a lot of unknowns and risk to manage.

Kiewit Foundations Co. is currently working on 16 projects across North America. Its services include structural and ground improvement solutions ranging from drilled shafts and stone columns to micropiles, driven piles, rigid inclusions and soil mixing.

While Kiewit Foundations Co. is a fairly new arm of the company, Kiewit's experience as a specialty foundations contractor is not.

"We have selectively self-performed foundations work for a long time," said Kiewit Foundations Co. President Chad Jessen. "The decision to invest in and commit to growing Kiewit's presence in the specialty foundation market was driven by our desire to have better control over cost and schedule for our clients."

Jessen says that in the past, Kiewit has experienced mixed results from the marketplace in terms of quality, schedule, cost-certainty or even finding someone who is capable of building the work.

"The current market is divided among a few large firms and numerous smaller, niche service companies. Kiewit's ability to compete as a local specialty contractor with global resources allows us to participate in this market in a way no other company can," said Jessen.

Self-performing the specialty foundations scope on Kiewit projects ensures Kiewit Foundations Co.'s growth within the company, but Jessen says the need goes beyond that.

"We also see demand for our services outside of Kiewit, working for other general contractors as a subcontractor and providing them the differentiating service we are able to provide ourselves," he said, which also creates new market revenue and profit for Kiewit.

Jessen explained foundations work has a large barrier to entry — it requires expensive, specialized equipment and the ability to manage those resources effectively. Kiewit's large, diverse fleet is up for the challenge.

"Today, we have over 30 specialty drills that can install a wide array of deep foundations or ground improvement elements," said Jessen. "Our drilling fleet is accompanied by

a wide range of pumps, batch plants, cranes, pile hammers and other specialty support equipment, not to mention \$20 million of tooling."

Many of those tools and equipment are fully loaded with new, cutting-edge data acquisition systems, something Parinella says also helped Kiewit Foundations Co. to get off on the right foot.

"As we move forward, there's always more and more need for data from the engineers and owners who want to see it, but also within Kiewit. We're a very data-driven company," he explained. "And this work requires a different kind of data than we've collected over the years."

Competing in North America's foundations market also requires construction-focused engineering and a fiercely loyal, specialized workforce that goes where the work needs to be done.

"We continue to hire and expand our team," said Jessen. "Virtually all of our drillers and other skilled craft are consistent and long-term team members who travel project to project with us. Our engineering team has also grown

rapidly, and we now have about 60 in-house geotechnical engineers within Kiewit Engineering Group who have regional expertise and support our growing business," he said.

Many of those experts, like Parinella and Kiewit Foundations Co. Sponsor Andy Anderson, are veterans in their field who saw an exciting opportunity at Kiewit for both the foundations industry and their own career growth.

"Over my most recent 25 years in foundations, Kiewit was probably my biggest client. The company I worked for, which is a big player in the foundations industry, often tried to emulate Kiewit," recalled Anderson. "They would ask, 'How would Kiewit do this?' That's a big draw. Foundations

professionals find strength in the Kiewit name."

Anderson says he never viewed Kiewit Foundations Co. as a startup, even in its earliest days.

"I viewed it as part of the Kiewit organization. The breadth of resources — people and equipment — is unmatched. The footprint that Kiewit has allows it to compete everywhere. It's very diversified and, in specialty foundations, only the top tier have that kind of footprint," said Anderson.

According to Greg Boonstra, another foundations professional who joined Kiewit a year ago, that footprint is getting even bigger.

"The speed of growth and willingness to invest is



Kiewit Foundations Co. solutions



DRILLED SHAFTS



ACIP/DISPLACEMENT PILES



STRUCTURAL SLURRY WALLS/CEMENT BENTONITE PANELS



CUT-OFF WALL



MICROPILE



STONE COLUMNS



SOIL MIXING



DRIVEN PILES



1. something that I haven't experienced before while working for other specialty foundation contractors," said Boonstra. "I've been involved with the Central 70 project for the last year and I've been happy and proud to be part of this megaproject in my hometown of Denver. The opportunity to work for Kiewit was appealing to me because Kiewit builds some very complex and iconic projects."

For Parinella, a former mining engineer, consultant and construction manager with years of experience in geotechnical work and equipment, it was Kiewit's entrepreneurial spirit that was the biggest draw. He joined Kiewit after helping grow another company from the ground up.

"That experience was exhilarating, but it was a lot of effort, and we didn't have the full interaction with the parent organization that we have here at Kiewit," he recalled. "Everyone is committed to making this a success. That coupled with Kiewit's reputation and its determination to get things done right, it's not hard to imagine what's on the horizon."



2. For structural support, 105 augered cast-in-place (ACIP) piles were drilled at the Kiewit headquarters in Omaha, Nebraska. Each was 24 inches in diameter and 56 feet deep. 2. Thirty-two secant pile shafts were drilled for the pump station shaft on the Central 70 project in Colorado. Each secant pile shaft was 38 inches in diameter and 60 feet deep. The team is also installing 615 grout columns and 1,123 drilled shafts on the project.

The potential is especially easy to imagine when you consider the amount of foundations work that runs across all of Kiewit's seven core business markets. Market type, geography and equipment can be obstacles for other key players in foundations work, but that kind of diversification is built into Kiewit's overall business model. According to Jessen, it's the perfect environment for Kiewit Foundations Co. to dig in and get the work done.

"As a general contractor we understand the crucial nature of this work and the need to get out of the ground fast and with the highest quality. Kiewit brings a client-centric approach to foundations because we are the client most of the time." **K**

PROJECTS CELEBRATE BIG WINS

Kiewit projects have had a lot to celebrate lately, achieving major milestones on time or ahead of schedule. Read on to learn about some of these big wins.

CALCASIEU PASS

In Cameron Parish, Louisiana, the Calcasieu Pass LNG export project received its first module from the Kiewit Offshore Services site in Ingleside, Texas. The module was delivered in April, two days ahead of schedule. Under the terms of the engineering, procurement and construction (EPC) contract, Kiewit Louisiana Co. will design, engineer, construct, commission, test and guarantee the facility for Venture Global Calcasieu Pass, LLC. Calcasieu Pass will be capable of handling 10 million tonnes per annum. The facility is scheduled to be up and running in 2022.

KIEWIT REGIONAL OFFICE TOPPED OFF

Representatives from the construction team, Kiewit and the local Denver community gathered in early March to top off the new Kiewit regional headquarters in Lone Tree, Colorado. The highest steel beam, signed by many Kiewit employees who will work at the new facility, was set in place atop the new structure. Kiewit Building Group Inc. is building the new regional headquarters, which is scheduled for completion in 2021.



LOS RAMONES ENERGY CENTER

Kiewit Energy de Mexico safely first-fired both GE H-Class gas turbines at the Los Ramones Energy Center in Mexico. With this milestone achieved, the project is 99% complete. Once in operation, the facility, located in Los Ramones, Nuevo Leon, will become the most efficient gas-fired peaker plant in Mexico.

MODULES EXPECTED EARLY AT GCGV

The Gulf Coast Growth Ventures LLC (GCGV) project in Gregory, Texas, will receive another shipment of critical path utilities modules soon. The water treatment and boiler feed water modules sailed ahead of schedule on April 14. A joint venture between Kiewit Energy Group Inc. and Chiyoda International Corporation (CKJV) is completing the engineer, procure and construct contract for the greenfield 1.8 million tonnes per annum ethylene plant. The multi-billion dollar facility will contain the world's largest ethane steam cracker unit. Its heavily modularized design includes 26 pipe rack modules, 10 large process and utility modules, and four steam cracking furnace modules. **K**





TURCOT PROJECT NEARS COMPLETION

For the past six years, crews have been working to improve the durability and safety of the Turcot Interchange and to create better links between neighborhoods in the southwest part of downtown Montréal, Quebec.

Scheduled for completion by the end of 2020, the project is considered one of the largest road projects in Quebec, as well as the most complex road infrastructure project currently underway in North America in terms of work sequence.

The Turcot Interchange was originally designed and built in the 1960s as part of Montréal's major infrastructure plan leading up to World's Fair Expo '67. When it opened, Turcot was Canada's highest elevated interchange, designed to allow ships and trains to pass under the freeway.

In the early 2000s, the old interchange began to show signs of deterioration, leading a few years later to a decision by the ministère des Transports du Québec (MTQ) to construct a new interchange. In 2015, the KPH Turcot partnership, consisting of Kiewit, Parsons and CRH, won the design-build contract and took on the challenge of completely rebuilding the aging infrastructure.

Prior to the design-build contract, the client had awarded 20 contracts for associated work on the Turcot project site, including stand-alone bridges that had to be integrated into the new infrastructures.

Kiewit, as lead member of the KPH Turcot partnership, was responsible for all construction and project management systems. Parsons was responsible for managing the design of the project and worked as an integrated team with WSP, the main designer, to carry out parts of the design, including the Lachine Canal bridge. WSP was responsible for design, environmental compliance, the integration of landscaping and urban design. They brought expertise to the design

of pavement, drainage, bridge decks, traffic management, road lighting, electrical and intelligent transport systems. CRH had responsibility for pavement and road accessories construction, as well as the supply of construction materials.

Each day over 300,000 vehicles travel through Montréal's Turcot Interchange. It is one of the biggest interchanges in Canada and a hub for traffic that connects three provincial highways as well as the Champlain bridge, which provides important access to the island of Montréal. It is an essential link between Montréal's Pierre-Elliott Trudeau International Airport and the city's downtown.

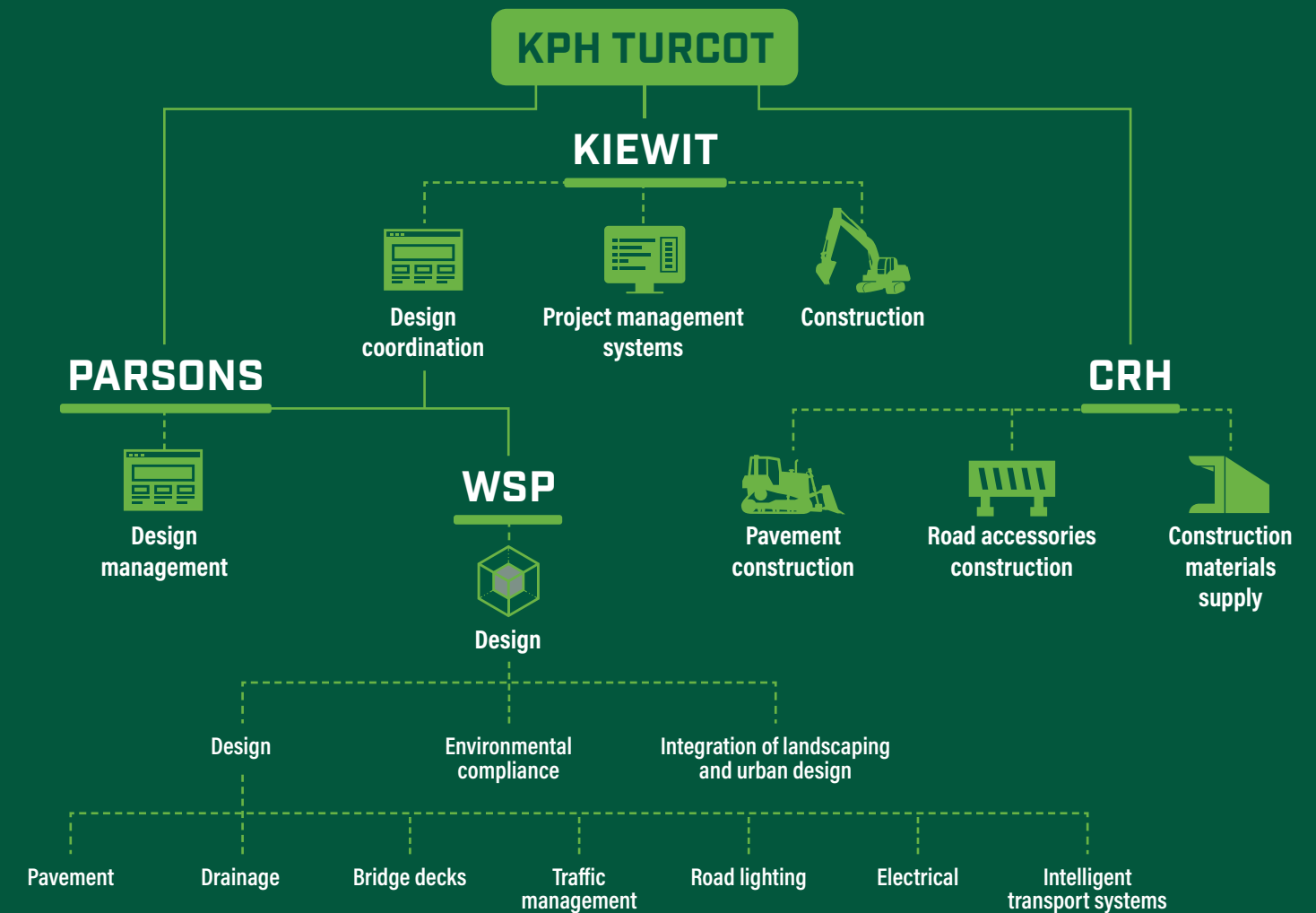
"Working on such a large site in a sensitive urban environment was a truly rewarding experience, and we all learned a lot from it," said Cloé Doucet, assistant to the roadway construction manager.

The construction site extends over nearly 8 kilometers from east to west, and 2 kilometers from north to south. The project included the reconstruction of the Turcot Interchange as well as three other interchanges: Angrignon, De La Vérendrye and Montréal West. It also included the relocation of Highway 20 lanes and Canadian National (CN) railway tracks.

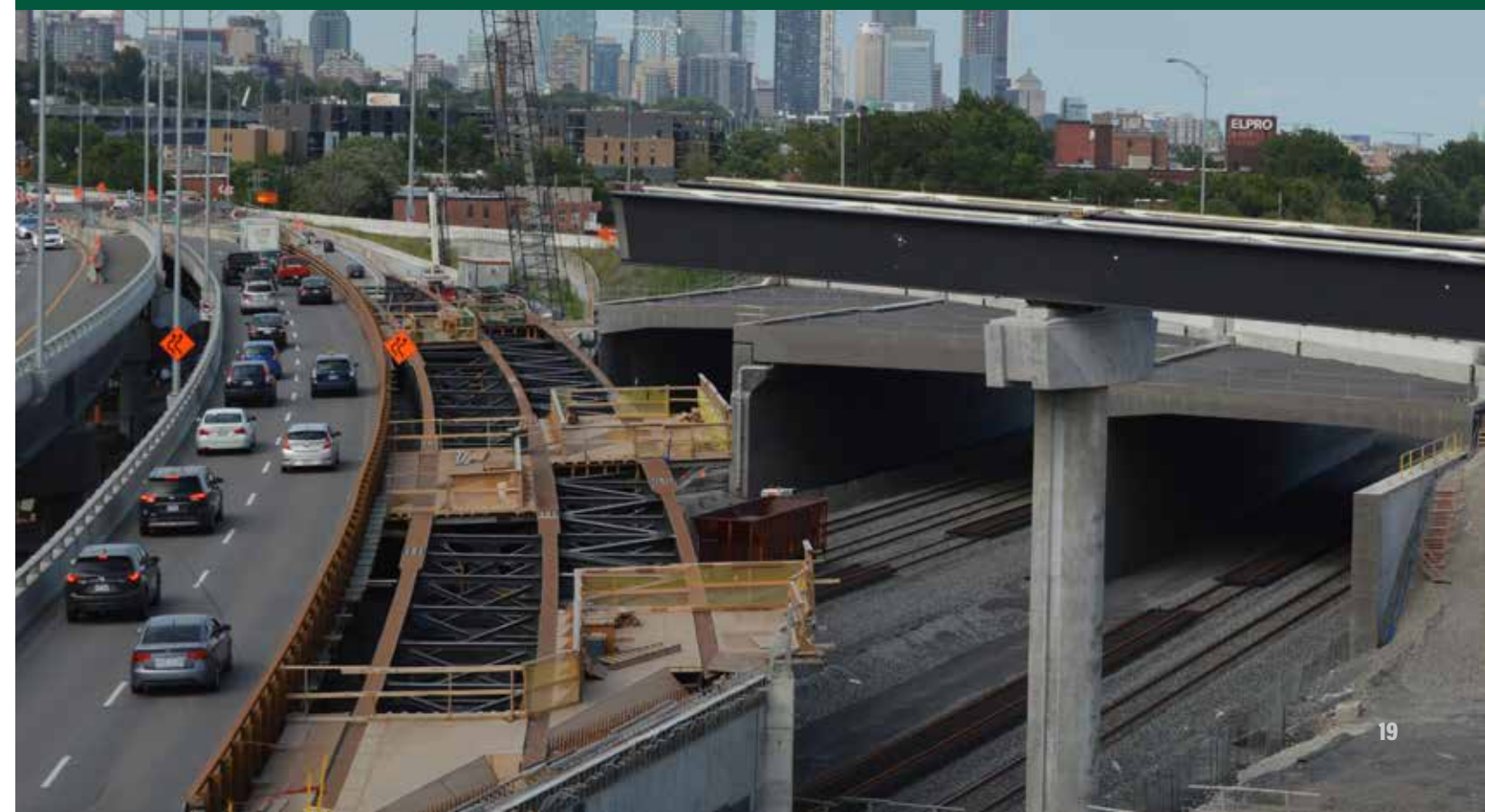
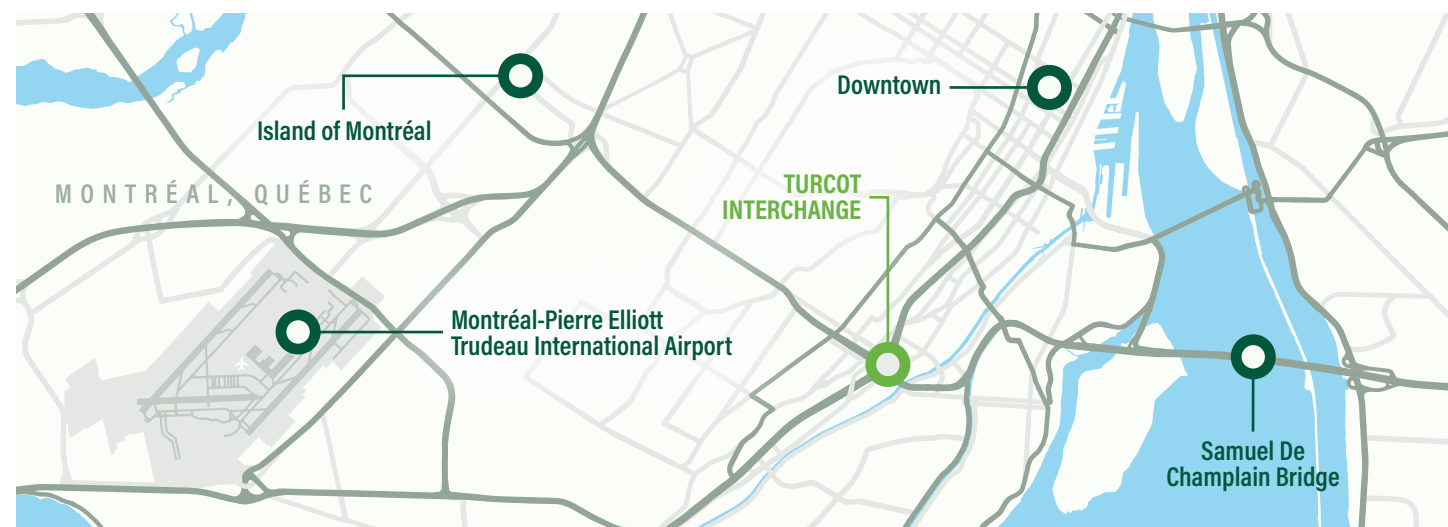
The new infrastructures are mainly built on fill and are considerably lower than the old elevated structures. This lowering is intended to improve lifecycle costs and durability.

"The project was also designed by the MTQ for the urban environment in which it is integrated," said Project Manager

KPH Turcot partnership



In the heart of the city





Girders, guardrails and retaining walls were painted green in this neighborhood to blend into its urban décor. Other neighborhoods were painted red, blue, yellow and gray.

Olivier Beaulieu. Along with wider shoulders for emergency vehicles, some key features in the design include additional green space, bicycle paths and dedicated bus lanes. Permanent noise reduction walls were installed along the highway to improve noise levels in the surrounding neighborhoods.

"The project is an important part of the community's identity. A lot of thought and energy went into developing the architectural concepts that would match the expectations of Montrealers," said Beaulieu.

The retaining walls were textured and colored. The steel girders and guardrails were painted. MTQ wanted to

create a project that blends into the urban décor, so each neighborhood has a color that reflects its flavor.

Signature structures on the project include the Lachine Canal cable-stay bridge. It was designed to resemble a ship hull, a nod to the Canal's industrial past. On top of these architectural features, the newly created green spaces will include 9,000 trees and 61,000 bushes.

BIGGEST CHALLENGE: MAINTAIN MOBILITY

"One of the biggest challenges of the project was to maintain mobility for the 300,000 vehicles and 50 trains that pass through the Turcot interchange daily," said Construction Manager Sébastien Djan-Chekar. This



Project quantities



5,000,000
cubic meters
excavation and backfill



2,000,000
metric tons
aggregates



300,000
cubic meters
concrete dismantling



137,000
cubic meters
concrete paving



328,000
square meters
asphalt



90,000
square meters
retaining walls



21,000
metric tons
structural steel

major constraint was at the heart of the planning and management of the project. Decommissioning the old interchange involved major work in a limited space with a specific completion schedule, all of which had to protect the tangle of existing works and keep traffic moving.

"MTQ's main objective was to reduce nuisances for users and residents and, above all, traffic-related problems," said Doucet. "To achieve this, the duration of the work was optimized to guarantee the efficiency and quality of the work, while minimizing lane closures and disruptions to neighborhood life."

Construction activities were planned in a way that prioritized the maintenance of mobility.

In order to establish the sequence of work, the team used 3D-imaging models of the existing interchange and structures to be built. Once the two models were juxtaposed, a real puzzle game ensued.

"It was possible to see the available space to find a starting point for construction outside the existing infrastructure, while considering the constraints of the surrounding environment," said Doucet. Subsequently, it was possible to determine how to link the old and new structures to maintain traffic flow. More than 50 temporary detours, whose sole purpose was to maintain the mobility, were incorporated in the design.

For almost the entire project, the construction sequence

began with building new roadway and new structures under the existing infrastructure before the cold season, which led to transferring the traffic onto the new infrastructure and temporary detours. This allowed the team to deconstruct all winter when the conditions aren't optimal for construction. By spring 2019, the demolition was 100% complete. The remaining two construction seasons were spent tying in portions of work obstructed by the last existing structures or temporary road configurations. The work to finalize the project will be ongoing until the end of 2020.

"KPH Turcot has actively participated with the client to keep citizens informed of upcoming ramp closures and

traffic constraints," said Maggie Brais-Viola, communication coordinator for KPH Turcot. "The project obtained the cooperation of local residents throughout the work thanks to open and transparent communication with them."

By listening to the questions and concerns of citizens and users, she said, a sense of trust was developed with them. This helped ease several sensitive operations, including complete closure of three major ramps to downtown for five consecutive days, overlapping the weekend. This type of closure was never done before and was unthinkable before this project. The communication campaign, jointly coordinated by the MTQ, was a great success, reducing the anticipated traffic jam from 8 kilometers to almost none.

Environmental win

Before the Turcot team broke ground, it had a comprehensive plan in place to help minimize the impact of construction on the environment.

GREENHOUSE GAS EMISSIONS

To track greenhouse gas emissions, a real-time telemetry system was put in place to collect exhaustive data throughout the project, according to Alexandre Cournoyer, Jr., environmental coordinator on the project. Hybrid equipment was prioritized to minimize tailpipe emissions and protocols were established to buy from local and regional suppliers.

By the end of the year, Cournoyer said, it is projected that 150,000 metric tons of carbon dioxide equivalent (TM CO₂eq) will have been emitted to successfully complete the work. All unavoidable emissions have been or will be fully compensated with carbon credits stemming from a pool of tree-planting sites throughout the province of Quebec and other parts of North America.

NON-RENEWABLE RESOURCES

The project also found a way to reduce the stress on valuable, non-renewable resources. About 99% of the 150,000 cubic meters of dismantled concrete have been reused as needed backfill for embankments underneath the new structures, and the metal used as rods in reinforced concrete has been recycled. Overall, 95% of all major and miscellaneous residual materials have been reused/recycled on or off-site, exceeding the original contractual objective of 80%.



IMPROVED URBAN AREA

"In an effort to better reconnect the surrounding boroughs and reduce the highway's physical footprint on the urban area, the project had a 'do more with less' approach," Cournoyer said. "Instead of using more area than needed, the reconfiguration of railways, roadways and underground utilities freed up to 250 meters of land along the original main axis."

The more than a half square kilometer of land will be given back for new urban development. About 3.2 million cubic meters of contaminated soil was remediated, the vast majority kept safely on-site, preventing large scale GHG emissions that would have resulted from hauling. Cournoyer said at least 70,000 trees, shrubs and bushes will be planted this summer on the site.



ACTIVE RAILWAY COORDINATION

Another major challenge was coordination of the active railway tracks. Four active railways pass through the project site and run either adjacent to or underneath the new interchange structures. The tracks are the main tracks of the CN Railway that goes through Canada. Over 50 trains per day travel through this railway corridor, which requires constant daily coordination in order to comply with CN's requirement of keeping mobility and fluidity.

Prior to the start of construction, the rail corridor ran between eastbound and westbound lanes of Highway 20, and in a tunnel under the existing ramps in the heart of the interchange. The relocation of the rail corridor was linked to two major project milestones. First, KPH Turcot needed to deliver the new corridor to CN for them to build the new rails. Second, rail traffic needed to be transferred to the new corridor. The relocation opened up the existing corridor for the construction of multiple new ramps, all while complicating some operations in the center of the project where the rails were no longer covered by a tunnel.

"Developing and maintaining good relations with CN was essential to the success of the project. The excellent relationship we built is a major achievement," said Djan-Chekar.

THE TURCOT LEGACY

Turcot is an impressive project in size, scope and complexity that successfully applied Kiewit's best safety practices. KPH and its subcontractors worked more than 7.5 million man-hours and surpassed 860 days without a recordable.



1. The old ramp from Highway 20 East toward Highway 15 North was dismantled to make way for the new interchange. 2. A look back, this photo shows an earlier view looking east toward the former Highway 720 West. 3. An aerial view of the new ramps at the heart of the Turcot Interchange.

“The Turcot project was extremely complex and challenging, but thanks to the hard work, commitment and integrity of our people, an impressive legacy will be left to Montrealers that every KPH employee should be proud of.”

JEAN-FRANÇOIS POULIN
Project Director

The Turcot team worked hard to change the culture and philosophy toward safety that was prevailing in the Quebec construction industry. This new culture was implemented by getting our workers and subcontractors to fully embrace and commit to their own safety. The results will have a lasting impact on the local construction industry.

The new interchange will be adapted to the current and future transportation needs of users. Since it will have fewer structures than the old one, it will be easier to maintain. Less massive, it will give a breath of fresh air to Montréal's urban landscape.

“The Turcot project was extremely complex and challenging, but thanks to the hard work, commitment and integrity of our people, an impressive legacy will be left to Montrealers that every KPH employee should be proud of,” said Project Director Jean-François Poulin. **K**

