

Connecting Physical and Racial Divides: The Alaska Highway

THE SURPRISE ATTACK by Japan on Pearl Harbor on December 7, 1941, propelled the United States into World War II. But it also set the stage for one of the country's most ambitious national security infrastructure projects—a massive highway, built through the inhospitable wilds of Canada's northeastern British Columbia and southwestern Yukon Territory and the United States' Alaska Territory, linking the lower 48 states with what would become the state of Alaska. More than 1,685 mi long and completed in just over eight months, the Alaska–Canada Highway, as it was originally called, not only played an important role in the war, it also set the stage for the racial integration of the U.S. military.

Nearly concurrent with the attack on Pearl Harbor, Japan also struck and occupied Guam and Wake Island, sparking worries among leaders in Washington, D.C., that Japan might gain control of the western half of the Pacific. “Such a circumstance would make Hawaii even more vulnerable to attack and expose the Aleutians and Alaska to invasion,” wrote historian Heath Twichell Jr., Ph.D., in his book *Northwest Epic: The Building of the Alaska Highway* (New York City: St. Martin's Press, 1992). “Maintaining military control over Alaska and expanding the bases there were thus considered strategic necessities. But after the U.S. Navy's losses at Pearl Harbor, its ability to protect the sea lines of communication to Alaska was suddenly very much in doubt.”

Indeed, within two months of the Pearl Harbor attack there were 58 visual sightings or radio fixes of Japanese ships off the west coast of North America, and in late February 1942, a Japanese submarine shelled an oil refinery in Santa Barbara, California.

Roughly 10,000 men carved the 1,685 mi long highway through the wilds of Canada and Alaska in just eight months.

American leaders worried that if Japan invaded Alaska, the United States might not be able to supply the territory and repel an attack by sea. At that time, the U.S. Navy had only five destroyers it could spare to protect Alaskan shipping lanes. Flying in supplies was dangerous because of pilot inexperience and treacherous weather. That left the option of reaching Alaska by land. Rail was ruled out because it would cost more and take longer to build than a roadway. So military engineers, with the reluctant blessing of the Canadian government, opted to build a highway.

After President Franklin D. Roosevelt approved the project in early February, Brig. Gen. Clarence Sturdevant, the assistant chief of the U.S. Army Corps of Engineers, placed Col. William M. Hoge in charge. Hoge, a World War I combat veteran and graduate of the Massachusetts Institute of Technology (MIT), had served in an engineering battalion in the Philippines in the 1930s, building roads and bridges in the jungles of Bataan.

Planners cobbled together a route that began at Dawson Creek, British Columbia, east of the Rocky Mountains, crossed the mountains to link with the small town of Whitehorse, Yukon, and then continued northwest into Alaska, ending at Delta Junction. From there it would connect with an existing highway leading north to Fairbanks. Planners thought this route would avoid most of the bad weather associated with the coast while enabling the highway to connect to the Northwest Staging Route, a strategically critical chain of airfields and radio ranging stations in Alberta, British Columbia, Yukon, and Alaska.

This interior route, however, left a gaping 600 mi hole at

its heart. No one was quite sure how to get from Fort Nelson, in British Columbia, through Watson Lake, in the far southern Yukon, and west through the Rockies to Whitehorse. There was no time for a terrain survey, so the route relied “more on faith than on facts,” Twichell wrote.

Construction officially began in March 1942. The initial contingent of workers consisted of four construction regiments comprising 5,095 enlisted men as well as several specialized units for a total of 6,400 laborers. Later that year, the Army called up additional regiments of African American soldiers—the 93rd, 95th, and 97th Engineer Regiments and the 388th Engineer Battalion. (The latter was largely tasked with building the massive Canol oil pipeline from the neighboring Northwest Territories to Whitehorse, Yukon, and into Alaska.) In all, according to the Corps’s website, 10,607 U.S. Army Engineer soldiers worked on the road, of which 3,695—34.8 percent—were African American.

Work began with the 35th Engineer Regiment, which started on the southern end of the route at Dawson Creek, about 400 mi northwest of Edmonton, Alberta. Daylight could last up to 20 hours in the spring and summer, with twilight for the remaining four hours, according to J. David Rogers, Ph.D., P.E., FASCE, a professor and the Karl F. Haselmann Chair in Geological Engineering in the Department of Geosciences and Geological and Petroleum Engineering at Missouri University of Science & Technology and a member of ASCE’s History and Heritage Committee. Crews, he says, could work around the clock in three shifts.

According to the Alaska Department of Transportation, some 250,000 tons of material was brought in to construct the road. The 35th Engineer Regiment alone used an armada of vehicles and equipment, including 93 half-ton dump trucks, 44 bulldozers, 9 road graders, and an array of pontoon boats, electric generators, air compressors, welding machines, and chain saws, according to Twichell.

Rogers says aerial photos provided survey parties with a general location and bearing. Then the surveyors, sometimes led by native guides, would “blaze trails and mark the proposed centerline by tying red cloths to bushes and trees. A plane table [surveying] party would then traverse the alignment and record relative elevations.”

From there, according to *Northwest Epic*, a battalion’s advanced clearing detachment went to work. Ten Caterpillar D8 bulldozers, four or five abreast, “advanced along the trail, knocking down and uprooting all trees and other vegetation in a swath 100 feet wide,”

Twichell wrote. “In this wake, the second wave of machines simply pushed all this verdant debris to the sides of the cut. The powerful D8 was capable of toppling a shallow-rooted tree 12 inches in diameter without even losing momentum; those with trunks in the 20[-inch] range needed an extra nudge or two.”

To clear a large tree, an operator used “his blade to build an earthen ramp against its trunk, chugged up the incline to gain extra leverage, and battered away until both tree and ‘dozer came crashing down together,” Twichell wrote. “The operator’s only protection against falling limbs was a stout iron bar welded to the frame above his seat.”

After that, an additional work party made sure food and water could be supplied to the lead group. This group “hastily corduroyed soft spots with brush and logs and built crude temporary bridges and culverts of hand-hewn timbers. A pair of bulldozers made up the rearguard of this contingent, moving just enough earth to cover the culverts and stabilize the corduroy matting,” Twichell wrote.

Next, the battalions’ rough grading detachment “spent twenty hours each day cutting down small hills, filling in low spots, and carving out drainage ditches,” he wrote.

The last step involved the final grading detachment, whose men put the “finishing touches on the road: shaping and compacting its crown, adding more earth to any remaining weak spots, and truing up the drainage ditches. When

time allowed, stretches that lay near easily accessible gravel deposits even got a topping of stones.”

The engineer regiments built more than 200 bridges and 8,000 culverts on the highway

The Alaska–Canada Highway was built after the attack on Pearl Harbor to connect Alaska with the U.S. mainland in the event of an invasion.



MAP COURTESY OF WIKIMEDIA COMMONS/LUIGI ZANASI



route. Many of these temporary bridges couldn't withstand the thawing of rivers in the spring, according to Rogers. "Flotsam in the form of tree trunks and brush . . . slammed into the pilings, damaging them and capturing more and more debris because of the obstructions," he says.

Despite Hoge's outward confidence, there were doubters in Washington about the routing of the highway, and Hoge's men got off to a slow start. "Hoge's lack of progress was a well-kept military secret," Twichell wrote. By early June, two months in, his battalions had only carved out 95 mi of crude pioneer trail.

Morale was low in the 35th during the first few weeks of work in April. "Day after day of straining through the gooey yellow clay wore down men and machinery," wrote Twichell. "The number of vehicles out of commission with damaged transmissions and broken axles began to mount." Some truck odometers registered more miles than the trucks had actually driven; the difference was due to wheels spinning in mud.

A central reason for the slow progress was the terrible condition of the soil. Builders in the southern portion of the route had to contend with muskeg, a swampy, highly organic soil with a high water table that was known to vex railroad operators. It was, according to Twichell, "solid enough during the winter but jellylike during the warmer months, when derailments due to shifting or sinking track were so common that every train carried a flatcar-mounted crane and several cars full of gravel ballast for on-the-spot repairs."

On the northern stretches of the road, engineer battalions encountered an even more difficult soil condition: permanently frozen ground known as permafrost. Twichell notes that engineers could cope with muskeg by "avoiding it, excavating it, or corduroying it. None of these solutions worked with perma-

frost, which covered many areas to great depths along the northern third of the route."

As Twichell explained, exposed permafrost "quickly dissolved into a slush that was futile to excavate, impossible to drain, and incapable of drying." The solution was to make sure the permafrost did not melt. To achieve that, "Engineers had to cut down all vegetation by hand and leave it where it fell." Then they piled on extra insulation—logs laid corduroy-style "or branches and brush crushed and compacted by a team of bulldozers." On top of this they placed earth and gravel by the truckload—as many as 1,000 truckloads per day.

In addition to the soil, weather proved another huge challenge. Workers were outfitted with van loads of cold-weather gear. According to Twichell, each man received "a sheepskin-lined trench coat, a reversible parka, a fur helmet, a sweater, a scarf, gloves, wool pants, wool socks and underwear, two pairs of heavy shoes, goggles, and a sleeping bag."

Working conditions were brutal. In the colder months of the job, temperatures could drop to as low as -30°F , which meant vehicle engines had to be kept running continuously. (If a vehicle stalled, Twichell noted, the only way to restart it was to build a fire under its oil pan, which carried its own dangers.) Vehicles broke down, and despite the heavy clothing, builders complained of frostbitten toes and feet.

Still, the men made do. Their base camps were well stocked with food, fuel and oil, heated tents, and well-rested spare drivers ready to relieve tired ones, Twichell wrote. The camps had large lending libraries with pulp novels, comic books, and magazines. Workers hunted and fished in their limited downtime. But as Twichell wrote, "Any GI looking for wine, women, and song along the Alaska Highway usually had to settle for a disappointing two out of three: a couple of over-priced beers in some dingy, jam-packed bar and boozy, all-male harmony around a badly tuned piano."

As difficult as it was for the white engineers to brave the difficulties of building the Alaska-Canada Highway, their black counterparts, who came to represent more than one-

Soldiers of the 95th Engineer Regiment began work on the Sikanni Chief River Bridge on the Alaska-Canada Highway in July 1942, above. Treacherous soil conditions frequently got the better of the bulldozers carving out the path of the highway, below.



PHOTOGRAPHS COURTESY OF THE OFFICE OF HISTORY, U.S. ARMY CORPS OF ENGINEERS, ALL © 2020 AMERICAN SOCIETY OF CIVIL ENGINEERS ALL RIGHTS RESERVED

third of the workforce, had to face even greater challenges. As Twichell put it, without the work of the 93rd, the 95th, and the 97th—and, on the Canol pipeline, the 388th—the highway would have taken at least a year longer to construct and might never have been finished at all.

These soldiers endured contempt and prejudice over their presence and condescension with regard to their skills. Black soldiers were not taken seriously as construction engineers—their white supervisors thought the work was too technical, the equipment too sophisticated. The black men faced other erroneous beliefs as well, about everything from their work ethic to their ability to handle the cold. They were asked to do a lot of stevedore work, were given less-essential assignments, and routinely had to complete those assignments with inadequate gear and equipment.

The 97th, for example, was assigned to open an access road 200 mi north of Valdez, Alaska, then work southeast on the main road toward the Alaska–Canada border, all while making do with a “battered fleet of dump trucks” classified as unserviceable. The 93rd had to begin work with only hand tools.

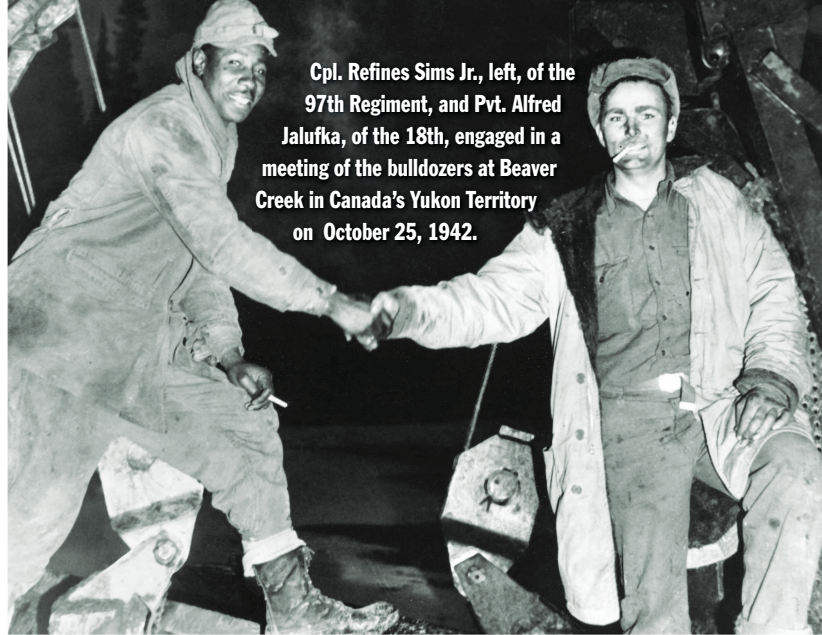
The 95th arrived at the southern end of the highway, at Dawson Creek, on May 29. Heavy equipment was given to the 341st, an all-white regiment, to build the road from Fort St. John, British Columbia, to Fort Nelson, despite the fact that the 95th had more road-building experience. The 95th was given the grunt work of following behind the 341st to improve the road’s durability.

“All else being equal, logic dictated that the more difficult of the two assignments should go to the regiment with more training and better equipment,” Twichell wrote. “Even taking into account the fact that the 341st had a month’s head start on the 95th in on-the-job experience, the balance still weighed in favor of putting the 95th in the lead, assuming that its potentially greater road-building efficiency would compensate for any work days lost during its shakedown period.”

Nevertheless, the black regiments acquitted themselves well, none more so than the 95th, which eventually came under the command of Col. Heath Twichell Sr., the historian’s father. But the men of the 95th were suffering from poor morale; they had been trained to do much more than they were being asked to do. In an article in *Washington City Paper* in 1993 (“Great Black North”), journalist Bill Gifford noted that Twichell Sr. recognized his regiment “needed more challenging work than digging ditches and road-grading.” He assembled the regiment’s “best woodsmen on the banks of the swift-flowing, chest-deep, 300-foot-wide Sikanni Chief River [in British Columbia] and gave them their orders: Bridge it.”

The men did him one better. According to Gifford’s story, the men bet their week’s wages they could build the bridge in seven days, rather than the expected fortnight. They worked day and night and did the job in 72 hours.

The Alaska–Canada Highway opened on November 20, 1942—but the road the Corps had blazed through the wilds of western Canada and Alaska was far from finished. Accord-



Cpl. Refines Sims Jr., left, of the 97th Regiment, and Pvt. Alfred Jalufka, of the 18th, engaged in a meeting of the bulldozers at Beaver Creek in Canada’s Yukon Territory on October 25, 1942.

ing to the Corps, engineer units continued to improve and maintain the primitive road through the winter of 1942–43. Following closely on their heels were civilian contractors under the direction of the Public Roads Administration (the predecessor of the Federal Highway Administration), which began improving and maintaining the road in the summer of 1943 and continued through to the end of World War II.

So, for all the struggles to build the road, did it actually prove useful to the Allies in winning the war? Through the Lend-Lease Act, the United States loaned fighters and bombers to the Russians—nearly 8,000 in all—and those planes were routed along the Northwest Staging Route through to Ladd Field in Fairbanks, where Russian pilots would fly them to Siberia and on to the Eastern Front. The planes were equipped with radio homing beacons, but when the northern lights interfered with their instruments, the pilots were able to use the road itself (weather permitting) as the ultimate navigational aid.

According to the Corps, the highway opened to the public in 1948. While the work of Hoge’s men was recognized, the contributions of the Army’s black corps of engineers went unheralded for years. Many people finally helped tell the story, including Twichell Jr., four-star Army Gen. Colin Powell, and Lael Morgan, a journalism professor who has taught at the University of Alaska and now teaches at the University of Texas at Arlington. Sixty-three years after the fact, in 2005, Congress finally passed a resolution honoring the men of the 93rd, 95th, and 97th Regiments and the 388th Engineer Battalion of the Corps of Engineers, noting that “despite enduring indignities and double standards, the soldiers of the Black Corps of Engineers contributed unselfishly to the western defense in World War II and these contributions helped lead to the subsequent integration of the military.”

The Alaska Highway was accorded landmark status in the ASCE Historic Civil Engineering Landmark Program in 1995.

—T.R. WITCHER



Witcher

T.R. Witcher is a contributing editor to *Civil Engineering*.