

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 organization operates through a network of subsidiaries in the United States, Canada, Australia and Mexico. Kiewit offers construction and engineering services in a variety of markets including transportation; oil, gas and chemical; power; building; water/wastewater; and mining. Kiewit had 2016 revenues of \$8.6 billion and employs 20,000 staff and craft employees.

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KIEWAYS

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HEAVY LIFTING DEVICE

Kiewit relies on an extensive fleet of equipment to build its work. Read about it starting on Page 12.



A WELL-OILED MACHINE

Kiewit prides itself on its capability to build complex projects across multiple markets such as transportation, building, and oil, gas and chemical, but all those moving parts don't sync up overnight. In this issue, you'll get an up-close look at how each piece — everything from equipment and technology, to teamwork and community relations — comes together so that we can plan, build and deliver some of our most incredible projects to date.

Kiewit's large and diverse equipment fleet certainly plays a big role in its flexibility. Starting on Page 12, see how this state-of-the-art machinery lets us work on virtually any project. Curious how we keep tabs on all of that equipment? Well, there's an app for that. Learn how it impacts planning and scheduling, plus travel back to the 1930s for a look at Kiewit's earliest investment in innovative equipment — that's all on Page 17.

As travel gets more complicated, so does the infrastructure we build, and the elevated Honolulu rail projects on Pages 18-25 are terrific examples. Not only are they incredible feats of engineering, but there's a lot that goes into the human side of building the country's first automated rail system in a highly congested area.

We can't talk about coordination and innovation without introducing you to Petra Nova. Turn to Page 6 to see how the best-of-the-best team was assembled for the world's largest carbon capture project in Texas.

I hope these stories help you appreciate the coordination and strategy that goes into building these complex projects.

BRUCE GREWCOCK

Chairman and CEO



LIGHT RAIL FIRSTS

On Page 18, Kiewit is building the initial phases of the country's first automated light rail system in Hawaii.

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The Petra Nova carbon capture project leverages a symbiotic relationship between an existing coal-fired power facility and a maturing oil field.

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Hawaii's first light metro rail system comes into view on the Island of Oahu.

OUR MARKETS

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

What began in 1884 with two hard-working brothers has grown into a Fortune 500 construction and engineering industry leader. As a multi-billion dollar organization, Kiewit can tackle projects of all sizes, in any market. Here are a few interesting facts about Kiewit.



NO. 7
IN POWER

ENR Top Design Firms

POWER

Kiewit ranks No. 7 in power on Engineering News-Record's (ENR) list of Top Design Firms.



WATER/WASTEWATER

Denver Water awarded Kiewit a construction manager at risk (CMAR) contract for its **Northwater Treatment Plant**. When complete, the new facility will have the capacity to initially treat 150 million gallons per day (MGD) and be expandable to treat up to 250 MGD.



G3 GRAIN EXPORT TERMINAL

G3 awarded Peter Kiewit Sons ULC a design-build contract for its new **grain export terminal** in North Vancouver, British Columbia. It will be the first new grain terminal constructed in the Port of Vancouver since the 1960s. Key components include the rail loop track for continuous unloading, 48 silos that can hold 180,000 metric tons of grain, the grain-cleaning building, a new marine dock, and ship-loading facilities.



TRANSPORTATION

Gateway Interchange Constructors, a joint venture of Clarkson Construction Co. and Kiewit, recently completed the **Johnson County Gateway Phase II** project for the Kansas Department of Transportation (KDOT). It was KDOT's first design-build project, and was completed in two and a half years.



Kiewit has completed more than

1,200

oil, gas & chemical projects in the past 10 years.

Kiewit has over

70

YEARS

of experience in the mining industry

OUR VALUES

PEOPLE | INTEGRITY | **EXCELLENCE** | STEWARDSHIP

For more than 130 years, Kiewit's culture has thrived on strong principles. From generation to generation, the torch has been passed down and carried by the company's leaders and workforce. Today, its core values — People, Integrity, Excellence and Stewardship — remain the company's cornerstone and are the way Kiewit runs its business.

Many of Kiewit's project teams received recognition and awards for a variety of accomplishments over the past year. Here are a few examples.



Canadian Brownfields Network, Brownie Awards Best Large Project

The **Waterloo LRT** team took home a Brownie Award in the Best Large-Scale Project category. The new transit system will connect three major urban centers in Ontario, Canada. The Brownie Awards are presented by the Canadian Brownfields Network and recognize projects that stimulate the transformation of brownfield sites and contribute to community growth across Canada.



Associated Builders and Contractors (ABC), National Excellence in Construction Award

TIC - The Industrial Company (TIC), a Kiewit subsidiary, won the Associated Builders and Contractors (ABC) National Excellence in Construction Award for its work on Elk Station Units 2 & 3.



Design-Build Institute of America, Design-Build Project of the Year

The Design-Build Institute of America (DBIA) named the **Claude "Bud" Lewis Carlsbad Desalination Project** its Design-Build Project of the Year. It was the first time a water/wastewater project was named Project of the Year. The plant, owned by Poseidon Water, was built by Kiewit Shea Desalination and produces an average of 50 million gallons of fresh drinking water per day.




World Demolition Summit, Collaboration Award

World Demolition Summit presented Kiewit/Manson and the **Old Bay Bridge Pier Demolition project** its 2016 Collaboration Award. Kiewit/Manson, the California Department of Transportation and other partners were recognized for their collaborative efforts during phase 1 of the project — removal of pier E3 — in 2015. The remaining piers will be removed during phase 2, which began in 2016.



Associated General Contractors (AGC) Nebraska Building Chapter, Build Nebraska Awards

Kiewit received three Build Nebraska Awards from AGC's Nebraska Building Chapter. **Children's Hospital Medical Center Village Pointe – Children's ASC** won for new construction of less than \$5 million, and **Baxter Arena** for new construction of more than \$15 million. **Do Space** received an honorable mention for building renovations of any amount.



CAPTURING INNOVATION

The story behind the success of the Petra Nova carbon capture project

Innovation. It's the one word that effectively summarizes the Petra Nova project — the first commercial-sized post-combustion carbon capture system in the U.S.

Led by NRG Energy, Inc., and JX Nippon Oil & Gas Exploration Corporation, Petra Nova is a major milestone in the quest for a more sustainable energy future, leveraging the operations of an existing coal-fired power facility and a maturing oil field to collectively reduce carbon emissions. As part of the U.S. Department of Energy's Clean Coal Power Initiative Program, the project was designed and constructed through a consortium that includes TIC - The Industrial Company (TIC), a subsidiary of Kiewit, and Mitsubishi Heavy Industries America, Inc. (MHIA).

A NEW ERA FOR SUSTAINABLE ENERGY

Coal continues to be a major source of energy in the U.S. Compared to other energy sources, coal-fired plants are the largest producers of carbon dioxide (CO₂) emissions, which are restricted in some areas due to environmental concerns.



As part of the Petra Nova project, an existing power generation station was retrofitted to capture more than 90 percent of CO₂ from a 240-megawatt equivalent slipstream of flue gas. The captured carbon is transported to the West Ranch Oil Field where it is used for Enhanced Oil Recovery (EOR) that has the potential to significantly increase oil production from 300 to as much as 15,000 barrels per day. On a daily basis, this process also prevents more than 5,000 tons of carbon emissions — the equivalent of taking 350,000 cars off the road.

Taking on the engineering, procurement and construction of an industry-first project is exciting and daunting. However, the expertise, teamwork and tenacity of TIC and MHIA led to a quality, on-time and on-budget project completion.

“We came into this project with a can-do attitude and quickly established open, trusting relationships,” said Bob Wolosyn, project director for TIC. “We focused heavily on making sure we had the right plan and people in place.”

SCOPING IT OUT

The scope of work entrusted to TIC required a wide range of capabilities, including engineering, procurement, site work, civil work, piping, electrical and instrumentation. TIC was also required to meticulously coordinate the integration of MHIA's proprietary carbon capture technology into the facility.

The key structural components of the new facility included a 120-foot-tall flue gas cooler, a 320-foot-tall absorber, a regeneration system, a CO₂ compression unit, and utility facilities, as depicted in the figure on page 10.

START-UP STRATEGY

Getting the right team in place was a top priority. TIC, along with its parent company Kiewit, held a “draft” — very similar to that of professional sports — to assemble the best-of-the-best team. Prior to setting foot on the construction site, each of the more than 1,000 workers who contributed to the project were required to attend a 10-hour orientation session. With this strong bench of skills and experience, TIC was able to self-perform nearly all of the work, allowing for better control and flexibility of the construction schedule.

Once the core team was in place, TIC set its sights on developing an ironclad plan, which relied heavily on a unified approach with MHIA, transparency with the client, and open candor throughout. Very early in the process, TIC led a line-by-line, open-book review of the project



estimate to identify and assign ownership of project-related risks. The plan also called for a high level of calibration of engineering and constructability.

“We included the client in all of our communications with the engineering groups on the project. We spent countless hours in in-person meetings and conference calls with team members in Japan, where key technology components were fabricated,” added Wolosyn. “We were also able to align all engineering work into one 4D model, which helped determine any potential issues or logistical conflicts well before we put shovels in the ground.”

Additionally, project partners agreed to work off of the same playbook, offering a systematic approach and standard operating procedures in developing detailed work plans, allocating man-hours, finalizing roles and responsibilities, and monitoring progress.

“Anytime you were in the field, you saw well-planned tasks being carried out,” said Justin Mannina, TIC project manager. “From warehousing to foremen and general foreman to operators and laborers, you could always see progress in the field moving forward.”

SPURRING INNOVATION

While effective planning calls for structure and discipline, ingenuity and out-of-the-box thinking also added to the success of the project. For example, a considerable volume of on-site welding was needed — a practice that

1. At peak construction, there were more than 500 workers on-site. 2. Petra Nova is the world's largest and the first commercial-sized post-combustion carbon capture system in the U.S.

The project teams

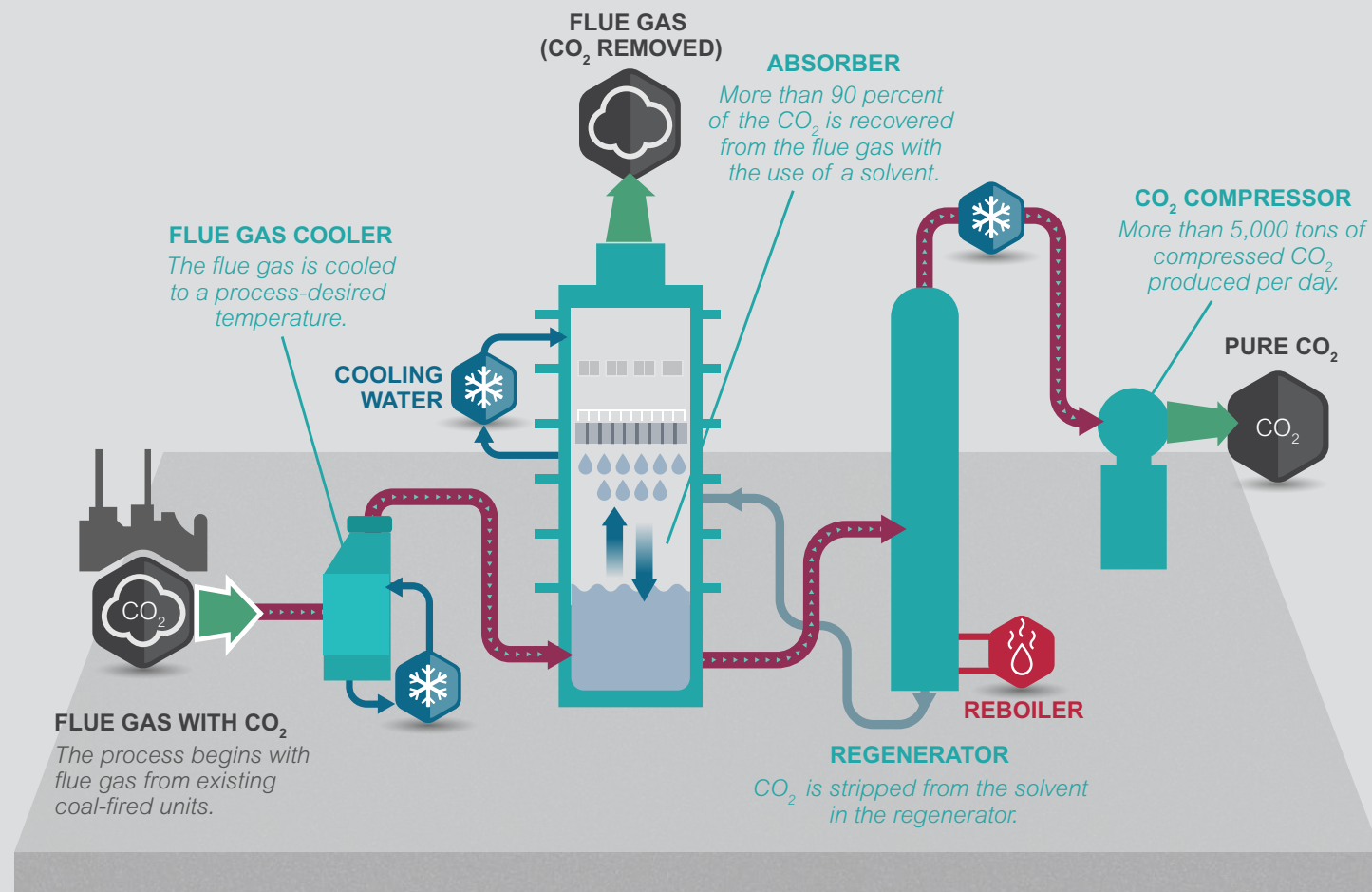
Owner: Petra Nova LLC, a joint venture of NRG Energy, Inc. and JX Nippon Oil & Gas Exploration Corporation

EPC Contractor: TIC - The Industrial Company, a subsidiary of Kiewit, and Mitsubishi Heavy Industries Americas, Inc.

Engineering: Mitsubishi Heavy Industries Americas, Inc. and Kiewit Engineering & Design

Funding Partner: U.S. Department of Energy's Clean Coal Power Initiative Program

The carbon capture process



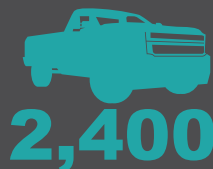
The Petra Nova carbon capture project features innovative technology (KM-CDR Process™) with advanced amine solvent and proprietary equipment developed by Mitsubishi Heavy Industries and Kansai Electric. Flue gas from the WA Parish Generating Station is cooled and then moved to the 320-foot-high absorber tower, where it is combined with an

advanced amine solvent. The carbon dioxide adheres to the solvent, is transported to the regenerator and exposed to heat and pressure. Pure carbon is released, compressed and enters a 12-inch pipe that delivers the carbon to the West Ranch oil field, where it is used for enhanced oil recovery.

Putting it into perspective



The tonnage of steel used to build the facility equals the weight of **240 elephants.**



The total weight of the absorber tower is equivalent to the weight of **2,400 trucks.**



The amount of concrete used in construction — 11,000 cubic yards — could fill **126 backyard swimming pools.**

is generally time-intensive — to meet quality standards. Workers were challenged to explore new welding techniques, ultimately conducting research on and using a semi-automatic welding process. With a modest amount of training, welding productivity increased by about 50 percent.

New mobile technology was also introduced on the construction site, bringing back-office operations, such as payroll and inventory, out into the field. Specifically, construction foremen were equipped with mobile devices that allowed them to monitor daily costs, approve time cards, report quantities, process payroll and assign work orders.

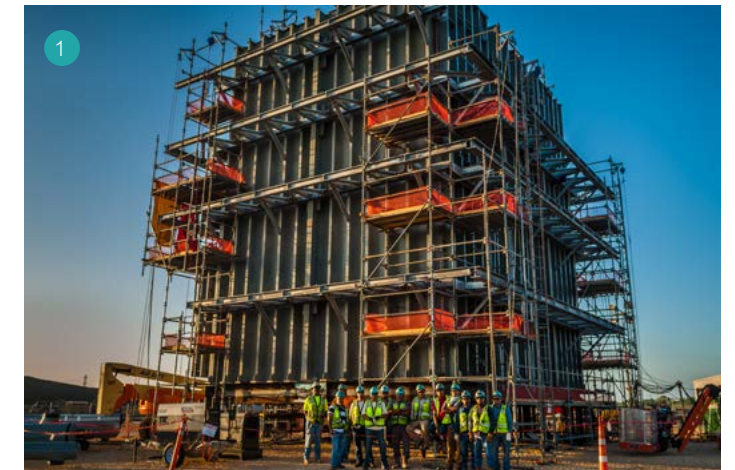
SUSTAINABLE SUCCESS

The successful completion of Petra Nova provides the groundwork for other systems that might use carbon in their operations, beyond EOR. As new processes emerge, TIC and MHIA are well-positioned to design and construct these projects, due in large part to early contractor involvement and cross-discipline training that eliminated silos within the organization.

“Well before we mobilized to the construction site, I worked in the office with the engineering team to fully understand the project and facilitate constructability reviews,” said Omar Chavez, construction superintendent at TIC. “From there, I was entrusted to handle key operations in estimating, hydro, pipe and managing subcontractors. It has been a huge opportunity to advance my career in the construction industry.”

Overall, through teamwork and a unified approach, the Petra Nova project was completed on time and on budget. More than 1.78 million man-hours were safely completed without a single lost-time incident. The construction scope of work had less than one percent of budget in change orders, and TIC was recognized as the 2016 Engineering & Construction (E&C) Supplier of the Year by NRG.

“The transparency, open dialogue and positive attitude permeated throughout the project teams, resulting in an atmosphere of cooperation at all levels,” said Jim Tharp, NRG project manager. “This is one of the best — if not the best — projects I have worked on in my career and I believe this is largely due to the working relationship between all of the project partners and vendors and the mutual respect that we have for each other as we strive to deliver a quality project safely.” **K**



1. Increased productivity was achieved by constructing sections of the cooling tower in a nearby laydown yard and then using a platform trailer and crane to set in place. 2. Access to an in-house fleet of cranes and other equipment maximized costs and streamlined the construction schedule. 3. To transport large equipment to the construction site, TIC modified nearby roads, bridges and overhead utility lines.

WEAPONS OF MASS CONSTRUCTION



With an equipment fleet consisting of 13,200 units with a \$2.1 billion replacement value, Kiewit has one of the largest and most modern privately owned equipment fleets in North America — and having that fleet helps set the company apart from its competitors, explains Kiewit Equipment Director Steve Curry.

“We have a large and diverse equipment fleet at our immediate disposal. We also have the capacity to quickly add to our fleet when opportunities arise. This allows us to take on virtually any project, anywhere,” Curry said.

Not only is Kiewit able to quickly mobilize equipment across North America, but the fleet's availability and diversity also provide teams a competitive advantage when pursuing opportunities. For instance, Kiewit can pursue an opportunity requiring specialized underground equipment, large mining tools or high-capacity cranes. Many competitors do not have immediate access to these types of specialized equipment.

“Not every contractor has this ability, but we do,” Curry said. “We own virtually every piece of equipment needed to be successful in the markets we serve. Equipment is critical. Without it, projects don't get built.”



CRANES, CRANES AND MORE CRANES

In the power, building, and oil, gas and chemical (OGC) markets, cranes are crucial to the success of a project. Having just one crane out of service can completely stop production for some projects. Kiewit's fleet of more than 260 company-owned cranes — consisting of rough terrain, hydraulic crawler, lattice boom crawler, hydraulic truck, and tower cranes — helps ensure successful production on all types of operations.

“Crawler cranes are great for power work because of their pick-and-carry capabilities,” said Kiewit Project Manager Aaron Jensen. “Every project we work on requires heavy loads to be transferred across the jobsite. With crawler cranes, you only have to set up once, and don't need to get trailers involved. They turn transporting and flying into one operation.”

At its peak, Kiewit's Cove Point liquefied natural gas (LNG) project had more than 50 cranes in operation — all from Kiewit's fleet.

Kiewit's tower cranes can stretch more than 300 feet in the air, while providing a smaller footprint than other types of cranes — something that is especially important in vertical construction. Teams rely on the cranes for many aspects of vertical-building construction, including erecting steel, placing concrete, finishing exteriors and handling materials.

“The smaller footprint, along with the vertical and horizontal reach, make tower cranes a better choice in the building market than a crawler crane,” said Kiewit Equipment Operations Manager Clay Christian. “Many of our projects



in the building market are located in congested, urban areas where there is not enough room for a crawler crane. Tower cranes allow us to move safely above and around surrounding buildings.”

GRADERS, ROLLERS AND EXCAVATORS

When it comes to excavating, grading or compacting, Kiewit's diverse line of excavators, motor graders and compactors saves the day. A water treatment plant is a great example. The scope for these projects includes an abundance of underground piping, mass excavations, structure excavations, demolition and grading, said Josh Young, a Kiewit sponsor, who has more than a decade of water/wastewater market experience.

For this line of work, Young needs an excavator.

“The excavator is one of the most versatile pieces of equipment we use on treatment plants, and with the right operator, they can be extremely efficient machines,” Young said. “With skilled operators, the excavator becomes an extension of their hands. It's fun to watch.”



It's not uncommon to see a half dozen or more excavators on a water/wastewater project at any given time, said Kiewit Sponsor Todd Orbus. Kiewit's fleet includes hybrid excavators that harness the energy during machine swings to help conserve fuel, and use many unique attachments that help increase versatility and productivity.

At the Folsom Auxiliary Spillway project, where Orbus worked, Kiewit used two unique attachments to accelerate the schedule and reduce costs. The first was a hydraulically operated clamshell attached to a long-reach excavator with GPS controls. This allowed soft sediment excavation to occur from land versus a typical marine-based operation. Second, the team deployed a hydraulically operated rock drill attached to a material-handling style excavator to safely provide precision drilling and blasting in tight quarters on a high-angle rock face.

“Water/wastewater projects are typically diverse in scope,” Orbus said. “They require expertise in civil, structural, mechanical and electrical construction. Much like the projects themselves, excavators are versatile tools that



1. A multi-crane module lift takes place at the Kiewit Offshore Services yard in Ingleside, Texas. 2. Several Kiewit-supplied tower cranes assist in constructing pontoons for the world's largest floating bridge. 3. Kiewit's fleet of equipment can endure any climate, including Arctic conditions. 4. An excavator operates with the unique, hydraulically operated clamshell attachment at the Folsom Auxiliary Spillway project. 5. A crushing operation takes place in Hawaii using Kiewit-owned equipment.

help with constructing all types of work on water/wastewater projects.”

Both Young and Orbus believe that providing modern, well-maintained machines with the latest technology is something that craft employees have come to appreciate about Kiewit.

“Kiewit is known for its incredible equipment fleet,” Young said. “Many operators say that they like working for us for that reason. Because our excavators are often the most crucial component of an operation, we give them extra

attention, just like your star quarterback. You expect the entire team to work hard, but you also have to protect the key player — and for water/wastewater projects, that's the excavator.”

DIAMONDS IN THE ROUGH

The Kiewit equipment fleet consists of more than just standard construction equipment, offering numerous high-cost, high-capacity, long lead-time units such as the P&H 4100XPC shovel.

The P&H 4100XPC electric mining shovel ranks as one of the largest in the world — and Kiewit's two units keep busy at the company-owned Buckskin Mine. These shovels are equipped with 73-yard buckets to fill Kiewit's 400-ton Caterpillar 797B/F haul trucks in only four loads. The 797 haul trucks are also among the largest of their kind.

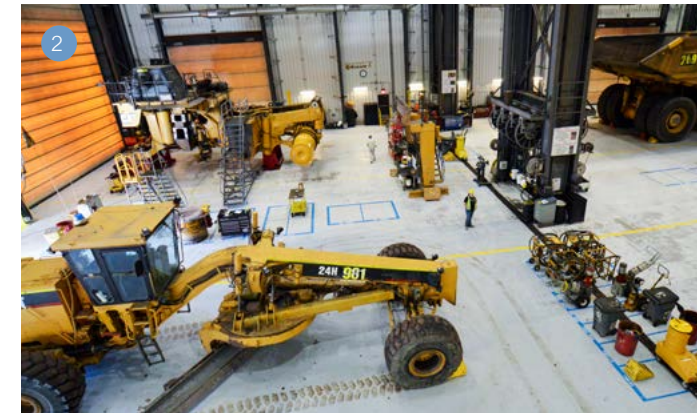
When it comes to heavy lifting, Kiewit Offshore Services (KOS) uses a piece of equipment unlike any other in the world — the heavy lifting device (HLD).

Designed and fabricated by Kiewit, the HLD can lift large modules and equipment onto floating structures, up to 13,000 tons at a radius of 225 feet, with a hook height of more than 400 feet. It is the world's largest on-shore lifter and, at 550-feet-tall, can be spotted on the horizon from anywhere on the shore of Corpus Christi Bay in Texas. Since its first use in 2004, the HLD has lifted more than 235,000 tons, or 470 million pounds.

FLEET MANAGEMENT

Ensuring that every piece of equipment in the over 13,000-unit fleet shows up when and where it's supposed to is the responsibility of Kiewit's Equipment organization.

During the estimating phase of a pursuit, Equipment employees evaluate the company's fleet to identify which units can be used on a job and what gaps need to be filled with a new equipment purchase. Project equipment schedules drive these decisions, which is why the company implemented a state-of-the-art application to monitor equipment scheduling in real-time across the organization.



1. Kiewit owns two P&H 4100XPC electric mining shovels — one of the world's largest shovels. 2. Kiewit's preventive maintenance practices ensure its fleet maintains the highest level of reliability. 3. The heavy lifting device (HLD) lifts an offshore topsides platform. The HLD is the only one of its kind and can lift 13,000 tons at a radius of 225 feet.

“Using our Corporate Equipment Schedule (CES) app, real-time equipment information is updated at the project level and feeds directly into a company-wide schedule,” said Curry.

Preventative maintenance is accounted for during planning and scheduling. Manufacturer recommendations are used to create maintenance plans for every piece of equipment. When activated, the plans generate work orders within the company's business operations software. The work orders are used to schedule maintenance, and contain details on the appropriate steps and parts to complete it.

It's all in a day's work for the Kiewit equipment team.

“Equipment availability and reliability are absolutely pivotal to a project's success,” said Curry. “It's our job to ensure equipment is not only available when a project needs it, but is at the highest level of reliability every time.”

The life of a crawler crane

Unit No. 1 - 2013 Liebherr LR1750 (Acquired new in 2014)

- 1 **IPL Environmental Controls**, Petersburg, Indiana
(April 2014-May 2015)
- 2 **Paradise Combined Cycle**, Drakesboro, Kentucky
(July 2015-December 2015)
- 3 **St. Joseph Energy Center**, New Carlisle, Indiana
(October 2016-March 2017)
- 4 **Next planned Kiewit project:** Kiewit Offshore Services, Ingleside, Texas

Unit No. 2 - 2014 Manitowoc MLC650 (Acquired new in 2015)

- 1 **Petra Nova Carbon Capture Project**, Thompsons, Texas
(April-November 2015)
- 2 **Grand River Energy Center**, Chouteau, Oklahoma
(November 2015-March 2016)
- 3 **Allen Combined Cycle**, Memphis, Tennessee
(July 2016-December 2016)
- 4 **Lackawanna Energy Center**, Jessup, Pennsylvania
(February 2017-present)



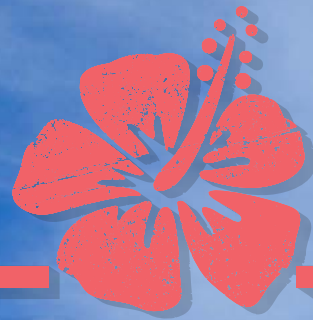
- 5 **Next planned Kiewit project:** Birdsboro Combined Cycle, Birdsboro, Pennsylvania

A look back



Kiewit has a long history of capitalizing on opportunities to use new and innovative equipment. In the early 1930s, Kiewit became the first construction customer for the LeTourneau scraper. The story is retold in the book, “Kiewit: An Uncommon Company.”

A contractor named Robert Gilmour LeTourneau had invented a pull-type scraper known as the Gondola, which was powered by electric motors and used rack-and-pinion drive. Intrigued by the new equipment, Peter [Kiewit] decided to take a risk and be the first contractor to purchase the scrapers from LeTourneau. ... PKS [Peter Kiewit Sons] successfully utilized the equipment to build the first of a series of dams that would transform the Platte River into a valuable tool for agriculture. ... With its increased capacity and weight, the LeTourneau equipment represented a vast improvement over the commonly used gasoline tractors.



ALL ABOARD HAWAII

If you've ever been to Hawaii, you've experienced its world-renowned beaches, friendly local flair and majestic landscapes. But you've probably also experienced sitting in traffic for hours on end, specifically on the

Island of Oahu.

Honolulu, the state's capital and largest city, ranked as the 10th most congested city on a 2015 INRIX Traffic Scorecard. That benchmark report for the U.S. Department of Transportation also said Honolulu residents wasted 49 hours each per year sitting in traffic.

In an effort to help reduce congestion and improve the lives of its nearly one million residents, the City and County of Honolulu broke ground on Hawaii's first light metro rail system in 2010. The 20-mile system will run from the community of Kapolei on the west side of Oahu through downtown Honolulu to the Ala Moana shopping center. It also will feature the country's first automated rail system, with everything from free Wi-Fi to surfboard racks. The anticipated operation date for the entire rail line is 2025.

Kiewit was awarded the first three contracts for the rail system, which the newly established organization Honolulu Authority for Rapid Transportation (HART) is charged with managing, operating and maintaining. The scope of work includes the first 10 miles of elevated guideway as well as construction of the Rail Operations Center as part of the joint-venture team. Kiewit is scheduled to complete all of its rail-related construction in 2017.

ADAPTING AND INNOVATING

Kiewit is responsible for utility relocations, roadway restoration and all structural work and track installation for the elevated rail system. The team used a variety of unique construction methods to build the guideway through the highly congested areas of Farrington and Kamehameha Highways.

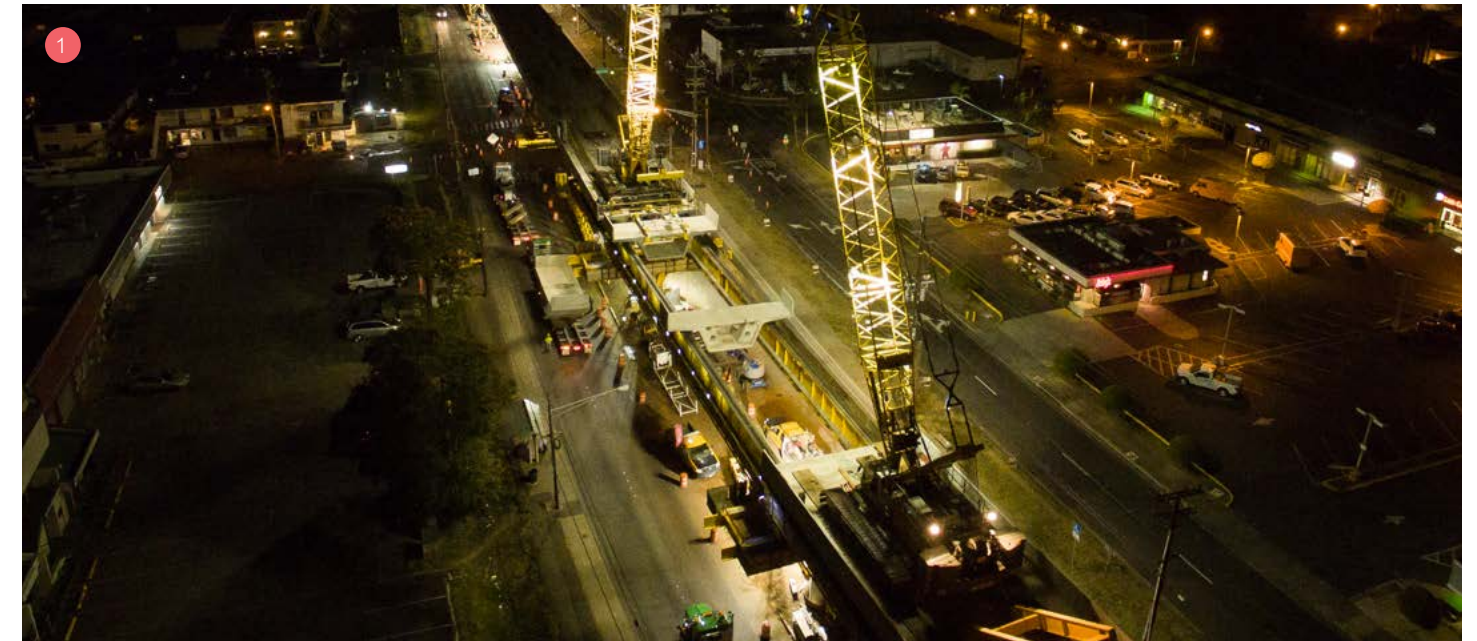
At the beginning of the project, the columns supporting the elevated guideway were built by placing the rebar first, then building the forms around it. After reviewing the process, the Kiewit team realized there was a more efficient way to build the 450 columns for the project: a form-first column method. This method uses the column form in lieu of external rebar bracing by installing the rebar cage after the form is set.

“The column group contributed to some of the company’s best ever unit rates in this type of work,” said Zach Reilly, Kiewit structures operation manager. “It also allowed the team to stay a step ahead of the segment installation team and make or beat our construction schedules.”

A first for the company was using the underslung guideway installation equipment, or truss, to install the more than 5,200 precast guideway segments on the project. Each guideway segment is like a puzzle piece and fits into a specific location; those segments are hauled to the site and picked from a crane on top of the guideway. The underslung trusses support the guideway segments from below while they are being installed, instead of from the top with an overhead truss.

“By documenting a step-by-step process for this approach, crews were trained and able to consistently perform the operation to meet quality standards,” said Kiewit Operations Manager Dustin Donahoo. “We needed to make sure we knew what all the steps were to the underslung truss and that we had good, solid processes that everyone could follow to prevent quality or safety mistakes.”

Using this method, crews were able to set guideway segments along the four miles of Kamehameha Highway, the second guideway contract, within a year.



1. Crews set the final guideway segments along Farrington Highway in March 2016. 2. 450 columns were built along Farrington and Kamehameha Highways before crews could set the guideway segments on top. 3. Shaft construction along the project.

The Honolulu rail project’s drilled shaft work was one of the largest self-performed efforts of that type in company history, at nearly 500 drilled shafts over 10 miles. Part of this work was the responsibility of Superintendent Eric Hermanson, whose crew faced Hawaii’s tough and unpredictable ground conditions, as well as tight work areas where drilling in narrow highway medians surrounded by traffic was the norm.

“There are so many things that are just not in your control, which makes scheduling work very hard,” said Hermanson. “The only way your team can be successful is if you adapt to change and never stop thinking outside the box.”

Project management recognized the group’s tenacity and commitment to delivering results.

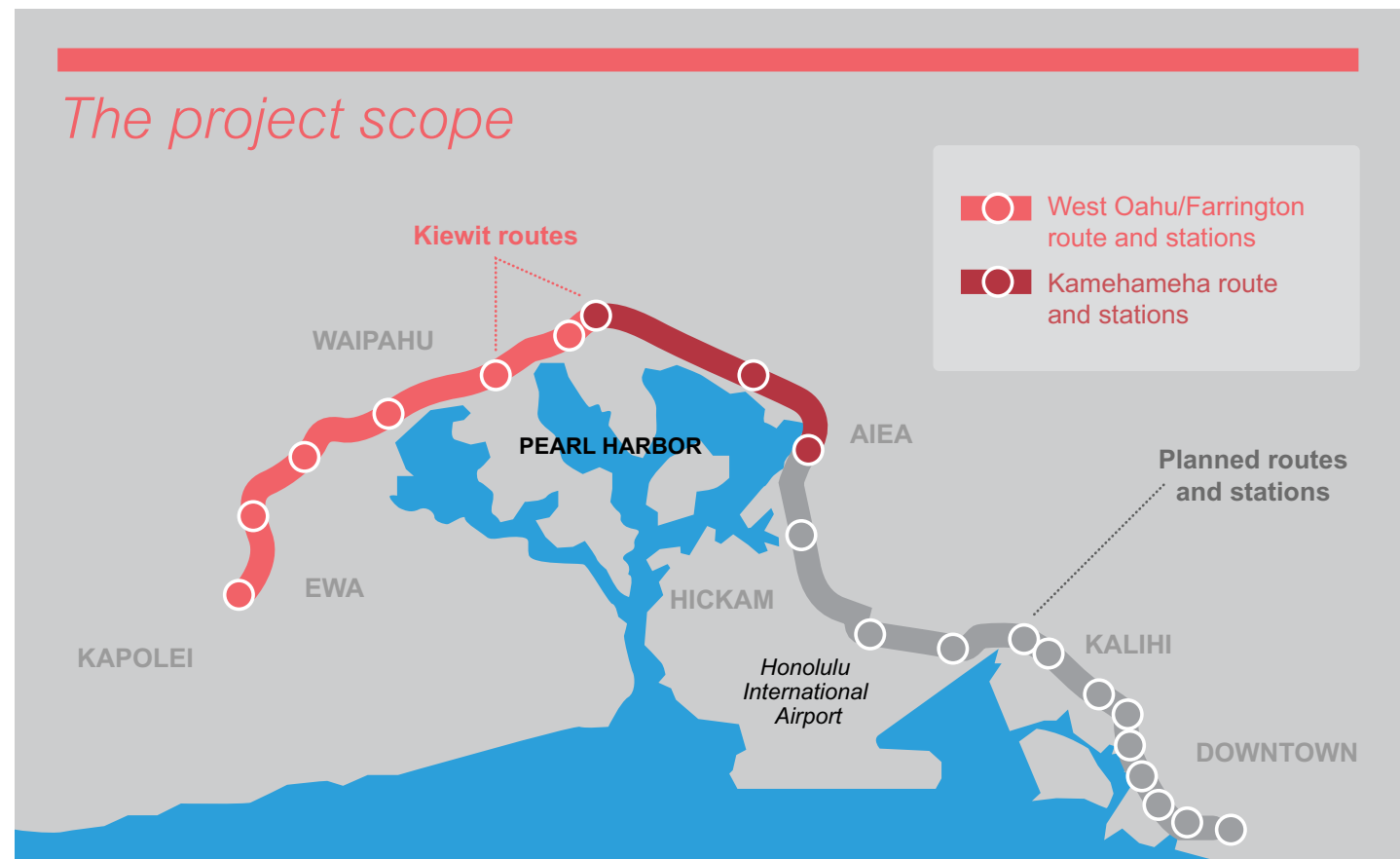
“That group, more than any, had to battle the conditions day in and day out. Any time you’re digging into the ground

there’s a chance you will run into something unexpected,” Donahoo said. “Successfully completing the drilled shafts was a significant accomplishment on this job.”

‘THE LIFEBLOOD OF THE TEAM’

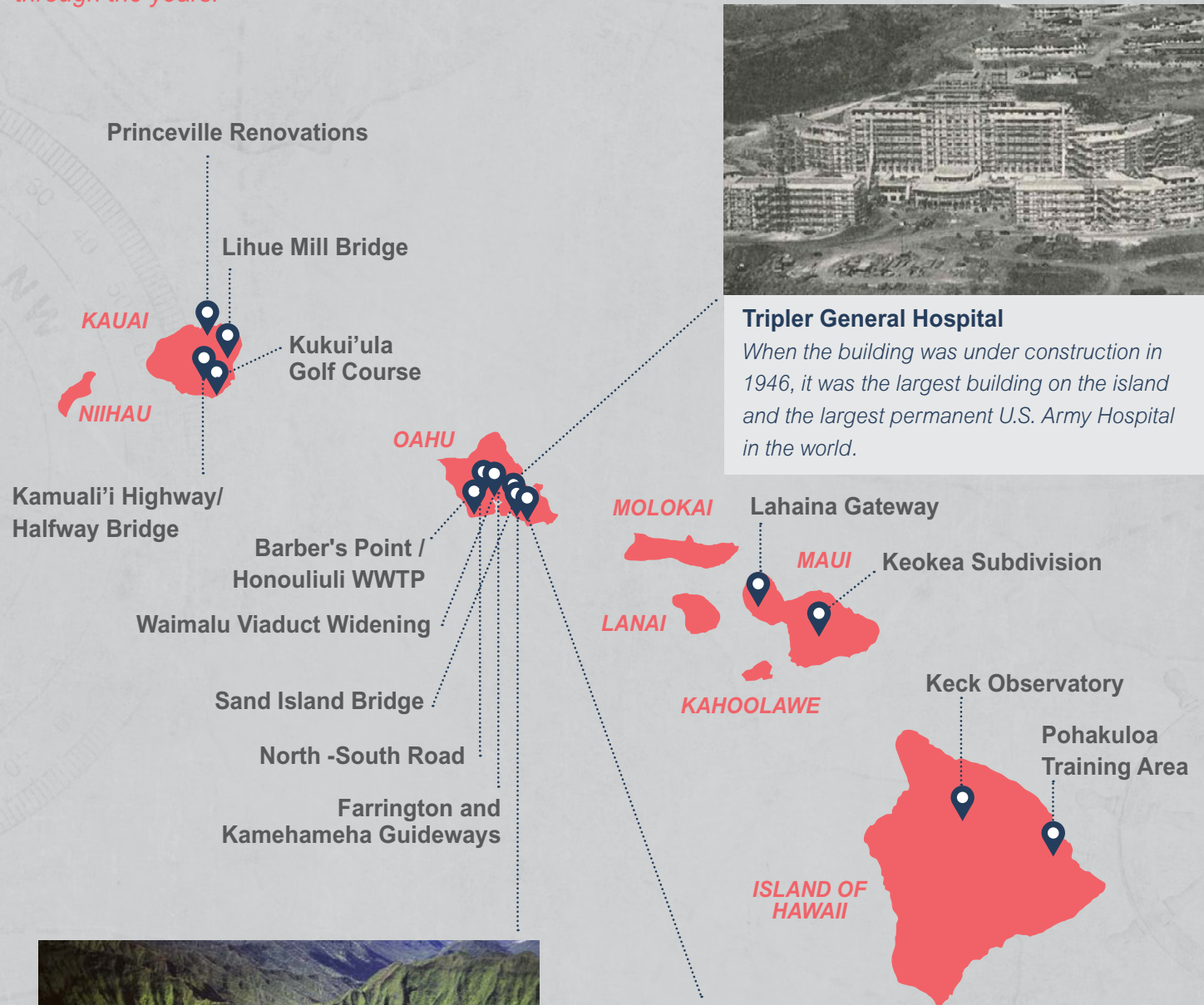
Michael Fennerty has high expectations for himself and his crews. His grandfather, Frank, was the first recipient of the prestigious Peter Kiewit Award, given out every year to a company manager who best exemplifies Peter Kiewit’s commitment to excellence in all aspects of project or mine management. Fennerty’s goal is to hopefully match his grandfather’s success with the company, and he’s learned enough in his first few years to lead him in that direction.

“Communicating internally is really important to set you up for success,” said Fennerty. “You also have to get to know your crews on a personal level to build team trust.”



Kiewit in Hawaii

Kiewit has more than 70 years of history in Hawaii, beginning with its first project, the Tripler Army Medical Center, completed in 1948. Here's a look at some of the projects the company and its people have built through the years.



Tripler General Hospital
 When the building was under construction in 1946, it was the largest building on the island and the largest permanent U.S. Army Hospital in the world.



Halawa Viaducts
 As a portion of Hawaii's H-3 Freeway project, Kiewit constructed the side-by-side viaduct structures at the upper end of the Halawa Valley.



Inter Island Terminal/Honolulu International Airport

Fennerty is part of a group of young leaders on the project management team entrusted to run a variety of operations, from setting the guideway segments to leading complicated utility relocations.

"In the summer of 2015, we made a commitment to take on young engineers on the project, and we gave them opportunities to be productive members of the team," said Kiewit Project Principal Phil Wallace. "They have learned and grown in their careers and faced every challenge head on. We would not be where we are today without their contributions."

These younger, talented rail project team members are contributing to the project in a variety of ways. For example, Fennerty's crew worked on the future Leeward Community College station structures and was able to make schedule and record no safety incidents or quality issues — all while beating budget.

Mitch Chicha started as an intern with Kiewit and has been a full-time employee now for six years. In July 2015, his crew was tasked with setting up the third truss system on the project. He and his crew were able to set two miles of guideway segments in just over a year with a great safety record and production units.

"Our success was not without challenges, but with the right guidance and collaboration, we were able to finish strong and share an amazing experience," Chicha said. He said he'll continue to benefit from that experience as his career progresses.

"Diving into the operations in Hawaii head first with an optimistic attitude and an open mind was the best career move I could have ever made," said Chicha. "I have been able to put an entire new skill set under my belt that will be extremely valuable for future work."



1. Kiewit laid 224,000 linear feet of rail and built various crossovers along the alignment, including at the future Pearlridge station. 2. Crews were responsible for building the Leeward Community College station structures, which included grading, walls and utility work. 3. Kiewit staff pose for a picture near the West Loch station work site on Farrington Highway.

“When one area of the project had challenges, the team was quick to lend a hand and send reinforcements. We put the long-term success of the project ahead of our individual groups. This unity allowed the team to overcome even the toughest obstacles.”

ZACH REILLY,
STRUCTURES
OPERATION MANAGER,
KIEWIT

“The younger members of this team are the lifeblood of the team itself,” said TJ Paul, Kiewit deputy project director. “Watching them take on challenge after challenge and observing their professional growth during that time is one of the most fulfilling aspects of managing work.”

Taking on challenges, thinking outside the box and working together as one team have ultimately led to the rail project team’s success.

WORKING TOGETHER


Between the levels of expertise and experience on the Honolulu rail projects, every Kiewit employee had one goal — to work together as a team and provide a safe and quality system to Oahu’s residents.

“A large portion of our team’s success was due to embracing a team mentality,” said Brent Scheele, Kiewit project manager. “Many people accepted new roles and will benefit from their experience here when constructing future projects.”

It also meant working together and shifting resources to meet an aggressive project schedule and improve field operations.

“When one area of the project had challenges, the team was quick to lend a hand and send reinforcements,” said Reilly. “We put the long-term success of the project ahead of our individual groups. This unity allowed the team to overcome even the toughest obstacles.”

Unity on the project spread beyond the jobsite. Kiewit partnered with local schools to provide science, technology, engineering and math (STEM) exercises and presentations, donated to local charities through the Safety Crew of the Month program, and worked to address residential and business concerns during construction. Building all of this goodwill and camaraderie brought a sense of pride to the team working on Hawaii’s largest public transportation project to date.

“This is hands down the coolest job I’ve ever been on,” said Donahoo. “This is definitely an iconic project in Hawaii — something that will be here for years. No matter how many decades later, we’ll see it and know that we built it.” 





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