

BRIDGE BUILDERS

Connecting Alaska with massive projects, regular maintenance

BY GAIL WEST

Bridges, both large and small, are an essential part of our transportation system across the nation. They're particularly critical in a state such as Alaska where we have mind-boggling rivers, both in size and will, and even greater bodies of water that separate our "here" from our "there." Explorers and pioneers that we are, we always want to get "there" from "here."

Case in point: the Knik Arm bridge expected to transport vehicles and people from Anchorage to the Matanuska-Susitna Borough and points north. Conceived more than 50 years ago when Alaska Railroad engineers began looking for a shortened rail line between Anchorage and Fairbanks, the bridge idea has now morphed to include the Knik Arm Bridge and Toll Authority (KABATA) and an approximate \$1 billion design and construction cost.

"Costs have remained fairly stable at \$715 to \$730 million for a bridge plus 18 miles of roadway that would cost about \$300 million," says Shannon McCarthy, government and public affairs manager for KABATA.

Fourteen of a total of 80 steel girders await bridge construction near Salcha. Carlile Trucking is hauling these 165-foot-long girders to the site.

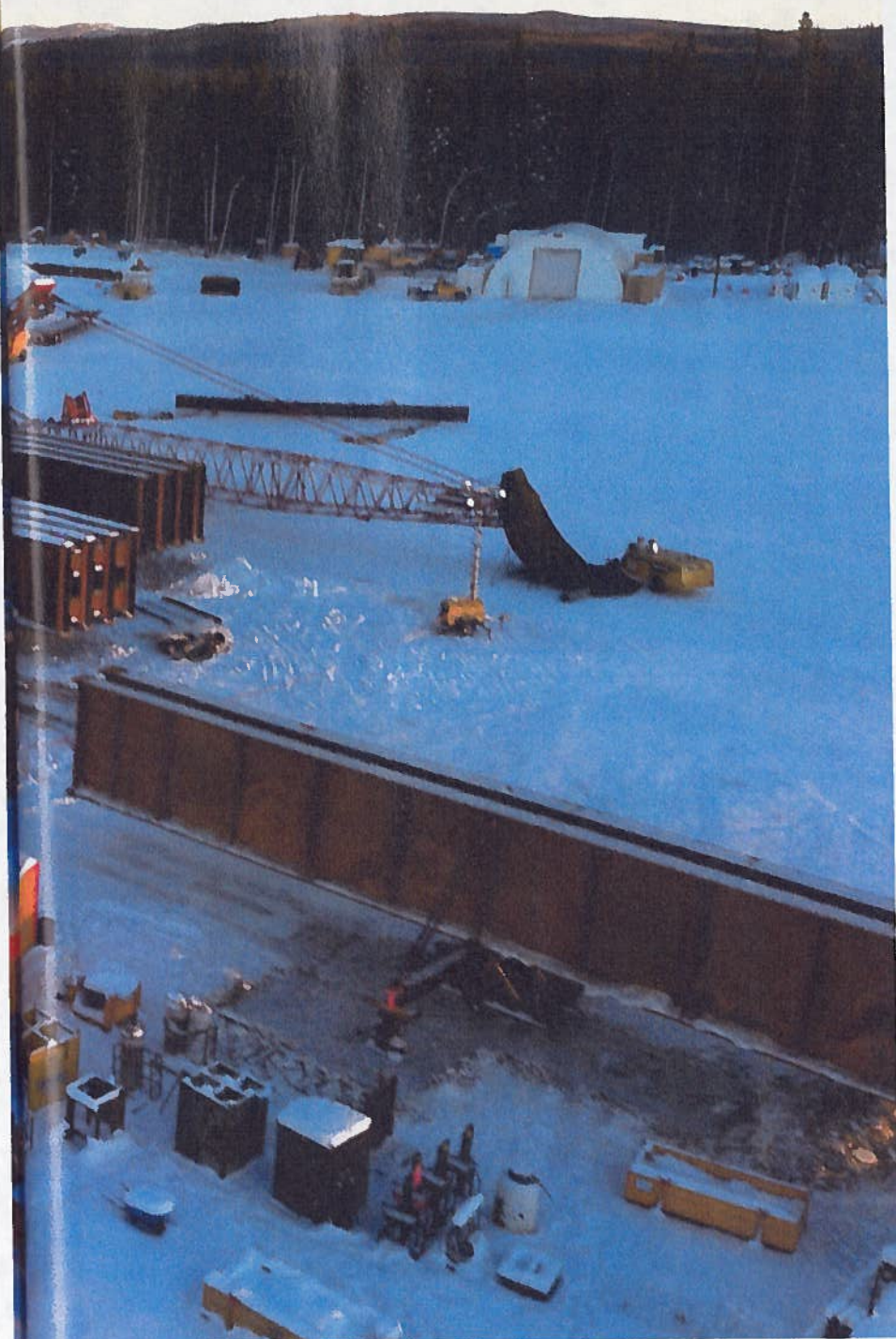
Photo by John Binkley

Knik Arm Bridge

Funding for this massive project will come from private-sector investment, McCarthy adds.

"KABATA is a public-private partnership," McCarthy says. "The private sector will put together their funding from equity investors to private activity bonds. The private-sector partner will be repaid for building, operating and maintaining the bridge through user fees in the form of tolls once the bridge is built."

Once finished, the Knik Arm bridge would link the Port of Anchorage area with Mat-Su's Port MacKenzie area over a 1.74-mile bridge which, with approaches, makes the total crossing 2.71 miles long. The two ports are now separated by 90 miles of road. Also included in construction plans are 18 miles of road. According to KABATA, the new bridge would support the port's freight-handling capacity and improve regional operations serving the airport and military. Although the Alaska Railroad



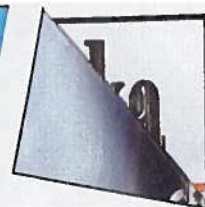
isn't a part of KABATA's current project plans, the authority says "the project would be complementary to future rail crossing and would not preclude rail approach and crossing options."

"We're actually on the cusp of going into construction now," McCarthy says. "This idea has been discussed for decades and at this point we have applied for all the key permits and we're nearly complete on right-of-way acquisition. We've already started the request-for-proposal process—we did that in 2011.

We asked for a statement of qualifications and selected three consortia to compete for the formal RFP. If the legislation we need passes (to establish a project reserve fund and clarify that the project is an infrastructure project backed by the state), we'll be going out with our RFP in May of this year."

Last October, KABATA received qualifications from six development teams and qualified three to compete in the final RFP process. Those three (Alaska Infrastructure Access

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Above: Piers 3 and 4 under plastic tents during construction to keep inside environment warm. **Below:** Pier 2, the first completed pier.

Note: Pilings are driven to elevation 425, tops of piers are at elevation 605, a distance of 180 feet from the bottom of pile to top of pier. Ordinary high water of the river is at elevation 590, and with top of pier at 605 the bridge will be 15 feet above the water.



Photos by John Binkley

Partners, Cook Inlet Passage Partners and North Star Mobility Group) each contain a combination of Alaska and Outside interests. Alaska businesses involved in the consortia include: Quality Asphalt Paving, R&M Consultants, DOWL HKM consulting group, Alaska Interstate Construction LLC and Denali Drilling.

"We had a great turnout from industry," McCarthy says, "and we were very pleased. Now, if things go as scheduled, we anticipate making an award to one of these three groups before the end of this year. Then construction would begin in earnest in 2014 and, if all goes well, the bridge would open for business in 2018."

McCarthy acknowledges that some of the biggest issues for bridge construction still lie ahead, but once an award is made to a bidder, that bid consortium will become a private-sector partner and much of the construction and operational risk shifts to that private partner.

"This public-private partnership is unique in Alaska, but it has been proven

effective elsewhere in the United States," McCarthy says. "It's a good way to build without using a lot of public funds. If we're successful, this model could be used for other—future—projects in Alaska."

Tanana River Crossing

The largest bridge currently under construction is far north of Knik Arm on the Tanana River near Salcha. According to Mark Peterburs, project director for the Alaska Railroad, the 3,300-foot-long bridge is the first of a four-phase project to extend the rail line 80 miles from its current terminus near Eielson Air Force Base to a spot near Delta Junction. When finished, this bridge will be the longest bridge in Alaska, Peterburs says.

Under the direction of primary contractor Kiewit Infrastructure West Co. of Anchorage, bridge and levee construction began in 2011 and girders began arriving at the site in November 2012. Each of the 165-foot-long steel girders weighs in at approximately 70 tons and Carlile Trucking is hauling 80 of them from Valdez on the only three trucks in Alaska that could handle them, according to Peterburs.

The river itself is presenting some of the biggest challenges, Peterburs adds. In 2012, with about 25 percent of the levee built, the Tanana ice broke up in April and flooded the area.

"We survived," Peterburs says. "Luckily, nobody had any serious property damage and there was no serious problem to the project other than the delay. Now, we have completed six of the 19 piers and another seven under construction, so we'll see how it all holds up this spring."

Phase 2 of the railroad's Northern Rail Extension will make the connection of the new bridge to the current rail at Eielson. Peterburs says it's about a 13-mile rail project. Phase 3 will extend the rail about 38 miles into the Donnelly Training Area, a military Arctic training and testing ground north of Delta Junction, and Phase 4 will extend the rail the final 30 miles into Delta Junction.

"One of the features of this entire project," Peterburs says, "is that it extends local rail access so the military can get to their training ground year-round instead of relying on an ice road during the winter."

Rockin' Western Alaska

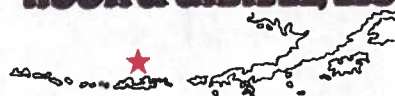
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Pictured to the left:
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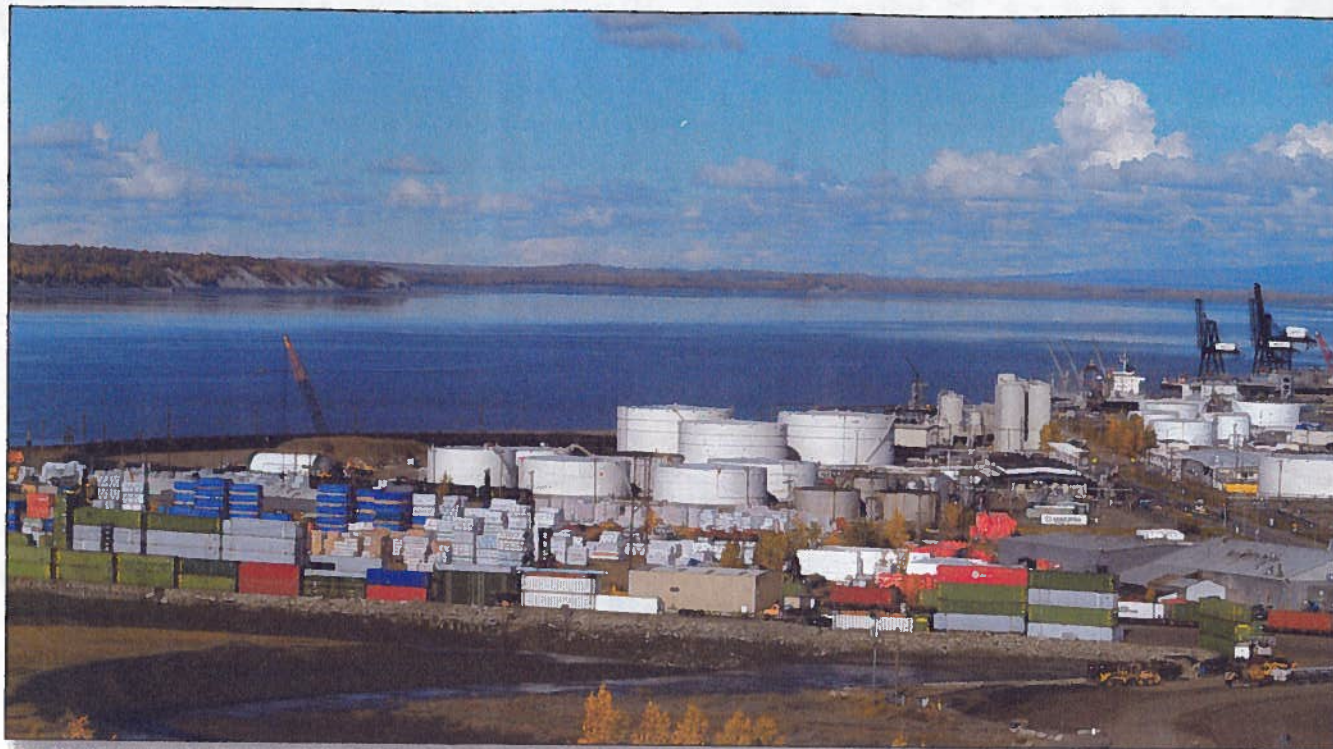
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A 1.74-mile-long bridge is scheduled to connect Anchorage to the Matanuska-Susitna Borough across Knik Arm between the Port of Anchorage and Port MacKenzie, a distance of 90 miles with current road access.

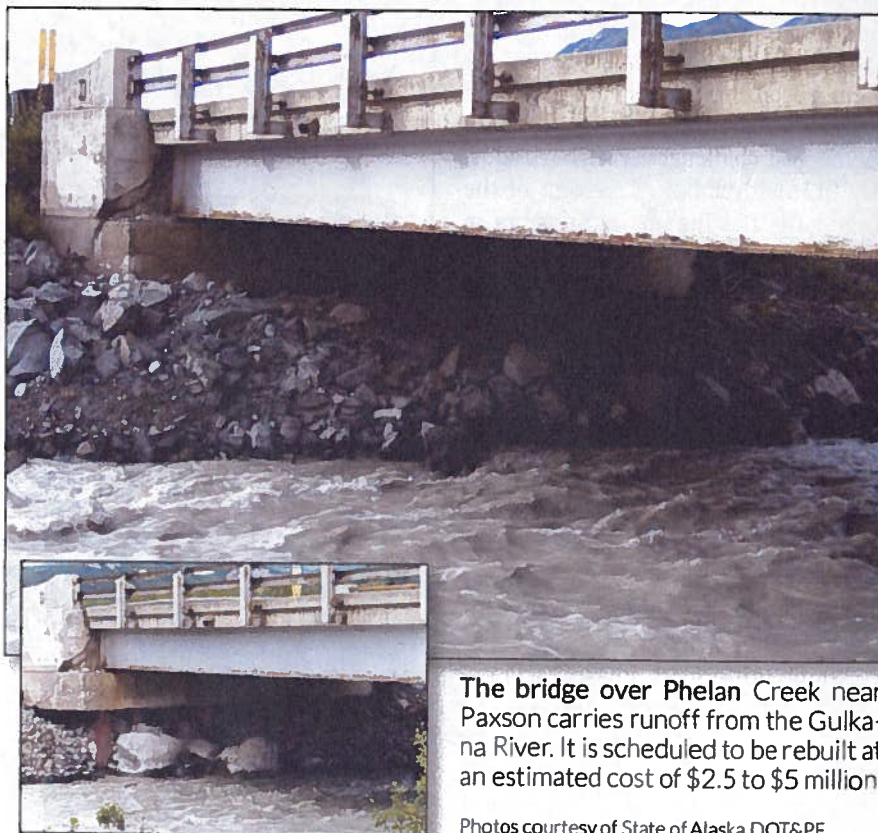
Funding for the first phase of the Northern Rail Extension, the Tanana River crossing at Salcha, consists of a \$105 million federal appropriation to the U.S. Army to ease access to its training areas on the west side of the Tanana River and \$83 million from the State of Alaska. Funding for Phase 2 (Moose Creek to Salcha), Phase 3 (Salcha crossing to Donnelly), and Phase 4 (Donnelly to Delta Junction) is still unknown.

"We hope to complete Phase 1 by August of 2014," Peterburs adds. "So far, it's gone well. The Railroad used the project-manager-general-contractor method with Kiewit winning the proposal process. After a year of working together, we all agreed on a specific price. That takes all the ambiguity out of the design and construction. We're half-way done now and there really haven't been any unknowns."

More Bridges

The State of Alaska also has bridge construction under way in both urban and rural locations, according to Rich Pratt, chief bridge engineer for the Alaska Department of Transportation and Public Facilities.

"Most of them are pretty routine projects," Pratt says, "replacing highway bridges that are worn out or have fulfilled their useful life. There are some new



The bridge over Phelan Creek near Paxson carries runoff from the Gulkana River. It is scheduled to be rebuilt at an estimated cost of \$2.5 to \$5 million.

Photos courtesy of State of Alaska DOT&PF

bridges, such as the one at Broad Pass in the Cantwell area on the Parks Highway—it's a railroad grade separation."

After completing the design several years ago, Pratt adds, the project is almost ready to begin.

Other replacement projects include bridges between mileposts 75 and 90 on the Seward Highway. His section has been asked to get started on replacing eight bridges in that span of highway, Pratt says. Most of these bridges, he points out,

were built right after the 1964 earthquake.

"The decks have basically worn out," Pratt says. "They're fairly narrow with narrow shoulders, they ride rough and they carry a lot of traffic."

The preliminary cost estimate for the first phase of this job is \$20 million and Pratt says he believes those bridges should be under construction in 2014.

Of the 62 current bridge projects under the state's auspices, Pratt estimates most are for replacing or rehabilitating existing bridges. Other bridges scheduled for rehab include six to 10 bridges on the Parks Highway between Healy and the developed area near the entrance to Denali Park—between mileposts 239 and 263—three in the King Salmon-Naknek area and a new bridge over the Wood River near Aleknagik, which should be bid in April.

In Anchorage there will be a new bridge across the railroad and Arctic Boulevard as part of the Dowling Road extension and another, wider bridge to be built across Campbell Creek as part of the Seward Highway widening.

"There's another bridge on the Copper River Highway in Cordova that needs replacing," Pratt says. "The river has moved, scoured the soil away from the bridge foundation, so the highway had to be closed. There's a big opening now between the end of the bridge and the existing road. We're anticipating that project in 2015 and it's going to be a challenging job for someone."

Coming up on DOT&PF's calendar are a project to replace and rehab bridges on Goldstream Road in Fairbanks (advertised in February and estimated at \$10 to \$20 million) and Phelan Creek bridge on the Richardson Highway (advertised in March and estimated at \$2.5 to \$5 million).

With bridges in the planning and construction stages across the state, Alaska's infrastructure is growing and improving—moving people and goods from one place to another. Roads and bridges need continual vigilance, though, to keep current ones in operational order and new ones on the drawing boards to meet the needs of an expanding state population. ⚙

Gail West is a freelance author living in Anchorage.



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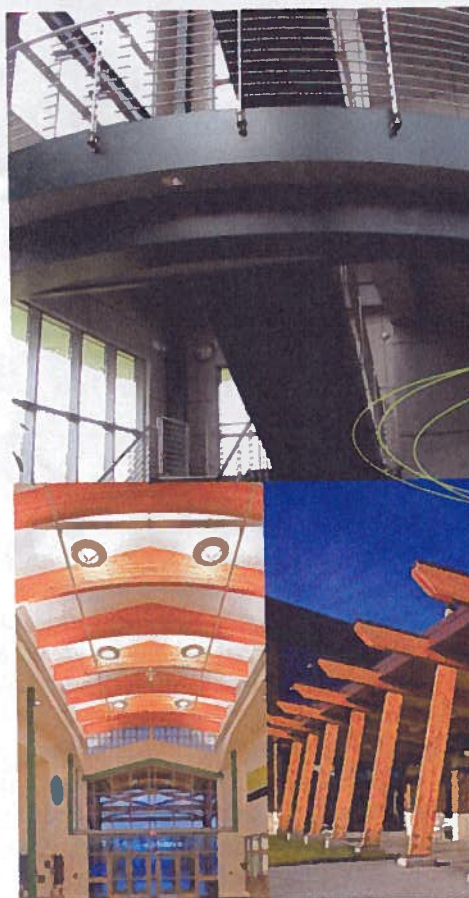
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