



Kiewit Corporation
3555 Farnam St.
Omaha, NE 68131

Want a career
that can take you places?

**LOOK NO
FURTHER.**

KIEWIT.COM/WHYKIEWIT

Sign up to receive Kieways
in your inbox at kieways.com

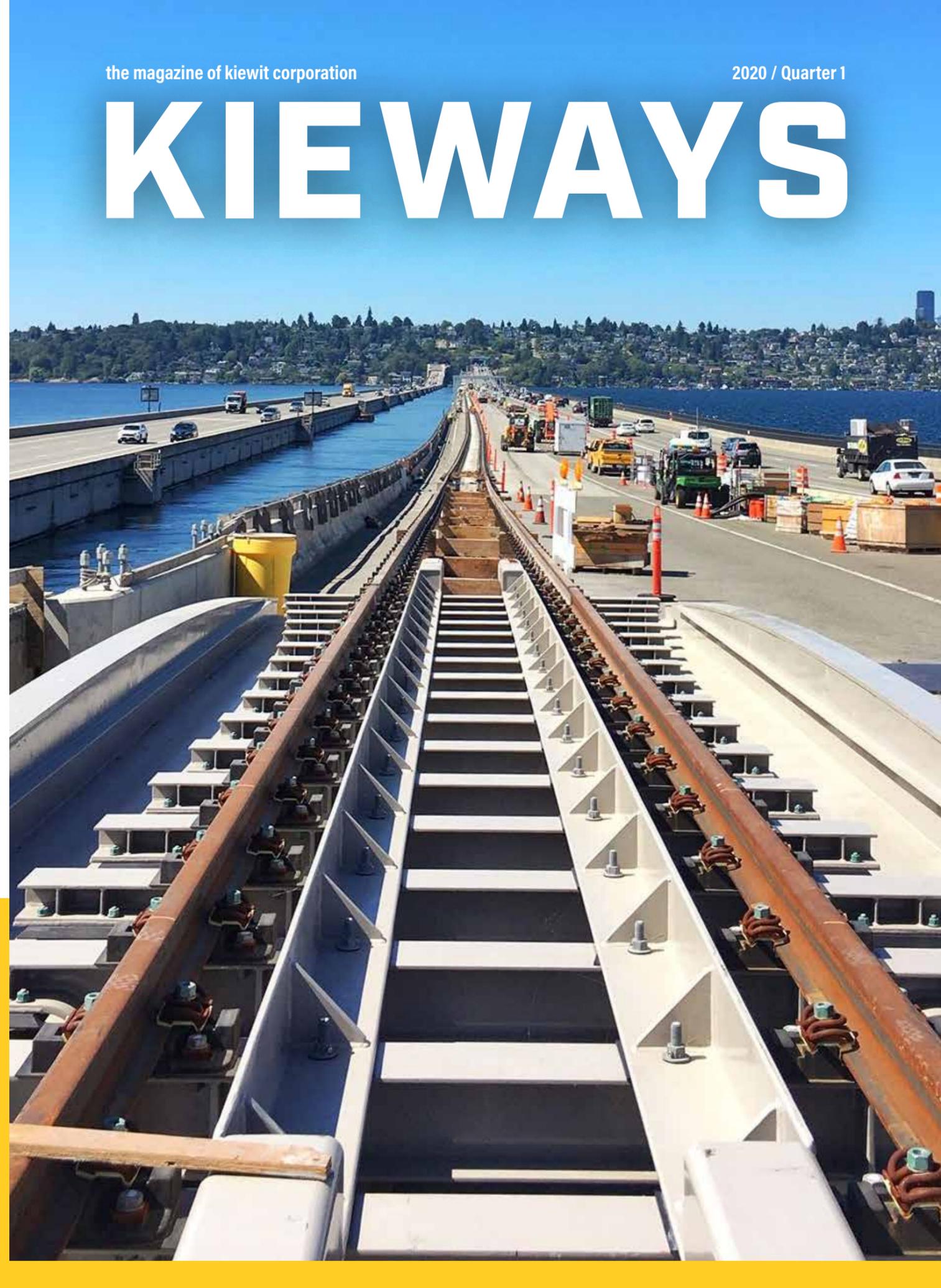


SINCE 1884

the magazine of kiewit corporation

2020 / Quarter 1

KIEWAYS





SUCCESS AT TERROR LAKE

The Kiewit team at Terror Lake braved the rugged terrain and harsh elements of Kodiak Island in Alaska, to finish the project a full year ahead of schedule. Read about it on Page 6.



MANAGING EDITOR: Sharon Armstrong

CREATIVE EDITOR: Ashley Wedeking

CONTRIBUTING WRITERS: Susan Houston Klaus, Teresa Shada, Kristen Stieg

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 2018 revenues of \$9 billion and employs 20,000 staff and craft employees.

CONTRIBUTING DESIGNERS: Emma Farrell, Shawn Vaughan, Ashley Wedeking

CONTRIBUTORS: Eric Grundke, Jessica Jensen, Rand Magee, Tricia Todd

EDITORIAL TEAM: Sharon Armstrong, Matt Baird, Carrie Chambers, Tom Janssen, Jessica Jensen, Tammy Korgie, Bob Kula, Amy Nussmeier, Toni Oestmann, Craig Olson, Gary Pietrok, Teresa Shada, Shawn Vaughan, Ashley Wedeking

KIEWAYS

Kieways is a quarterly magazine issued by Kiewit Corporation. To subscribe, go to kieways.com.

Copyright 2020 by Kiewit Corporation.

All rights reserved.

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

To contact us, visit kiewit.com.



TEAMS UP THEIR GAME TO DELIVER FOR CLIENTS

It never ceases to amaze me how Kiewit teams manage to up their game again and again, taking on new challenges, delivering on client expectations and building strong partnerships.

The projects featured in this issue of Kieways all have one thing in common – repeat clients. From remote Alaska, to Washington and Nebraska, Kiewit teams brought their A game to find innovative ways to build unique work, beat schedules and build on already strong partnerships.

On Page 6, read about how Kiewit returned to Kodiak, Alaska, to help a client realize its vision to power the town with 95% renewable energy by 2020. The Kiewit team braved the elements and with careful planning and flawless execution finished a full year ahead of schedule.

In Washington, a Kiewit Hoffman joint venture is creating some firsts and setting records of its own. The team is retrofitting the Homer M. Hadley Memorial Bridge to carry light-rail traffic on I-90 between Mercer Island and Seattle. The 6,000-foot-long floating bridge is the first of its kind with light rail. Read about how the team accomplished this challenging project on Page 14.

Finally, we'd be hard-pressed to find a better partner than Omaha's Henry Doorly Zoo and Aquarium in Omaha, Nebraska. The zoo is one of the top-rated in the United States and Kiewit has been there since 1965. On Page 18 read about how Kiewit has helped the zoo grow into an attraction that brings in 2 million visitors each year.

The projects featured in this issue of Kieways may not be the biggest, but each is unique, represents the amazing ingenuity of our people, and is a testament to the importance of building strong relationships with our clients.

RICK LANOHA
Chief Executive Officer



SEA LIONS GET NEW HOME

Owen Sea Lion Shores is the latest in a long line of attractions built by Kiewit at Omaha's Henry Doorly Zoo and Aquarium in Omaha, Nebraska. Read about it on Page 18.

ON THE COVER

14 A MODERN MARVEL

Adding light rail to a floating bridge had never been done before, but a Kiewit Hoffman joint venture was up for the challenge.

ALSO INSIDE

04 KIEWIT NEWS

Catch up on recent news from across Kiewit.

06 IT ALL STARTED WITH TERROR LAKE

A Kiewit team braved rugged Alaska terrain to deliver on its client's vision a year ahead of schedule.

18 FROM A TO ZOO

Since 1965, Kiewit has been building projects at Omaha's Henry Doorly Zoo and Aquarium, helping it grow into one of the top zoos in the United States.

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

KIEWIT.COM

NEWSROOM.KIEWIT.COM

KIEWITJOBS.COM



SKARSGARD WINS PETER KIEWIT AWARD

Kiewit CEO Rick Lanoha presented Pegah Skarsgard the Peter Kiewit Award for Excellence in Management at the company's Annual Meeting in January. Skarsgard took home the company's most prestigious award for her leadership on the Huntington Beach Energy Center project in California. The award is named after Peter Kiewit, the company's president from 1941-1969. It was first presented in 1981.



NOBODY GETS HURT

Twenty-one Kiewit projects earned Project Goose Egg Awards for their 2019 safety performance. Kiewit presents Project Goose Eggs to projects that worked more than 200,000 craft man-hours without a recordable incident. Combined, these 21 projects worked more than 10 million hours without an incident. Below are photos of a few of the winning projects.



Raglan Mine, Boisbriand, Quebec



Hickory Run Energy Center, New Castle, Pennsylvania



Connect 4, Irving, Texas



KIEWIT ENGINEERS TRAVEL TO RWANDA WITH BRIDGES TO PROSPERITY

A team of 12 Kiewit engineers recently traveled to Rwanda with Bridges to Prosperity to build a 50-meter suspension bridge. The new bridge serves two communities and approximately 1,500 people. The structure provides safe access to essential health care, education and economic opportunities over the Koko River, which was previously impassable during the rainy season.

KIEWIT AND FLUOR PARTNERSHIP AWARDED EPC CONTRACT FOR NEW PDH FACILITY

Canada Kuwait Petrochemical Corporation (CKPC) awarded an engineering, procurement and construction (EPC) contract for a new propane dehydrogenation (PDH) facility to Heartland Canada Partners. Heartland Canada Partners is a 50/50 partnership between Kiewit Construction Services ULC and Fluor Canada Ltd. Congratulations to the team.



THE BEST OF THE BEST IN SAFETY

Lackawanna Energy Center earned Engineering News-Record's Excellence in Safety Award in the publication's nationwide Best of the Best Projects competition.

OROVILLE PROJECT EARNS AGC CALIFORNIA HONORS

The Oroville Spillways Emergency Recovery Project earned the "Heavy Civil over \$100 Million" and the "Partnering in Excellence" awards at the Associated General Contractors (AGC) of California's Constructor Awards ceremony in San Francisco in January. Read more about Kiewit's work on the project in the 2018 and 2019 Quarter 1 issues of Kieways at kieways.com/archive.



74 COLLEGIATE WOMEN ATTEND FUTURE WOMEN IN KIEWIT SUMMIT

In February, 74 collegiate women from nearly 50 universities across North America attended the Future Women in Kiewit Summit in Omaha, Nebraska. Some of the attendees were future Kiewit interns or employees. Attendees heard from women across the Kiewit organization, networked and learned about Kiewit's diverse markets and career opportunities.

IT ALL STARTED WITH

TERROR LAKE

Since ancient times, energy derived from falling or running water has been used as a source of renewable energy. China's Han Dynasty used trip hammers powered by vertical-set water wheels to pound and hull grain, break ore and make paper. Centuries later, when the world's first factory systems were established, England's Cromford Mill became the world's first water-powered cotton spinning mill.

In the 1880s, hydropower plants were installed across North America — in Ontario, Michigan, New York and Wisconsin — and supplied power to mills and lit local buildings. In the 20th century, U.S. President Franklin Roosevelt enacted policies that supported the construction of numerous waterpower projects. By 1940, hydropower made up 40% of electricity generation in the United States.

And it was in the 1940s that the Kodiak Electric Association, Inc. (KEA) was created.

On the surface, KEA is a rural electric cooperative that generates, transmits and distributes electrical power in Kodiak, Alaska. It owns, operates and maintains an isolated grid.

But dig deeper.

This grid is made up of renewable energy resources: hydropower, wind, two flywheels and a battery storage system. Base rates for KEA's customers haven't increased since the 1990s. To think of any commodity at the same price today as it was 30 years ago seems almost impossible. But not in Kodiak. KEA is redefining what it means to deliver consistently affordable and renewable electricity.

And it all started with Terror Lake.

POWERING A VISION

The Terror Lake Hydroelectric Project started out as more than a concept. It was a vision.

KEA and its engineers knew that the secret to affordable, stable energy was all around them. It was in the water — the rainfall and snowmelt of the Kodiak mountains. In the 1970s, engineers began to lay out their elaborate vision and design for the undertaking, ensuring every drawing reflected the project's maximum potential and not just for the demand at the time.

"The engineers had the foresight to see what resources were available and how that layout could occur," explains Jennifer King, KEA regulatory specialist. "But at that time,

1. Kiewit finishes Terror Lake dam in the 1980s. 2. Kiewit breaks ground on Phase 1 of the Terror Lake Hydroelectric Project in April 1982.

3. An excavator crosses over a temporary jimbob bridge. The bridge, along with all of Kiewit's equipment, leaves the island when the project finishes.

4. Kodiak Island is known for its Kodiak bear habitation. Kodiak bears are one of the largest bears in existence, second to only the polar bear.



the town didn't need that much power. It only made sense economically to build what Kodiak needed and have the designs ready to move ahead when the town needed more power."

The engineers designed the project in a way that would let KEA and its contractors build the project in phases — and in April 1982, a joint venture of Kiewit/Groves won the bid for the first phase of the Terror Lake Hydroelectric Project. Phase 1 consisted of a 26,680-foot-long power tunnel, a penstock in a backfilled trench down to a 3-unit-capacity powerhouse, various secondary structures and tunnels, and a major rock-fill dam.

DAMMING TERROR LAKE

The Upper Terror River feeds into Terror Lake, and the lake system is unique. It's trans-basin, meaning it involves multiple watersheds: the Terror, the Kizhuyak and the Hidden Basin. The first phase of the project focused on the Terror and Kizhuyak watersheds. To capture as much water as possible, Kiewit raised the lake level more than 190 feet by damming Terror Lake, which in turn raised its surface area and increased storage capacity.

Different diversions, Shotgun Lake, Falls Creek and Rolling Rock Creek, feed water from different drainages throughout this region to supply the Kiewit-built hydro powerhouse.

The powerhouse was designed for three turbines to provide a total of 30-megawatts of power, but the town, at that time, needed less than 20. Kiewit built the plant for three bays, but only installed two turbines.

"The penstock, the power tunnel, the tailrace, the powerhouse — everything was designed for the full three turbines, so when we needed that third turbine, we'd be ready," King said.

THE THIRD TURBINE

In 2007, the KEA board of directors released a vision statement stating that KEA will be 95% renewable by 2020. While hydro was a major energy source, it wasn't KEA's only energy source. Kodiak was diesel dependent.

"We used to be dependent on millions of gallons of diesel per year, and we had to buy that at different volatile price rates and pass that cost onto our membership," said King. "KEA knew that diesel was not in our future. We couldn't rely on diesel as primary power. We needed to find some other sources."

With a renewed focus on alternative energy, KEA installed its first three wind turbines above the town on Pillar Mountain. They were the first megawatt-scale wind turbines



in the state of Alaska. It then went on to add an additional three, but wind is wild and unpredictable. An energy storage solution was needed. Enter the two flywheels and a battery storage system.

Before long and ahead of schedule, KEA had met its renewable energy goal and the town began to change how it received its electricity. The old diesel power shipping crane in town was replaced with an electric, state-of-the-art crane. The town swimming pool is now being heated by an electric boiler. New housing is being built with electric heat and people are retrofitting their diesel boilers into electric.

"As we provided stable, affordable, clean electricity for the community, other uses of diesel in town became electrified, so our load expanded," King said. "People said, 'Wait, we have this great electric supply, why aren't we using electricity instead of diesel?' The better job we do at providing this energy, the more the town wants this energy and we need to stay ahead of it. We don't want everyone converting to electric and then have to turn on the diesel engines."

KEA did not want any reliance on diesel. By 2014, the third turbine was up and running in the Terror Lake hydro powerhouse.

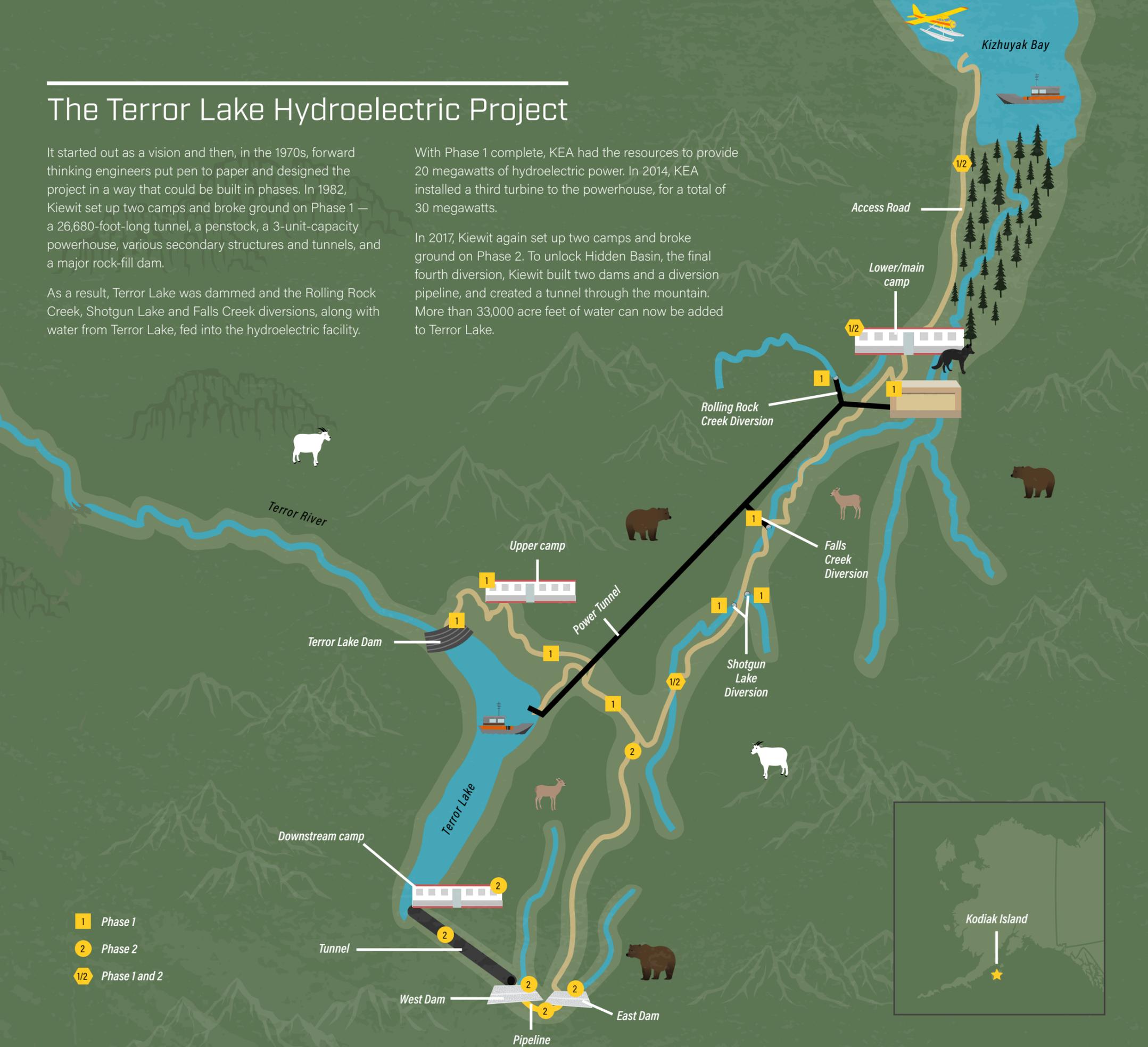
The Terror Lake Hydroelectric Project

It started out as a vision and then, in the 1970s, forward thinking engineers put pen to paper and designed the project in a way that could be built in phases. In 1982, Kiewit set up two camps and broke ground on Phase 1 — a 26,680-foot-long tunnel, a penstock, a 3-unit-capacity powerhouse, various secondary structures and tunnels, and a major rock-fill dam.

As a result, Terror Lake was dammed and the Rolling Rock Creek, Shotgun Lake and Falls Creek diversions, along with water from Terror Lake, fed into the hydroelectric facility.

With Phase 1 complete, KEA had the resources to provide 20 megawatts of hydroelectric power. In 2014, KEA installed a third turbine to the powerhouse, for a total of 30 megawatts.

In 2017, Kiewit again set up two camps and broke ground on Phase 2. To unlock Hidden Basin, the final fourth diversion, Kiewit built two dams and a diversion pipeline, and created a tunnel through the mountain. More than 33,000 acre feet of water can now be added to Terror Lake.



UNLEASHING THE HIDDEN BASIN

For KEA to maintain its now 100% renewable energy grid, it needed to unlock the third and final watershed of the trans-basin Terror Lake — the Hidden Basin, a resource capable of adding 33,000-acre-feet of water to Terror Lake.

“The Hidden Basin is an amazing resource,” King said. “That water is fuel, and we now have that much more fuel added to our system.”

Because of the original big vision of Terror Lake, to fully incorporate the Hidden Basin, KEA and Kiewit didn’t need to change anything with their already installed powerhouse transmission lines. When Kiewit finished Hidden Basin construction in November 2019, KEA was left with an even greater passive, gravity-fed supply of hydro resources that will power its town with renewable energy for decades to come.

“This takes care of our load from here on out,” King said. “It really seals the deal that we do not need to return to diesel!”

A YEAR AHEAD OF SCHEDULE

Longtime Kiewit Project Manager Clint Lane led the charge for Terror Lake’s final construction project. Terror Lake is located on a remote, isolated island, only accessible by boat or seaplane. But these are the types of projects that Lane, a 30-year Kiewit veteran, thrives on. He’s either led or been part of some of Kiewit’s most challenging remote island work throughout his career. His resume includes managing the Unalakleet Coastal Erosion, Akutan Airport and the Kodiak Airport Runway Safety Area (RSA) projects.

King was very pleased to have Kiewit as its partner with Lane at the helm.

“We knew all along that this would be a very heavy, field-logistics type of project, and that is why we are thrilled to have Kiewit,” she said. “Kiewit has good staff, equipment, people and planning. The team is diligent and able to adapt and make necessary decisions in the field for how this is going to work. There is such a practical mindset with a lot of good brainpower and equipment with horsepower behind it for the job to get done in these unique remote areas.”

To incorporate the Hidden Basin as the fourth diversion into Terror Lake, Kiewit constructed two dams and a diversion pipeline, and used drill and blast techniques to make a tunnel through the mountain. Because it is located on an isolated island, Kiewit set up two camps. The main camp housed up to 70 people working on the dams, diversion pipeline and upstream tunnel construction. Another camp was set up to house up to 24 people working on the



Equipment, materials and supplies travel on barges from the Pacific Northwest.

downstream tunnel construction at Terror Lake. Additionally, the team needed to construct temporary access roads on the pristine island.

Kodiak is a rugged island, known to be unpredictable with harsh winter and autumn storms. Lane knew the best approach for this project was to get in and get out.

"Our contract said we had three years to build the project," Lane said. "But from the beginning, we were focused on getting it done in two if we could."

The team was able to plan it in a way that would allow them to complete all the major construction in its two-year goal, avoiding the need to deal with three winters of Terror Lake logistics. Boats and barges freeze in the water. Equipment freezes. Attempting to do construction work from November to April on the island was all but impossible.

In the end, the Kiewit team met its goal of finishing Hidden Basin construction a year ahead of schedule. A few will return to Terror Lake in the summer to do some final reclamation work, but for KEA, the Hidden Basin is fully incorporated and its big vision for the Terror Lake Hydroelectric Project is now complete.

"We're very pleased that this water resource is now available to the community," King said. "Knowing that we have Hidden Basin adding to the lake as soon as this winter and knowing that this spring we have that much more of a resource available, lets us know that we don't need to do diesel runs to supplement our power supply." **K**

"Kiewit has good staff, equipment, people and planning. The team is diligent and able to adapt and make necessary decisions in the field for how this is going to work. There is such a practical mindset with a lot of good brainpower and equipment with horsepower behind it for the job to get done in these unique remote areas."

JENNIFER KING

KEA Regulatory Specialist

ONCE HADLEY'S FOLLY, NOW
**A MODERN
MARVEL**

A Kiewit joint venture is creating a new set of firsts on a bridge originally conceived by a pioneering Seattle bridge engineer.



In the early 1920s, an engineer named Homer More Hadley was something of a maverick.

He envisioned a new roadway for landlocked Seattle-area drivers in the eastern part of the city: a floating bridge to span Lake Washington.

It was an innovative solution for a structure that needed to work with the up-to-200-foot lake depth, too deep for traditional pilings or towers.

The engineer's concept, inspired by European cellular construction and designed as a series of hollow concrete barges, was initially ridiculed by naysayers who called it "Hadley's Folly."

But after intensive lobbying by fans of the idea, his dream came to life. That bridge, named for Lacey V. Murrow, second director of the Washington State Highway Department, opened to traffic in 1940.

In 1989, nearly a half-century later, Hadley got a posthumous tribute: the Homer M. Hadley Memorial Bridge, a companion floating bridge to carry the westbound lanes of I-90 between Mercer Island and Seattle.

A JOINT VENTURE MARKED BY FIRSTS

Today, the Homer M. Hadley (HMH) Memorial Bridge is making news of its own. In 2023, the structure will be the first-ever floating bridge to carry light rail traffic (LRT).



1. The top photo shows the view to the west on the Homer M. Hadley Memorial Bridge where light rail track is being installed. The Lacey V. Murrow Memorial Bridge is shown on the left. The floating bridges carry traffic on Interstate 90 across Lake Washington. 2. The second photo shows the view circa 1959 looking west from the original Lacey V. Murrow Memorial Bridge, which carried eastbound and westbound traffic across the lake. [Photo credit: Seattle Municipal Archives via Wikimedia Commons]

The bridge, approximately 6,000 feet long, is the centerpiece of joint venture Kiewit Hoffman East Link Constructors for Sound Transit, in partnership with the Washington State Department of Transportation (WSDOT).

“It’s really easy to get wrapped up in the job and forget that some of the work that we’re performing out here has never been done before. It’s a phenomenal feeling to be involved in these industry firsts.”

MITCH CHICHA

Kiewit Project Engineer

The LRT project — which is marked by some impressive firsts for the team — encompasses a 7-mile stretch of roadway.

It intersects with Sound Transit’s north-south mainline, running from the International District/Chinatown Station in the downtown Seattle Transit Tunnel to south Bellevue at the east end of the East Channel Bridge.

Work has included closing the existing high-occupancy vehicle (carpool) lanes, retrofits for the bridge and two tunnels, installation of the new guideway, and building two stations. Before those tasks could begin, there were also seismic upgrades to the HMM Bridge and three others in the area.

TIGHT SPACES

To strengthen the existing structure for the increased load brought by the light rail trains and associated infrastructure, the team installed post-tensioning strands inside the bridge. At 3,600 feet, they will be the longest continuous tendons in the world.

The meticulous process required crews to work inside the individual cells of the bridge, core drilling roughly 2,500 holes below the water line to create a path for the continuous tendons and the ducts that encase them.

This wasn’t a job for even the mildly claustrophobic or non-limber individual.



When the LRT project opens in 2023, the 105-foot-wide top deck of the bridge will allow for a pedestrian path, four lanes of vehicle traffic and two directions of light rail track, eastbound and westbound. The westbound track will be complete by summer 2020.

“You’re doing everything in a 30-by-15-by-15-foot cell,” said Brawn Lausen, project manager, “so you’re bringing the materials inside through a little door, a hatch, that’s two-foot-by-four-foot wide.”

Another challenge: To stay on schedule, the work had to take place while the bridge was open to vehicle traffic.

“While live traffic was traveling above our heads, in many cases we had several workers down below inside the bridge drilling all these holes, putting in the ducts and threading all the post-tensioning strand through it,” said Construction Manager Dave Bowman.

STRETCHING THE STRANDS

The post-tensioning elements were assembled over several months.

“While we were doing all that,” Bowman said, “we worked with Sound Transit and WSDOT to identify a weekend six months in advance when we could do a complete shutdown of the bridge” for the post-tensioning event.

Two massive 600-ton hydraulic rams were lowered down inside the bridge structure.

Several trolley systems took them down to newly constructed large steel anchor frames at the east and west ends of the bridge.

Slowly and methodically, the rams began to stretch the strands until they achieved an elongation of just over 22 lineal feet.

The team’s success earned them the 2019 Award of Excellence for Repair/Rehab/Strengthening by the Post Tensioning Institute.

STICKING TO A UNIQUE TRACK

Building the guideway that the LRT will run on represents another unique aspect of the project. Typical direct fixation track uses a “drill-and-dowel” method to connect to the existing structure.

The HMM Bridge, however, required another solution because of the existing post-tensioning within the bridge deck. Sound Transit worked with designers for almost a decade to solve that problem.

In an industry first for a floating bridge, 7,400 lightweight precast plinth blocks each weighing 100 pounds were epoxied to the bridge’s pontoon deck, said Project Engineer Mitch Chicha.

In a temperature-controlled environment, a layer of rubberized elastomeric grout was installed to the bottom of every block to prevent the block from cracking as the deck epoxy cured and created heat. That will also allow for resilience in the blocks as trains travel over them.

The bridge surface was prepared and grout dams were formed around each block using angle iron forms. Self-leveling epoxy grout was then installed under the blocks and air pockets removed to ensure a strong bond.

‘A PHENOMENAL FEELING’

The project is about 80 percent complete, with track work scheduled for the rest of this year.

By the time work wraps at the end of 2020, staff and craft will have invested 1 million man-hours. The team will then turn over the project to Kiewit subsidiary, Mass. Electric Construction Co., to install the infrastructure to power the trains.

Chicha says he’ll look back with pride on the innovation the project represents.

“It’s really easy to get wrapped up in the job and forget that some of the work that we’re performing out here has never been done before,” he said. “It’s a phenomenal feeling to be involved in these industry firsts.” **K**



From



to



Children's Adventure Trails



Kiewit's history at Omaha's Henry Doorly Zoo and Aquarium



Each year, more than 2 million people visit Omaha's Henry Doorly Zoo and Aquarium. The zoo has changed drastically in the last 55 years, and Kiewit Building Group Inc. has been there every step of the way.

For nearly as long as it's been called Omaha's Henry Doorly Zoo and Aquarium, Kiewit has been building projects there. In 1963, Margaret Hitchcock Doorly donated \$750,000 to the zoo with the stipulation that it be named after her late husband, Henry Doorly, chairman and publisher of the Omaha World-Herald newspaper. Two years later, Kiewit began its first zoo project.

Kiewit General Superintendent Bob Edick remembers what the zoo was like in his childhood days.

"When I was growing up, it was a pretty small place. It's three to four times bigger than it was 20 years ago. As it grows, it just keeps getting better and better."

Edick has been a part of construction at the zoo for more than 15 years. He served as the general superintendent over the Hubbard Orangutan Forest and the Grewcock Center for Conservation and Research projects, which opened in

2005 and 2006, respectively. Over the years, he has also supported Kiewit's construction of the Desert Dome and the Suzanne and Walter Scott Aquarium.

For him, the most memorable project was the Hubbard Orangutan Forest.

"On that project, we installed 65-foot-tall banyan 'trees' made of steel and concrete with a net over the top. We built a state-of-the-art habitat for the orangutans that no one ever sees," said Edick. "And we had to weld everything so the orangutans wouldn't unscrew the nuts from the bolts. It's crazy how strong — and how mischievous — they are."

While Edick has worked on many building projects since he started with Kiewit in 1980, the zoo projects stand out to him.

"When we work for the zoo, we get to build the stuff that no one gets to build. It's one-of-a-kind."

Kiewit has worked on more than 35 projects at Omaha's Zoo and Aquarium. Some of the most noteworthy include the following:

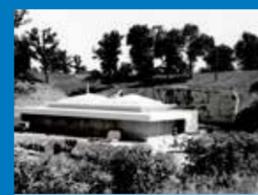
- **The Lee G. Simmons Aviary** opened in 1983. The four-acre exhibit includes more than 500 birds such as flamingos, ducks, swans, storks, ibis and cranes.

- **The Lied Jungle®** is a large indoor rain forest. Completed in 1992, the 80-foot-tall building includes a translucent roof supported by steel columns camouflaged as trees. The exhibit features a swaying suspension bridge, a 35-foot-tall waterfall and underwater viewing areas. The jungle was named USA TODAY's Best Zoo Exhibit in the country in 2019.
- **The Suzanne and Walter Scott Aquarium** opened to the public in 1995. Named after Kiewit's former chief executive officer and his wife, the exhibit includes a 70-foot shark tunnel that allows visitors to walk among the sharks, sea turtles and colorful fish. Kiewit constructed the 1.2-million-gallon aquarium in less than two years and renovated it in 2012, adding a 13,000-square-foot conference center.
- **The Desert Dome** is the world's largest indoor desert, according to the zoo. It features animals and plants from Africa's Namib Desert, Australia's Red Center and North America's Sonoran Desert. Completed in 2002, it sits under a large geodesic dome, which towers 13 stories high and is made up of 1,760 acrylic, triangular-shaped panels.
- **The Suzanne and Walter Scott African Grasslands**, completed in 2016, is the largest construction project



Desert Dome

55 years of strong partnership



1966: Construction is completed on bear grottos, a children's zoo and facilities for primates and hoofed animals.

1965



1972: Kiewit partners with the zoo again on a new facility for sea lions, featuring a reinforced concrete den structure.

1970



1983: The walk-through Simmons Aviary is constructed. It is now home to 500 birds, including flamingos, ducks, swans, storks and cranes.

1980



1984: A new Marine Aquarium is built with 22 displays, including a 34-foot-long shark tank and a touch tank for visitors to feel starfish.

1980



1987: Major renovations take place, including construction of a gift shop, Wolf Woods, Wild Kingdom Pavilion and new displays for otters and monkeys.

1987



1992: Kiewit builds the Lied Jungle, a large indoor tropical rain forest.

1990



1995: The Suzanne and Walter Scott Aquarium opens. The 71,000-square-foot aquarium was constructed in 21 months.

1995



1997: A new IMAX theater opens with a screen measuring 41 feet tall by 75 feet wide.

1997



1999: Thirty animals are added to Sue's carousel.

1999



2002: Kiewit builds the zoo's Desert Dome. The zoo reports it is the world's largest indoor desert, located under the world's largest glazed geodesic dome.

2000



2004: Hubbard Gorilla Valley opens, allowing gorillas to roam over the 3-acre site.

2004

in the zoo's history. The project was built in phases, with the first phase focused on creating new habitats and buildings for elephants, giraffes, rhinos, gazelles, antelopes and zebras. The second phase of the project included a game-management headquarters with new habitats for lions, cheetahs and other African grasslands animals.

- **The Asian Highlands**, the zoo's newest exhibit, opened in its entirety in 2019. For this project, Kiewit turned eight acres of undeveloped land into an immersive journey through Asia. The exhibit includes a diverse collection of animals like the red panda, white-naped crane, sloth bear, tufted deer, Amur tiger, snow leopard, takin, Pere David's deer and Indian rhino.

HISTORY REPEATS ITSELF

Kiewit continues to build on its legacy at the zoo as it simultaneously constructs a new exhibit and remodels another.

In the summer of 2018, Kiewit started construction on Owen Sea Lion Shores, part of a grand vision to create a coastal Alaskan-themed area at the northwest end of the zoo. Located on the site of the former Durham Bear Canyon where Kiewit started its first zoo project, the future home of the sea lions will open in fall 2020.

Although currently in the midst of major construction, Project Manager Jon Babovec can already envision what zoo guests will see.

"Visitors will be drawn into a seemingly natural environment, with new focal points around every corner. Even though this exhibit is right in the middle of the zoo, you'll feel like you're exploring the coast of the northwest," said Babovec.

Zoo guests will enter through a grand sea arch, the largest single piece of rock work in the zoo. They will walk alongside a 275,000-gallon pool, which will be heated or chilled depending on the season. And they'll even get to watch the sea lions swim up close thanks to a 40-foot-long, 17,000-pound underwater viewing window.

While the public will get to see the end result, the project team knows that the exhibit is more than meets the eye.

"The job includes more than 10,000 feet of piping below the 1.5-acre exhibit," said Babovec. "More than half of the project is below grade. There's a whole forest of underground pipe that no one will ever see."

In fact, even though the project is in the middle of the zoo, there are many things that the average zoo visitor will not see. To minimize impact to staff and guests, construction



2005: Kiewit completes Hubbard Orangutan Forest. Two man-made banyan trees rising 65 feet in the air allow orangutans and other monkeys to study visitors, the zoo and even downtown Omaha.



2008: The Berniece Grewcock Butterfly and Insect Pavilion opens, giving visitors an up-close view of butterflies, moths, hummingbirds, spiders, ants, bees and more.



2010: Expedition Madagascar opens with nearly 19,000 square feet of indoor and outdoor space to showcase the zoo's lemur population.



2012: The Suzanne and Walter Scott Aquarium is renovated.



2013: A new modern entrance, ticketing and guest services is built.



2016: Kiewit completes the zoo's Alaskan Adventure, an Alaskan-themed splash ground. Statues help visitors learn about some of the animals that can be seen near the Alaska coastline.



2016: Kiewit completes the largest project in the zoo's history. The Suzanne and Walter Scott African Grasslands spans 28 acres and is home to the zoo's elephants, rhinos and zebras.



2017: Children's Adventure Trails and the Robert B. Daugherty Education Center provide both new play and educational areas for children and visitors.



2019: Asian Highlands opens taking guests on an immersive journey, ranging from the grassland foothills of Northern India to the Himalayan Mountains.



2020: Owen Sea Lion Shores will open in the fall as a new habitat with a 275,000-gallon pool, an underwater viewing window, natural boundaries, heated rocks, an underwater kelp forest and sandy beach areas.

materials are delivered before the zoo opens or after it closes.

“The fact that this is a functioning zoo changes our priorities. While safety is always our first priority, this project requires us to consider the safety of 2 million annual visitors and 1,100 zoo staff,” said Babovec.

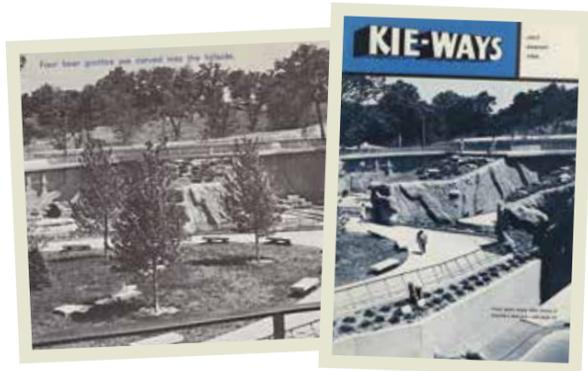
Safety is also top of mind for a second Kiewit team remodeling the Suzanne and Walter Scott Aquarium. The renovation will feature a completely new entrance, including brushed stainless steel waves on the roof and a tiled plaza. Kiewit is also installing a new asphalt roof, updating the Sea Turtle Café and remodeling the restrooms.

Performing construction while the aquarium remains open is a challenge that crews take very seriously. The project team must keep members of the public safe as they enter

From apes to zebras

Kiewit's first work with Omaha's Henry Doorly Zoo began in 1965 with the construction of four bear grottos located in an area excavated from a hillside. Even in the 1960s, the zoo focused on providing a natural environment for the animals. According to the Kieways article, “The exposed concrete walls were surfaced with gunite concrete that was sculpted to resemble native rock formations. Ornamental native rock is also used in the grottos to further depict a ‘natural’ setting.”

Additional construction included primate complexes to house gorillas, orangutans and baboons. Kiewit also built an elaborate children's zoo, which included a barn-hatchery, railroad depot, concessions, restrooms, seal pool, prairie dog village, otter pool and buildings for petting small animals. The work was featured on the cover of a 1966 issue of Kieways.



and exit the aquarium, as well as keep them out of the construction area. To accommodate zoo visitors, Kiewit has broken the project into phases and performs much of the work at night.

With limited space for crews and materials, the team must also carefully coordinate how subcontractors can work around each other and when materials must be delivered.

55 YEARS STRONG

Since its first project in 1965, Kiewit has not only built new exhibits but also a strong relationship with the zoo management and staff.

General Superintendent Don Buboltz has worked for Kiewit for nearly 30 years — many of them on Omaha's Zoo and Aquarium projects. In addition to overseeing the zoo's current projects, Buboltz worked on the Desert Dome, the Bay Family Children's Adventure Trails, the Dick and Mary Holland Meadowlark Theater and the Robert B. Daugherty Education Center.

During his time at the zoo, Buboltz shared that Kiewit has learned to adapt to the zoo's unique needs.

“With more than 1,100 employees at the zoo, we have to keep in mind things they're doing that may affect our construction,” Buboltz said. “And sometimes we have to shift what we're doing to accommodate a design change that will help the animals or benefit the public. We have to be flexible.”

The relationship works both ways.

“The zoo staff is awesome. They'll go out of their way to explain not only how the zoo works but also the animals themselves,” said Edick.

“Kiewit has been a trusted partner for decades in helping us build a world class zoo,” said Dennis E. Pate, president and CEO of Omaha's Henry Doorly Zoo and Aquarium. “Our environment, with 2 million guests, creates special concerns for safety near construction sites that are top of mind for Kiewit employees and the subcontractors they manage. Communicating and addressing these concerns is one of the things that sets them apart.” **K**

