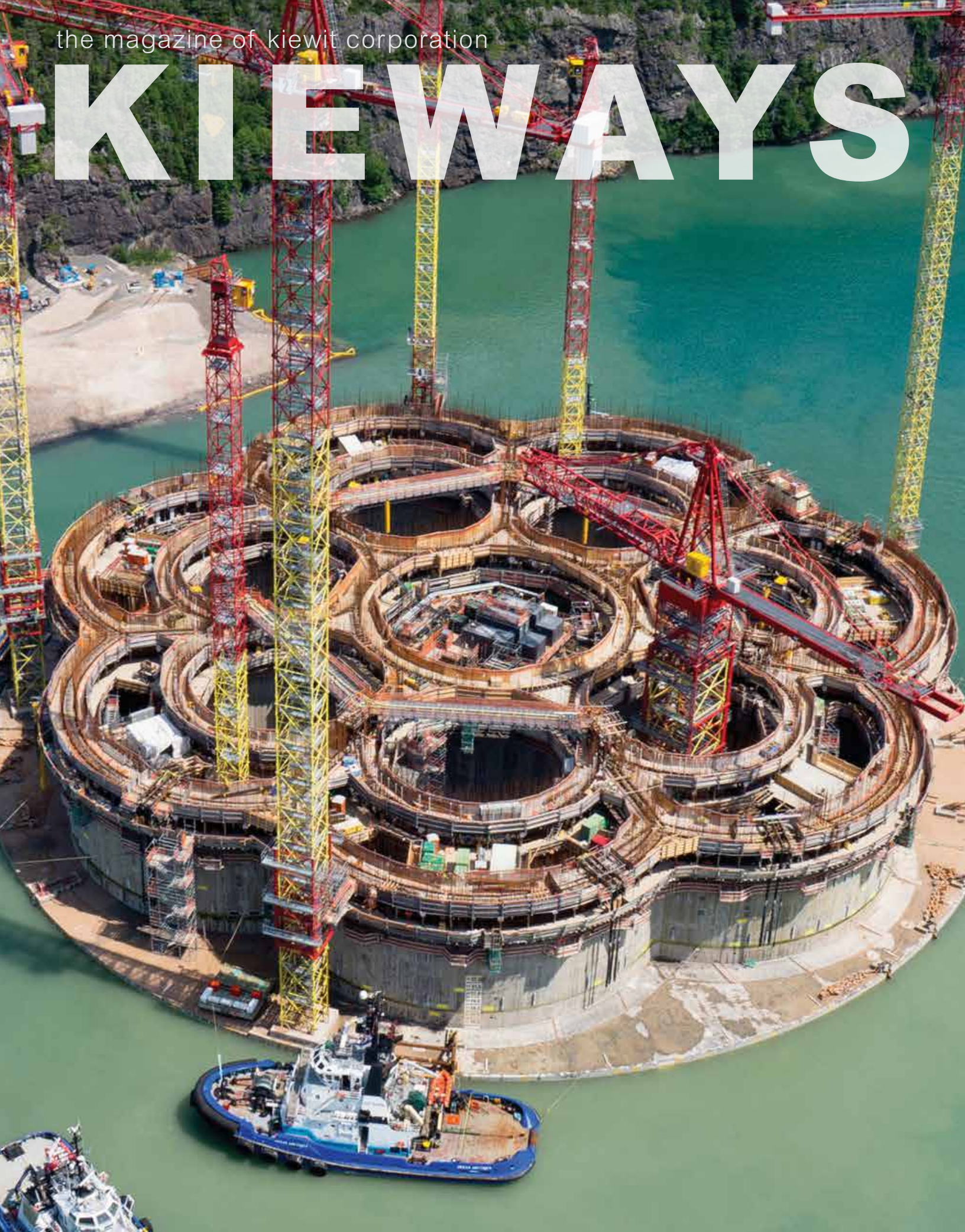


the magazine of kiewit corporation

# KIEWAYS







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 company operates through a network of offices and projects in the United States, Canada and Australia. Kiewit offers construction and engineering services in a variety of markets, including: transportation; water/wastewater; power; oil, gas and chemical; building; and mining. Kiewit had 2014 revenues of \$10.4 billion and employs more than 25,700 staff and craft employees.

**MANAGING & CREATIVE EDITOR**

Ashley Wedeking

**EDITORIAL DIRECTOR**

Tammy Korgie

**CONTRIBUTING WRITERS**

Susan Houston Klaus, Jessica Jensen, Sara Rohner

**CONTRIBUTING DESIGNERS**

Tyler Van Zee, Shawn Vaughan

**EDITORIAL BOARD**

Mike Faust, Tom Janssen, Tammy Korgie, Bob Kula, Craig Olson, Teresa Shada, Ashley Wedeking

**CONTRIBUTORS**

Eric Grundke, Rand Magee, Teena Rawlings, Megan Romero, Mike Schuetz, Tricia Todd, Peter Vogt, Brad Wedeking

**KIEWAYS**

Kieways is a quarterly magazine issued by Kiewit Corporation. To subscribe, go to [kiewit.com/kieways](http://kiewit.com/kieways).

Copyright 2015 by Kiewit Corporation. All rights reserved.

Kiewit, the Kiewit logo and Kieways are service marks of Kiewit Corporation. An equal opportunity employer.

To contact us, visit [kiewit.com](http://kiewit.com).

**INNOVATIONS AT WORK**

An aerial view of the newly built and functioning Pointe du Bois Spillway, which is located on the Winnipeg River in Manitoba, Canada. Read more on Page 16.



**REFLECTING ON WHAT SAFETY REALLY MEANS**

After finalizing this edition of Kieways in early March, my original comments reflected our company's unwavering commitment to safety and recognized that 2014 marked our safest year on record. The company's total recordable incident rate reached an all-time low of 0.53, compared to the industry average, which was nearly seven times higher at 3.50 (2013). I was — and still am — very proud of what our people accomplished.

However, just days before going to print, two employees lost their lives on our projects. This was devastating news. No words have been able to express our sincerest condolences for the families, friends and co-workers so deeply affected. Our focus immediately shifted to supporting them during this very difficult time.

I thought a lot about this letter and what I should do. I ultimately decided it was best to use this tragic situation to reaffirm our commitment to making sure every Kiewit employee goes home the same way they arrived on our jobs. No exceptions. Ever.

Despite our 2014 performance, we can and must do better. This begins with understanding why these fatalities occurred and never letting them happen again. We should openly discuss how we've made substantial progress on our journey to Nobody Gets Hurt. And, we should celebrate those who have embraced our powerful Craft Voice in Safety and Craft Safety Advisor programs, and committed to preventing and mitigating diamond events.

A great example of this commitment is the Pointe du Bois Spillway in Manitoba, Canada (Page 16). The project team worked over 550,000 manhours, and fully applied our safety processes, leading to an impressive year without incurring a single recordable during 2014.

Our safety culture has always been the foundation of our success. To honor the memories of the two men we lost, we must vow to use everything at our disposal to ensure no one is ever put in harm's way on our jobs. I am confident we can emerge from these tragic events safer and stronger than ever before.

**BRUCE GREWCOCK**  
Chairman and CEO





## A SUCCESSFUL PARTNERSHIP

Kiewit recently completed its 50th project for Creighton University. Read more about this partnership and the newest space on campus, The Championship Center, on Page 12.

## ON THE COVER

### 22 IT TAKES AN ISLAND

In Newfoundland, Canada, Kiewit is working in several different locations to build components of the Hebron oil platform.

## ALSO INSIDE

### 04 OUR MARKETS AND OUR VALUES

Learn about the diverse markets we serve and our commitment to core values.

### 06 BUILDING A REPUTATION DOWN UNDER

While tackling weather and geographic challenges, employees find success on Kiewit Australia's biggest project yet.

### 12 SLAM DUNK

Kiewit's relationship with Creighton University has been growing for nearly 60 years — learn about the latest partnership.

### 16 A 21ST CENTURY INNOVATION

A determined Canadian team stood up to Mother Nature numerous times and used major innovations to bring this century-old dam and spillway into a new era of technology.



# OUR MARKETS

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

What began in 1884 with two hardworking brothers has grown into a Fortune 500 construction, mining and engineering leader. As an \$10.4 billion organization, Kiewit can manage projects of all sizes, in any market. Here are a few interesting facts about Kiewit.



### DID YOU KNOW?

Kiewit completes more than

**50,000 TONS**

of offshore fabrication work each year.



### A LOOK BACK IN TIME

With military construction projects completed and state highway work suspended due to World War II, Kiewit looked to new markets. To keep people and equipment working, they opened their first surface coal mine outside of Sheridan, Wyo. in 1944. The **Big Horn Mine** shipped 70,000 tons of coal that first year, going on to ship more than 47 million tons over the next 55 years before the mine was eventually idled.

In 1970, Congress passed the Clean Air Act, which led to a need for low-sulfur coal. Kiewit began building the **Decker Mine** in southeast Montana in 1971 and shipped its first trainload of coal the following year.



### LEADING THE WAY

**Marsh Landing Generating Station's** Administration Building became Kiewit Power's first Leadership in Energy & Environmental Design (LEED) certified facility. The building uses environmentally responsible features like efficient mechanical systems to optimize energy performance, downspouts to direct rain water to landscaping and reserved parking for fuel efficient vehicles. Systems put in place during construction will pay environmental dividends for years to come.



### IN THE NEWS

The KPH-Turcot consortium, led by Kiewit and Parsons Canada, has won the contract to rebuild Quebec's dilapidated **Turcot interchange**.

The interchange is Quebec's busiest stretch of road and is used by 300,000 vehicles daily. The nearly \$4 billion construction is set to begin in 2015 and wrap up by 2020.



In 2014 Kiewit completed the **Bill Young Regional Reservoir** in Tampa Bay, Fla. The reservoir's capacity is 15.5 billion gallons, and is part of Tampa Bay



Water's network of water supply facilities. Other construction includes a surface water treatment plant, a seawater desalination plant and permitted capacity of groundwater from wells. Tampa Bay Water is the only water utility in the United States to take advantage of this blend of resources — groundwater, surface water and desalinated water.



**The University of Nebraska at Omaha's (UNO) Community Arena**, set to be completed by Kiewit later this year, includes two NHL-size ice rinks — 180,000 pounds of ice total. The arena will be home to UNO Maverick hockey, basketball and volleyball. It will also host community and family events and concerts. For a look at another sports facility Kiewit built, see Page 12.



# OUR VALUES

PEOPLE | INTEGRITY | **EXCELLENCE** | STEWARDSHIP

For more than 130 years, Kiewit's culture has been built on a foundation of strong core values — People, Integrity, Excellence and Stewardship. These remain the cornerstone of how Kiewit runs its business.

### MAKING EXCELLENCE OUR GOAL

This year, Kiewit was honored for its outstanding workforce, strong culture and commitment to talent and leadership development.

#### MOST ADMIRED

Where does Kiewit stack up next to the most admirable companies in the world? *Fortune Magazine* recognized Kiewit on its list of **World's Most Admired Companies of 2015**. Under the engineering and construction



industry category, Kiewit placed third for the fourth consecutive year.

#### TOP COMPANY FOR LEADERS

In 2014, the **Aon Hewitt Top Companies for Leaders™** study ranked Kiewit as a top performer in North America based on leadership strategies, practices and outcomes. Kiewit continuously enhances



and expands its development programs to ensure the growth of our leaders.

#### GREAT PLACE FOR GRADS

Kiewit prides itself on hiring the best and brightest talent as they graduate from universities across North America. In 2014, Kiewit was named a **Best Place to Work for Recent Grads by Experience™** based



on our training programs, growth opportunities, organizational culture and benefits.

#### GREAT PLACE TO WORK



More than \$80 million spent annually on training and development, an unparalleled commitment to health and wellness, and most importantly, the extraordinary efforts of our people. These are just some of the reasons Kiewit made the **2014 FORTUNE Magazine Best 100 Companies to Work For** list in the U.S. and the **2011, 2012, 2013 and 2014 Best Workplaces in Canada** lists. Each list is based on employee survey responses and a comprehensive Culture Audit® that provides an inside look at company policies and practices.

### KIEWIT PROJECTS HONORED FOR EXCELLENCE

Many of Kiewit's projects have received recognition and awards for a wide variety of accomplishments and innovations. Here's just a few from the past year.

- **2014 DBIA DESIGN-BUILD MERIT AWARD, Draper Light Rail Extension** — Exemplary design-build delivery resulting in a highly successful project that achieved best value while meeting design and construction quality, cost and schedule goals
- **2014 DBIA DESIGN-BUILD MERIT AWARD, Denver Union Station Transit Improvements** — Outstanding companies that have exceptional thinking and inspired greater progress toward a healthier and more sustainable universe
- **NEW JERSEY ALLIANCE FOR ACTION AWARD, Woodbridge Energy Center** — Excellent safety and efficiency as one of New Jersey's leading infrastructure projects
- **ROADS & BRIDGES TOP 10 BRIDGE AWARDS, Northern Rail Extension Phase 1** — Challenges and impact to the region included work in extreme weather conditions to complete the bridge to give the US military year-round access to its largest training ground

For a look at more of Kiewit's successful projects, visit [kiewit.com](http://kiewit.com)



# BUILDING A REPUTATION DOWN UNDER

THE WHEATSTONE PROJECT





Kiewit Australia was launched in early 2010 to pursue project opportunities in the resource sector in the western part of the country. Based in Perth, Kiewit Australia's inaugural job was a \$247 million engineer-procure-construct project for Cloudbreak Mine, an iron ore mine processing plant in northwest Australia for Fortescue Metals Group. The success of the project led to additional projects on the continent.

In 2013, Kiewit Australia, in a joint partnership with Ertech, was awarded its biggest job yet — a general services contract for Bechtel on the Chevron-operated Wheatstone Project.

### THE SHAPE OF THINGS TO COME

Wheatstone involves constructing an onshore LNG facility near the town of Onslow on the northwest coast. Recognized as a clean, safe energy source, LNG is an in-demand commodity in Asia, where there are few naturally occurring gas resources. Australia, with its abundance of offshore methane gas and proximity to key population centers, has become a top supplier of natural gas to the region.

Australia's Bureau of Resources and Energy Economics

estimates that by 2019, LNG shipments will make the country the world's largest producer.

The product is made when natural gas is chilled to more than minus 160 degrees C (minus 256 F). In liquid form, LNG isn't flammable or explosive, and the volume it occupies is reduced by more than 600 times — making it easy to safely transport. Later, the product is reheated into its original form and piped to its destination.

LNG produced by the Wheatstone Project will be shipped via tanker to help fuel the Asia-Pacific region.

### GEOGRAPHIC CONSIDERATIONS

Kiewit/Ertech was initially awarded a \$296 million contract that spans everything from civil and concrete work to piping and electrical.

The contract specifies installation and maintenance of underground and above-ground utilities, construction and maintenance of roads and laydown areas, site support, and other construction scopes found on this type of large-scale LNG project.

"It's a very large project for us," said area manager Tom

Thorn. "It's the perfect match for Kiewit's capabilities and experience. It's a great training ground for our staff and craft teams."

One of the biggest hurdles is simple geography, Thorn said.

"In Australia, most of the work is remote. The challenge we face is the additional planning and lead time in getting people, materials and supplies to the site."

Temperatures in the mid-40s C (110+ degrees F) are common during the summer months. In 2014, temperatures climbed to 49 degrees C (120 degrees F). On top of that, the area is notoriously secluded and dry.

"It's hot and remote, but this isn't a whole lot different than working in the middle of nowhere in west Texas," said Project Manager Cody Jensen, who jumped at the opportunity to take his skills and experience to a new market for Kiewit. "It sounds cliché, but the big part of our success here is just sticking to or reverting back to the Kiewit basics of building and managing our work, people and equipment."

### THE SWISS ARMY KNIFE

Having a core group of employees well-versed in the Kiewit philosophy and culture drives the way this team works, said Thorn.

"This is a fast-track project, with design and procurement happening while construction has started. Because of the size of the project, every piece is magnified. Having a core group of Kiewit people here, combined with the strong, talented local workforce, has been significant in how we differentiate ourselves on the project."

The team has earned a reputation for adaptability, which has paid dividends as the project has grown.

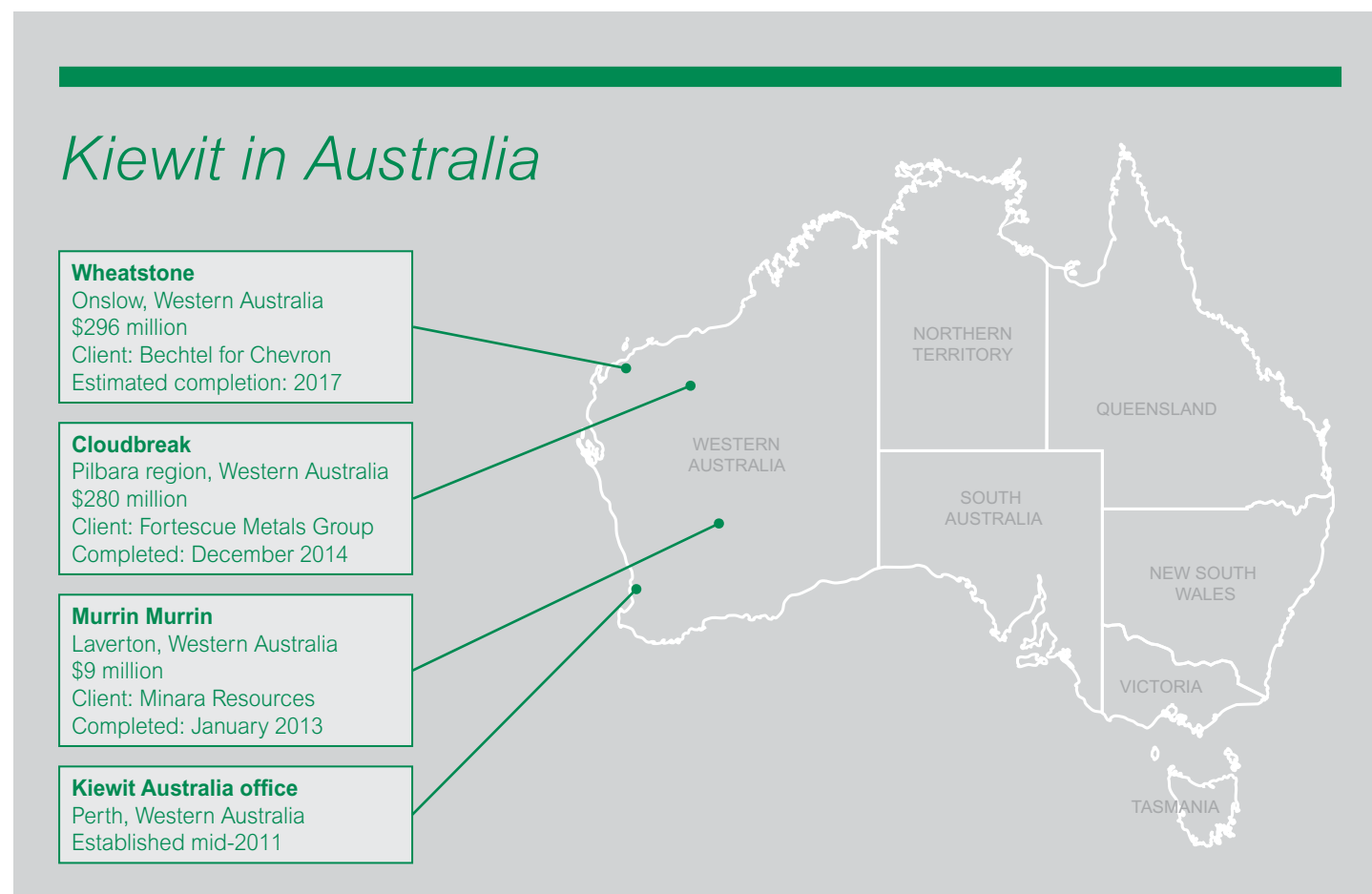
"Unlike other construction projects for Kiewit, this one didn't have a specific scope — it was a catch-all contract. It's a massive job site with 25-plus subs on very large packages of work. Consequently, a lot of jobs tend to pop up in new and different ways."

Thorn calls the Kiewit team "the Swiss Army knife" of the project. When additional work is needed, the team is flexible and handle the extra tasks for the client.

"We are well-placed to take on additional scope at short notice and our ability to adapt means we can react quickly

“Building on our success and continuing to show our value will mean a lot for our future in Australia. The team performance thus far is what’s helping us build our reputation here.”

**CODY JENSEN,**  
PROJECT MANAGER



and help the overall project move forward successfully.”

Kiewit continues to play an integral role in helping complete key components of permanent work on the site.

### GAINING A FOOTHOLD

Well after the Wheatstone Project is completed in the coming years, it will be one that Kiewit Australia will recognize as a key building block in expanding the company’s presence in the country.

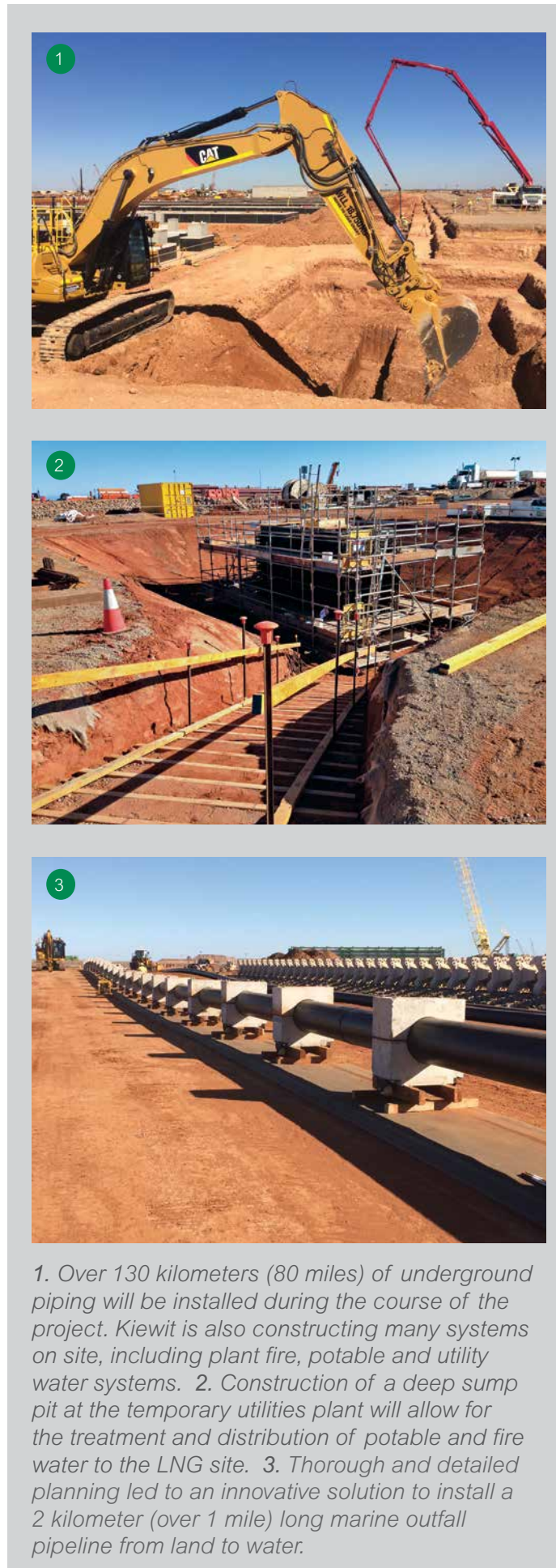
“Building on our success and continuing to show our value will mean a lot for our future in Australia,” Jensen said. “The team performance thus far is what’s helping us build our reputation here.”

“It’s fulfilling to be involved in such a large project and to have a team that’s well-respected,” said Thorn. “The Wheatstone Project has some of the best contractors from around the world. We’re able to see and learn some innovative things that other construction companies are doing in this part of the world.”

Jack Cotton, general manager for Kiewit Australia, has seen how far the organization’s Australian operations have come since launching in 2010. He attributes the success to a strong focus on the Kiewit basics.

“In the early days, we had lots to learn so we relied on the Kiewit basics — getting work at the right price, building work at the lowest cost and taking care of our assets.”

Today, those basics have helped Kiewit Australia establish a strong, growing reputation in a country rich with great people and traditions — with many more outstanding opportunities to come. **K**



1. Over 130 kilometers (80 miles) of underground piping will be installed during the course of the project. Kiewit is also constructing many systems on site, including plant fire, potable and utility water systems. 2. Construction of a deep sump pit at the temporary utilities plant will allow for the treatment and distribution of potable and fire water to the LNG site. 3. Thorough and detailed planning led to an innovative solution to install a 2 kilometer (over 1 mile) long marine outfall pipeline from land to water.

## Hand me that spanner, will you?

While Kiewit is headquartered in the United States, it has always worked hard to establish strong roots in the countries in which it operates. This includes getting involved in local communities, building strong local workforces and respecting the cultural differences that bring new ideas and ways of thinking to the company. In many cases, Kiewit employees commit to moving to new countries to blend their existing experience with new opportunities.

For Kiewit Australia, the blending of cultures has been an eye-opening experience — even though English is spoken in Australia and by many Kiewit employees in North America. Kiewit Australia Area Manager Stu Nyland, who moved to the country in 2011, quickly discovered many interesting language nuances.

Nyland recalls when he was asked to meet one of Kiewit’s Australian partners at an office building at 1:00 in the “arvo.”

“I thought that meant the building’s atrium, as in ‘arrivo.’ So I was standing in the atrium when I received a call asking where I was. I replied I was in the arvo. Our partner laughed and said that arvo means ‘afternoon,’ not atrium.”

Australians call formwork “shutters.” Rebar ironworkers are

“steel fixers.” And a wrench is a “spanner.”

While Americans have a flat tire, Aussies have a “punctured tyre.” A car’s hood is called a “bonnet” and a dead battery is more gently referred to as a “flat” battery.

Workers have a midday meal together in the “crib,” their name for the lunchroom. Locals eat “tea” every night instead of dinner. What newcomers may assume is an appliance for dessert — a “pie warmer” — is actually for heating frozen meat pies.

The cultural differences have only enhanced the importance of good communication between the Kiewit team and international colleagues. Everyone is encouraged to keep an open mind and learn, Nyland said.

Nyland and his family have been lucky to take advantage of the diverse array of adventures available in the country.

“Living and working here has been one of the best experiences of my life. I would recommend it to anyone.”



## How’s your straya (Australian English)?

**Aggro:** abbreviation for aggravated, aggressive, aggression

**Av-a-go-yer-mug:** a phrase used to encourage someone to put more effort into something

**Beano / Beanfeast:** a festivity, celebration

**Big smoke:** the city

**Bonza:** excellent, attractive, pleasing

**Bushwacked:** extremely fatigued or exhausted

**Centralia:** the inland region of Australia

**Chinwag:** a chat, conversation

**Corker:** something striking or astonishing; something very good of its kind

**Dinkum / dinki-di:** true, honest, genuine

**Footy:** rugby league

**Hack it:** to tolerate something or to keep up

**Hard yacka:** hard work

**Hooroo:** goodbye

**On ya mate:** usually means well done but often used sarcastically

**Open slather:** free-for-all, anything goes

**Piker:** someone who doesn’t want to do something especially within a group

**Ripper / rip snorter:** great, terrific

**Sandshoes:** casual footwear, joggers

**Sanga:** a sandwich or sausage

**Strine:** Australian English

**Struth:** an exclamation expressing surprise or verification

**Ta / tar:** thanks

**Tucker:** food

**Ute:** small truck, short for utility truck

**Yarn:** a story

**Yobbo:** loutish, surly youth

**Yonks:** a long period of time



# SLAM DUNK

KIEWIT AND CREIGHTON UNIVERSITY'S PARTNERSHIP OF NEARLY SIX DECADES MARKS A MAJOR MILESTONE WITH THE CHAMPIONSHIP CENTER

Tour Omaha, Neb. — where Kiewit was founded in 1884 and still maintains its corporate headquarters — and you'll see the Kiewit name and Kiewit-constructed facilities throughout town. The company's history in Omaha has included the construction of stadiums, shopping centers, hospitals, corporate headquarters, zoo exhibits and academic buildings.

One part of the city where Kiewit's presence is especially noticeable is the campus of Creighton University. In 2014, Kiewit completed its 50th campus project in 59 years. The Championship Center is getting attention not only in Omaha, but also across the country as a top facility for student-athletes.



## A STRONG FOUNDATION

Kiewit's first project for Creighton was a five-story residence hall built in 1955. The past six decades have included construction of various research centers, the School of Dentistry, and Creighton University Medical Center additions and upgrades, among other projects. Kiewit's first athletic building on campus, the Kiewit Physical Fitness Center, was completed in 1976.

Recently, Kiewit has completed several projects for Creighton Bluejays athletic teams. Morrison Stadium, which hosts Creighton's men's and women's soccer teams, was completed for the university in 2004. Creighton's teams also use projects built by Kiewit for the city of Omaha. TD Ameritrade Park, home of the NCAA Men's College World Series, is the home stadium for Bluejays baseball. Men's basketball games are played in the CenturyLink Center, built by Kiewit in downtown Omaha.

"Knowing the long history Kiewit has with Creighton University — and that this would be our 50th project on campus — definitely motivated our project team," said Kiewit Project Executive Todd Scholz.

## STACKING UP AGAINST THE COMPETITION

The Championship Center at Creighton University is used as the primary practice facility for the men's basketball team, and will also provide a high-quality training facility for all Bluejays teams.

In 2013, construction had already begun when the Bluejays joined the Big East Conference, known for its competitiveness in men's basketball. After touring other facilities in the conference, school officials concluded they needed to add several additional features to match the new competition.

Ideas from the project team and Creighton officials, players and coaches, along with amenities found around the Big East and other larger programs — such as the University of Oregon and Creighton's in-state rival, the University of Nebraska-Lincoln — were added to the design. Kiewit worked closely with the architect, DLR Group, to incorporate the changes.

"The design changes and some winter weather presented challenges," Scholz said. "But we were committed to working together with DLR Group and Creighton to deliver their vision on time, and that's what we were able to do."

## AN OVERALL EXPERIENCE

The state-of-the-art, 42,000-square-foot Championship Center was turned over to Creighton in June 2014. Its main attraction is the D.J. Sokol Gymnasium, featuring the Kyle Korver Courts. The 13,900-square-foot gym includes 12 baskets, with adjustable side hoops that can be used during youth summer camps. But this isn't simply a gymnasium, and the features don't end there.

The athletic performance and training centers include a HydroWorx therapy pool and an underwater treadmill. A players' lounge, locker rooms, video and lecture rooms, offices, conference rooms and academic resource center also are part of the Championship Center.

While the players' lounge, locker rooms and offices primarily serve the men's basketball programs, the Athletic Performance Center, Athletic Training Center and Academic Resource Center will serve all student-athletes at Creighton.

"Our goal with the Championship Center was to provide our student-athletes with a facility that not only gives a competitive edge in athletics, but in their studies and overall collegiate experience," said Steven Brace, associate athletic director for Creighton University. "Kiewit went the extra mile to make sure we were completely satisfied and helped us bring this to life." 

## Beginning of a partnership

Creighton University, founded in 1878, and Kiewit, founded in 1884, share a long history. The first Kiewit project on Creighton's campus was built in 1955. Two projects built by Kiewit on campus also bear Kiewit's name:



## KIEWIT RESIDENCE HALL

Kiewit Residence Hall was originally built in 1964 and has undergone rehabilitation throughout the years. It remains Creighton's largest residence hall and houses almost half of every freshman class.

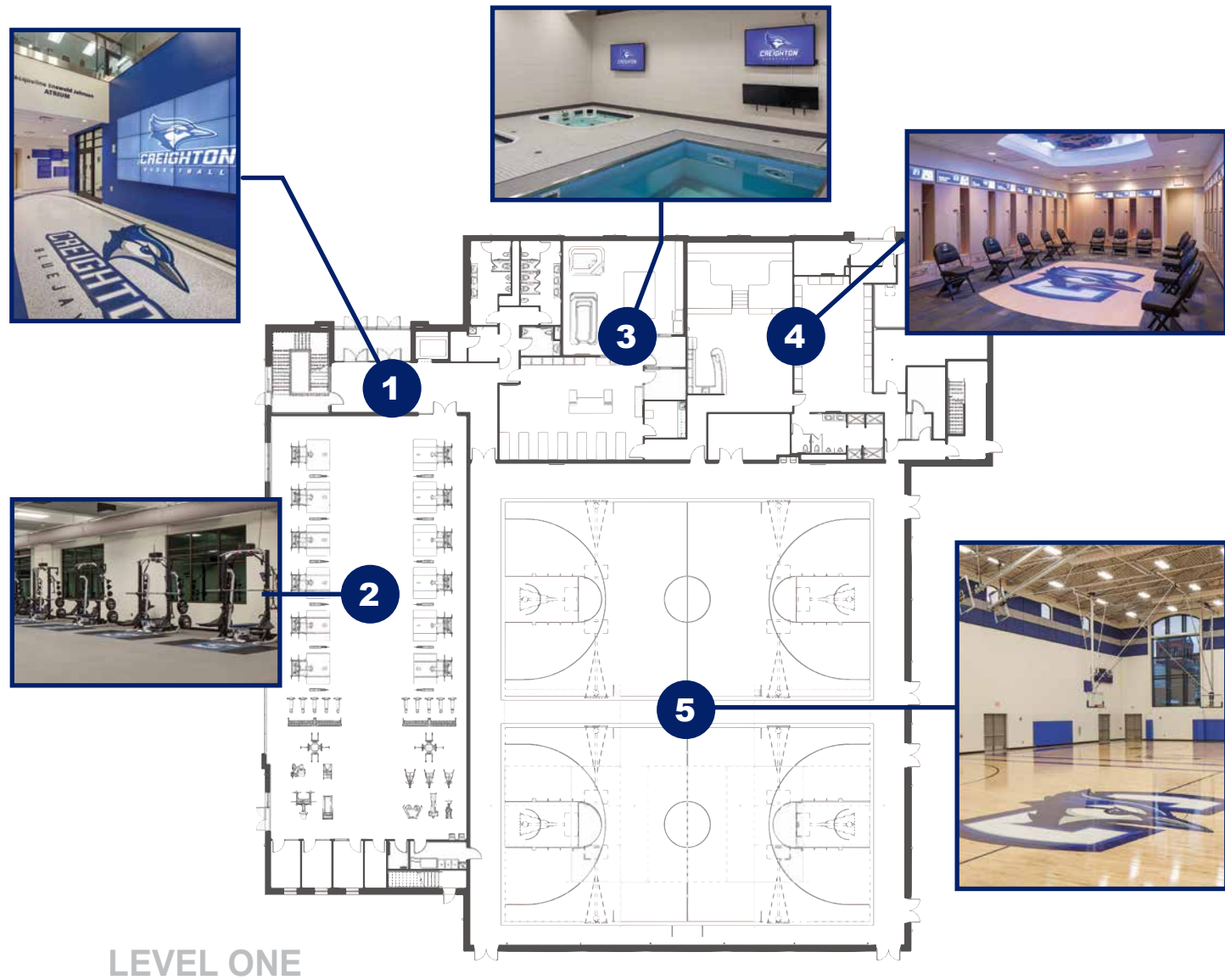


## KIEWIT FITNESS CENTER

Kiewit Fitness Center was originally built in 1975 and has also undergone upgrades. Accessible to all students, it features: a weight and cardio room; basketball, tennis and racquetball courts; a three-lane running track; and men's and women's locker rooms and saunas. Peter Kiewit, best known for developing the company into a major national contractor during the 20th century, was on hand to dedicate the facility.



# A championship blueprint



Creighton University's 42,000-square-foot Championship Center is an integral component of the school's athletic facilities and houses two practice courts, athletic performance and training centers, an academic resource center and offices for the athletic director and men's basketball coaching staff. The center includes:

- 1 ATRIUM** — Visitors are greeted by a wall of flat screen televisions and the Creighton athletics logo
- 2 ATHLETIC PERFORMANCE CENTER** — The 5,500-square-foot facility features state-of-the-art weight training and cardio equipment that record student workouts and provide immediate feedback
- 3 ATHLETIC TRAINING CENTER** — Athletic trainers work with student-athletes in this designated space, which includes therapy pools, underwater treadmills and recovery pools
- 4 PLAYERS' LOUNGE AND LOCKER ROOMS** — Easy access to the courts featuring a nutrition station and recreation area

- 5 GYMNASIUM AND COURTS** — The 13,900-square-foot gymnasium houses two full-size regulation courts with a total of 12 baskets
- 6 ACADEMIC RESOURCE CENTER** — The center features tutoring areas, study rooms and study tables, and is open to all student athletes
- 7 VIDEO AND LECTURE ROOM** — An 800-square-foot tiered room allows players and coaches to view game film
- 8 OFFICES AND CONFERENCE ROOMS** — A suite of offices for the athletic director and coaching staff allow them to oversee the program in close proximity
- 9 VIEWING PLATFORM** — Guests may view court activity from an elevated platform accessed through the conference room and the head coach's office
- 10 MEDIA AND VIDEO ROOMS** — The room serves as the hub for the building's technology



# POINTE DU BOIS SPILLWAY

A 21ST CENTURY INNOVATION







*For more than a century, a single powerhouse and 97 spill gates have regulated water flow on the Winnipeg River in Pointe du Bois, Manitoba, Canada. The structures were built with the best resources available in the early 20th century, but since then technology has changed dramatically.*

In 2012, Manitoba Hydro, which operates and maintains the Pointe du Bois generating station and spillway, approached Kiewit for an Early Contractor Involvement (ECI) contract to provide engineering, earthworks, concrete, mechanical and electrical services to bring the antiquated system up to date.

KGS, the project's designers, were crucial in helping Kiewit come up with solutions to challenges and worked closely with Kiewit and Manitoba Hydro during every step of the process.

Manitoba Hydro realized a major flood could impact the existing structures, including the dam and powerhouse.

Before Kiewit arrived on site, the spill gates — which

*A 5,000-foot view of the Winnipeg River meeting Pointe du Bois Spillways with all 7 gates in action, which replaced 97 existing gates.*

regulate the river's flow — were wooden timbers stacked one on top of the other, hundreds of feet up from the river bottom. To change the water elevation, workers originally lifted the timbers with old-fashioned hand cranks, and more recently, with an electrical winch system. If a flood was imminent, this was a dangerous and high-pressure task for all involved.

The timing of the project would turn out to be especially memorable. Eighteen months after construction began, the entire province faced massive flooding. In July 2014, the residents of Pointe du Bois found themselves preparing for a 100-year flood.

"Ontario, Manitoba's neighboring province, released a lot of water from its rivers, which pushed huge amounts into the Winnipeg River," explained Kiewit commercial manager Ameer Balouch. "We had to perform an emergency response to the flood at the request of our client. We ended up releasing water through one of the gates that was actually under construction."

## ESTABLISHING THE BEST DESIGN

Instead of refurbishing the dam and spillway as originally planned, the client decided to build a new dam and new spillway to the east. The new structures would meet current Canadian Dam Association guidelines.

"Manitoba Hydro had the foresight to expect the worst," said Balouch, "and Kiewit experienced the worst last summer. Since we had the appropriate procedures in place, we were fortunate and able to handle this massive river flow."

A portion of the Winnipeg River is diverted into the old powerhouse, but control of the water's elevation takes place through the new spill gates.

"The experience KGS had with this kind of work was a great asset — they were able to stay on top of the changes and work closely with both Kiewit and Manitoba Hydro to make this project a reality," said Balouch.

"The final design we agreed on was seven mechanically-operated gates that raise and lower to control the elevation upstream," explained Balouch. "This mechanism will prevent flooding of the powerhouse and maintain the water at a certain elevation."

Through innovation and technological advances, those seven gates replaced the original 97.

"Instead of having manual laborers use hand cranks to lift and lower wooden beams, one person can sit at a computer and change the steel gate heights with the push of a button," Balouch added.

## GETTING TO THAT POINT

The 97 gates still served a purpose — they were sealed to act as a temporary dam. To control the flow of water, divers swam to the bottom of the river and, using cinders and oakum (a mossy material), filled and sealed between the current timbers, preventing water flow.

Once the water was removed from the old riverbed, crews began a process called curtain wall grouting. They drilled into the existing rock and pressure-grouted underneath to seal any cracks under the rock to protect the new dam. During curtain wall grouting, separate crews began placing concrete in the deep voids to obtain a better seal for the future impervious (clay) fill of the dam structure.

"After the curtain wall grouting and foundation preparation are complete, we will build the new clay-core dam about

## Pointe du Bois by the numbers

**97** original spill gates in Pointe du Bois

**7** new replacement spill gates installed

**-55° C**  
(-67° F) coldest temperature employees experienced at Pointe du Bois

**103**  
years old age of the original dam and powerhouse structures

**31** Manitoba municipalities declared a state of emergency from the 2014 flooding



*Construction of the powerhouse tie-in wall with the 1912-built powerhouse in the background.*





### ADDITIONAL WORK

For now, there are no plans to rebuild the 100-year-old powerhouse, so the team is doing rehab on the east and west sides of the building.

“We had divers video the old structure to assess the damage. From our findings, we anticipate demoing one to two feet of the existing surface of the structure and pouring back the walls because they have started to erode,” Balouch explained.

“We have five custom-made cofferdams that were designed by Kiewit’s Engineering team to help with rehabbing 20 sections of the old dam.”

Crews submerged the dams into the water and sealed them up against the existing structure; they will demolish the existing concrete that has started eroding and pour back with new concrete. After curing, the cofferdams are jumped to the next section, meaning the cofferdam will be pulled out and moved to the next section. This occurred for all 20 sections on the old dam wall.

### AS COLD AS MARS

Not only has Kiewit taken on a fairly unique project — and bounced back from the 100-year flood during spillway construction — but, the project team has also faced some cruel weather conditions.

“Winter 2013 was one of the worst Manitoba has experienced since the 1950s,” said Balouch. “Temperatures reached lows to where Fahrenheit and Celsius were nearly the same. For a while we sat at minus 45 degrees Fahrenheit and Celsius. With the wind chill, our temperatures got as low as minus 55 degrees Celsius [minus 67 Fahrenheit]. It was literally as cold as Mars here in Pointe du Bois.”

To meet schedule milestones, some crews had to work in that weather — in heated structures, of course.

“We’re already five months into our winter and have about one more month left,” he added. “We’re all looking forward to the warmer temperatures.”

For this year, the client and Kiewit opted to put a scheduled shutdown in place from mid-December to the end of March.

“Some operations for dam replacement simply cannot happen during our winter. We’ll be bringing the crews back in at full-steam at the beginning of April.”



1. 100-year-old dam structure awaiting decommissioning. 2. Section of the old dam sealed with oakum to allow clay core dam construction to begin.

500 feet downstream of the current dam,” said Balouch. “We’ve built a tie-in wall with the existing powerhouse structure and spillway. We’ll decommission the existing spillway by removing the old timber gates and allowing the water to fill in.”

Construction of the new spillway has also required a new channel.

“We blasted and excavated a channel from the dam to the spillway,” he said. “We left a 90- by 50-foot section in place that we called the ‘rock plug.’ This plug kept the other side of the channel dry while we built the spillway and all of the piers.”

Mechanical and electrical work on the gates followed. Once the stop logs were in place, Kiewit flooded the channel upstream and installed a “bubble curtain” to reduce the vibration from the blast on the newly installed gates. The crews subsequently blasted and excavated the rock plug.



### SAFETY AND ENGAGEMENT

“For 2014, we didn’t have a single recordable incident,” said Balouch. “Our Craft Voice in Safety program is very strong, and we have a strong group of core employees working on this job. Our superintendents are performing daily inspections of work areas, and extreme housekeeping measures are an ongoing push.”

Great safety numbers most certainly can be attributed to the team’s high engagement.

“This is a unique job,” he added. “We’re kind of away from everything in some ways. We’re in the middle of the country and secluded. We all live in a small town and get together often to do functions, like compete on our baseball, curling and bowling teams.”

“We’ve also worked very closely with our client throughout this entire project to help us complete the work in the most innovative ways possible.”

The client agrees.

“The job has gone well so far,” said Manitoba Hydro Deputy Project Manager Ryan Ward. “We’ve had a number of challenges related to weather and materials, but our collaboration and ability to keep lines of communication open have made a difference. We built our contract to promote effective communication, and I think that has served us very well.” 



3. 70 cubic meters per second of water per gate flows through the newly constructed Pointe du Bois Spillway. 4. Lost in the moment — a Kiewit employee gazes on the successful commissioning of the stop log monorail crane. 5. Project success is driven by Kiewit’s people.



# IT TAKES AN ISLAND

---

IN NEWFOUNDLAND, CANADA,  
THERE'S AN ENORMOUS  
EFFORT UNDERWAY TO BUILD  
THE HEBRON OIL PLATFORM.





*Destined for the Grand Banks in the North Atlantic, approximately 350 kilometers (217 miles) from the Newfoundland's capital city of St. John's, the completed Hebron structure will be able to produce oil in one of the harshest environments in North America. It's designed to resist iceberg impacts and will have the capacity to store up to 1.2 million barrels of oil.*

*Kiewit is a significant player in Hebron's construction, completing related projects at locations around the province. With experience in the offshore industry that includes another platform built in Newfoundland — Hibernia in the 1990s — Kiewit continues to make progress at Hebron, one of the company's largest projects to date.*

#### **SETTING THE STAGE**

The Hebron oil field is estimated to hold more than 700 million barrels of recoverable resources. In 2011, construction began on a stand-alone, concrete gravity based structure (GBS). Work continued in 2013 on the topsides, which eventually will be mated with the GBS to form the finished Hebron platform for ExxonMobil Canada Properties and its partners, including the province of Newfoundland and Labrador.

The largest component of Kiewit's work on Hebron is the GBS, being built by the partnership Kiewit-Kvaerner Contractors (KKC). Kiewit and Kvaerner, a Norwegian company, also worked together 20 years ago on the Hibernia GBS at the same construction site. The Hibernia project was the first GBS project to be completed in Newfoundland and Labrador.

"Kvaerner are the experts in GBS technology with more than 20 GBS projects around the world. With our more than 130-year history of construction experience in North America, this truly is a world-class team at Hebron," said KKC Construction Manager Kevin Hughes.

"Working with Kiewit in the past, I've always been impressed by the company culture and especially the commitment to safety," said Astor Nyborg, KKC project director.

"We knew each team brought a lot of things it did well to the table," Hughes said. "Our teams complement each other well. Our partner's technical strengths and experience

with GBS platforms coupled with Kiewit's organizational strengths and resources provide us with the capacity to take on such a challenging project.

"We are constantly taking the best practices from both Kiewit and Kvaerner and adopting them as KKC," he added. "To this day, we're still learning from each other and getting better as a team."

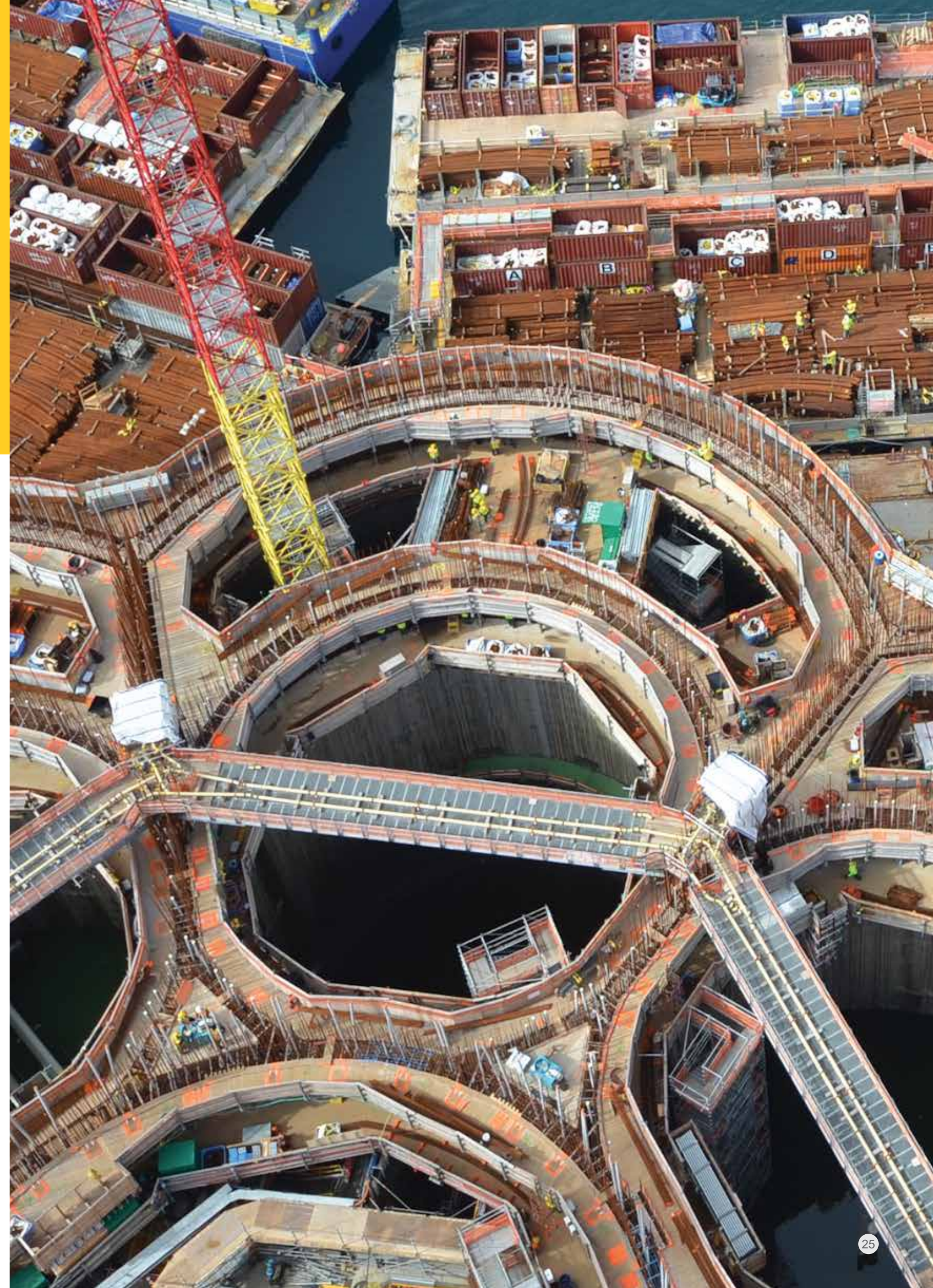
#### **GETTING TO WORK**

Before KKC could start building the GBS, the construction site needed to be reawakened from hibernation. Located in Bull Arm, Newfoundland, it's the same site used during the construction of Hibernia.

"The first part of the job was to essentially wake up the site and make upgrades to what remained from Hibernia," said KKC Installation Manager Mike Ostlund. "The site functions like a small city, so we had to make sure all the systems — sewer, water, water treatment and electrical, for example — would support operations."

Preparations in the first year also included building a dry dock for the first phase of GBS construction. KKC built a bund wall, or cofferdam, to section off the dry dock and safely removed marine life in the area before pumping water out of the dry dock.

Construction of the GBS began in the dry dock in late 2012. On top of a base slab that covers an area almost the size of three NFL football fields, concrete was poured in phases using slip forms to make the cell walls.





The slip form process allows for a pour of concrete as formwork is raised vertically using hydraulics. Once the slip forming of the walls was complete, mechanical outfitting of the structure began.

By mid-2014, construction in the dry dock was complete. The dry dock was flooded and the bund wall removed. The GBS was then towed by tugs out to the deep water site less than a kilometer away and secured for the next phase of construction. At approximately 180 meters (590 feet), water depth at the site is nearly twice that of the offshore installation site.

### OPERATING ON A GRAND SCALE

Once the GBS arrived at the deep water site, KKC prepared for a 35-day continuous slip form concrete pour to add 44 meters (144 feet) to the GBS. This included five weeks spent assembling a floating production facility with offices, facilities, laydown areas, backup power generation on board, and a floating batch plant.



1. In June 2014, more than 1,500 people celebrated 10 million manhours without a lost time incident at the Hebron GBS. 2. The GBS and surrounding flotilla seen from above at the deep water site. The flotilla includes a floating concrete batch plant.

“Preparation for this enormous slip started over a year before it began,” Hughes said. “Everything from optimizing the structure for ease of construction, to the logistics of gearing up 2,800 people a day on the GBS and transporting them and materials back and forth to shore each day.”

All of the planning came to fruition in mid-September 2014, when the slip form pour began. The last batch of concrete was poured 35 days later, and the GBS had reached 71 meters (233 feet) in height.

“Finishing this slip was definitely one of the highlights of this job,” said Hughes. “Being able to complete one of the largest slip form pours in the world with an excellent safety and quality record speaks to the dedication and attention to detail of everyone — craft, staff and the client — who was a part of the engineering, planning and execution of this large operation.”

The excellent safety record on the largest slip was a direct reflection of the safety culture that has been in place and evolving since the first day of the project.

“Our key to safety success is our craft engagement and commitment to Nobody Gets Hurt,” said Dwayne Serafin, the KKC site operations manager.

“It starts with the orientation and extends to the front lines,” he said. “Our craft are always involved. That’s what has made Hebron an industry leader in safety. Our people make it personal, they care about each other, and it’s evident in the culture here.”

### AN ISLAND-WIDE EFFORT

While KKC continues work at Bull Arm, additional Kiewit crews are building other parts of Hebron around Newfoundland.

On the west side of the island in Stephenville, part of the KKC team is fabricating mechanical outfitting and decking for the GBS. The finished materials, including mechanical piping, are then transported to Bull Arm and installed inside the center shaft of the GBS.

On the south side of the island in Marystown, Kiewit Offshore is building Hebron’s drilling support module (DSM). The DSM is a 3,200-metric-ton, four-level structure, one of four primary pieces that will make up the topsides.

On the finished platform, the outfitted DSM with its

## Construction progression

1. KKC prepares the Bull Arm site for construction of Hebron’s gravity-based structure (GBS).
2. KKC builds the dry dock, where the first phase of GBS construction takes place.
3. At the dry dock, the GBS reaches 27 meters tall using slip form concrete pouring methods.
4. Once construction in the dry dock is complete, the dry dock is flooded and the GBS is towed to the deep water site for further construction.
5. The flotilla is assembled around the GBS for the deep water construction phase.
6. While the GBS is being built at Bull Arm, other parts of Hebron, including topsides, are being built and/or assembled in Newfoundland, as well as in Korea.
7. The largest slip form pour of the project — the second largest slip form pour in the world — takes place at the deep water site and adds 44 meters (144 feet) to the height of the GBS.
8. Construction continues on the GBS and the topsides.
9. Once the topsides and GBS are complete, the topsides will be floated to the deep water site where it will be mated with the GBS. The systems will be integrated and tested at Bull Arm.
10. Finally, Hebron — the completed oil platform — will be towed from the deep water site to the Grand Banks off the coast of Newfoundland, where installation, hookup and commissioning operations will take place.





instrumentation, multitude of pumps, bulk storage and drill pipe storage will work in conjunction with the derrick equipment set module.

“The fabrication and assembly of this structure from the bottom up would not have been possible without the many Kiewit personnel involved,” said Kiewit Offshore Area Manager John Huber.

“Kiewit’s involvement embodies the teamwork philosophy we have all come to appreciate by drawing from the pool of talented people across North America. Being one of the largest modules constructed in-province, the project has allowed many Newfoundlanders and Labradorians to apply

their trade on a monumental project for the province.”

Once construction of the topsides and GBS is complete, the topsides will be floated over and mated with the GBS at the Bull Arm deep water site. Everything will be integrated and tested there before it’s towed to and installed off the coast of Newfoundland, ready for first oil.

### NEVER SAY NEVER


When Hebron becomes operational in the North Atlantic, it will be a significant event in Newfoundland and Labrador, and in the careers of all the Kiewit people who have been involved on the project.

It’s what many might consider a once-in-a-career job, and one this team will never see again. But those who were at Hibernia and now are at Hebron know you should never say never.

“Being from Newfoundland, working on Hibernia was a great moment in my career,” said Seumas St. George, KKC mechanical outfitting discipline and installation lead. “To be back here again with Kiewit, working on one of the largest projects in the company’s history and one that is so important to Newfoundland, it’s incredible.”

For those who weren’t on Hibernia, but heard stories about it during their Kiewit careers, it’s just as exciting to be part of the team at Hebron.

“When I started with Kiewit in 1997 as an intern, I heard about Hibernia and always thought ‘I’d love to work on a project like that,’ but didn’t know if the opportunity would come along,” KKC General Superintendent Dan Sullivan said. “It’s been a great experience working at Hebron. I’m glad things came full circle.”

“This is a great opportunity not only for those of us here in Newfoundland, but for all of Kiewit,” said Sullivan. “The skills learned and refined just coordinating a project of this magnitude, as well as working with a world-class team, will have enormous benefits for the company now and in the future.” 



## Hebron’s largest slip form by the numbers

50,000  
cubic meters Concrete

35  
days Continuous slip form concrete pour

15,000  
tons Rebar

more than  
7,000 Embeds

approximately  
3,500 Craft workers involved in the operation

1.2  
million craft hours worked





Kiewit Corporation  
3555 Farnam St.  
Omaha, NE 68131

Subscribe online at [kiewit.com/kieways](http://kiewit.com/kieways)

**Kiewit core values:**

**People.**  
**Integrity.**  
**Excellence.**  
**Stewardship.**

