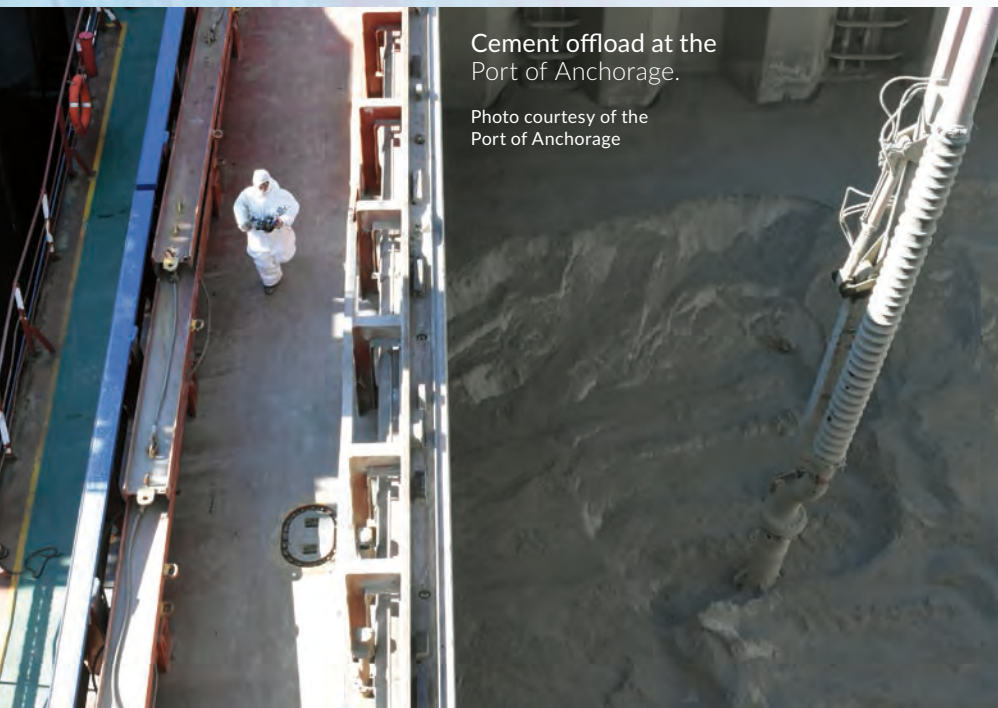




Arctic Transportation Infrastructure Needs



Cement offload at the
Port of Anchorage.

Photo courtesy of the
Port of Anchorage

Ports and roads from Barrow to Anchorage

By Julie Stricker

An Alaska road map is barren by Lower 48 standards. Most of the roads in the 49th State are concentrated in the most-populous Southcentral region, with two highways connecting Fairbanks and Anchorage. One of those turns to the east and Canada. The other heads north, ending on the shores of the Arctic Ocean amid the industrial development of Alaska's oil fields. Outside of this corridor, the map is mostly blank.

Despite current low oil prices, most of Alaska's budget is still based on the output of the oilfields in the far north. But there is only the one road, mostly gravel, leading to



ABI's new cement dome at the Port of Anchorage.

Photo courtesy of the Port of Anchorage

Industrial ships lined up at the Port of Anchorage.

Photo courtesy of the Port of Anchorage



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it, and a handful of airfields. The port that serves most of Alaska, including the oil fields, is hundreds of miles to the south and more than fifty years old.

Alaska has no deepwater ports to serve Arctic shipping, which is increasing as sea ice diminishes. The increased traffic, which this summer includes an 820-foot luxury cruise ship attempting to navigate the Northwest Passage, concerns Alaska residents along the coasts who depend on the plants and animals in the region for subsistence. They also see the increased traffic as an opportunity for economic development, if they can build the infrastructure to support it.

Rex Rock Sr., president and CEO of ASRC (Arctic Slope Regional Corporation), says the North Slope's lack of infrastructure is holding the region back economically.

ASRC, along with six village corporations from the North Slope, formed Arctic Inupiat Offshore (AIO) LLC in 2014 to pursue a strategic partnership with Shell and

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A 36-inch diameter corrugated metal pipe installed at MP 414 on the Dalton Highway.

Photo by Patrick Flaherty/
Courtesy of Alaska DOT&PF

act as a unified voice for North Slope communities. With Shell pulling anchor from its offshore ambitions in the Chukchi Sea after failing to find commercial quantities of oil, AIO is continuing to work for economic development in the region.

"I think we need everything the outside world has already," Rock says. "We do need roads. They would lower the prices on everything as far as freight. ... I think a train would really help. We need everything just like everybody else."

A deepwater port is another pressing need, especially given the increase in traffic through the Northwest Passage and the Northeast Passage over Russia, he says. A deepwater port near Barrow would allow the US Coast Guard to station cutters there, improve search and rescue operations, and support onshore and offshore drilling, he says.

Anthony Edwardson, president and CEO of the village corporation for Barrow, Ukpeaġvik Inupiat Corporation, also a member of AIO, says there has been talk of deepwater port near Barrow. And while reports have tagged both Nome and Port Clarence north of Nome as potential sites for a port, both are still hundreds of miles from the North Slope. "We do have a plan that we've put together and we've shared it with the gov-



John with Norgasco, Inc., running a current through an electrical wire to locate a gasline under the Dalton Highway at MP 414.

Photo by Jai Chang
/ Courtesy of Alaska DOT&PF

ernor of Alaska," Edwardson says. "We're really pushing forward for a deep port."

A major obstacle to building roads and infrastructure on the North Slope are the widespread public interest lands, says Teresa Imm, general manager of AIO and director of resource development for ASRC. For instance, building a road to Anaktuvuk Pass would require going through Gates of the Arctic National Park; Kaktovik lies on the outskirts of the Arctic National Wildlife Refuge; and roads to Barrow or Wainwright would pass through the National Petroleum Reserve-Alaska.

"These are all properties that the federal government manages," she says. "We have to have the federal government open up

to develop rights-of-ways through public interest lands. Just the way the land is designated is a huge inhibitor to grow infrastructure on the North Slope."

Besides physical infrastructure, the North Slope has also lagged far behind in telecommunications, but that is expected to change early in 2017 when high-speed broadband is rolled out in Alaska's northern communities.

The biggest benefit will be the reduction of latency in the villages, Imm says.

"The ability to download a lot of information, to have high-speed Internet through fiber in the communities, is potentially going to be a game-changer," she

says. "You'll be able to have your workers actually reside in the communities. People within these communities will be able to work in the same high-speed environment that everyone else does. That's going to be really significant."

Roads

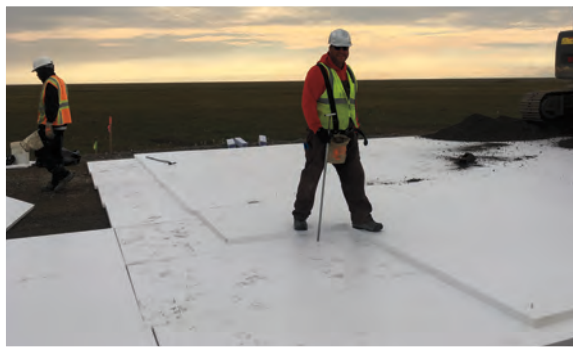
Despite being home to the vast Prudhoe Bay oilfield and numerous satellite fields and developments that have historically formed the basis for Alaska's economy, only one road leads into the North Slope, the 414-mile Dalton Highway, which begins 79 miles north of Fairbanks. The northern portion of the mostly gravel road was slated for upgrades in 2015, but devastating floods that closed the road for several weeks led to the expansion of those plans. The original \$27 million project focused on Miles 401-414, just south of the road's end in Deadhorse. It would have raised the road grade seven feet, replaced culverts, and resurfaced the road.

After the floodwaters subsided, the project was extended to Mile 397 and the budget expanded to \$43 million, in part due to flood damage.

This year and into 2017, the Dalton Highway from Miles 379-397 will also be raised above the floodplain and resurfaced. The latter project is estimated at \$31 million.

Brice operator scooping dirt onto the insulation foam which will keep the road permafrost frozen at MP 405 on the Dalton Highway.

Photo by Jai Chang / Courtesy of Alaska DOT&PF



Laborer pinning the foam insulation with wooden dowels to the ground at MP 410 on the Dalton Highway.

Photo by Patrick Flaherty / Courtesy of Alaska DOT&PF



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At the end of August, the Alaska Department of Transportation & Public Facilities (DOT&PF) officially opened its first major addition to Alaska's road system in years: a single-lane road from the Interior community of Manley Hot Springs to the Yukon River near Tanana. The \$13.5 million road to Tanana, which includes improvements to an existing 14-mile stretch of road, is the first project to link a rural community to Alaska's road system since the road to Whittier was completed in 2000.

It was envisioned as part of Governor Sean Parnell's Roads to Resources initiative, in which roads would link Alaska's mineral resources to its current infrastructure. Budget constraints have curbed the majority of the proposals, although the 220-mile Ambler Mining District Industrial Access Project from the Dalton Highway to mineral reserves in the Ambler Mining District is still moving forward.

"We have been tasked by the governor and the Legislature to pursue the scoping portion of the ANILCA right of way process, and we are in the applications phase," says Alaska Industrial Development and Export Authority spokesman Karsten Rodvik in an email.

The road would provide land access to several exploration sites—Arctic, Bornite, Sune, and Smucker—that could yield substantial quantities of copper, gold, silver, and zinc. A road would lower the costs of building the mines and provide a way to get the ore to market. DOT&PF estimates it would cost between \$430 million and \$510 million, depending on the route, to build the road.

DOT&PF also looked at other options to access the region, including a road link to the Elliott Highway and a railroad link to Nenana. Costs of those options were double to nearly quadruple the Dalton routes.

The state also looked at the feasibility of building a road west from the mining district, where it would link with a proposed port at Cape Blossom near Kotzebue. That route, although shorter, would require twenty-two major river crossings and cost \$860 million.

Ports

Cape Blossom is one of several sites the US Army Corps of Engineers studied as a potential deepwater port serving Alaska's Arctic. While the Corps decided that an expansion of Nome's harbor would best serve its needs, the Northwest Arctic Borough is continuing work to develop Cape Blossom into a regional port that would help lower the cost of living in Alaska's Northwest communities. The estimated cost to build the port is \$70 million, according to the borough.

Port Clarence, seventy miles northwest of Nome, is a natural deepwater port that was used as a port of refuge for whaling ships more than a century ago. More recently, it was the site of a Coast Guard LO-RAN station. In 2016, Congress authorized the transfer of 2,400 acres at Point Spencer, which forms the uplands on the western edge of the port, to BSNC (Bering Straits Native Corporation). In 2014, BSNC released a feasibility study of developing the port that concluded it would be viable if oil and gas development occurred on Alaska's Outer Continental Shelf. With Shell's pull-out in 2015, those prospects have dimmed.

BSNC did acquire several mooring systems from Shell Alaska, which subsidiary Inuit Services planned to deploy at Port Clarence this summer. The moorings will be made available for industry, government, and private use, the corporation states.

In the meantime, expansion plans for Nome's harbor are on hold. The Corps identified Nome as the best site for an Arctic deepwater port in its Alaska Deep-Draft Arctic Port System feasibility study. The \$210 million expansion would dredge the harbor to a mean depth of 28 feet and extending a causeway 2,150 feet, with a large vessel dock constructed at the end of the causeway.



Photo courtesy of Crowley

A Crowley tug and barge taking on fuel from bulk tanker *Nord Ocean*.

After Shell's withdrawal from the Chukchi, however, the Corps in October 2015 announced it would shelve the plans for at least twelve months to reassess the economic benefits and justification for the project. The Corps planned to monitor Arctic activities to determine if there is still a federal interest in continuing. It plans to meet with the state of Alaska and city of Nome to assess whether to continue the project or change the scope of the study to analyze other options.

In the meantime, the port that currently has the biggest impact on life in Alaska is the Port of Anchorage. It is the single largest cargo-handling system in the state, responsible

for 80 percent of all food, clothing, construction materials, and consumer goods shipped to Alaska, says spokesman Jim Jager. It's not a destination, he notes, but an intermodal cargo transport hub that connects marine, road, rail, and pipeline infrastructure. And it's outdated and falling apart.

"Anchorage receives some 2,400 containers of goods each week that are then distributed to some two hundred communities, military bases, and other developments that are spread out across most of the state of Alaska," Jager says.

A steady stream of containers leaves Anchorage daily with cargo for the North Slope.



BSNC descendant Nick Hanson. Photo courtesy of Brett Hanson.

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Tank farm at
the Port of
Anchorage.

Photo courtesy of the
Port of Anchorage



A natural gas pipeline envisioned by Alaska Governor Bill Walker would add more than a year's worth of extra ships bringing cargo to support pipeline construction.

"There is no cost-effective alternative for receiving and delivering all of the fuel and dry cargo that crosses Anchorage's docks, and Alaska's population isn't big enough to economically support another marine port that can handle Anchorage's cargo volumes without significantly increasing shipping costs," Jager says.

The port, which was built in 1961, is a critical piece of Alaska infrastructure and it's corroding, he says.

"We're spending about \$3 million a year putting jackets on failing dock piles," he says. "Because of the climate up here, the rust and corrosion tend to be worse right at the midline. You can't replace the pile without taking the whole dock out."

While the steel jacket maintains the pile's load-bearing capacity, it does nothing for seismic stability and doesn't help modernize the docks to deal with today's larger boats, he says. "They will last ten to fifteen years. Once they fail, there is really nothing we can do. We're going to have to start restricting the load capacity of the docks and then close the docks.

"Even if you assume we have no earthquakes, in ten to fifteen years we're going to effectively start closing down the docks in Anchorage. And there's no Plan B."

There are other ports in Southcentral Alaska at Valdez, Whittier, and Seward, but none has the cargo capacity or handling abilities that Anchorage does and all are at the end of narrow, sometimes treacherous road corridors, Jager says. All three are also prone to tsunamis and were destroyed in the 1964 earthquake. Some items are

trucked up the Alaska Highway, but not many. Even looking at the Ted Stevens Anchorage International Airport as a cargo option if the port fails won't work because nearly all of the state's aviation fuel comes in through the port.

"Every scenario [to supply Alaska] fails if the Port of Anchorage fails," he says. "You can't get enough goods and services up in a sustainable fashion to handle the volume.

"We are very much in a just-in-time delivery mode in Alaska," Jager adds. "We basically have stockpiles to last seven days. If the Port of Anchorage is shut for a week, Alaska is out of food."

In most places, Jager says, it's not a healthy option to have one port as the single port of entry and the single point of failure, but economic reality is that Alaska is at the end of a very long supply chain with a small, scattered population. There's not enough population to support redundant ports without paying huge subsidies.

It's also a facility the Department of Defense classifies as necessary to the national defense. "All of the bases in Alaska rely on the Port of Anchorage," Jager says. "A gate opens directly onto [Joint Base Elmendorf-Richardson]. I see Hummers driving up the ramp on the ship. If we didn't have the Port of Anchorage, the military will say, 'Gee, Alaska is a much less attractive place.'"

While ports in the Lower 48 usually handle both incoming and outgoing cargo, giving them two potential income streams, Alaska exports almost nothing.

"Our biggest export is great big containers of fresh Alaska air that we ship to Tacoma," Jager says. "But we're not getting paid for it. No matter how we do this project, it's going to be paid for by Alaskans. The question is how are we going to pay for it?"

The port needs to be redesigned and rebuilt. An ambitious expansion plan headed by former Governor Bill Sheffield that would have added a considerable amount of land to the port and rebuilt the docks was shelved by Anchorage Mayor Dan Sullivan after it ran into cost and design problems. It is currently under litigation.

However, the port is still aging, Jager says, and the litigation won't make the problems go away. Port officials have asked for a \$290 million bond toward a more modest rebuild, with a total project cost of an estimated \$550 million. They already have \$127 million remaining from the Sheffield project. Jager says he won't have a true cost until the project is fully designed and out for bid.

"If we were to go out and bid it today, it might come in lower," Jager says. "With the economy the way it is, the contractors are really sharpening their pencils. The interest rates are really good."

The project will take about seven years because the port will have to stay open during construction.

"The plan is we're going to start moving dirt next summer," Jager says. A new fuel and cement berth with reinforced pilings will be constructed to the south of the existing docks. Then, one by one, the other docks will be demolished and rebuilt. "It'll be quite a dance," he says.

"Since we can't afford to have two ports, we're going to have one with really strong docks," he says. "That's just a more cost-effective way of ensuring resiliency for Southcentral Alaska." ❁

Julie Stricker is a journalist living near Fairbanks.